Hokkaido University Sustainability Weeks 2010

From October 25(Mon.)

Annual Report

HOKKAIDO UNIVERSITY

About This Document

This is the annual report of the Sustainability Weeks which is a campaign Hokkaido University launched in 2007 to promote research and education for the realization of a sustainable society. This mainly consists of PDF files converted from the website of the Sustainability Weeks 2010.

To keep the records as of when the events were held, some pages include out-of-date information, website links, and contact information which is not valid currently.

In the “Greeting from the President,” Sapporo Sustainability Declaration (SSD) is mentioned to explain about roles of universities. SSD’s details are available on another report on the Hokkaido University website. Please use the search engine with the key words “Sapporo Sustainability Declaration” or “G8 University Summit” to find out more about them.

This is the English annual report of Sustainability Weeks 2010. Its Japanese version and other years’ annual reports of Sustainability Weeks are available on the website as well. We are glad if you refer to them for your better understanding.

Also, please understand that it is difficult to answer inquiries about the event details since the only event planners and host members at that time have detailed information. We hope this document helps you somehow to contribute to achieve a sustainable society.

Secretariat of Sustainability Weeks
Hokkaido University
March, 2017

Contents

Sustainability Weeks 2010 Opening Symposium: Toward a Society Offering Quality of Life and Human Dignity for All
－Comprehensive Exploration into the Causes of the Crises We Face－

(* The numbers in the parentheses [ ] are the page numbers in the report.)

1. Overview of Sustainability Weeks 2010

Features of This Year

- Theme : **Toward a Society Offering Quality of Life and Human Dignity for All**
- Core period : Mon, October 25 – Sun, November 7, 2010
- Number of events : 47
- Event period : Mon, September 25 – Wed, December 8, 2010
- Number of participants : 11,196
- Points worth special mention :
    - In a departure from the previous focus on natural environment topics, the SW 2010 program highlighted humanity for the first time. Consequently, the SW program developed into a Hokkaido University signature event covering an even broader range of academic fields and a greater diversity of issues than in previous years. It became unparalleled anywhere in the world as a program promoting social contributions and international exchanges.
    - During the SW 2010 Opening Ceremony held on October 25, a special event was held in honor of Hokkaido University Emeritus Professor Akira Suzuki, who was awarded the 2010 Nobel Prize in Chemistry several weeks earlier. The faculty, administrative staff and students of the University joined in the celebration of Dr. Suzuki's achievement.
    - Representatives of universities with which Hokkaido University newly concluded partnership agreements were invited to various SW 2010 events to share sustainability initiatives taken at their individual institutions. This helped to promote an understanding of the partner institutions among the faculty, administrative staff and students of the University.
    - The total numbers of events and participants in SW over the last four years, including this year, topped 100 and 20,000, respectively.
    - Hokkaido University and The Hokkaido Shimbun Press cohosted the Hokkaido University Sustainability Forum 2010 for the general public. The Hokkaido Shimbun serially published advertisements for the Sustainability Weeks and also carried an article publicizing the special event in honor of Emeritus Professor Akira Suzuki.
    - Students from the Graduate School of Environmental Science operated Velotaxi cycle rickshaws on campus during the Ride and Think for Sustainability in Hokkaido University event. Advertisements for the

Sustainability Weeks were placed on Velotaxis to facilitate fund-raising and publicity.

Final Version

Hokkaido University Sustainability Weeks 2010

From October 25(Mon.)

HOKKAIDO UNIVERSITY

Message from the President

Since its foundation as Sapporo Agricultural College in 1876, Hokkaido University (HU) has contributed to the creation of a society in which people live in harmony with nature. Since the beginning of the 21st century, we have broadened our outlook and set the goal of achieving a sustainable society through research and education in pursuit of relationships involving harmony among the environment, society, the economy, and individuals.

In 2008, we hosted the G8 University Summit in Sapporo and adopted the Sapporo Sustainability Declaration with 20 overseas universities, 14 Japanese institutions, and the United Nations University and pledged to act as a driving force behind the realization of such a sustainable society.

We will host the Sustainability Weeks again this year to reconfirm our commitment.

The theme of this year's Weeks – the fourth in the series – is **Toward a Society Offering Quality of Life and Human Dignity for All.** Come join in the symposiums, lectures, workshops, and exhibitions we have planned and engage in discourse with researchers from around the world as well as with students and members of the general public so we can all work together for the sake of a better future.

Saeki Hiroshi
President of Hokkaido University

1 Opening Event: Hokkaido University International Symposium on Sustainable Development

October 25 (Mon.)～26 (Tue.) 9:00～

Toward a Society Offering Quality of Life and Human Dignity for All -Comprehensive Exploration Into the Causes of the Crises We Face -

Web

ⓐ Ideally a sustainable society allows everyone to achieve physical, mental, and social well-being to have a high quality of life. As these things are realized, those benefiting in turn become a driving force behind the sustainability movement and bring it closer to an ideal state.
In reality, however, human activity driven by self-interest and desire has caused rapid deterioration of the natural environment, including global warming, pollution stemming from hazardous chemicals, and reduced biodiversity. Meanwhile, social imbalances such as poverty and isolation have spread noticeably. It is thought that these problems will ultimately lead to the destruction of general well-being and threaten the very survival of humankind.
This symposium will investigate the deterioration of well-being from a comprehensive viewpoint and identify the inherent factors that destroy sustainability. It will also include consideration of how to remove factors that act as obstacles to the creation of a society in which everyone can enjoy a higher quality of life with dignity.

ⓑ Hokkaido University Conference Hall
ⓒ Japanese/English (Translation will be provided at the Plenary Session)
ⓓ Required (Charge:free)
ⓔ Hokkaido University
ⓖ Secretariat for Sustainability Weeks
TEL:+81-(0)11-706-2093
FAX:+81-(0)11-706-2095
E-mail: office1@sustain.hokudai.ac.jp

プログラム

October 25(Mon.)

●Opening Ceremony

Keynote Lecture: Keith F,TAYLOR, Dalhousie University

●Plenary Session

●Session1: Effects of the Natural & Social Environments on Human Health
Yun-Chul HONG, Institute of Environmental Medicine, Seoul National University
Reiko KISHI, Center for Environmental and Health Sciences, HU

●Session2: The Deterioration of Ecosystems and it's Impacts on Human Life
Jamsran TSOGTBAATAR, Institute of Geoecology, Mongolian Academy of Sciences
Noboru FUJITA, Research Institute for Human and Nature
Mamoru ISHIKAWA, Faculty of Environmental Earth Science, HU

●Session3: Reflections on Societal Structure
Makoto YUASA, Anti-poverty Network
Takeshi NAKAJIMA, Faculty of Public Policy, HU

October 26(Tue.)

●Parallel Sessions

1. Children for Sustainable Development–Present Crisis Affecting Children
●Host: Faculty of Education ●Language: Japanese

2. The Eurasian Ecotone: Sustainable Ecosystem Use in Mongolia
●Host: Faculty of Environmental Earth Science GCOE ●Language: English

3. Global Water Crisis and Well-being
●Host: Faculty of Engineering ●Language: English

4. Health and Nursing Care in an Ageing Society: What is Happiness?
●Host: Graduate School of Medicine ●Language: Japanese

●Panel Discussion

LEGEND

0 Date
Title
ⓐ Outline
ⓑ Venue
ⓒ Language
ⓓ Registration
ⓔ Organizer
ⓕ Co-host
ⓖ Contact

Registration can be made via our website where you see this icon.
【Registration】
https://www.sustain.hokudai.ac.jp/sw/application/

The background color indicates the type of events. These events are open to everyone.

- QUALITY: Quality of Life and Human Dignity for A
- NATURE: Our Relationship with Nature
- CAMPUS: Sustainable Campus
- FUTURE: Learning for the Future

Hokkaido University supports the "Children's Contest for the Environment in Sapporo" (hosted by the City of Sapporo).

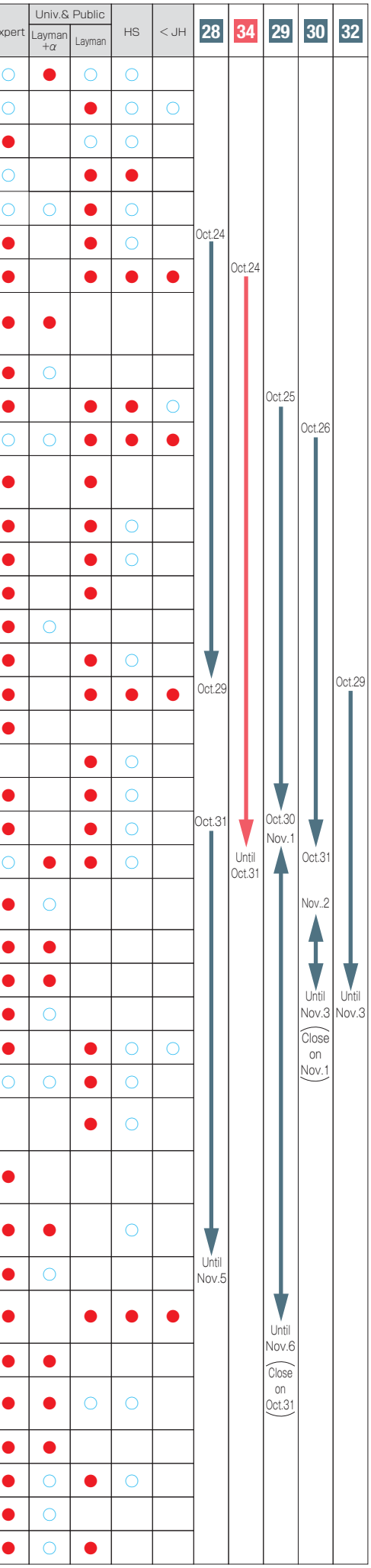
This event will offer great opportunities for elementary and junior high school students in Sapporo to introduce the environmental protection efforts they have been involved in. Hokkaido University will award the Sustainability Prize to the group with the most outstanding activities.

■The contest is open to the public and will be held at Sapporo L-PLAZA on November 27.
■Contact: City of Sapporo
TEL: +81-(0)11-211-2877

Event Schedule

● Main Target ○ Welcomes

Date		Title	Expert	Univ.& Public Layman +α	Univ.& Public Layman	HS	< JH
Sep.25 (Sat.)	2	Public Lecture: Fertility and Sustainable Future	○	●	○	○	
Oct.13 ~ 15 (Wed. ~ Fri.)	13	Science Café:"Shirabekata" on Earth vol.1-3	○		●	○	○
Oct.16 (Sat.)	27	The 7th Presentation & Debate Competition, School of Economics and Business Administration	●		○	○	
Oct.22 (Fri.)	3	Public Lecture: Hokkaido University Sustainability Form	○		●	●	
Oct.24 (Sun.)	4	Public Lecture: Let's Think Together! Our Environment and Children's Health	○	○	●	○	
Oct.24 ~ 29 (Sun. ~ Fri.)	28	The 2nd Hokkaido University Sustainability Research Poster Contest I	●		●	○	
Oct.24 ~ 31(Sun. ~ Sun.)	34	Special Event: Ride and Think for Sustainability in Hokkaido Univ.	●		●	●	●
Oct.25 ~ 26 (Mon. ~ Tue.)	1	SW2010 Opening Event Toward a Society Offering Quality of Life and Human Dignity for All –Comprehensive exploration into the causes of the crises we face –	●	●			
Oct.25 (Mon.)	14	International Workshop on Green Circuits and Systems	●	○			
Oct.25 ~ Nov.6 (Mon. ~ Sat.)	29	Fair Trade Fair vol.5	●		●	●	○
Oct.26 ~ Nov.3 (Tue. ~ Wed.)	30	Controlling Zoonoses: An Experimental Exhibition on Integrative Science	○	○	●	●	●
Oct.27 (Wed.)	35	Invitation to Study Abroad Programs: SD on Campus – A Global Quality of International Campus Life	●		●		
Oct.27 (Wed.)	36	Sustainable Campus Tour	●		●	○	
Oct.27 (Wed.)	37	First Sustainable Campus Contest	●		●	○	
Oct.28 (Thu.)	15	International Symposium on Renewable Energy	●		●		
Oct.29 (Fri.)	31	International Symposium – Global Campus for Sustainability Education	●	○			
Oct.29 (Fri.)	16	Symposium on Northern Mountains: Past Change and Monitoring Network	●		●	○	
Oct.29 ~ Nov.3 (Fri. ~ Wed.)	32	CLARK THEATER 2010	●		●	●	●
Oct.30 (Sat.) AM	17	Key Issues for Carbon Storage and Biodiversity - Tropical Peat and Forest-	●				
Oct.30 (Sat.) PM					●	○	
Oct.30 (Sat.)	5	Hokkaido Community Care Symposium	●		●	○	
Oct.31 ~ Nov.5 (Sun. ~ Fri.)	28	The 2nd Hokkaido University Sustainability Research Poster Contest II	●		●	○	
Nov.1 (Mon.)	6	Symposium on the Possibility of a Green Welfare State : Toward Sustainable and Inclusive Growth	○	●	●	○	
Nov.1 (Mon.)	18	Symposium on EcoDesign for a Low Carbon Society Based on Regional Partnerships Between Urban and Rural Areas	●	○			
Nov.1 ~ 2 (Mon. ~ Tue.)	19	Workshop for the 2nd Amur-Okhotsk Consortium Meeting 2011	●	●			
Nov.2 (Tue.)	7	Symposium on Expanding the Potential of Children in Future Society	●	●			
Nov.3 (Wed.)	8	The Instruction on Research Diagnostic Criteria for Temporomandibular Disorders	●	○			
Nov.3(Wed.)	20	Seminar on Environmental Policy ~ Biodiversity and Climate Change ~	●		●	○	○
Nov.3 (Wed.)	9	Public Program on Health Sciences	○	○	●	○	
Nov.3 (Wed.)	21	Public Lecture: The 3rd International Symposium on Sentinel Earth—Advances in Satellite Imagery Data and GIS and Their Applications-			●	○	
Nov.4 ~ 5 (Thu. ~ Fri.)	21	The 3rd International Symposium on Sentinel Earth—Advances in Satellite Imagery Data and GIS and Their Applications-	●				
Nov.4 (Thu.)	22	Business-Academia-Government Collaboration Seminar on Developments of Geo-spatial Information and Future World II	●	●		○	
Nov.5 (Fri.)	23	Hokkaido Marine Bioscience Symposium	●	○			
Nov.6 (Sat.)	33	The 14th Ainu Language Speech Contest "ITAK AN RO" ~ Let's Speak in Ainu Language!	●		●	●	●
Nov.6 (Sat.)	10	International Symposium on Child Poverty and Anti-poverty Strategies	●	●			
Nov.6 (Sat.)	11	International Symposium on "Reproductive Rights and the Sustainability of Women's Health in Historical and Contemporary Perspectives"	●	●	○	○	
Nov.7 (Sun.)	12	Special Lecture – Intergenerational Justice and Health in an Aging Society	●	●			
Nov.9 (Tue.)	24	Public Lecture: Theory and Practice of Fisheries Sustainability Science	●	○	●	○	
Nov.15 (Mon.)	25	SCJ Hokkaido District Conference " Green Innovations Originating in Hokkaido"	●	○			
Dec.8 (Wed.)	26	JSPS Core University Program Seminar "Proposal for Sustainable Fisheries"	●	○	●		



Program information is subject to change. Updated information is available on our website: http://www.sustain.hokudai.ac.jp/sw/

Quality of Life and Human Dignity for All

Striving to create a community whose members enjoy physical, mental, and social well-being as well as a high quality of life.

2 September 25 (Sat.) 15:00 ～

Public Lecture: Fertility and Sustainable Future

ⓐ This is a public lecture on the theme of sustainable development and health. Speakers, including overseas university researchers, will explain sustainable development from the viewpoint of healthcare. Special focus will be placed on Japan's falling birthrate in the context of parallel experiences of other industrialized countries. The lecture will examine factors contributing to low birthrates by comparing international experiences and will highlight their implications for creating a sustainable society. We look forward to the participation of the general public and high school and university students who are interested in the relationship between health and society in terms of our immediate surroundings and the world as a whole.

ⓑ Hokkaido University Conference Hall ⓒ Japanese / English ⓓ Not-required (Charge: free) ⓔ Hokkaido University ⓕ University of Geneva ⓖ Department of Global Health and Epidemiology, Graduate School of Medicine, Hokkaido University
FAX: +81-(0)11-706-7374 E-mail: sw2010@ghe.med.hokudai.ac.jp

3 October 22 (Fri.) 18:30 ～

Hokkaido University Sustainability Forum

Web

ⓐ The forum will consider quality of life and human dignity from the viewpoints of individuals and the environment that supports us. It will offer opportunities to look at lifestyles from the perspectives of the inner life, interpersonal ties, the natural environment and urban infrastructure through discussions involving Hokkaido University researchers. We look forward to the participation of members of the general public looking for a weekend of contemplation.

ⓑ Hokkaido University Conference Hall ⓒ Japanese ⓓ Required (Charge: free) Please register via our website ⓔ Hokkaido University ⓕ The Hokkaido Shimbun Press ⓖ Secretariat for Sustainability Forum, The Hokkaido Shinbun Press (Contact: M.Hoshi, T.Nakase) FAX: +81-(0)11-210-5727 E-mail: kokoku3@hokkaido-np.co.jp

4 October 24 (Sun.) 13:30 ～

Public Lecture Commemorating the Establishment of the Hokkaido University Center for Environmental and Health Sciences: Let's Think Together! Our Environment and Children's Health

Web

ⓐ This lecture meeting will highlight the both positive and negative effects of our immediate natural and social environment on the health of babies and children both today and in the future. We will report our findings from studies we have conducted over 10 years in Sapporo and Hokkaido, in addition to introducing the Japan Eco & Child Study to be launched by the Ministry of the Environment next year. We would like to discuss environmental factors and the health of children with audience, and we hope that many citizens, students, representatives of local governments and experts in the field of healthcare will attend.

ⓑ Hokkaido University Conference Hall ⓒ Japanese ⓓ Required (Charge: free) Please register via our website by Oct.15 ⓔ Center for Environmental and Health Sciences, Hokkaido University ⓖ Center for Environmental and Health Sciences, Hokkaido University
TEL: +81-(0)11-706-4747 FAX: +81-(0)11-706-4725 E-mail: e.h.s@med.hokudai.ac.jp

5 October 30 (Sat.) 13:00 ～

Hokkaido Community Care Symposium

Web

ⓐ Medical services offered in local regions are at risk of collapse due to doctor shortages. This symposium will feature discussion on the types of cooperation that can be established between the government and local residents to protect medical services as well as on the viability of such cooperation.
In the creation of sustainable local communities, health protection can no longer be left to medical professionals alone. It is necessary to form a mechanism for collaboration with clarified roles and challenges for local residents, the government, welfare workers and medical professionals.
We look forward to the participation of university students, members of the general public, local government representatives and experts interested in enhancing the quality of medical and welfare services provided.

ⓑ Hokkaido University Conference Hall ⓒ Japanese ⓓ Please register via our website or e-mail. (1,000Yen.Students:free) ⓔ Hokkaido Community Health Forum ⓕ Hokkaido University Hospital Postgraduate Clinical Training Center ⓖ Hokkaido University Graduate School of Medicine Healthcare Systems Research (Contact: M.Nikaido)
TEL: +81-(0)11-706-7005 FAX: +81-(0)11-706-7628 E-mail: nikaido@med.hokudai.ac.jp

6 November 1 (Mon.) 14:00 ～

Symposium on the Possibility of a Green Welfare State : Toward Sustainable and Inclusive Growth

ⓐ This symposium will consider the feasibility of a green welfare state as a solution to maintaining a harmonious balance among the natural environment, social security and the economy. Much attention these days is paid to sustainable cooperation among the three fields of the natural environment (environmental policy), the reproduction of the next generation (social security policy) and the economy (economic and fiscal policy), which were previously independent of one another. We look forward to the attendance of many people at the keynote lecture by Professor Y. Hiroi from Chiba University, who has discussed welfare policy from the viewpoint of a steady-state society, and the panel discussion involving Professor J. Yamaguchi from Hokkaido University and other distinguished panelists.

ⓑ Hokkaido University Conference Hall ⓒ Japanese ⓓ Not-required (Charge: free) ⓔ The Advanced Institute for Law and Politics, Hokkaido University ⓕ Project of JSPS Grants-in-Aid For Scientific Research: New Politics for Welfare Regime and Organized Interests in Japan ⓖ The Advanced Institute for Law and Politics, Hokkaido University TEL: +81-(0)11-706-4005 E-mail: jcenter@juris.hokudai.ac.jp

7 November 2 (Tues.) 13:00 ～

Symposium on Expanding the Potential of Children in Future Society

ⓐ This symposium will include discussion on the physical fitness and health of children, their mental development, culture and child rearing, and parenting in a gender-equal world with the aim of creating a society that values the future potential of children. Due to demographic graying and a falling birthrate, Japan' s population has begun to decline. It is therefore imperative to develop a new outlook for the country with ties to the rest of the world and conditions in which children – the guardians of the future – can grow up in perfect health.
We hope that members of the citizen, students and experts who are interested in child health and child-rearing will join us in thinking about a society that will expand the potential of children.

ⓑ Hokkaido University Conference Hall ⓒ Japanese ⓓ Not-required (Charge: free) ⓔ Faculty of Health Sciences, Hokkaido University ⓕ Hokkaido University Center for Environmental and Health Sciences, Support Office for Female Researchers ⓖ Faculty of Health Sciences, Hokkaido University TEL: +81-(0)11-706-3315 E-mail: shomu@hs.hokudai.ac.jp

8 November 3 (Wed.) 10:00 ～

The Instruction on Research Diagnostic Criteria for Temporomandibular Disorders

Web

ⓐ Temporomandibular joint disorder is becoming a lifestyle-related disease among Japan's graying population. This workshop offers opportunities to learn about the diagnostic approach to this disease, whose symptoms include jaw pain and reduced ability to open the mouth. Dr. Thomas List from Sweden and Dr. Peter Svensson from Denmark, who played central roles in the recent establishment of international diagnostic criteria for the condition (RDC/TMD), will present the diagnostic approach at the workshop. We hope to see a wide range of dental practitioners and researchers at this world' s first workshop covering related leading-edge research.

ⓑ Hokkaido University Conference Hall ⓒ Japanese / English ⓓ Required (Charge: free) ⓔ Graduate School of Dental Medicine, Hokkaido University ⓖ Graduate School of Dental Medicine, Hokkaido University (Contact: T. Arima)
TEL: +81-(0)11-706-4275 FAX: +81-(0)11-706-4276 E-mail: tar@den.hokudai.ac.jp

9 November 3 (Wed.) 13:00 ～

Public Program on Health Sciences

Web

ⓐ This program is a three-hour introduction to a wide range of up-to-date research findings for qualitative improvement of health, from the basics of health sciences to applied technologies for the enhancement of vital functions. The event will focus on three topics in particular: 1. research on functionality assessment of protein foods for the prevention of lifestyle-related diseases; 2. research on diagnosis and treatment of autism, Asperger's syndrome and other diseases; and 3. development of ideal wheelchair and office chair designs in consideration of physical stability. We look forward to the participation of members of the general public, high school and university students, and experts who are interested in basic science concerning healthcare and technologies that will help to promote nursing care and welfare among other developments.

ⓑ 6th Floor, Faculty of Health Sciences, Hokkaido University ⓒ Japanese ⓓ Required (Charge: free) Please register via website, e-mail or phone to the address listed below by October 29. ⓔ Public Program Committee in Faculty of Health Sciences, Hokkaido University ⓖ Faculty of Health Sciences, Hokkaido University
TEL: +81-(0)11-706-3315 E-mail: shomu@hs.hokudai.ac.jp

10 November 6 (Sat.) 13:00 ～

International Symposium on Child Poverty and Anti-poverty Strategies

Web

ⓐ This symposium will welcome a representative of the Child Poverty Action Group – a UK charity that promotes pioneering public activities to combat child poverty. The event will provide a forum for participants from Japan and the UK to discuss policy issues related to child poverty and awareness raising and to conceive counter-strategies for the future. Poverty adversely affects the growth and development of children, and Japan also suffers from policy issues and practical problems with child poverty in a wide range of fields including those of education, welfare, health and medical care. We look forward to the participation of members of the general public wishing to address poverty issues as well as the attendance of students, educators and experts.

ⓑ Hokkaido University Conference Hall ⓒ Japanese / English ⓓ Required (Charge: free) Please register via website,e-mail, or fax by October 31. ⓔ Graduate School of Education, Hokkaido University ⓕ Society for the Study of Poverty ⓖ Graduate School of Education, Hokkaido University (Contact: I. Matsumoto, M. Toriyama)
FAX: +81-(0)11-706-3114 E-mail: tmadoka@edu.hokudai.ac.jp

11 November 6 (Sat.) 14:00 ～

International Symposium on "Reproductive Rights and The Sustainability of Women's Health in Historical and Contemporary Perspectives"

ⓐ At this symposium, leading historians from Japan and the U.S. will discuss women's health and welfare. Although women's decisions on reproductive matters such as abortion, contraception and childbirth significantly affect their health and well-being, the enormous economic and social impacts of these issues have caused families, governments, religious organizations among others to impose a variety of related restrictions, including many adverse to the well-being of women and children. This session will provide chances to consider what should be changed and what should be left alone so that individuals can make optimal decisions for a better society.

ⓑ Hokkaido University Conference Hall ⓒ English ⓓ Not-required (Charge: free)
ⓔ Center for Applied Ethics and Philosophy, Hokkaido University
ⓖ Center for Applied Ethics and Philosophy, Hokkaido University (Contact: M.Nakachi)
TEL: +81-(0)11-706-2865 E-mail: mnakachi@let.hokudai.ac.jp

12 November 7 (Sun.) 13:00 ～

Special Lecture – Intergenerational Justice and Health in an Aging Society

ⓐ We will host a special lecture by Harvard University's Prof. Norman Daniels – a leading expert on public health ethics – on health promotion in an aging society and the allocation of medical resources necessary for such promotion. As a population ages, some can and some cannot afford proper medical care. Professor Daniels will talk about such issues from the viewpoint of Justice. He will also focus on the allocation of medical resources, such as doctors, medicine and medical equipment, that will catalyze the promotion of public health. As a Japanese interpretation service will be provided for this English-language lecture, we hope many young people and members of the general public will attend.

ⓑ Hokkaido University Center for Experimental Research in Social Science ⓒ English
ⓓ Not-required (Charge: free) ⓔ Center for Applied Ethics and Philosophy, Hokkaido University
ⓖ Center for Applied Ethics and Philosophy, Hokkaido University (Contact: S.Majima)
TEL: +81-(0)11-706-3062 E-mail: caep@let.hokudai.ac.jp

Our Relationship with Nature

NATURE

Pursuing a balance with Earth's ecosystems so all living creatures & humans can coexist in harmony.

13 October 13 (Wed.) - 15 (Fri.) 18:30 ～

Science Café: "Shirabekata" on Earth vol.1-3

ⓐ "Shirabekata" on Earth is the name given to a series of events intended to provide opportunities to find out about research, science, the environment, the earth, living creatures and other related matters. Its effects are akin to those of cases in which people come to feel familiar with distant foreign countries and towns by watching travel programs on TV or reading books about them. This Science Café event will run for three consecutive evenings with guest speakers covering the natural environment and living creatures in our immediate surroundings. Their talks will also be related to today's key topic of biodiversity. We look forward to the participation of junior high and high school students, university students and members of the general public.

ⓑ Sapporo 55 Bldg. 1F Inner Garden (N5,W5,Sapporo) ⓒ Japanese ⓓ Not-required (Charge: free)
ⓔ Executive Committee of "Shirabekata" on Earth ⓕ IFES-GCOE Regional Education and Outreach Promotion Office, Hokkaido University ⓖ IFES-GCOE Regional Education and Outreach Promotion Office, Hokkaido University (Contact: Y.Sato) E-mail: shirabekata@ees.hokudai.ac.jp

14 October 25 (Mon.) 13:00 ～

International Workshop on Green Circuits and Systems

ⓐ This workshop will present a keynote lecture by University of Louisiana Professor Magdy A. Bayoumi – one of the world's foremost researchers on cutting-edge wireless networks – on the direction of green system technology. The event will also include the presentation of research findings by students and discussion on research into the latest technologies for next-generation information communication and multi-media systems. We look forward to the participation of members of the general public, representatives of businesses and students who are interested in today's global trends of promoting energy conservation through the integration of all information systems such as telephone lines, Internet frameworks and mobile phone networks.

ⓑ Room No.17, 11th floor of the Graduate School of Information Science and Technology, Hokkaido University ⓒ English ⓓ Not-required (Charge: free) ⓔ Center for Next-Generation Information Technology based on Knowledge Discovery and Knowledge Federation, Hokkaido University Graduate School of Information Science and Technology, Hokkaido University
ⓖ GCOE Office, Graduate School of Information Science and Technology, Hokkaido University
FAX: +81-(0)11-706-7890 E-mail: gcoe@ist.hokudai.ac.jp

15 October 28 (Thu.) 9:30 ～

International Symposium on Renewable Energy

ⓐ This symposium will provide a chance for researchers and actors from inside and outside of Japan to discuss together about measures and future prospects to develop and distribute renewable energy such as biomass, solar power, wind power, water power and geothermal heat. Renewable energy can contribute to mitigate global warming because the use yield relatively little amount of CO_2. The use of renewable energy also helps to rise the energy self-support ratio of countries like Japan which are not rich in resources such as oil and coal. We welcome participation of citizens and students who are interested in these important issues that must be tackled actively in each country and region including Hokkaido.

ⓑ Hokkaido University Conference Hall ⓒ Japanese / English ⓓ Not-required (Charge: free)
ⓔ Hokkaido University Low-Carbon Society Project
ⓖ Hokkaido University Public Policy School (Contact: Y.Kondo)
TEL & FAX: +81-(0)11-706-4717 E-mail: low-carbon@hops.hokudai.ac.jp

16 October 29 (Fri.) 13:00 ～

Symposium on Northern Mountains: Past Change and Monitoring Network

ⓐ Environmental change is rapidly taking place in the mountains of northern Japan, such as the Daisetsuzan National Park, as represented by the decreasing diversity of alpine plants. This event will outline such changes found through field and satellite observation efforts implemented over a period of many years. The session will also include discussion of the environmental observation and monitoring network needed to assess the sustainability of ecosystem services in northern mountain areas and to prevent weather disasters such as last year's fatal accident that killed a number of elderly hikers. We look forward to the participation of members of the general public, students and experts who are interested in mountain ecosystems and biodiversity.

ⓑ Hokkaido University Conference Hall ⓒ Japanese / English ⓓ Not-required (Charge: free) ⓔ IFES-GCOE, Graduate School of Environmental Science Graduate School of Agriculture ⓕ "Current situation of biodiversity crisis in the forest-alpine ecotone and mechanism under global change" (The Environment Research and Technology Development Fund D-0904 of the Ministry of Environment, Japan) ⓖ Global COE Unit, Faculty of Environmental Earth Science, Hokkaido University
(Contact: A. Kondoh) TEL: +81-(0)11-706-4862 FAX: +81-(0)11-706-4867 E-mail: a.kondoh@ees.hokudai.ac.jp

17 October 30 (Sat.) 9:30 ～

Key Issues for Carbon Storage and Biodiversity -Tropical Peat and Forest-

ⓐ **Morning**: Researchers from Hokkaido University – an institution advocating the Carbon Initiative at the cutting edge of tropical peat and forest research – will discuss the tropical peat forest, biodiversity and the establishment of an international network. **Afternoon**: The present status of tropical peat and forest, which are currently facing widespread destruction, and challenges related to their conservation will be outlined for high school students and members of the general public. Attendees will learn the crises and what will become of the massive amounts of carbon stored in tropical peat lands and rich biodiversity extending over Southeast Asian islands, the Brazilian Amazon and Central Africa.

ⓑ Hokkaido University Conference Hall ⓒ Japanese / English ⓓ Not-required (Charge: free)
ⓔ Center for Sustainability Science, Hokkaido University
ⓖ Hokkaido University Center for Sustainability Science (Contact: K.Hirose)
TEL: +81-(0)11-706-4530 FAX: +81-(0)11-706-4534

18 November 1 (Mon.) 13:00 ～

Symposium on EcoDesign for a Low Carbon Society Based on Regional Partnerships Between Urban and Rural Areas

ⓐ This symposium will showcase the results of research activities aimed at creating a low-carbon society – the term given to a society with low levels of CO_2 emissions (a major cause of global warming) – in Asia. We have studied the nature of cooperation between rural and urban areas, including investigation of a system for the efficient use of biomass resources produced in rural areas to produce energy for urban areas. We will exchange views on future scenarios in Asia while introducing the ideal material-cycle system for energy and materials as understood from relevant examples in Hokkaido and China.

ⓑ Hokkaido University Conference Hall ⓒ Japanese ⓓ Not-required (Charge: free) ⓔ Center for Sustainability Science, Hokkaido University ⓕ Osaka University, Ritsumeikan University
ⓖ Hokkaido University Center for Sustainability Science (Contact: T.Sato)
TEL: +81-(0)11-706-4586 FAX: +81-(0)11-706-4534 E-mail: toshikisato@census.hokudai.ac.jp

19 November 1 (Mon.) - 2 (Tue.) 13:00 ～

Workshop for the 2nd Amur-Okhotsk Consortium Meeting 2011

ⓐ The Amur-Okhotsk Consortium is an international network of scientists aiming to conserve the environment of the Amur River basin (shared by Mongolia, Russia and China) and the Sea of Okhotsk in its downstream area. This year, the consortium focuses on selecting topics of discussion for its second meeting scheduled for 2011. Established in November 2009, the consortium seeks to develop a common understanding of sustainable environmental use that does not damage the diversity of regional economies, society and culture. We look forward to the participation of students and citizens who are interested in the development of an international framework for environmental conservation.

ⓑ Hokkaido University Slavic Research Center ⓒ Japanese, Russian, English ⓓ Not-required (Charge: free)
ⓔ Institute of Low Temperature Science & Slavic Research Center, Hokkaido Univ.; New Energy Resources Research Center, Kitami Institute of Technology ⓕ Research Institute for Humanity and Nature, Hokkaido Univ. GCOE Program "Reshaping Japan's Border Studies", MLIT Hokkaido Regional Development Bureau ⓖ Pan Okhotsk Research Center, Institute of Low Temperature Science, Hokkaido Univ. TEL: +81-(0)11-706-7142
E-mail: ao-symposium@lowtem.hokudai.ac.jp URL: http://www.chikyu.ac.jp/AMOC/

20 November 3 (Wed.) 14:00 ~

Seminar on Environmental Policy ~ Biodiversity and Climate Change ~

Web

ⓐ This seminar will showcase biodiversity conservation and climate change issues in the context of policy measures while taking international trends into account. This event will introduce the latest trends in regard to topics of discussion by the 10th Conference of Parties to the United Nations Convention on Biological Diversity (COP10), scheduled to be held in Nagoya in October. The session will provide opportunities to examine environmental policies aimed at resolving biodiversity conservation for people in Hokkaido. This seminar also provides the trend of international discussion concerning climate change issues and the trend of domestic measures, staring the 16th Conference of the Parties to the United Nations Framework Convention on Climate Change (COP16), which will be held in Mexico in November.

ⓑ Hokkaido University Conference Hall ⓒ Japanese ⓓ Required (Charge: free) Please register via our website. ⓔ Hokkaido University Low-Carbon Society Project ⓕ Ministry of the Environment Hokkaido Regional Office ⓖ Ministry of the Environment Hokkaido Regional office (Contact: M.Yasuda) TEL: +81-(0)11-299-1952 FAX: +81-(0)11-736-1234
E-mail: reo-hokkaido@env.go.jp

21 November 3 - 5 (Wed. - Fri.) 9:30 ~

The 3rd International Symposium on Sentinel Earth—Advances in Satellite Imagery Data and GIS and Their Applications-

ⓐ This is an open lecture for the general public and an international symposium for experts. The public lecture will focus on problems stemming from CO2 emissions – a major cause of global warming – and give an easy-to-understand overview of the related issues. The symposium will provide a forum for the presentation of findings on research into earth observation using satellite image data and their latest usage. The outcomes of research regarding the latest progress in Geographic Information Science (GIS) and the state of its usage will also be presented, along with the results of studies on using satellite data to detect forest/wild fires in Alaska and Indonesia.

ⓑ Hokkaido University Conference Hall ⓒ Public Lecture: Japanese / Symposium: English ⓓ Not-required (Charge: free) *Details will be announced on the website. ⓔ Hokkaido University, Asia Institute of Technology, University of Alaska, University of Palangkaraya, Japan Aerospace Exploration Agency (JAXA), Remote Sensing Technology Center of Japan (RESTEC) ⓖ Graduate School of Information Science and Technology, Hokkaido University (Contact: R. Ishige)
TEL: +81-(0)11-706-7691 FAX: +81-(0)11-706-6295

22 November 4 (Thu.) 13:00 ~

Business-Academia-Government Collaboration Seminar on "Developments of Geo-spatial Information and Future World II"

ⓐ This seminar will introduce the latest trends of geo-spatial information usage in industry, government and academia, including its adoption for industrial promotion, conservation and management of the natural environment and the development of new welfare services. Geo-spatial information provides a social information infrastructure with growing expectations as a tool for creating a sustainable society. Using such information together with the geographic information system (GIS) and satellite positioning technologies is expected to help promote agriculture and fisheries – leading industries in Hokkaido – and develop social welfare services that will be effective in an aging society. We look forward to the participation of representatives from businesses and local governments as well as members of the general public who are interested in the application of this information infrastructure.

ⓑ Hokkaido University Conference Hall ⓒ Japanese ⓓ Not-required (Charge: free) ⓔ Hokkaido University Graduate School of Letters, GIS Association of Japan Hokkaido Regional Office, Hokkaido GIS/GPS Society, Non-profit Organization "Digital Hokkaido" ⓖ Hokkaido University, Graduate School of Letters (Contact: Y.Hashimoto) TEL & FAX: +81-(0)11-706-4019 E-mail: you@chiri.let.hokudai.ac.jp

23 November 5 (Fri.) 13:00 ~

Hokkaido Marine Bioscience Symposium

ⓐ This symposium will offer opportunities to consider current and future effects of global warming, ocean acidification and human activities on marine organisms in seas close to Hokkaido. Surrounded by three seas (the Pacific Ocean, the Sea of Japan and the Sea of Okhotsk), Hokkaido has rich marine ecosystem environment and marine resources. In this symposium, citizens, students, fisheries parties and experts will gather in a room to discuss latest research findings towards marine ecosystem conservation and sustainable use of marine resources.

ⓑ D-201, Graduate School of Environmental Science, Hokkaido University ⓒ Japanese ⓓ Not-required (Charge: free) ⓔ Hokkaido Marine Bioscience Society, IFES-GCOE Global COE Program "Establishment of Center for Integrated Field Environmental Science", Hokkaido University ⓖ Graduate School of Environmental Science, Hokkaido University
(Contact: T.Okino) TEL & FAX: +81-(0)11-706-4519 E-mail: okino@ees.hokudai.ac.jp

24 November 9 (Tues.) 9:30 ~

Public Lecture: Theory and Practice of Fisheries Sustainability Science

Web

ⓐ This event will provide opportunities to contemplate what should be done to ensure the sustainability of marine resources, such as salmon, sardines and tuna, so that people around the world can continue to use as seafood. Items on the agenda include food miles (an indicator how far food has travelled before it reaches the consumer), eco-labeling, food traceability, aquaculture and more. To conserve marine ecosystems and ensure the sustainable harvesting of seafood, both academic work and practice must be pursued. We look forward to the participation of students, members of the general public and representatives of businesses who are interested in fisheries sustainability.

ⓑ Hakodate Community Design Center 2nd floor, Hakodate-city ⓒ Japanese / English ⓓ Required (Charge: free) Please register via website, e-mail or fax listed below by October 29. ⓔ Faculty of Fisheries Sciences, Hokkaido University ⓕ Science Council of Japan, Hakodate City ⓖ Faculty of Fisheries Sciences, Hokkaido University (Contact: M.Kaeriyama)
TEL & FAX: +81-(0)138-40-5605 E-mail: salmon@fish.hokudai.ac.jp

25 November 15 (Mon.) 13:30-

SCJ Hokkaido District Conference " Green Innovations Originating in Hokkaido"

Web

ⓐ This lecture meeting highlights proposals for new lifestyles as well as new forms of industry and economy that capitalize on Hokkaido' s characteristics of a vast land area and a rich natural environment and on locally developed science and technology. Green innovation is aimed at creating coexistence between nature and humans by conserving and restoring the natural environment through reduced impacts on it and adapting to environmental changes such as natural disasters. The concept also helps to advance human development in general. This event will involve discussion of future prospects for green innovation and consideration of new roles for science and technology. We look forward to the participation of researchers, university students and members of the general public who are interested in the latest academic achievements in Hokkaido.

ⓑ Hokkaido University Conference Hall ⓒ Japanese ⓓ Required (Charge: free) Please register via web site,e-mail,or fax ⓔ Hokkaido District Conference, Science Council of Japan; Hokkaido University ⓖ Research Department, Hokkaido University (Contact: Y. Harada)
TEL: +81-(0)11-706-2155 FAX: +81-(0)11-706-4873 E-mail: suishin@general.hokudai.ac.jp

26 December 8 (Wed.) 13:00 ~

JSPS Core University Program Seminar "Proposal for Sustainable Fisheries"

Web

ⓐ This seminar will focus on future cooperative relations in fisheries between Japan and Korea and offer the opportunity to review a project implemented by Hokkaido University and Korea' s Pukyong National University over the past decade entitled Elucidation of fish resource fluctuation and development of zero-emission fishery with low environmental burden. The two countries will propose a new form of fisheries for the maritime environment they share to make effective use of marine resources while avoiding waste and the imposition of burdens on the surrounding environment; that is, they will make a proposal for sustainable fisheries in the future.

ⓑ Hanabishi Hotel, Yunokawa Onsen, Hakodate-city (1-16-18, Yunokawa-cho, Hakodate)
ⓒ Japanese / Korean (Translation will be provided) ⓓ Not-required (Charge: free)
ⓔ Hokkaido University, Pukyong National University ⓕ Japan Promotion of Science, Korea Research Foundation ⓖ Faculty of Fisheries Sciences, Hokkaido University (Contact: K.Sawada)
TEL: +81-(0)138-40-5504 E-mail: sawa3@jimu.hokudai.ac.jp

Learning for the Future

FUTURE

Considering the history, wisdom, and culture unique to each region while nurturing minds, hearts, and friendships to pave the way to a new future.

27 October 16 (Sat.) 9:30 - 17:45

The 7th Presentation & Debate Competition, School of Economics and Business Administration

ⓐ Hokkaido University undergraduate and graduate students majoring in a variety of fields will organize teams and present their unique ideas on the theme of *Revitalizing Agriculture – Redesign New Business.* They will examine their strengths and weaknesses through the medium of debate. This year' s competition – the seventh in the series – will encourage students accurately understand the present state of business in Japan and aim for more creative design to address the situation at hand. Competing teams will make proposals for agricultural revitalization based on surveys and analysis that they will implement continuously from summer onward. We look forward to seeing high school, university and graduate students as well as those engaged in agricultural business and the general public.

ⓑ Hokkaido University Center for Experimental Research in Social Science W102, 101, 201, 202 ⓒ Japanese ⓓ Not-required (Charge: free) ⓔ School of Economics and Business Administration, Hokkaido University ⓖ "The 7th Presentation & Debate Competition" Management Office (Contact: K.Tsukada) TEL: +81-(0)11-706-4066 FAX: +81-(0)11-706-4947 E-mail: sacade@econ.hokudai.ac.jp

28 October 24 (Sun.) noon - 29 (Fri.) noon Contest: Oct. 26 (Tues.) 12:30 - 15:30 / October 31 (Sun.) noon - November 5 (Fri.) noon Contest: Nov. 2 (Tues.) 12:30 - 15:30

The 2nd Hokkaido University Sustainability Research Poster Contest

ⓐ HU students will review their current research programs from the viewpoint of contribution to efforts for the creation of a sustainable society, summarize these contributions in poster format and make presentations in Japanese or English. Nearly 100 posters will be exhibited over a period of two weeks. Communication Time (CT) sessions will be set up on Tuesdays, when students will make presentations in front of their posters and answer questions from visitors. The contest will provide a wealth of opportunities to learn about future scenarios envisioned by students as well as to find out about their research programs and gain experience of research poster presentations. We look forward to welcoming all comers – especially high school, university and graduate students.

ⓑ Hokkaido University Conference Hall ⓒ Japanese / English ⓓ Not-required (Charge: free) ⓔ Hokkaido University ⓖ Secretariat for Hokkaido University Sustainability Weeks 2010
TEL: +81-(0)11-706-2093, FAX: +81-(0)11-706-2095 E-mail: office1@sustain.hokudai.ac.jp

Sustainable Campus

CAMPUS

October 27 (Wed.) is Sustainable Campus Day. Our campus is a stage for social experimentation and place to develop new sustainable models.

29 Student Organized

October 25 (Mon.) - November 6 (Sat.) Weekday: 9:00-19:00
Saturdays: 10:00-15:00 Sundays: Closed

Fair Trade Fair vol.5

ⓐ During this fair, you will be able to shop for foodstuffs and general merchandise that students often purchase in order to increase awareness of fair trade products, i.e., those traded with a focus on paying fair wages to producers in developing nations. This year' s fair is the fifth of its kind; as at last year' s event, a lecture meeting will be also held (date and time TBA) to provide opportunities for attendees to learn about the present status of fair trade and related issues. Buying fair trade products leads to a sustained improvement in the living standards of those who produce them. We hope that the items on sale, which will include chocolate, coffee beans and other products made in consideration of environmental protection, will generate enhanced interest in fair trade among many students, faculty members and members of the general public.

ⓑ Hokkaido Univ. Co-op Building 1F ⓒ Japanese ⓓ Not-required (Charge: free)
ⓔ International cooperation student association "yui" ⓕ Hokkaido Univ. Co-op ⓖ International cooperation student association "yui" (Contact: G. Matsushima)
TEL: +81-(0)80-1768-1640 E-mail: yui.international.cooperation@gmail.com

30

October 26 - 31 (Tues. - Sun.) 9:30 - 16:30
November 2- 3 (Tues. - Wed.) 10:00 - 16:00

Controlling Zoonoses: An Experimental Exhibition on Integrative Science

ⓐ The Hokkaido University Museum will display cutting edge research on zoonotic diseases, whose causative agents infect both humans and animals. Visitors will learn about diseases such as influenza and Ebola hemorrhagic fever through panels, videos, observation of infections through microscopes, and by experimentation with laboratory instruments. In order to establish preemptive measures to predict and prevent outbreaks and epidemics of zoonotic diseases, it is imperative that interdisciplinary research and education is conducted by experts in the fields of medicine, veterinary medicine, pharmaceutics, engineering, and science. This exhibition explores the full potential of Integrative Sciences and is open to the public. We hope that a wide range of students--from those in junior high to those in university, including researchers--take advantage of this opportunity we present to you.

ⓑ Hokkaido University Museum ⓒ Japanese ⓓ Not-required (Charge: free) ⓔ The Hokkaido University Museum ⓕ Global COE Program "Establishment of International Collaboration Centers for Zoonosis Control", Hokudai Integrated Science Consortium, Hokkaido University Research Center for Zoonosis Control ⓖ The Hokkaido University Museum (Contact: H. Matsueda) TEL & FAX: 011-706-2754 E-mail: matsueda@museum.hokudai.ac.jp

31

October 29 (Fri.) 9:00 ～

International Symposium – Global Campus for Sustainability Education

ⓐ In this international symposium, we will discuss on educational methods of sustainability science and its operational problems for the establishment of global campuses where students in different countries will learn together. Several speakers are invited from partner universities of Indonesia, Taiwan, and other countries with whom we have already collaborated e-lectures on sustainability. We look forward to participation of educators who are interested in the development of international educational programs. This symposium is financially supported by MEXT special coordination funds for promoting science and technology: Strategic program for fostering environmental leaders.

ⓑ Hokkaido University Conference Hall ⓒ English ⓓ Not-required (Charge: free) ⓔ Center for Sustainability Science, Hokkaido University ⓕ The University of Palangka Raya, International Institute for Water and Environmental Engineering, National Cheng Kung University, Zhejiang University, Pukyong National University, Swinburne University of Technology, University Sains Malaysia, Gajah Mada University
ⓖ Center for Sustainability Science, Hokkaido University (Contact: S.Tanaka)
TEL: +81-(0)11-706-4530 FAX: +81-(0)11-706-4534 E-mail: jimu@census.hokudai.ac.jp

Special Coordination Fund for Promoting Science and Technology

32 Student Organized

October 29 -November 3 (Fri. - Wed.)

CLARK THEATER 2010

ⓐ With the aim of creating a forum for communication through images and movies, this theater will be established to show culturally enlightened movies for a limited period.
The concept of this fifth year in the series is "Beyond Borders." We will show a variety of movies that transcend generations and status as well as movie genres and themes. A number of related events are also scheduled, including the showing of a short film produced at Hokkaido University, a documentary called Gaia Symphony and a talk show with guests. We look forward to the participation of junior and high school students, university students and members of the general public.

ⓑ Hokkaido University Clark Memorial Student Center ⓒ Japanese / English / Others
ⓓ Not-required (Some films will be free of charge.) ⓔ Hokudai Theater Project Execution Committee 2010 ⓕ Hokkaido University GAIA Project ⓖ Hokudai Theater Project Execution Committee 2010 E-mail: info@clarktheater.jp

33

November 6 (Sat.) 10:00 ～

~The 14th Ainu Language Speech Contest "ITAK AN RO" ～ Let's Speak in Ainu Language!~

ⓐ At this event, people learning Ainu language at 14 Ainu language schools in Hokkaido and elsewhere in the country will gather to exhibit the skills they have honed in practice.
This year's ITAK AN RO Ainu language speech contest – the 14th in the series – will consist of the Oratorical Division and the Oral Literature Division. It will include performances of *Kamuy yukar* stories, and roughly 50 contestants of all ages will participate. We hope that many people ranging from elementary school students to adults will take this precious opportunity to experience the rarely heard Ainu language and remember that Japan is a multicultural, multi-ethnical and multilingual country.

ⓑ Hokkaido University Clark Memorial Student Center ⓒ Japanese / Ainu ⓓ Not-required (Charge: free) ⓔ The Foundation for Research and Promotion of Ainu Culture ⓕ Center for Ainu & Indigenous Studies, Hokkaido University ⓖ The Foundation for Research and Promotion of Ainu Culture TEL: +81-(0)11-271-4171 E-mail: ainu@frpac.or.jp

34

October 24 (Sun.) - 31 (Sun.)

Special Event: Ride and Think for Sustainability in Hokkaido University

ⓐ Here, students from Hokkaido University Graduate School of Environmental Science will operate Velotaxi cycle rickshaws inside and outside the Sapporo Campus.
Visitors can ride Velotaxis bearing designs that reflect the university's environmental initiatives. Enjoy a leisurely trip between venues on this CO_2 emission-free mode of transport while chatting with the student driver.

ⓑ Street at Hokkaido University Sapporo Campus ⓒ Japanese
ⓓ Not-required (Charge: free) ⓔ IFES-GCOE Regional Education and Outreach Promotion Office, Hokkaido Univ. ⓕ Nonprofit Organization EcoMobilty SAPPORO ⓖ IFES-GCOE Regional Education and Outreach Promotion Office, Hokkaido Univ. (Contact: N.Yoshimura)
TEL: +81-(0)11-706-3355 E-mail: ynobu14001@ees.hokudai.ac.jp

35

October 27 (Wed.) 13:00 ～

Web

Invitation to Study-Abroad Programs: SD on Campus – A Global Quality of International Campus Life

ⓐ In this event, the representatives of HU's overseas partner institutions will introduce their campuses to attract HU students to become their exchange students as they present their unique approaches for sustainable developments on their own campuses.
These universities are known for their commitments for the creation of a quality sustainable society (i.e., sustainable development) as they pursue to establish a global quality of life for the future. They will be introducing their prized research and education programs. The event should be very inspirational for those who are interested in studying abroad, wishing to work overseas after graduation, or simply interested in SD in other universities. So, don't miss it!

ⓑ Hokkaido University Conference Hall ⓒ Japanese / English ⓓ Not-required (Charge: free)
ⓔ Hokkaido University Office of International Affairs
ⓖ Division of International Services, Office of International Affairs, Hokkaido University
(Contact: K.Kono) TEL: +81-(0)11-706-2182 E-mail: ryugaku@academic.hokudai.ac.jp

36

October 27 (Wed.) Morning Tour 9:00 - 12:00 Afternoon Tour 13:00 - 16:00

Web

Sustainable Campus Tour

ⓐ The Sustainable Campus Tour is aimed at introducing our initiatives to reduce the environmental impact of Hokkaido University's Sapporo Campus. We will take tour participants around a biogas production facility, a composting facility and pellet boiler in Field Science Center for Northern Biosphere, and several facilities at the Graduate School of Environmental Science. Hokkaido University is striving to establish a sustainable campus, and has already inaugurated several facilities as the first step towards achieving this goal. To further reduce our environmental load and CO_2 emissions, we will open these facilities to all and offer a forum for an exchange of ideas between the general public, researchers and students. We hope that many participants, including students who are interested in working toward environmental conservation, will join us.

ⓑ 1F Lecture Room, Field Science Center for Northern Biosphere, Hokkaido University
ⓒ Japanese / English ⓓ Required (Charge: free) Please register via website by Oct. 24.
ⓔ Center for Sustainability Science, Hokkaido University ⓕ Hokkaido University Sustainable Low-Carbon Society Project, Field Science Center for Northern Biosphere
ⓖ Center for Sustainability Science, Hokkaido University (Contact: N.Tsuji)
TEL: +81-(0)11-706-4533 FAX: +81-(0)11-706-4534 E-mail: n-tsuji@sgp.hokudai.ac.jp

37 Student Organized

October 27 (Wed.) 16:30 ～

Candle Night! Oct.26

First Sustainable Campus Contest

ⓐ In this contest, Hokkaido University's campus will be considered as a microcosm of a sustainable society, and students will present their ideas for an ideal campus in either Japanese or English. Awards will be presented to those with the most outstanding concepts. Undergraduates and graduates wishing to enter the contest should download application forms from the website and submit them no later than October 8. We look forward to entries capitalizing on the free, unrestrained thinking of students and their research activities and to the participation of anybody interested in the environment and sustainable campuses.

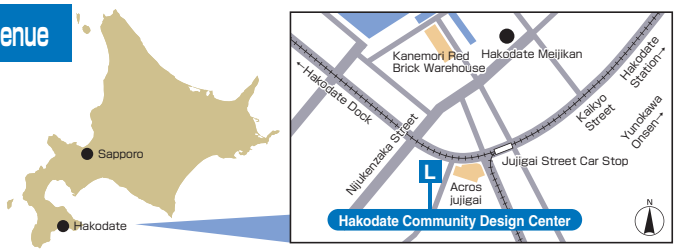
ⓑ Hokkaido University Conference Hall ⓒ Japanese / English ⓓ Not-required (Charge: free) ⓔ The Students Council for Sustainable Development in Hokkaido University
ⓕ Hokkaido University Public Policy School, Sustainable Low-Carbon Society Project
ⓖ The Students Council for Sustainable Development in Hokkaido University
(Contact: T. Okabe) TEL: +81-(0)80-5103-2733 E-mail: scsd-hokudai-info@freeml.com

Program information is subject to change. Updated information is available on our website. http://www.sustain.hokudai.ac.jp/sw

Map of Venues

Sapporo Venues

Hakodate Venue



A Conference Hall

2 Sep.25(Sat.)
3 Oct.22(Fri.)
4 Oct.24(Sun.)
28 Oct.24(Sun.)-29(Fri.)
Oct.31(Sun.)-5(Fri.)
1 Oct.25(Mon.)-26(Tue.)
35 Oct.27(Wed.) 17 Oct.30(Sat.)
37 Oct.27(Wed.) 6 Nov.1(Mon.) 21 Nov.3(Wed.)-5(Fri.)
15 Oct.28(Thu.) 18 Nov.1(Mon.) 22 Nov.4(Thu.)
16 Oct.29(Fri.) 7 Nov.2(Tue.) 10 Nov.6(Sat.)
31 Oct.29(Fri.) 8 Nov.3(Wed.) 11 Nov.6(Sat.)
5 Oct.30(Sat.) 20 Nov.3(Wed.) 25 Nov.15(Mon.)

B Hokkaido Univ. Co-op Building

29 Oct.25(Mon.)-Nov.6(Sat.)
*Closed on Oct.31(Sun.)

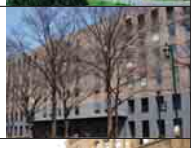
C Clark Memorial Student Center

32 Oct.29(Fri.)-Nov.3(Wed.)
33 Nov.6(Sat.)

D Graduate School of Environmental Science

23 Nov.5(Fri.)

E Center for Experimental Research in Social Sciences



27 Oct.16(Sat.) 12 Nov.7(Sun.)

F The Hokkaido University Museum

30 Oct.26(Tue.)-31(Sun.)
Nov.2(Tue.)-3(Wed.)

G Field Science Center for Northern Biosphere

36 Oct.27(Wed.)

H Graduate School of Health Science

9 Nov.3(Wed.)

I Graduate School of Information Science and Technology

14 Oct.25(Mon.)

J Slavic Research Center

19 Nov.1(Mon.)-2(Tue.)

K Sapporo 55 Bldg.1F Inner Garden
(Books Kinokuniya Main Entrance)
North5. West5, Sapporo

13 Oct.13(Wed.)-15(Fri.)

L Hakodate Community Design Center

24 Nov.9(Tue.)

Secretariat for Sustainability Weeks 2010
Hokkaido University Office of International Affairs

Address: North 8, West 5, Kita-ku, Sapporo, Hokkaido, 060-0808, Japan
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For more information, please visit our website:
http://www.sustain.hokudai.ac.jp/sw/

Issued on September,2010 [2nd Edition]

Greeting from the President

Hiroshi Saeki, President of Hokkaido University

Since its foundation as Sapporo Agricultural College in 1876, Hokkaido University has contributed to the creation of a society in which people live in harmony with nature. Since the beginning of the 21st century, we have broadened our outlook and set the goal of achieving a sustainable society through research and education in pursuit of relationships involving harmony among the environment, society, the economy, and individuals.

In 2008, we hosted the G8 University Summit in Sapporo and adopted the Sapporo Sustainability Declaration with 20 overseas universities, 14 Japanese institutions, and the United Nations University and pledged to act as a driving force behind the realization of such a sustainable society.
Hokkaido University hosted the Sustainability Weeks again in 2010 to reconfirm our commitment.

The theme of this year's Weeks – the fourth in the series – was Toward a Society Offering Quality of Life and Human Dignity for All. Over 10,000 people participated in the symposiums, lectures, workshops, and exhibitions we planned and engaged in discourse with researchers from around the world as well as with students and members of the general public for the sake of a better future.

Hiroshi Saeki
President
Hokkaido University

Hokkaido University Sustainability Weeks 2010

Report

HOKKAIDO UNIVERSITY

Report on Sustainability Weeks 2010

For our Well-being – Toward a Sustainable Society

The Sustainability Weeks project is hosted by Hokkaido University with the aim of promoting research and education to help create a sustainable society. The first session was organized in 2007, and it has since been held every year with the involvement of the entire university. The year 2010 marked the fourth anniversary of the event. It is hoped that the coming together of researchers, educators, students and members of the general public from Japan and overseas to share and discuss the latest scientific matters will help to illuminate a path toward a better future.

Sustainability Weeks 2010 by the Numbers

October 25 – November 7, 2010

Number of events: 47

38 events during the Sustainability Weeks period

5 pre-events

4 post-events

(incl. 4 hosted by students and 3 collaboratively run by students and faculty members)

Hokkaido University Sustainability Research Poster Contest

Number of participants: 93 (76 teams)

2 undergraduate students
42 students in master's degree programs
49 students in doctoral degree programs

Number of judges: 141 (80 students 61 faculty members)

Number of website visitors: 29,148

(April 1 – November 29, 2010)

Number of participants: 11,196

(incl. 267 from overseas)

Number of events jointly held with partner institutions: 5 (9 institutions)

China: Zhejiang University
Indonesia: University of Palangka Raya, Universitas Gadjah Mada
South Korea: Seoul National University, Pukyong National University
Malaysia: Universiti Sains Malaysia
Switzerland: University of Geneva
Thailand: Asian Institute of Technology
USA: University of Alaska

Number of participants from partner institutions: 31 (25 institutions in 15 countries)

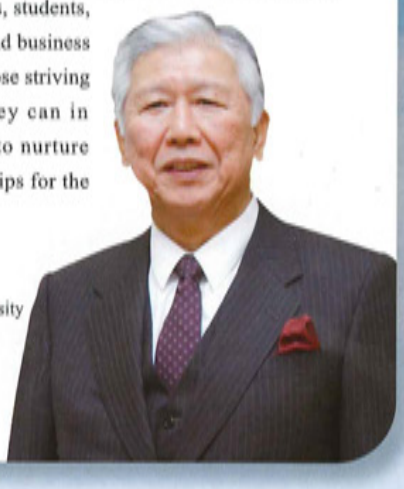
The Sustainability Weeks 2011 event is scheduled for a two-week period from Monday October 24, 2011.

For more information:

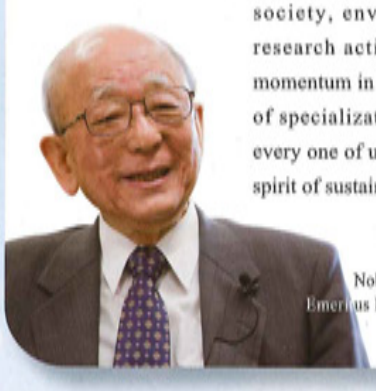
Sustainability Weeks 2010 **http://www.sustain.hokudai.ac.jp/sw/events/2010/**

Voices

Collaboration is essential in tackling global problems that defy resolution by single states or regions acting alone. We at HU host the Sustainability Weeks program to provide a platform for cooperation among people around the world. We aim to discuss possible solutions to these problems with increasing numbers of researchers, students, community activists and business people – essentially those striving to do everything they can in various fields – and to nurture cooperative relationships for the future.



Hiroshi Saeki
President, Hokkaido University



As part of efforts to build a sustainable society, environmentally friendly research activities are also gaining momentum in chemistry – my own field of specialization. It is important that every one of us should embrace the true spirit of sustainability.

Akira Suzuki
Nobel Laureate in Chemistry 2010
Emeritus Professor, Hokkaido University

I see social sustainability as the creation of a society in which people can live rich and full lives. To achieve this, it is important to open up paths to new horizons through the strength of science while changing the way people think. It is a great honor for me to help support HU researchers in various fields by drawing on my many years of experience as a TV anchor. I believe that HU will have achieved true success in its initiatives when the term sustainability enters common parlance.

Noriyuki Sato
TV anchor
Visiting professor, Hokkaido University
Creative Research Institution Sousei (CRIS)

We entered the Sustainability Research Poster Contest because we saw it as a great opportunity to learn about sustainability, which we were already interested in. From the viewpoint of agriculture and our studies, a sustainable society is one in which a certain level of food production can be maintained. This contest helped us realize the importance of communicating this viewpoint to the public, and we also felt the need to broaden our own horizons as far as agriculture is concerned. We are very pleased that the presentation on which we worked so hard beyond national boundaries was recognized with this prestigious award.

Yuka Uchida
Nareethep Ruangship
Hokkaido University President's Award (Grand Prix) winners
at the 2nd Hokkaido University Sustainability Research Poster Contest

When I drove a Velotaxi cycle rickshaw bearing advertising for the Sustainability Weeks event across Sapporo and around the campus, lots of people came to talk to me about it. Among the variety of questions they asked, many wanted to know the meaning of sustainability, and I also learned a lot by answering these questions. I realized that we ourselves have to properly understand the future of a sustainable society if we are to call on the public to think and act together to conserve and harness Hokkaido's rich natural environment.

Takumi Fujibe
Division of Environmental Science Development
Graduate School of Environmental Science, Hokkaido University

Keiko Kurita
Eco-mobility Sapporo (NPO)

The Hokkaido University Sustainability Weeks 2010

The 4th Hokkaido University Sustainability Weeks 2010 proved to be a unique week of unparalleled social contribution and international exchanges, covering a wider range of disciplines and tackling more challenges than in previous years and is now a signature event of Hokkaido University.

The main theme for 2010 was *Toward a Society Offering Quality of Life and Human Dignity for All*. The two week period from October 25 to November 7 involved 47 sessions including pre- and post-events.

Sustainability Weeks 2010 Opening Symposium

OCT 25 Mon – OCT 26 Tue

Sustainability Weeks 2010 focused on humanity to pave the way for this event to further evolve from previous ones, which mainly dealt with the natural and social environments.

Researchers in the fields of medicine, natural science, the humanities and social science gathered to comprehensively explore and discuss the causes of issues that prevent people from achieving physical, mental and social well-being that would assure a high quality of life. The symposium started with a keynote lecture by Keith F. Taylor, Associate Vice-President Academic Outreach and International Programs, Dalhousie University in Canada, an institution that was recently added to the list of Hokkaido University's partner institutions.

Discussions on the first day were held from the viewpoints of health, the environment, social policy and citizens' activities, and the second day highlighted children, ecosystems, the water crisis and the aging society with falling birthrates. The symposium provided us with an opportunity to comprehensively confirm once again beyond academic disciplines that the health and lifestyle of an individual are affected by the structure of society and the natural environment, and that human activities have an influence on these matters.

Public Lecture: Let's Think Together! Our Environment and Children's Health

Researchers outlined to members of the general public the results of their research on the effects of natural and social environments on fetuses and children. The audience showed particular interest in the fact that results of a long-term epidemiological study entitled the ***Hokkaido Study on the Environment and Children's Health*** by Hokkaido University researchers led to the Japan Eco & Child Study to be launched in 2011 by the Ministry of the Environment of Japan involving some 100,000 mothers and children. The audience asked many questions, including those concerning the future plans of the Hokkaido University's Center for Environmental and Health Sciences (CEHS), which acts as the Hokkaido hub for this nationwide study, followed by lively discussions.

International Symposium on Child Poverty and Anti-poverty Strategy

NOV 6 Sat

Researchers from Japan and the UK outlined the present status and challenges of studies that are conducted in the two countries to grasp the state of child poverty and eliminate it. They also illustrated related citizens' activities and policy development, and held discussions involving the audience. The discussions centered on the need to re-examine the concept of child poverty itself and on strategic issues involving consensus building in society.

This was the first international symposium on child poverty ever to be held in Japan and was significant because major issues related to future research and practical activities were made clear, and the event paved the way for the continuation of international research.

Events and Activities

Ⓞ Organizer Ⓒ Co-host

Sep 25 (Sat.) Public Lecture: Fertility and Sustainable Future
Ⓞ Hokkaido University (HU) Ⓒ University of Geneva

Oct 13 (Wed.) - 15 (Fri.) Science Café: "Shirabekata" on Earth Vol.1- Vol.3
Ⓞ Executive Committee of "Shirabekata" on Earth
Ⓒ IFES-GCOE Regional Education and Outreach Promotion Office, HU

Oct 16 (Sat.) The 7th Debate Competition
Ⓞ School of Economics and Business Administration, HU

Oct 22 (Fri.) Hokkaido University Sustainability Forum
Ⓞ Hokkaido University Ⓒ The Hokkaido Shimbun Press

Oct 24 (Sun.) Public Lecture Commemorating the Establishment of the Hokkaido University Center for Environmental and Health Sciences: Let's Think Together! Our Environment and Children's Health
Ⓞ Center for Environmental and Health Sciences, HU

Oct 24 (Sun.) - 29 (Fri.) The 2nd Sustainability Research Poster Contest I
Ⓞ Hokkaido University

Oct 25 (Mon.) - 31 (Sun.) Special Event: Ride and Think for Sustainability in Hokkaido Univ.
Ⓞ IFES-GCOE Regional Education and Outreach Promotion Office, HU
Ⓒ EcoMobilty SAPPORO (NPO)

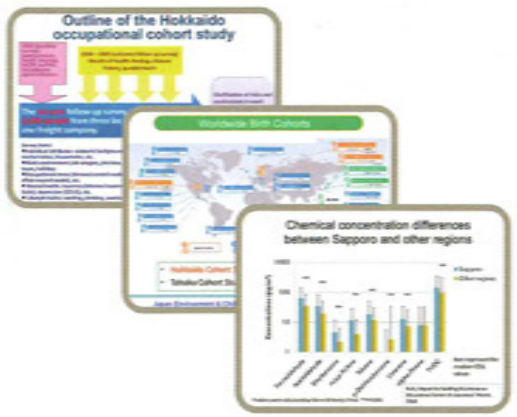
Oct 25 (Mon.) - 26 (Tue.) SW2010 Opening Event:
Toward a Society Offering Quality of Life and Human Dignity for All
-Comprehensive Exploration Into the Causes of the Crises We Face-
Ⓞ Hokkaido University

Oct 25 (Mon.) Int'l Workshop on Green Circuits and Systems
Ⓞ Center for Next-Generation Information Technology based on Knowledge Discovery and Knowledge Federation, HU
Ⓒ Graduate School of Information Science and Technology, HU

Oct 25 (Mon.) -Nov 6 (Sat.) Fair Trade Fair Vol.5
Ⓞ International cooperation student association "yui" Ⓒ Hokkaido Univ. Co-op

Oct 26 (Tue.) -Nov 3 (Wed.) Controlling Zoonoses: An Experimental Exhibition on Integrative Science
Ⓞ The Hokkaido University Museum
Ⓒ Global COE Program "Establishment of International Collaboration Centers for Zoonosis Control"; Hokudai Integrated Science Consortium; Hokkaido University Research Center for Zoonosis Control

OCT 24 Sun



Quality of Life and Human Dignity for All

QUALITY

Striving to create a community whose members enjoy physical, mental, and social well-being as well as a high quality of life.

Symposium on a Green Welfare State: Toward Sustainable and Inclusive Growth

NOV 1 Mon

Based on previous conventional wisdom that economic development must be given up to protect the natural environment, it was considered that social security, the natural environment and the economy were contradictive and independent of each other. Recently, however, the possibility of a green welfare state has attracted much attention as a solution and as a means of striking a balance between policies in these three fields (i.e., social security policies, environmental policies and fiscal and economic policies). The symposium highlighted how people involved in these fields can work together on national, global and local levels, and how synergistic effects can be generated through cooperation among the three fields on the three levels.

International Symposium on Renewable Energy

OCT 28 Thu

Soon after a Japanese phrase meaning "low-carbon society" was coined in Japan in 2005, Hokkaido University launched research on measures to develop and disseminate renewable energy, and began to make policy recommendations. This year's International Symposium on Renewable Energy, the third of its kind, focused on the present status and future prospects on renewable energy, such as wind, snow and biomass power and assembled researchers and individuals with practical experience in renewable energy from around the world. Speakers shared policy challenges in Japan, Germany, the U.S. and China, as well as initiatives taken at local governments like the Shimokawa Town Office, a nonprofit organization and a private corporation in Hokkaido. They also discussed problems and possible solutions.

Our Relationship with Nature

NATURE

Pursuing a balance with Earth's ecosystems so all living creatures & humans can coexist in harmony.

The 2nd Hokkaido University Sustainability Research Poster Contest

OCT 24 Sun - OCT 29 Fri, OCT 31 Sun - NOV 5 Fri

A total of 93 students in 76 teams from two undergraduate and ten graduate schools participated in the research poster contest. They reviewed their research programs from the viewpoint of making a contribution toward the creation of a sustainable society, and explained them in the form of poster and oral presentations. A total of 141 faculty members and students served as the judges who chose a total of 37 award winners for the 2nd Sustainability Research Poster Contest.

Learning the Futu

FUTUR

Considering the hist and culture unique t while nurturing mi and friendships to p to a new future.

Special Lecture on Intergenerational Justice and Health in an Aging Society

NOV 7 Sun

This event featured a discussion on health promotion and the necessary allocation of medical resources to strengthen the aging society from the viewpoint of bioethics. The lecture revealed that the issue of resource allocation cannot simply be resolved in terms of the fair intergenerational allocation of medical resources, namely, simply by distributing equitable amounts of resources to young and old. In reality, those born in a certain generation may suffer more disadvantages than those born in other generations. The participants shared the understanding that the future challenge would be to come up with ideas on how to rectify those disadvantages.

Public Lecture: Theory and Practice of Fisheries Sustainability Science

NOV 9 Tue

With the slogan of "The survival of humans is deeply dependent on the marine ecosystems", 90 researchers, journalists, people from the business world and members of the general public joined the lecture to discuss how marine organisms and marine ecosystems should be protected. Among the earth's population exceeding 6.5 billion, there are 2.9 billion people who rely on marine organisms as a major source of food. Marine ecosystems have been disturbed by human activities, resulting in decreased biodiversity and desertified marine habitats. Against this backdrop, how can we create a society where food and the sea are sustained in a healthy manner? The event emphasized the importance of thinking globally and making the best possible choices in our lives, namely, by acting locally.

Controlling Zoonoses: An Experimental Exhibition on Integrative Science

OCT 26 Tue - NOV 3 Wed

Researchers who believe that inter- and multi-disciplinary research efforts are required to find solutions to the complex problems we are facing today had an exhibition on zoonoses at the Hokkaido University Museum. Using the exhibits, young researchers explained to local residents who visited the museum possible solutions that could only be reached by integrating the latest research results in the fields of veterinary medicine, medicine, biology, information science and science from a broad perspective.

Oct 27 (Wed.) SD on Campus – A Global Quality of International Campus Life
O Hokkaido University Office of International Affairs

Oct 27 (Wed.) Sustainable Campus Tour
O Center for Sustainability Science, HU
C Sustainable Low-Carbon Society Project; Field Science Center for Northern Biosphere, HU

Oct 27 (Wed.) First Sustainable Campus Contest
O The Students Council for Sustainable Development in HU

Oct 28 (Thu.) Int'l Symposium on Renewable Energy
O Sustainable Low-Carbon Society Project (Public Policy School; Faculty of Environmental Earth Science)

Oct 29 (Fri.) Int'l Symposium on Global Campus for Sustainability Education
O Center for Sustainability Science, HU
C The University of Palangka Raya (Indonesia); International Institute for Water and Environmental Engineering (Burkina Faso); National Cheng Kung University (Taiwan); Zhejiang University (China); Pukyong National University (Korea); Swinburne University of Technology (Australia); University Sains Malaysia (Malaysia); Gajah Mada University (Indonesia)

Oct 29 (Fri.) Symposium on Northern Mountains: Past Change and Monitoring Network
O IFES-GCOE; Graduate School of Environmental Science; Graduate School of Agriculture
C "Current situation of biodiversity crisis in the forest-alpine ecotone and mechanism under global change" (The Fund D-0904 of the Ministry of Environment, Japan)

Oct 29 (Fri.) -Nov 3 (Wed.) CLARK THEATER 2010
O Hokudai Theater Project Execution Committee 2010
C Hokkaido University GAIA Project

Oct 30 (Sat.) Key Issues for Carbon Storage and Biodiversity -Tropical Peat and Forest-
O Center for Sustainability Science, HU

Oct 30 (Sat.) Hokkaido Community Care Symposium
O Hokkaido Community Health Forum
C Hokkaido University Hospital Postgraduate Clinical Training Center

Oct 31 (Sun.) -Nov 5 (Fri.) The 2nd Sustainability Research Poster Contest II
O Hokkaido University

Nov 1 (Mon.) Symposium on the Possibility of a Green Welfare State: Toward Sustainable and Inclusive Growth
O The Advanced Institute for Law and Politics, HU
C Project of JSPS Grants-in-Aid For Scientific Research: New Politics for Welfare Regime and Organized Interests in Japan

Nov 1 (Mon.) Symposium on EcoDesign of Low Carbon Society Based on Regional Partnership Between Urban and Rural Areas
O Center for Sustainability Science, HU
C Osaka University; Ritsumeikan University

Nov 1 (Mon.) - 2 (Tue.) Workshop for the 2nd Amur-Okhotsk Consortium Meeting 2011
O Institute of Low Temperature Science; Slavic Research Center, HU; New Energy Resources Research Center; Kitami Institute of Technology
C Research Institute for Humanity and Nature; Hokkaido University Global COE Program "Reshaping Japan's Border Studies"; Hokkaido Regional Development Bureau; Ministry of Land, Infrastructure and Transport

Nov 2 (Tue.) Symposium on Expanding the Potential of Children in Future Society
O Faculty of Health Sciences, HU C Center for Environmental and Health Sciences, HU; Support Office for Female Researchers, HU

Nov 3 (Wed.) Int'l Discourse on Diagnosing Temporomandibular Disorders (TMD) Workshop
O Graduate School of Dental Medicine, HU

Nov 3 (Wed.) Seminar on Environmental Policy ~ Biodiversity and Climate Change ~
O Sustainable Low-Carbon Society Project, HU
C Ministry of the Environment Hokkaido Regional Office

Nov 3 (Wed.) Public Program on Health Sciences
O Public Program Committee in Faculty of Health Sciences, HU

Nov 3 (Wed.) - 5 (Fri.) The 3rd Int'l Symposium on Sentinel Earth -Advance in Satellite Imagery Data and GIS and Their Application-
O Hokkaido University (Graduate School of Info Science and Technology; Research Faculties of: Engineering, Science, Enviromental Earth Science, Fisheries Science; Institute of Low Temperature Science; Support Office for Space Science and Engineering); Asia Institute of Technology; University of Alaska; University of Palangkaraya; Japan Aerospace Exploration Agency (JAXA); Remote Sensing Technology Center of Japan (RESTEC)

First Sustainable Campus Contest

OCT 27 Wed

Students who firmly believe that the imagination and creativity of students will change Hokkaido University, and who made it their goal to create a global model of campus sustainability here, formed a group called Students Council for Sustainable Development (SCSD). They held a contest calling for project ideas to achieve this goal among the students and awarded prizes for excellent ideas. During this inaugural contest, seven unique project concepts were submitted, and the venue where the presentations were held was enlivened with the passionate appeals of the presenters and the insightful questions from the jury members. Unfortunately, nobody could meet the stringent judging criteria to receive the Grand Prix Award. However, the event was fruitful because students, faculty members and members of the general public who had a common interest in improving campus sustainability could establish a network of people who support the SCSD's activities.

The seven project concepts are as follows:

- Special Jury Award and Venue Award: Energy development system using bicycle generated power
- Special Jury Award: The establishment of an environment department
- An eco-coupling tax; a paperless university; the promotion of the Warm Biz energy conservation campaign; a fasting camp; and the creation of a social network service (SNS) focusing on sustainability science

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Sustainable Campus

Our campus is a stage for social experimentation and place to develop new sustainable models.

SD on Campus – A Global Quality of International Campus Life

OCT 27 Wed

A seminar for Hokkaido University students who are interested in studying abroad was held by inviting the representatives of seven of the university's partner institutions that place special emphasis on fostering human resources that will contribute to the achievement of sustainable development (SD). Informed about the distinct educational environment of each of those institutions, students could picture their possible involvement in sustainable development initiatives in the classroom and beyond at these institutions. They appeared highly motivated to study abroad.

Participating institutions:
AGH University of Science and Technology (Poland), Dalhousie University (Canada), Sichuan University (China), Technische Universität München(Germany), University of Oklahoma (U.S.A.), Universiti Sains Malaysia, and Yonsei University (South Korea).

Nov 4 (Thu.) Business-Academia-Government Collaboration Seminar on Developments of Geo-spatial Information and Future World II
D Hokkaido University Graduate School of Letters; GIS Association of Japan Hokkaido Regional Office; Hokkaido GIS/GPS Society; Digital Hokkaido (NPO)

Nov 5 (Fri.) Hokkaido Marine Bioscience Symposium
D Hokkaido Marine Bioscience Society; IFES-GCOE, HU

Nov 6 (Sat.) The 14th Ainu Language Speech Contest "ITAK AN RO"
D The Foundation for Research and Promotion of Ainu Culture
C Center for Ainu & Indigenous Studies, HU

Nov 6 (Sat.) Int'l Symposium on Child Poverty and Anti-poverty Strategy
D Graduate School of Education, HU
C Society for the Study of Poverty

Nov 6 (Sat.) Int'l Symposium on "Reproductive Rights and The Sustainability of Women's Health in Historical and Contemporary Perspectives"
D Center for Applied Ethics and Philosophy, HU

Nov 7 (Sun.) Special Lecture "Intergenerational Justice and Health in an Aging Society"
D Center for Applied Ethics and Philosophy, HU

Nov 9 (Tue.) Public Lecture: Theory and Practice of Fisheries Sustainability Science
D Faculty of Fisheries Sciences, HU
C Science Council of Japan; Hakodate City

Nov 15 (Mon.) SCJ Hokkaido District Conference "Green Innovations Originating in Hokkaido"
D Hokkaido District Conference, Science Council of Japan; Hokkaido University

Dec 7 (Tue.) Fishing Down and Fisheries Sustainability Science
D International Exchange Committee in the Faculty of Fisheries

Dec 8 (Wed.) JSPS Core University Program Seminar "Proposal for Sustainable Fisheries"
D Hokkaido University; Pukyong National University
C Japan Society for Promotion of Science; Korea Research Foundation

Future Activities of Hokkaido University

Hokkaido University focuses on the following four initiatives to fulfill the pledges outlined in the Sapporo Sustainability Declaration (SSD) adopted by the presidents of 35 major universities around the world here in Sapporo, Hokkaido in 2008.

1 Hosting Sustainability Weeks programs

Universities, being neutral and objective, are best suited to inform political and social change toward a sustainable society. Each year, Hokkaido University hosts a two-week Sustainability Weeks program to offer a platform for exchanges among specialists from academia, educational institutions, business communities, governments and NGOs, as well as students and members of the general public. They gather from all over the world to learn about problems shared by the human race as a whole, and discuss possible solutions. Ideas and plans for the forthcoming Sustainability Weeks program in its fifth year, slated for October 24, 2011, are now being gathered from across the world.

▼Sustainability Weeks

http://www.sustain.hokudai.ac.jp/sw

2 Establishing a Sustainable Campus

Hokkaido University views the Sapporo Campus, which is nestled in the middle of a city with a population of 1.9 million, as an experimental field, and have established the Office of Campus Sustainability in November 2010 to promote our initiative to create a new model for a sustainable society. We combine the results of our cutting-edge research with vitality of our students to create a miniature society that is sustainable in every aspect, including study, research, operation and daily life.

▼Office for a Sustainable Campus

http://www.hokudai.ac.jp/bureau/news/news-top/campus-sustainability/cs.html

3 Foster Emerging Talent to Lead a Sustainable Future

Hokkaido University has placed special emphasis on fostering global perspectives in our students to help them develop the knowledge, skills and behavioral patterns that are essential for building the next generation and to expand their networks with those who share the same ideals around the world. To this end, we have increased the number of summer programs we jointly host with our partner institutions as well as the number of students we send to international conferences. The center for Sustainability Science initiates the promotion of joint classes connecting Hokkaido University with the partner institutions via the internet.

▼Center for Sustainability Science (CENSUS)

http://foxsus.census.hokudai.ac.jp/strass/

4 Leading the Sustainability Network

Collaboration is essential when we tackle problems that defy solutions by single states or regions acting alone. Hokkaido University will continue to exercise leadership to build networks with other organizations within Japan and overseas. Currently, as a board member of the network for the Promotion of Sustainability in Postgraduate Education and Research Network (ProSPER.Net), Hokkaido University organizes the Alternative University Appraisal Project (AUA) to provide resources to universities in Asia-Pacific which reveals the contribution of universities towards the achievement of sustainability.

▼Alternative University Appraisal Project (AUA)

http://www.sustain.hokudai.ac.jp/aua

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Hokkaido University Office of International Affairs
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TEL: +81-(0)11-706-8031 FAX: +81-(0)11-706-8036 E-mail:office1@sustain.hokudai.ac.jp

http://www.sustain.hokudai.ac.jp/sw/

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北海道新聞　サステナビリティ・ウィーク　インタビュー企画
「北海道大学が考えるサステナビリティとは」

第一回　２０１０年９月２２日（水）　北海道新聞朝刊掲載

北海道大学が考える
サステナビリティとは

サステナビリティ（持続可能な社会）に対するメッセージを、
北海道大学の研究者から6回にわたってお聞きします。
シリーズ❶

企画・制作／北海道新聞社広告局

人々、人間社会からもアプローチ

健康・安全・生活を統括する、公衆衛生学

医学の世界には、臨床医学や基礎医学に対して、社会医学という分野があります。社会医学は、予防医学と、医療のシステムなどを研究する学問に分かれ、私は予防医学の中の公衆衛生学が専門です。

公衆衛生学という言葉は、憲法25条にも記されています。「すべて国民は、健康で文化的な最低限度の生活を営む権利を有する。国は、すべての生活部面について、社会福祉、社会保障及び公衆衛生の向上及び増進に努めなければならない」。公衆衛生学とは、社会に生きる人々の健康・安全・生活を統括する科学と言えるでしょう。

例えば、働く人のメタボリック症候群という問題に対して、私たち公衆衛生学の専門家は、個々人の生活習慣に目を向けるだけでは不十分だと考えます。深夜まで残業し、帰宅してから夕食をとる生活スタイルが背景にあるならば、労働環境の改善も検討します。そのためには、医師だけでなく、労働に関する法律や経済の専門家とも協力していきます。

現代社会における健康問題を根本的に解決するには、大きな枠組み、長期的な視野での取り組みが必要です。さらに、単に一人の人を救うということではなく、社会全体が良い方向に向かうよう導く研究が求められていると思います。

人々や人間社会のあり様からのアプローチ

あらゆる環境が人々の健康と安全、生活に与える影響が多大で、かつ、健康障害を引き起こすリスクが胎児から高齢者にまで及んでいます。

北海道大学が重要課題として、全学的活動を進めているサステナビリティ（持続可能な社会）には、地球温暖化、水、大気汚染など自然環境面からのアプローチだけではなく、人々や人間社会のあり様からのアプローチがますます重要になってくるでしょう。

今春、北海道大学に環境健康科学研究教育センターが設立されました。多様な学問の融合が求められる公衆衛生学を専門とする私が長を務めることが、学部を横断した取り組みを推進するきっかけになればと願っています。

当センターでは、環境省から委託を受けて、医学研究科、教育学研究院、保健科学研究院、さらには道内の医科大学などと連携して、全国規模の研究「子どもの健康と環境に関する全国調査」を行っています。今後も、北海道大学内外の多くの研究者とともに、人々の生活の質の向上に向けて、研究に取り組んでいきたいと考えています。

北海道大学 特任教授
環境健康科学研究教育センター長
岸 玲子さん

専門分野は公衆衛生学、疫学。北海道大学大学院医学研究科博士課程修了、米国ハーバード大学公衆衛生大学院修了。内分泌かく乱化学物質の人への影響、シックハウス症候群の実態と原因解明などをテーマに、複数の疫学研究を最大30年以上にわたって実施している。

第二回　２０１０年１０月２日（土）　北海道新聞朝刊掲載

北海道大学が考える
サステナビリティとは

サステナビリティ（持続可能な社会）に対するメッセージを、
北海道大学の研究者から6回にわたってお聞きします。
シリーズ❷

企画・制作／北海道新聞社広告局

ウェル・ビーイングの視点から迫る

持続可能な社会の実現へ向けて

北海道大学では、創立以来多くの研究者が世界中の自然を相手に調査や観測を行ってきました。地球環境の変化を示すデータを見るにつけ、人類は果たして持続可能だろうかという問題意識が高まり、全学を挙げてこの問題に取り組もうと、２００７年、「サステナビリティ・ウィーク」をスタートしました。

「北海道洞爺湖サミット」が開催された08年には、国内外の大学や国連大学と「G8大学サミット」を開催し、持続可能な社会の実現に向けた「札幌サステナビリティ宣言」を採択しました。昨年は、①感染症の拡大阻止②水源の枯渇回避③食料とエネルギーの確保④低炭素・循環型社会の構築⑤東アジアの生命線であるオホーツク海とその流域の持続可能な開発、といった喫緊の5課題について、北海道大学の研究者が国際社会に対し提言をしました。

健康、貧困、高齢社会新たな切り口も

過去3回の「サステナビリティ・ウィーク」は、主に自然環境や社会システムの側面から、持続可能な社会のあり方を検討してきました。今年は新たなアングルを持ち込もうと、人間にスポットを当て、『ひとり一人がすこやかに人間らしく生きる社会を目指して』をテーマに掲げます。

一人一人が身体的、精神的、社会的に良好な状態（ウェル・ビーイング）で、質の高い生活（クオリティー・オブ・ライフ）を送る世界は、あるべき持続可能な社会の姿です。ウェル・ビーイングとは、「GDP（国内総生産）以外に、国の豊かさや国民の幸せを示す指標を持てないか」という、最近盛んに行われている議論の中で注目されている概念です。一人一人の健康や生活は、社会の仕組みや自然環境の影響を受け、逆に、人間の活動はそれらに影響を与えます。このような視点を皆さんと共有していきたいとの思いから、今年のオープニングシンポジウムは、健康、貧困、高齢社会を切り口にしました。

地球規模の課題に取り組む際は、国と国との利害がぶつかり、物事が容易に進まないことが多々あります。しかし、研究者同士、あるいは市民も交えて、課題に対する価値観を共有することが国の利害を超えて解決に向かう第一歩だと思います。

この「サステナビリティ・ウィーク」が、子や孫のさらに先の世代へ、より良い社会を手渡していくために共に考え、語り合う場になればと願っています。多くの市民の皆さんのご参加を、お待ちしています。

北海道大学理事・副学長、教授、工学博士
サステナビリティ・ウィーク2010実行委員長
本堂 武夫さん

専門分野は応用物性・結晶工学など。北海道大学工学部卒業、同大学院修士課程修了。極地の氷床研究の第一人者で、第35次南極観測隊（夏隊）に参加。「氷とクラスレートハイドレートの物性と氷床研究所への応用」などの研究で知られる。日本物理学会、国際雪氷学会などに所属。07年、理事・副学長に就任。

北海道新聞　サステナビリティ・ウィーク　インタビュー企画
「北海道大学が考えるサステナビリティとは」

第一回　２０１０年９月２２日　北海道新聞朝刊掲載

北海道大学が考える
サステナビリティとは

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シリーズ❸

企画・制作／北海道新聞社広告局

海の生態系を守り、次世代に食料を

海洋生態系のピラミッドに異変

将来にわたって人類が生き残るには、食料の確保と、そのための海の生態系の保全が必要です。このような趣旨の議論や研究を行う際、これまでは産業としての漁業を軸に据えてきました。しかし、それでは「食」は守れませんでした。利益の追求により、乱獲が進み、魚はどんどん減少してしまいました。いま大切なことは、次世代の食料を守るにはどのような海洋生態系が必要かというアプローチだと、私は考えています。

海洋生態系のピラミッドは、下から植物・動物プランクトン、小魚の階層（栄養段階）があり、トップにはサケ、マグロ、サメなどの大型の魚がいます。グルメ志向の高まりもあり、近年、人類はピラミッドのトップに位置する魚を大量に捕ってきました。その結果大西洋のクロマグロや一部のサメは絶滅危惧（きぐ）種に指定されるまでになりました。

トップの魚が少なくなると、その下の階層の小魚は食べられることがなくなるので数が増える一方、小魚の餌となるプランクトンは減ってしまうことから、近年、ピラミッドの形が大きく変わりつつあります。

エコラベルから、養殖から、海の問題を考える

11月9日の講座では、市民の方々と問題意識を共有するために、多様な話題を用意します。その一つが、エコラベルです。例えば、アメリカ西海岸で使われているエコラベルは、緑、赤、黄の順に、食べてよい魚から食べてはいけない魚までを分類しています。サケでいうと、アラスカの野生のサケは量も十分いて管理も良いので緑、大西洋で養殖されたサケはPCBやダイオキシンなどの残留数値が高いので赤というように、単一魚種でも産地や養殖場ごとに識別します。食料として安全で、環境や生態系に優しく、フレンドリーな漁業や養殖が行われているものを食べなさいという啓蒙（けいもう）と実践が目的です。

今や地球上で食べられている水産物の約半分を占める養殖にも焦点を当てます。養殖には、魚に与える餌の半分が海中に沈むことによる汚染、餌に魚粉を用いることによる生態系の切断などの問題が潜んでいるからです。このほか、フードマイレージ、食料トレーサビリティなどについても、専門家が分かりやすく解説します。

また、12月7日には、生き物の減少が海の砂漠化につながると、世界に警鐘を鳴らしている元ブリティッシュ・コロンビア大学漁業センター所長ダニエル・ポーリー氏が北大水産学部（函館）で特別講義を行います。海の生態系を守ることの大切さを理解しあう場になればと願っています。

北海道大学 大学院水産科学研究
水圏生態系保全学講座教授
帰山（かえりやま） 雅秀さん

専門分野は魚類生態学、水圏保全生態学。北海道大学水産学部卒業後、水産庁勤務中に水産学博士号を取得。アラスカ大学フェアバンクス校客員教授などを経て、05年から現職。「亜寒帯水圏生態系キーストン種サケ属魚類の生態系サービスとリスク管理」ほか研究実績多数。日本水産学会、アメリカ水産学会などに所属。

第二回　２０１０年１０月２日　北海道新聞朝刊掲載

北海道大学が考える
サステナビリティとは

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シリーズ❹

企画・制作／北海道新聞社広告局

消費エネルギーを抑える技術の開発は急務

情報端末の消費電力量は地球が持つ総エネルギー並に

現在、世界中の端末数は約10億台で、年間約12％の割合で増加しています。単純計算では２０１５年には端末数が今の10倍になり、これらの消費電力は合計45テラワット※、地球が持つ地熱を含む総エネルギーに匹敵します。

温暖化対策では、太陽光や風力発電など、どうやってCO_2排出量を削減してエネルギーを生み出すかという話になりがちですが、それではエネルギー量を減らす答えにはなりません。そもそも、家電製品や端末などの消費エネルギーを抑えることが必要ではないでしょうか。

最近のノートパソコンは昔のものより熱くなりやすいと思いませんか。すぐに熱くなり、ひざの上に1時間も載せられない。これは消費エネルギーの増加を意味します。つまり、小型で高機能になりはしたが、消費エネルギーも増えてしまった。持続可能な社会の実現には、人々が求めるより快適な機能を満たしながら、消費エネルギーを格段に抑える技術の開発が求められます。

エネルギー消費が少なく、より良いものを求めて

このような消費エネルギーを抑えた回路やシステムを「グリーン・サーキッツ・アンド・システムズ」と呼び、近年研究者の間では大きな話題となっています。私たちの研究室でも音声対話ができるロボットと、無線通信システムを開発しています。ロボットに搭載する音声認識チップは極低消費電力化に成功し、企業が製品として販売しています。無線通信システムは、最新の規格の倍、６００Ｍｂｐｓ※の速度で消費電力を4分の1に抑えることには成功しました。次は消費電力を変えずに通信速度を3Ｇｂｐｓ※にまで上げることを目指しています。

昨今、大手のインターネット検索エンジン運営会社では、スーパーコンピューター1台に代えて複数のパソコンを使って同じ作業をさせる、いわゆる「グリッド・コンピューティング」がトータルでの消費電力が少なく済むということを言っており、低炭素社会という観点からも注目されています。これと同様のことを、私たちは回路設計のＬＳＩシステム内で研究しています。インターネットというラージスケールから、ＬＳＩや回路素子というナノスケールまで、エネルギー消費を抑えようという考えでは同じといえるでしょう。

10月25日、「グリーン・サーキッツ・アンド・システムズ」の技術の方向性に関するワークショップを行います。電話回線やインターネット回線、携帯電話網などを統合し省エネ化を図ろうとする世界の動きに関心のある方は、ぜひご参加ください。

北海道大学 大学院
情報科学研究科教授、工学博士
宮永 喜一さん

専門分野は音声情報処理、無線通信システム、LSI設計技術。北海道大学工学部卒業後、1990年から同大学で研究・教育を行う。「拡張ロバスト音声認識システムの極低消費電力型LSI設計に関する研究」などで知られ、企業の受託研究多数。2008年、「LSI IPデザインアワード」受賞。電子情報通信学会、IEEEなどに所属。

※ 1テラワット（TW）＝1×10^{12}ワット（W）のこと。※Mbps、Gbpsとは　通信速度の単位の1つ。1Mbpsは1秒間に100万（＝10の6乗）ビット、1Gbpsは1秒間に10億（＝10の9乗）ビットのデータを送れることを表す。

北海道新聞　サステナビリティ・ウィーク　インタビュー企画
「北海道大学が考えるサステナビリティとは」

第五回　２０１０年１０月１８日（月）　北海道新聞朝刊掲載

北海道大学が考える
サステナビリティとは

サステナビリティ（持続可能な社会）に対するメッセージを、北海道大学の研究者から6回にわたってお聞きします。
シリーズ❺

企画・制作／北海道新聞社広告局

〝知の統合〟がサステナビリティを実現

複雑化、多様化する問題に、〝知の統合〟を

近年、学問の世界は高度になった半面、細分化が進み、一人の研究者では解明できない問題が増えています。この現状を何とかできないかと、昨年、有志によって「北大統合科学コンソーシアム」を設立しました。その趣旨は、拡散・細分化した多様な分野の研究を再び収束させて〝知の統合〟を目指すもので、さまざまな研究からみて中立的な立場にある総合博物館をプラットフォームにしています。

同コンソーシアム設立のきっかけは、08年に同博物館で行われた展示「洞爺湖・有珠火山地域の環境と資源」です。有珠火山噴火に伴って、洞爺湖・有珠火山地域の環境と資源がどのように変化し、どのように人間生活に影響を与えたかについて、生態系、水環境、地質と資源・環境、鳥類生態、植生、昆虫、人類遺跡、そして社会学など、さまざまな研究分野から多角的にとらえた展示を行いました。研究の結果を重ね合わせていくことで、問題の解決策や新しい問題点が見えてきました。

地球上の問題が複雑化、多様化する中、サステナビリティ（持続可能な社会）を実現するには、統合科学という学問、そして考え方、行動が必須といえるでしょう。

統合科学としての人獣共通感染症研究

今年の「サステナビリティ・ウィーク」では、総合博物館内でインフルエンザやエボラ出血熱といった人獣共通感染症をテーマにした展示を行います。

人獣共通感染症は、北海道大学がその研究において世界に誇る分野の一つです。また、05年に設立された人獣共通感染症リサーチセンターでは、医学、獣医学、薬学、農学、理学、情報科学などの研究者が集まり、〝知の統合〟を実践しています。統合科学という新しい学問のあり方を知っていただくには、人獣共通感染症は、最も分かりやすいテーマだと考えています。

プログラムは、人獣共通感染症の解説、ウイルスが感染した細胞の顕微鏡観察、人獣共通感染症の病原体を媒介する昆虫などの標本展示、研究室で使われる最新機器を用いた実験体験や防護服の試着など、子供から大人まで興味の持てる内容です。アンケートに協力いただいた来場者にはウイルスを模した特製携帯ストラップを差し上げます。

また、10月31日にはインフルエンザ研究の世界的な権威で、日本学士院賞を受賞している喜田宏教授が講演を行います。北海道大学が考えるサステナビリティの一端に触れられる好機だと思いますので、興味のある方はお問い合わせください。

北海道大学 総合博物館 館長、大学院理学院 教授 博士（理学）
松枝 大治さん（写真右）
専門分野は鉱物学・鉱床学。九州大学理学研究科博士課程修了。

北海道大学 大学院 先端生命科学研究院 特任准教授 博士（理学）
三浦 信明さん（写真中）
専門分野は分子シミュレーション、生体関連化学など。北海道大学理学研究科博士課程修了。

北海道大学 人獣共通感染症リサーチセンター 准教授 博士（工学）
伊藤 公人さん（写真左）
専門分野は計算機科学。北海道大学工学研究科博士課程修了。

第六回　２０１０年１０月２１日（金）　北海道新聞朝刊掲載

北海道大学が考える
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シリーズ❻

企画・制作／北海道新聞社広告局

再生可能エネルギーがパラダイムを変える

現状維持ではなく、現状を変えること

経済とは、中国の古典にある『経世済民』が語源で、社会を長期的に治め、人々に良い生活をもたらすことを意味します。この概念を現代に当てはめれば、地球温暖化問題も持続可能な発展という話題も、経済分野で語るべき題材といえます。

サステナビリティ（持続可能な社会）とは、現状維持ではなく、現状を変えなければ実現できません。物事を発想するに当たって、この前提に立つことが非常に重要です。従来の方法論の踏襲では、財政から資源・エネルギー、廃棄物まで、問題の解決を図ることは困難であり、私たちの生活も地球も破綻しかねません。

今夏の猛暑を振り返っても、地球温暖化対策が喫緊の課題であることは明らかです。国内の温室効果ガス排出量を20年までに90年比25％削減するという政府の目標を達成するために重要なキーを握っているのは、再生可能エネルギーです。これは、太陽光や風力、バイオマス（原料、燃料として利用できる生物起源の有機物。木くず、動物のふん尿、生ゴミ等）などを用いる地球環境に優しいエネルギーです。

地球にも地域にも良い影響を

経済産業省は、再生可能エネルギーで発電した電気を電力会社が全量買い取り、その費用を電気料金に上乗せする制度の具体策をまとめました。この政策が実現されれば、国民全員が再生可能エネルギーの開発・活用に係る負担を広く薄く担い、国民全員がこれに投資することになります。現在、日本では、再生可能エネルギーは電力全体の1％以下ですが、全量買取制度を導入したデンマークでは20％以上、ドイツでは15％以上を占め、政策効果は実証済みです。

北海道は、再生可能エネルギーの宝庫です。主要産業である酪農、漁業、林業はバイオマスと直結します。また、風力でいえば、先駆の稚内市や苫前町では、市町内の風力発電機の発電量は、市町内で必要な電力の7割近くに及んでいます。また、再生可能エネルギーの開発・活用は、諸外国の例を見れば、Uターンした技術者が機器の維持管理を行う、新たな環境関連ビジネスを起こすなど、地域経済にも良い影響を与えます。諸外国は再生可能エネルギーの普及を、新たなビジネスのチャンスととらえています。

再生可能エネルギーを使い、地域経済と雇用を興すというパラダイムは、北海道の将来にとっても非常に有益でしょう。１３０年前、北海道の開拓・開発のために設立された北海道大学は、開学の精神、使命を21世紀に受け継ぐ意味からも、このような動きの推進役を務めていくべきだと考えます。

北海道大学 大学院
経済学研究科教授、経済学博士
吉田 文和さん

専門分野は環境経済学、産業技術論、循環型社会の経済学的分析。京都大学大学院経済学研究科博士課程修了。国際共同研究「循環型社会の経済分析、ITと環境問題」を進める傍ら、放送大学講師を務め、『IT汚染』（岩波新書）を著すなど幅広く活躍。環境経済・政策学会、日本環境学会などに所属。

北海道大学　鈴木章名誉教授
ノーベル化学賞受賞記念特集
２０１０年１０月１０日（日）
北海道新聞朝刊掲載

北海道大学 ノーベル賞受賞記念特集

フロンティア精神で、新しい時代を切り拓く

スウェーデン王立科学アカデミーは10月6日、2010年のノーベル化学賞を鈴木章北海道大学名誉教授に授与すると発表しました。北海道大学の前身・札幌農学校として創基135年、北海道という風土に育まれ、そして多くの道民の皆様に支えられ、北海道大学は今日まで歩み続けてきました。クラーク博士が開校式で唱えた“lofty ambition”（高邁なる大志）。これを端緒とするフロンティア精神により勝ち得たこのたびの栄誉は、今こそ北海道の皆様とともに分かち合うべきものと考えます。北海道大学はこの日を忘れずに、これからも北海道とともに、日本そして世界をリードする研究・教育に努めます。

鈴木 章先生　研究の足跡

鈴木先生は、主に有機合成化学や有機金属化学、触媒化学の各分野で研究業績を重ねてきました。中でも1979年に発表した、パラジウム触媒を用いる有機ホウ素化合物のクロスカップリング反応は、有機合成化学のみならず触媒化学や材料科学など、幅広い分野に多大な影響を及ぼした研究であり、"Suzuki coupling反応"もしくは"Suzuki-Miyaura coupling反応"として世界的に知られています。

鈴木先生をこの研究へと導いたのは、米国・パデュー大学のハーバート・ブラウン教授（1979年ノーベル化学賞受賞、故人）でした。鈴木先生は北海道大学助教授時代の1963年から、博士研究員としてブラウン教授に師事。1965年に北海道大学に戻り、有機ホウ素化合物を使った新しい合成法の研究に精力的に取り組みました。北海道をホームグラウンドとしながら、研究者と国際的に交流することが、今日の栄誉につながったといえるでしょう。

画期的ともいえる鈴木先生らによるクロスカップリング反応も、発見当初周囲の評価は決して芳しいものではありませんでした。しかし、1979年に論文が海外の学会誌に掲載されると、国内よりも欧米から先に、この研究に対する評価や反響は高まっていきました。多くの人々に励まされ、鈴木先生と学生たちがフロンティア精神を持って挑み続けたことや、日本の枠を越えて国際的に研究を展開したことが、このような結果を導いたに違いありません。

鈴木先生らによるこのクロスカップリング反応の研究は、医薬、農薬、IT機器に不可欠な液晶、新世代の発光材料である有機EL（エレクトロルミネッセンス）などに用いられています。

このように、研究成果を社会に還元することは極めて重要です。今後も伝統ある触媒化学をはじめ、北海道で磨かれた知で世界に貢献を果たすことは、北海道大学の務めであると私たちは考えます。

鈴木 章先生の略歴

1930年　岩見沢村（現むかわ町）で生まれる。
60年　北大大学院理学研究科博士課程修了
61年　北大工学部合成化学工学科助教授
62年　米国・パデュー大博士研究員（～65年）
73年　北大工学部応用化学科教授
88年　英国・ウェールズ大招聘（しょうへい）教授
94年　北大を停年退官、北大名誉教授に。その後は、岡山理科大、倉敷芸術科学大の教授、米国・パデュー大、台湾中央科学院・台湾国立大の招聘教授を歴任
2009年　英国化学会名誉会員

【受賞歴】

日本化学会賞（89年）、有機合成化学特別賞（04年）、日本学士院賞（04年）、P・カーラーメダル（09年/スイス）、北海道新聞文化賞（09年）

持続可能な社会（サステナビリティ）の実現をめざし、道民とともに“行動する大学”へ

北海道大学は、1876年に設立されて以来、フロンティア精神を掲げ、自然と人間が共存する社会づくりに地域とそして世界と協力してきました。21世紀に入ってからは、より視野を広げ、環境・社会・経済・個人の調和を目指し「持続可能な社会（サステナビリティ）の実現」を掲げて、研究と教育に取り組んでいます。

地球環境の劣化、水や食料の枯渇、地球温暖化などの人類の存亡に関わる問題が山積する中、「サステナビリティ」は、いまや国連をはじめとする国際社会のみならず学術分野において最も重要な課題と位置づけられています。

この人類の課題に取り組むことこそ、新しい時代の開拓者であり続ける、北海道大学の使命です。

サステナビリティを実現するには、研究者と市民、大学と企業や行政などの連携が不可欠です。北海道大学が積み重ねてきた、調査や観測、実験および分析などの“知の蓄積”を、市民や世界の研究者、そして社会を担うセクターと共有し、議論し、新しい社会を共に描こうと、2007年から毎年「サステナビリティ・ウィーク」を開催しています。また2008年には、「G8大学サミット」を札幌で開催し、海外の20大学、日本の14大学そして国連大学と共に「札幌サステナビリティ宣言」を採択し、大学も持続可能な社会を実現するための原動力になるのだと誓い合いました。

創立以来培かってきた高邁なる大志とフロンティア精神。その志を胸に抱き40余年前アメリカへ渡った鈴木章先生。この綿々と続く精神は決して途切れることなく今につながっています。北海道大学は今までも、そしてこれからもずっと、環境・社会・経済・個人が調和する住みよい世界の実現を目指し、この北の大地で道民の皆様とともに考え、行動する大学であり続けます。

北海道大学では、鈴木先生の講演会をノーベル賞授賞式の後、札幌で開催する予定です。
詳細は、開催決定後北海道大学ホームページなどでご案内いたします。
■北海道大学ホームページ
http://www.hokudai.ac.jp/

北海道大学
HOKKAIDO UNIVERSITY

2. Websites of the Events and Activities

Public Lecture: Fertility and Sustainable Future

Overview

Date	September 25 (Sat.) 15:00～17:30 **(Finished)**
Organizer	Hokkaido University
Co-host	University of Geneva
Venue	Hokkaido University Conference Hall
Language: English/Japanese (Interpretation will be provided) **Intended Audience:** researchers, general public, college students	
Outline	This is a public lecture on the theme of sustainable development and health. Speakers, including overseas university researchers, will explain sustainable development from the viewpoint of healthcare.Special focus will be placed on Japan's falling birthrate in the context of parallel experiences of other industrialized countries. This lecture will examine factors contributing to low birthrates by comparing international experiences and will highlight their implications for creating a sustainable society. We look forward to the participation of the general public and high school and university students who are interested in the relationship between health and society in terms of our immediate surroundings and the world as a whole.
Registration	Not-required
Fees	Free
Program	>>Download Poster >>Download Program
Contact	Department of Global Health and Epidemiology, Graduate School of Medicine, Hokkaido University FAX: +81-(0)11-706-7374 E-mail: sw2010[at]ghe.med.hokudai.ac.jp

Report

Since 2009, Hokkaido University and its overseas partner institutions have been involved in an international consortium that conducts joint research into the socio-cultural aspects of health in the context of sustainable development. Particular focus is placed on fertility in relation to declining birthrates from global as well as national perspectives. In 2010, Hokkaido University held an international symposium entitled Public Lecture: Fertility and Sustainable Future for Japanese researchers and members of the general public. Experts from universities and research institutions at home and abroad were invited to speak on low birthrates and population issues, and a lively discussion on what sustainable development means from the viewpoint of healthcare took place.

Experts from Japan, South Korea, and Switzerland offered examples of rapidly declining birthrates from their own countries. The speeches ranged from, “Japan’s low fertility: current status, issues, and perspectives”, to “Very low fertility in Korea: is it a challenge or an opportunity for future sustainability?”, and “Is low fertility related to sustainability in Switzerland?” After these speeches, other invited experts from the U.S., Thailand, and Sri Lanka gave short presentations. After the speeches and presentations, all the speakers joined in a discussion on how to establish a sustainable society in this age of declining birthrates. The chairperson presented the following four topics to serve as a base for future discussion:

1. Improved health conditions and subsequent longevity have had the effect of emphasizing cultural and human aspects of society;
2. Longevity and longer periods of health stem largely from the development of the public health system and the efforts of medical professionals;
3. Societies’ expectations for accelerated use of resources are reflected in the economy and households;
4. Declining birthrates are due to the domestic and international migration of people and families.

Last but not least, it is a significant achievement that lively discussions on declining birthrates and a sustainable future took place during Sustainability Weeks 2010 with members of the general public and experts at home and abroad; in the future, discussion on aging societies can be expected to enhance the discussion toward the creation of a sustainable future.

audience participation

the panelists

Science Café: “Shirabekata” on Earth Vol.1- Vol.3

Overview

Date	October 13 (Wed.) – 15 (Fri.)　18:30～ **(Finished)**
Organizer	IFES-GCOE Regional Education and Outreach Promotion Office, Hokkaido University
Venue	Sapporo 55 bldg. 1F Inner Garden (Books Kinokuniya Main Entrance) North5. West5, Sapporo

Language: Japanese

Intended Audience: general public, college students, high school students

Outline	What does biodiversity mean? Why is it important? What related movements are under way around the world? These questions related to ecosystems and more will be answered by scientists for the general public. This event is an offer opportunity for Sapporo locals to converse with scientists on a daily changing topic prior to the 10th Conference of Parties to the United Nations Convention on Biological Diversity (COP10) – a government-level international conference scheduled to take place in Nagoya from October 18 to 29. We look forward to the participation of junior and high school students, university students, and members of the general public.
Registration	Not-required
Fees	Free
Contact	IFES-GCOE Regional Education and Outreach Promotion Office, Hokkaido University (Contact: Y.Sato) E-mail: shirabekata[at]ees.hokudai.ac.jp

Report

The first night of the three day Science Café event beginning on October 13 welcomed as its guest speaker Hokkaido University Research Faculty of Agriculture, Dr. Shin-ichi Akimoto. He and over 100 participants considered the meaning of procreation from the lifecycle of the snow bug in the lecture, What kind of insect is the snow bug?– Lessons in living from a short-lived bug.

On the second night, members of the Sapporo Nature Research and Interpretation Office delivered a lecture titled, Hints into finding the value of work—let’s start with acorns: Investigating nature, growing forests, and looking at life. The speakers shared with the

audience the fascinating, appealing, as well as difficult aspects of investigating, fostering, and communicating in their work.

The third and last night ended with a talk on How do plants return to areas afflicted by disasters? the case of Mt. Usu; Closed ski grounds; and The plants at your feet. Our guest speaker, Shiro Tsuyuzaki, was an associate professor at Hokkaido University's Faculty of Environmental Earth Science when Mt. Usu erupted. Dr. Tsuyuzaki and the audience considered how naturally and unnaturally disturbed vegetation should be restored.

Although all three Science Café events were held on weekday evenings, many people participated and actively asked questions and demonstrated the depth of the research of the guest speakers as well as their warm personalities.

first night

second night

third night

The 7th Presentation & Debate Competition, School of Economics and Business Administration

Overview

Presentation Data	http://eprints.lib.hokudai.ac.jp/dspace/handle/2115/44352 (Link to HUSCAP)
Date	October 16 (Sat.) 9:30 – 17:45 **(Finished)**
Organizer	School of Economics and Business Administration, Hokkaido University
Venue	Hokkaido University Center for Experimental Research in Social Science W102, 101, 201, 202

Language: Japanese

Intended Audience: researchers, general public, college students

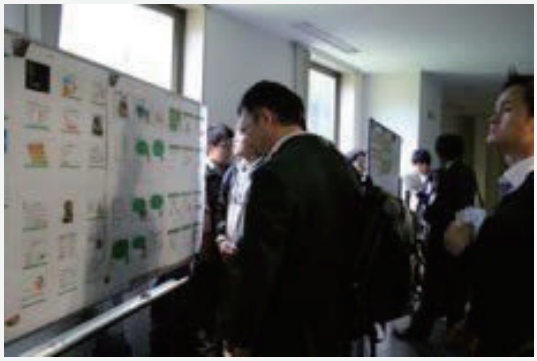
Outline	Hokkaido University undergraduate and graduate students majoring in a variety of fields will organize teams and present their unique ideas on the theme of *Revitalizing Agriculture – Redesign New Business*. They will examine their strengths and weaknesses through the medium of debate. This year's competition – the seventh in the series – will encourage students accurately understand the present state of business in Japan and aim for more creative design to address the situation at hand. Competing teams will make proposals for agricultural revitalization based on surveys and analysis that they will implement continuously from summer onward. We look forward to seeing high school, university and graduate students as well as those engaged in agricultural business and the general public.
Registration	Not-required
Fees	Free
Contact	School of Economics and Business Administration, Hokkaido University, sponsored by "The 7th Presentation & Debate Competition" Management Office (Contact: K.Tsukada) TEL: +81-(0)11-706-4066 FAX: +81-(0)11-706-4947 E-mail: sacade[at]econ.hokudai.ac.jp

Report

The School of Economics and Business Administration held their 7th Presentation & Debate Competition which focused on the theme, Revitalizing Agriculture: A New Business Model. Prior to the competition, a seminar held in July primed the participants as researchers and individuals engaged in agricultural business lectured on approaches to agricultural revitalization.

A total of 13 teams comprised of undergraduate and graduate students, including a team debuting from the Faculty of Agriculture and a team from Hokkaido University's Public Policy School (HOPS), participated in the competition. The participants engaged in fierce battles of words for over six hours, and exhausted their intellects to make proposals for agricultural revitalization from various angles. This year a poster contest was held during the lunch break and gave participants another way to publicize their hard work outside the debating stage. More than 100 people participated and members of the audience coming from various fields actively made comments from the floor after the competition.

Capturing the victory after hours of intense debates was the takait team from the School of Economics and Business Administration (Takai Seminar). The Kokai himitsu kessha team from the School of Economics and Business Administration (Hashimoto Seminar) came in second, and the Hokkaido University Debate Club (HDC) team finished third. The Shabekuri club team from HOPS won the poster contest. The team from the Takai Seminar achieved their long-sought goal of winning the competition. As they fought through debate after debate, they increased their strength and were victorious due to strong and solid teamwork. The second-place team from the Hashimoto Seminar persevered with a unique policy argument. The debate competition offered a great opportunity for undergraduate and graduate students to not only hone their communication, presentation, and organizational skills, but to also have the opportunity to interact with students from schools other than the School of Economics and Business Administration.



presenting research

poster contest

◆Download the presentation data：http://eprints.lib.hokudai.ac.jp/dspace/handle/2115/44352
（Link to Hokkaido University Scholarly and Academic Papers （HUSCAP）

Hokkaido University Sustainability Forum

Overview

Date	October 22 (Fri.) 18:00 Open 18:30 Start **(Finished)**
Organizer	Hokkaido University
Co-host	The Hokkaido Shimbun Press
Venue	Hokkaido University Conference Hall
Language: Japanese **Intended Audience:** general public, college students	
Outline	The forum will consider quality of life and human dignity from the viewpoints of individuals and the environment that supports us. It will offer opportunities to look at lifestyles from the perspectives of the inner life, interpersonal ties, the natural environment and urban infrastructure through discussions involving Hokkaido University researchers. We look forward to the participation of members of the general public looking for a weekend of contemplation.
Registration	Required Please register via our website. Registration is closed. (Oct. 14)
Fees	Free
Contact	Secretariat for Sustainability Weeks TEL: +81-(0)11-706-2093 FAX: +81-(0)11-706-2095 E-mail: sw1[at]oia.hokudai.ac.jp

Report

Hokkaido University and Hokkaido Shimbun Press, the newspaper publisher with the highest readership in Hokkaido co-hosted the forum *Toward a Society Offering Quality of Life and Human Dignity For All* for the general public as a pre-event for Sustainability Weeks 2010.

Despite the late starting time of 6:30 p.m., the forum attracted approximately 250 citizens. In the first part of the program, Professor Tsuyoshi Setoguchi of the Faculty of Engineering discussed “A northern compact city – toward a sustainable city” with guest professor Noriyuki Sato and Ai Kawahara, a first year doctoral student of the Graduate School of Agriculture. The theme of the second part was “Views of Life and Death to Ensure the Quality of Life and Human Dignity.” Professor Teruo Utsunomiya of the Graduate School of Letters presented topics and Professor Sato and Misaho Shigeki, a second year master’s student at Hokkaido University’s Public Policy School (HOPS), made comments. During the recess, the Student’s Council for Sustainable Development of Hokkaido University, to which Shigeki belongs, showed *New Life, New Challenge*, a 10-minute film that was shown with the purpose of inspiring people to consider things they can do to build a sustainable society. The forum was an impressive feat of student organization with Asumi Noto of the Faculty of Letters serving as the master of ceremonies.

In our post-event questionnaire for the audience, many participants responded that they wanted Hokkaido University to take the initiative in establishing a future Hokkaido-based society. Expectations for the Sustainability Weeks program were evident by the requests for more events with public participation and indicate that forums made available to the general public provide us with feedback and the opportunity to communicate research outcomes and campus trends in plain language.

forum poster


second session(from right: Professors Sato, Utsunomiya, & Motegi; Mr. Tamura (The Hokkaido Shimbun Press)

Public Lecture Commemorating the Establishment of the Hokkaido University Center for Environmental and Health Sciences: Let's Think Together! Our Environment and Children's Health

Overview

Presentation Data	http://eprints.lib.hokudai.ac.jp/dspace/handle/2115/44091 (Link to HUSCAP)
Date	October 24 (Sun.) 13:30～ **(Finished)**
Organizer	Center for Environmental and Health Sciences, Hokkaido University
Venue	Hokkaido University Conference Hall

Language: Japanese

Intended Audience: general public, college students

Outline	This lecture meeting will highlight the both positive and negative effects of our immediate natural and social environment on the health of babies and children both today and in the future.We will report our findings from studies we have conducted over 10 years in Sapporo and Hokkaido, in addition to introducing the Japan Eco & Child Study to be launched by the Ministry of the Environment next year. We would like to discuss environmental factors and the health of children with audience, and we hope that many citizens, students, representatives of local governments and experts in the field of healthcare will attend.
Registration	Required. Please register via our website. Registration on the day of the event is possible. (No admission after limit is met.) >> Registration
Fees	Free
Contact	Center for Environmental and Health Sciences, Hokkaido University TEL: +81-(0)11-706-4747 FAX: +81-(0)11-706-4725 E-mail: e.h.s[at]med.hokudai.ac.jp

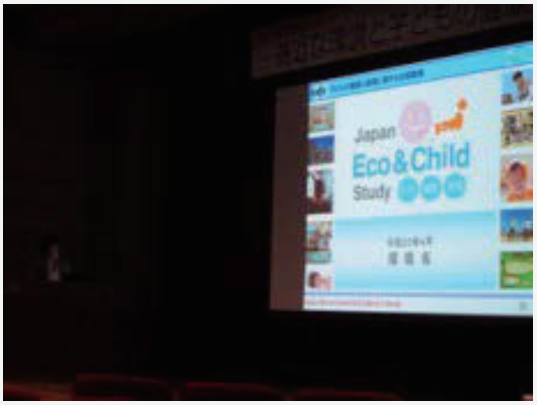
Report

On October 24, 2010, a public lecture entitled *Let's Think Together! Our Environment and Children's Health* was held in commemoration of the April 2010 inauguration of Hokkaido University Center for Environmental and Health Sciences (CEHS).

The event began with an opening address by its chair, Yasushi Handa, who serves as an assistant professor at CEHS. Dr. Chihiro Miyashita, a CEHS research fellow, then spoke about health effects of environmental chemicals under the theme, Our immediate environment. Her speech was based on results of her research program – Hokkaido Study on the Environment and Children's Health. The next speaker, Dr. Atsuko Araki, also a CEHS research fellow, shed light on health issues caused by indoor pollution and indoor pollutants. Her speech, *Keeping the home healthy to keep children healthy*, was based on the results of her previous nationwide epidemiological study designed to elucidate the cause of sick house syndrome.

Next, Koichi Yano, the director of the Public Health Office in Sapporo City Health & Welfare Bureau, highlighted the percentage of Sapporo citizens who either smoke, or smoke during pregnancy/ are affected by passive smoke while pregnant, or expose their infants to tobacco smoke. He spoke about the measures taken against passive smoking in his talk, *Mom and Dad, stop smoking for my sake!*
Lecturing next was Professor Hisanori Minakami of the Department of Obstetrics and Gynecology, Graduate School of Medicine, and CEHS. He illustrated the increase in the rate of low birth weight infants and their potential health issues under the theme, *To unborn babies: a message from an obstetrician*. Next, was CEHS Director Professor Reiko Kishi who spoke on the theme, *Achievements of the Hokkaido Study on Environment and Children's Health and the Forthcoming Nationwide Survey by the Ministry of the Environment* wherein she gave an outline and the results of the Hokkaido Study on the Environment and Children's Health as well as an overview of the Japan Eco & Child Study to be launched in 2011 by the Ministry of the Environment. She also explained the philosophy and activities of CEHS.

Last but not least, a panel discussion was chaired by Professor Akito Kawaguchi (Development of Human Developmental Sciences in the Faculty of Education) and Professor Takeshi Saito (Department of Comprehensive Development Nursing in the Faculty of Health Sciences), who double as CEHS Deputy Directors. They fielded questions from the audience which were answered by the speakers. Many questions raised covered a wide range of fields, and were followed by a lively exchange of opinions. Participants showed a high level of interest in the topics covered and attentively listened to the exchanges. The public lecture proved very successful.



lecture by Center Director, Reiko Kishi


overall discussion

◆Download the presentation data：http://eprints.lib.hokudai.ac.jp/dspace/handle/2115/44091
（Link to Hokkaido University Scholarly and Academic Papers （HUSCAP）

Special Event: Ride and Think for Sustainability in Hokkaido Univ.

Overview

Date	October 25 (Mon.) – 31 (Sun.) **(Finished)**
Organizer	IFES-GCOE Regional Education and Outreach Promotion Office, Hokkaido Univ.
Co-host	Nonprofit Organization EcoMobilty SAPPORO
Venue	On the street at Hokkaido University
Language: Japanese **Intended Audience:** anyone	
Outline	Here, students from Hokkaido University Graduate School of Environmental Science will operate Velotaxi cycle rickshaws inside and outside the Sapporo Campus. Visitors can ride Velotaxis bearing designs that reflect the university's environmental initiatives. Enjoy a leisurely trip between venues on this CO2 emission-free mode of transport while chatting with the student driver.
Registration	Not-required
Fees	Free
Contact	IFES-GCOE Regional Education and Outreach Promotion Office, Hokkaido Univ. (Contact: N.Yoshimura) TEL: +81-(0)11-706-3355 E-mail: ynobu14001[at]ees.hokudai.ac.jp

Report

The "Ride and Think for Sustainability in Hokkaido University" event, planned by students, aimed to achieve two purposes by the use of Velotaxi cycle rickshaws: 1) To publicize the Sustainability Weeks 2010 program in the local community and to make contact with local citizens as well as others from various parts of the world to promote exchanges; and 2) to

Velotaxi on campus

increase environmental awareness among the people that actually rode them. Planners rented Velotaxis and underwent training on how to drive them from EcoMobilty Sapporo, the nonprofit organization which actually operates this service in Sapporo. Support from the IFES-GCOE Regional Education and Outreach Promotion Office aided in the planning and execution of the event which consisted of two stages, a preparatory stage starting in May, and an operational stage that began in October.

In the preparatory stage, students learned a lot about project planning as they worked on a proposal for how to promote the event as a design element of the Velotaxis. During the operational stage, Velotaxis with the phrases “Sustainability Weeks 2010” and “Hokkaido University” painted on them were driven around Sapporo from October 1 to 24, and publicized the program to be held at the University with the actual vehicle operation contracted out. From the day of the opening ceremony on October 25 until October 31, students drove the vehicles on campus and gave rides to many people, including tourists. Thanks to extensive coverage by newspapers and radio programs, a large number of people experienced their first Velotaxi.

Achievements

Nearly 300 locals, overseas visitors, students and researchers rode the Velotaxis during the one-week operational period. Many locals solicited Velotaxi drivers with questions about Sustainability Weeks, and the vehicles with their advertisements attracted considerable attention. Many people took photos or videos and helped to enhance recognition of the Sustainability Weeks program. Riders remarked that the leisurely pace allowed them the opportunity to enjoy the landscape and that it perfectly suited the natural environment of the campus since it was a clean form of transport that didn’t emit any CO2.

Future Prospects

Many people used Velotaxis to move around on HU’s vast campus, and there were many requests to operate them even after the Sustainability Weeks program. The popularity of this program opens up the possibility of using Velotaxis as a practical approach to Hokkaido University’s commitment to protecting the environment.

Velotaxi friends

The 2nd Hokkaido University Sustainability Research Poster Contest

Overview

Presentation Data	http://eprints.lib.hokudai.ac.jp/dspace/handle/2115/44124 (Link to HUSCAP)
Date	Part1: October 24 (Sun.) noon – 29 (Fri.) noon **(Finished)** Contest: October 26 (Tues.) 12:30 – 15:30 Part2: November 2 (Sun.) noon – 5 (Fri.) noon **(Finished)** Contest: November 2 (Tues.) 12:30 – 15:30
Organizer	Hokkaido University
Venue	Hokkaido University Conference Hall

Language: English/Japanese

Intended Audience: researchers, general public, college students

Outline	HU students will review their current research programs from the viewpoint of contribution to efforts for the creation of a sustainable society, summarize these contributions in poster format and make presentations in Japanese or English. Nearly 100 posters will be exhibited over a period of two weeks. Communication Time (CT) sessions will be set up on Tuesdays, when students will make presentations in front of their posters and answer questions from visitors.The contest will provide a wealth of opportunities to learn about future scenarios envisioned by students as well as to find out about their research programs and gain experience of research poster presentations. We look forward to welcoming all comers – especially high school, university and graduate students.
Registration	Not-required
Fees	Free
Contact	Secretariat for Hokkaido University Sustainability Weeks 2010 TEL: +81-(0)11-706-2093, FAX: +81-(0)11-706-2095 E-mail: sw1[at]oia.hokudai.ac.jp

Report

The Hokkaido University Sustainability Research Poster Contest aims to encourage students to view their current research from the stance of how it can contribute toward the creation of a sustainable society, and then explain this in terms that are understandable to people outside their specialized fields. Many students participated in the contest for the opportunity to contemplate how their research is connected to the general theme of the development of a sustainable society.


a student presents their research poster

This year's contest, the second of its kind, received a total of 93 entries involving 76 teams: 2 undergraduate students, 42 students in master's degree programs, and 49 doctoral students participated. The submitted works were divided into two groups and were judged within a two-week period.
Serving as the judges were 61 HU faculty members and 80 students who presented their posters. Each poster was examined by three faculty members and two students – a total of five judges – and contestants competed for a possible maximum total score of 375 points. Judging this year was characterized by the fact that the judges viewed posters outside their own specializations.

Many students commented that presenting their posters was an instructive experience and that they learned how difficult it is to explain their research to people in fields different from their own. One participant said, "I was very inspired since I could come up with new ideas by showing my research to those in different fields." Faculty members who acted as judges also made positive comments, "Presentations by students majoring in different fields from mine stimulated me intellectually," and "It was a very interesting experience. I learned a lot." These comments indicated that discussions held during the contest were productive for presenters and judges alike.

On November 5, an award ceremony was held in Meeting Room No. 1 of the Conference Hall, and certificates and supplementary prizes were handed to the 42 students in 37 teams that won the 2nd Hokkaido University Sustainability Research Poster Contest awards.
The Sustainability Research Poster Contest will be held again in 2011.Participation of students across a broad spectrum–both the sciences and humanities—is expected.

Number of participants by department

Graduate School of Environmental Science: 40; Graduate School of Agriculture: 17; Graduate School of Health Sciences: 11; Faculty of Engineering: 10; Graduate School of Fisheries Sciences: 4; Graduate School of Economics and Business Administration: 3; Graduate School of International Media, Communication, and Tourism Studies: 2; Graduate School of Dental Medicine: 2; Graduate School of Letters: 1; Public Policy School: 1; School of Dental Medicine: 1; Faculty of Agriculture: 1

Hokkaido University President's Award (Grand Prix) Winners

Graduate School of Agriculture	Nareethep Ruangthip	Health and public sanitation
	Yuka Uchida	
Graduate School of Health Sciences	Risa Takashima	Social bonds, culture and peace
Graduate School of Letters	Kunihito Nagasaka	Policies and social systems
Graduate School of Environmental Science	Yoshihiro Mihara	Economy, industry and energy
Graduate School of Environmental Science	Natsumi Ishimaru	Food and water
	Ikue Sekiguchi	
Graduate School of Agriculture	Arshana Nor Noorul Amin	Food and water
Graduate School of Environmental Science	Hisashi Endo	Global environment and ecosystems

prize recipients pose for a commemorative photo

a student receives her award from Executive and Vice President Hondoh

◆Download the presentation data：http://eprints.lib.hokudai.ac.jp/dspace/handle/2115/44124
（Link to Hokkaido University Scholarly and Academic Papers （HUSCAP）

International Workshop on Green Circuits and Systems

Overview

Presentation Data	http://eprints.lib.hokudai.ac.jp/dspace/handle/2115/44261 (Link to HUSCAP)
Date	October 25 (Mon.) 13:00～ **(Finished)**
Organizer	Center for Next-Generation Information Technology based on Knowledge Discovery and Knowledge Federation, Hokkaido University
Sponsorship	Graduate School of Information Science and Technology, Hokkaido University
Venue	Conference Room (11F Room17), Graduate School of Information Science and Technology, Hokkaido University

Language: English

Intended Audience: researchers, general public, college Students

Outline

This workshop will present a keynote lecture by University of Louisiana Professor Magdy A. Bayoumi – one of the world's foremost researchers on cutting-edge wireless networks – on the direction of green system technology.

The event will also include the presentation of research findings by students and discussion on research into the latest technologies for next-generation information communication and multi-media systems.

We look forward to the participation of members of the general public, representatives of businesses and students who are interested in today's global trends of promoting energy conservation through the integration of all information systems such as telephone lines, Internet frameworks and mobile phone networks.

Download Poster (269KB)

Registration	Not-required
Fees	Free
Contact	GCOE Office, Graduate School of Information Science and Technology, Hokkaido University FAX : +81-(0)11-706-7890 E-mail : gcoe[at]ist.hokudai.ac.jp

Report

The International Workshop on Green Circuits and Systems was addressed by Dr. Magdy A. Bayoumi, one of the world's foremost researchers on cutting-edge wireless networks, and Director of The Center for Advanced Computer Studies, University of Louisiana at Lafayette, U.S.A. He delivered the keynote lecture entitled *Wireless Sensors Networks: Challenges and Opportunities*. The second invited speaker was Prof. Dr. Eryk Dutkiewicz of the Department of Electronic Engineering, Macquarie University, Sydney, Australia, who spoke on *Development of a Wireless Body Area Network Platform for Implantable Medical Applications*.

At the event, students also presented research findings, and proceedings did not only follow a seminar style, but lively discussions on the latest technologies for next-generation information communication and multi-media systems took place. It was a vibrant event. The themes of students' presentations were as follows:

1. Robust Speech Recognition by Mr. Yiming Sun
2. Speech Recognition using Stochastic DTW by Mr. Yuxin Zhang
3. Low Power Design of MIMO-OFDM by Mr. Jaeseong Kim
4. Advanced MIMO-OFDM by Ms. Nicole Shi

Dr. Eryk Dutkiewicz, "Development of a wireless body area network platform for implantable medical applications"

Prof. Magdy A. Bayoumi, "Wireless Sensors Networks: Challenges and Opportunities"

◆Download the presentation data：http://eprints.lib.hokudai.ac.jp/dspace/handle/2115/44261
（Link to Hokkaido University Scholarly and Academic Papers （HUSCAP）

Fair Trade Fair vol.5

Overview

Date	October 25 (Mon.) – November 6 (Sat.) **(Finished)** Weekday: 9:00-19:00 Saturdays: 10:00-15:00 Sundays: Closed
Organizer	International cooperation student association “yui”
Co-host	Hokkaido Univ. Co-op
Venue	Hokkaido Univ. Co-op Building 1F
Language: Japanese **Intended Audience:** general public, college students	
Outline	During this fair, you will be able to shop for foodstuffs and general merchandise that students often purchase in order to increase awareness of fair trade products, i.e., those traded with a focus on paying fair wages to producers in developing nations. This year’s fair is the fifth of its kind; as at last year’s event, a lecture meeting will be also held (date and time TBA) to provide opportunities for attendees to learn about the present status of fair trade and related issues. Buying fair trade products leads to a sustained improvement in the living standards of those who produce them. We hope that the items on sale, which will include chocolate, coffee beans and other products made in consideration of environmental protection, will generate enhanced interest in fair trade among many students, faculty members and members of the general public.
Contact	International cooperation student association “yui” (Contact: Matsushima) TEL: +81-(0)80-1768-1640 E-mail: yui.international.cooperation[at]gmail.com

Report

The Fair Trade Fair vol. 5 was held in cooperation with the Hokkaido University Co-op. At this two weeks event at the co-op building, merchandise commissioned by Mintaru, a fair trade shop, located near the university, were sold and included mainly foodstuffs like chocolate and coffee, and sundry items like keyrings and decorative objects. The total sales amounted to 79,458 yen.

a variety of goods were displayed for the Fair Trade Fair

On October 27, a lecture meeting addressed by Ms. Yuko Nakata, a former employee of the Fair Trade Company's shop "People Tree" was held. The aims of the lecture meeting were to deepen our knowledge of fair trade and to spread awareness of this social movement. The event provided participants with a forum where they could listen to the lecture and actively express their opinions.

Yui international cooperation student association believes that it is meaningful to continue activities like these and we hope that continuation of these activities will help many more people to learn about fair trade and stimulate them to think about the present state of world affairs.


people showing interest in fair trade goods

SW2010 Opening Event – Hokkaido Univ. Int'l Sympo on SD: Toward a Society Offering Quality of Life and Human Dignity for All – Comprehensive Exploration Into the Causes of the Crises We Face –

Overview

Presentation Data	http://eprints.lib.hokudai.ac.jp/dspace/handle/2115/44098 (Link to HUSCAP)
Date	October 25 (Mon.) – 26 (Tue.) **(Finished)**
Organizer	Hokkaido University
Venue	Hokkaido University Conference Hall

Language: English/Japanese

Intended Audience: researchers, general public, college students

Outline

Ideally a sustainable society allows everyone to achieve physical, mental, and social well-being to have a high quality of life. As these things are realized, those benefiting in turn become a driving force behind the sustainability movement and bring it closer to an ideal state. In reality, however, human activity driven by self-interest and desire has caused rapid deterioration of the natural environment, including global warming, pollution stemming from hazardous chemicals, and reduced biodiversity. Meanwhile, social imbalances such as poverty and isolation have spread noticeably.

It is thought that these problems will ultimately lead to the destruction of general well-being and threaten the very survival of humankind. This symposium will investigate the deterioration of well-being from a comprehensive viewpoint and identify the inherent factors that destroy sustainability. It will also include consideration of how to remove factors that act as obstacles to the creation of a society in which everyone can enjoy a higher quality of life with dignity.

On Monday, 25 November: Sustainability Weeks 2010 Opening Ceremony Plenary Session for Hokkaido Univ. Int'l Sympo on SD: Toward a Society Offering Quality of Life and Human Dignity for All

On Tuesday, 26 November:
-Parallel Session1: Children for Sustainable Development
-Parallel Session2: The Eurasian Ecotone
-Parallel Session3: Global Water Crisis and Well-being
-Parallel Session４: Health and Nursing Care in Ageing Society

Poster Download

Registration	Required >>Registrations
Fees	Free
Contact	Secretariat for Hokkaido University Sustainability Weeks 2010 TEL : +81-(0)11-706-2093 FAX: +81-(0)11-706-2095 E-mail :sw1[at]oia.hokudai.ac.jp

Program

Monday, October 25, 2010

Start	Program	Lecturer
Opening Ceremony		
9:00	Opening Address	President, Hokkaido University
9:05	Greeting	N. Fujishima, Director-General for International Affairs, MEXT
9:25	Keynote Lecture: Sustainability and Complexity	Keith F. Taylor, Associate Vice-President Academic, Dalhousie University
10:25	Celebration Ceremony for Emeritus Prof. Akira Suzuki's Nobel Prize in 2010)	
Plenary Session		
11：10	Session1： Effects of the Natural & Social Environments on Human Health	・Yun-Chul HONG, Institute of Environmental Medicine, Seoul National University・Reiko Kishi, Center for Environmental and Health Sciences, HU
13:10	Lunch	
14:00	Session 2： The Deterioration of Ecosystems and It's Impacts on Human Life	・Jamsran TSOGTBAATAR, Institute of Geoecology, Mongolian Academy of Sciences ・Noboru Fujita, Research Institute for Human and Nature ・Mamoru ISHIKAWA, Faculty of Environmental Earth Science, Hokkaido University

16:15	Session 3：Reflections on Societal Structure	・Makoto YUASA, Secretary-General, Anti-Poverty Network ・Takeshi NAKAJIMA, Faculty of Public Policy, Hokkaido University

Tuesday, October 26, 2010

Start	Program	Lecturer
Parallel Session		
1. Children for Sustainable Development—Present Crisis Affecting Children 9:00 Open 9:30-12:30		
	Lecture	Akito KAWAGUCHI, Faculty of Education, HU
	Lecture	Harumitsu MUROHASHI, Faculty of Education, HU
	Lecture	Ichiro MATSUMOTO, Faculty of Education, HU
The Eurasian Ecotone： Sustainable Ecosystem Use in Mongolia 9:00 Open 9:30-12:30		
	Lecture	O.BOLORMAA, National University of Mongolia
	Lecture	Yuki MORINAGA, Meiji University
	Lecture	Mamoru ISHIKAWA, Faculty of Environmental Earth Science
3. Global Water Crisis and Well-beingbeing 9:00 Open 9:30-12:30		
	Lecture	Xiaochang C. WANG, Xi'an University of Architecture and Technology, China
	Lecture	Ryuji MATSUNAGA, International Cooperation Manager, HU
	Lecture	Naoyuki FUNAMIZU, Faculty of Engineering, HU
4. Health and Nursing Care in an Ageing Society: What is Happiness? 9:30-12:30		
	Lecture	Hidehiko TAMASHIRO, Graduate School of Medicine, HU
	Lecture	Tamiko Ikeno, Graduate School of Medicine, HU
The 2nd Hokkaido University Sustainablility Research Poster Contest 12:30-15:30		
HU students will present their current research programs from the view point of contribution to efforts for the creation of a sustainable society.		
Panel Discussion 15:45-18:15		

Report

The Sustainability Weeks 2010 program commenced with an opening ceremony, and the two-week-long event was officially declared open by Hokkaido University President Hiroshi Saeki. His opening address was followed by greetings from Nobuo Fujishima, Director-General of International Affairs, the Ministry of Education, Culture, Sports, Science and Technology of Japan. Fujishima expressed his expectations for Sustainability Weeks 2010 to be a forum for discussions from the viewpoint of education for sustainable development (ESD). Next, Takeo Hondoh, Hokkaido University Vice President, addressed the basic philosophies of the university and the important role that Sustainability Weeks has in creating a sustainable society. In the keynote lecture, Keith F. Taylor, Associate Vice-President Academic Outreach and International Programs of Dalhousie University, Canada presented his institution's initiatives to promote sustainability, and underscored the fact that economic and environmental systems are both too complex to be managed uniformly and that education will pave the way for a sustainable future.

After this, a special event was held in honor of Hokkaido University Emeritus Professor Akira Suzuki who won the 2010 Nobel Prize in Chemistry. President Saeki gave a congratulatory speech, and Prof. Norio Miyaura, Suzuki's research colleague, gave a tribute. Following these speeches Japanese and international students engaged in catalyst research said a few words and then Dr Suzuki was presented with a bouquet of flowers. He ended the ceremony by remarking that even in his field of chemistry, the concept of eco-chemistry, or practicing chemistry without polluting the environment, is gaining ground. In addition to the efforts of governments and universities, each and every one of us must work together to keep the spirit of sustainability alive. Prof. Suzuki also expressed his expectations toward the development of this well-timed project by Hokkaido University.

In the symposium following the celebration ceremony, participants made comprehensive efforts to find the causes of the crisis we are facing under the 2010 theme, Toward a Society Offering Quality of Life and Human Dignity for All. Viewpoints of health, the environment, and social policy were discussed on Day 1, and on Day 2, four Parallel Sessions were held in the morning which focused on children, ecosystems, the water crisis, and aging society/ falling birth rates, and were followed by a Plenary Session and a Panel Discussion in the afternoon.

Dr. Keith Taylor, Associate Vice-President Academic Outreach and International Programs, Dalhousie University gives the keynote speech

Congratulatory Ceremony for 2010 Nobel Prize recipient Emeritus Professor Akira Suzuki

Mako Yuasa, Secretary–General of the Anti-Poverty Network, and Assoc. Prof. Takeshi Nakajima, HU Public Policy School, discuss poverty in Japan (Plenary Session 3)

Professor Hondoh answers a question during the discussion on day 2

◆Download the presentation data：http://eprints.lib.hokudai.ac.jp/dspace/handle/2115/44098
（Link to Hokkaido University Scholarly and Academic Papers （HUSCAP）

Controlling Zoonoses: An Experimental Exhibition on Integrative Science

Overview

Presentation Data	http://eprints.lib.hokudai.ac.jp/dspace/handle/2115/44080 (Link to HUSCAP)
Date	October 26 – 31 (Tues. – Sun.) 9:30 – 16:30 **(Finished)** November 2- 3 (Tues. – Wed.) 10:00 – 16:00 **(Finished)** * Nov.1 (Mon.) is closed
Organizer	The Hokkaido University Museum
Co-host	Global COE Program “Establishment of International Collaboration Centers for Zoonosis Control”, Hokudai Integrated Science Consortium, Hokkaido University Research Center for Zoonosis Control
Venue	The Hokkaido University Museum
Language: Japanese **Intended Audience:** researchers, general public, college students	
Outline	The Hokkaido University Museum will display cutting edge research on zoonotic diseases, whose causative agents infect both humans and animals. Visitors will learn about diseases such as influenza and Ebola hemorrhagic fever through panels, videos, observation of infections through microscopes, and by experimentation with laboratory instruments. In order to establish preemptive measures to predict and prevent outbreaks and epidemics of zoonotic diseases, it is imperative that interdisciplinary research and education is conducted by experts in the fields of medicine, veterinary medicine, pharmaceutics, engineering, and science. This exhibition explores the full potential of Integrative Sciences and is open to the public. We hope that a wide range of students–from those in junior high to those in university, including researchers–take advantage of this opportunity we present to you.
Registration	Not-required
Fees	Free
Contact	The Hokkaido University Museum (Contact: H. Matsueda) TEL & FAX: +81-(0)11-706-2754 E-mail: matsueda[at]museum.hokudai.ac.jp

Report

Interventions to control zoonoses require multidisciplinary collaboration encompassing the fields of veterinary medicine, medicine, biology, information science, science and so forth. The aim of this event was to promote among the general public, an understanding of our research on zoonotic diseases, which have huge implications as an integrative science.

We displayed panels with explanations about zoonoses, experimental facilities, and models in a corner of the Hokkaido University Museum. We also set up a hands-on experience corner to provide visitors with opportunities to observe carrier insects through microscopes, use laboratory instruments, put on protective wear, and play games with the theme of infectious diseases. In this corner, 14 faculty members, 10 postdoctoral fellows, and 18 students took turns to explain exhibits to visitors and receive visitors in the experience corner.

The event attracted approximately 3,000 local residents of all ages over a nearly two-week period. A total of 775 visitors answered our questionnaire, and their responses showed that the ingenuous exhibits and explanations we offered were easy to understand. Many respondents expressed their expectations of and opinions about our research facilities and programs.

On October 31 (Sunday), Professor Hiroshi Kida of Hokkaido University Research Center for Zoonosis Control gave a lecture entitled *A Critical Dissection of the Pandemonium over Avian, Swine and Then Pandemic Influenza*. Nearly 60 local residents attended the lecture. The audience asked various questions about research on influenza infections, including the highly pathogenic avian influenza viruses that had been isolated from duck droppings in Wakkanai and Onuma, both in Hokkaido, several days before the lecture. Questions about vaccines and new strains of influenza viruses were also asked. With Professor Kida's meticulous explanations, the audience appeared to have deepened their understanding of these research activities.

Researchers involving a variety of disciplines had gathered at Hokkaido University Research Center for Zoonosis Control to achieve a simple aim, namely, to overcome zoonoses. In a sense, this represents a culmination of integrative sciences. Hokkaido University needs not only to promote research on zoonotic diseases, but also advance with experiments in integrative sciences. In other words, we have to continue contemplating the roles that studies and science can play to ensure the sustainability of mankind.

learning about infectious diseases

interactive displays enhance understanding of infectious diseases

◆Download the presentation data：http://eprints.lib.hokudai.ac.jp/dspace/handle/2115/44080
（Link to Hokkaido University Scholarly and Academic Papers （HUSCAP）

Invitation to Study-Abroad Programs: SD on Campus – A Global Quality of International Campus Life

Overview

Date	October 27 (Wed.) 13:00～15:30 **(Finished)**
Organizer	Hokkaido University Office of International Affairs
Venue	Hokkaido University Conference Hall

Language: English/Japanese (Interpretation will be provided)

Intended Audience: Hokkaido University students

Outline

In this event, the representatives of HU's overseas partner institutions will introduce their campuses to attract HU students to become their exchange students as they present their unique approaches for sustainable developments on their own campuses.
These universities are known for their commitments for the creation of a quality sustainable society (i.e., sustainable development) as they pursue to establish a global quality of life for the future. They will be introducing their prized research and education programs.
The event should be very inspirational for those who are interested in studying abroad, wishing to work overseas after graduation, or simply interested in SD in other universities.
So, don't miss it!

Poster Download (651KB)

Registration	Not-required
Fees	Free
Contact	Division of International Services, Office of International Affairs, Hokkaido University (Contact: K. Kono) TEL: +81-(0)11-706-8053 E-mail: ryugaku[at]oia.hokudai.ac.jp

Report

Hokkaido University Sustainability Weeks offered our overseas partner institutions the opportunity to present their appeals to encourage our students to join study-abroad programs at their institutions. Representatives of the following seven partner institutions placing particular emphasis on building a sustainable society participated.

– AGH University of Science and Technology (Poland)
– Dalhousie University (Canada)
– Sichuan University (China)
– Technische Universität München (Germany)
– University of Oklahoma (U.S.A)
– Universiti Sains Malaysia
– Yonsei University (South Korea)

program for students interested in studying abroad

The representatives outlined courses and workshops that their universities offer in relation to efforts to promote sustainable development (SD) and create a sustainable society. They also highlighted ways in which their students are involved in sustainable development both in and out of the classroom. The seminars they introduced were attractive and had distinct characteristics.
Student responses to the post-event questionnaire revealed that this event helped shape their desire to study abroad. Representatives of the partner institutions also seemed satisfied that they were able to appeal directly to Hokkaido University students.

Dr. Markus Schaller, Technische Universität München

presentation by HU staff

First Sustainable Campus Contest

Overview

Date	October 27 (Wed.)　16:30～ **(Finished)**
Organizer	The Students Council for Sustainable Development in Hokkaido University
Co-host	Hokkaido University Public Policy School, Hokkaido University Sustainable Low-Carbon Society Project
Venue	Hokkaido University Conference Hall
Language: English/Japanese **Intended Audience:** researchers, general public, college students	
Outline	In this contest, Hokkaido University's campus will be considered as a microcosm of a sustainable society, and students will present their ideas for an ideal campus in either Japanese or English. Awards will be presented to those with the most outstanding concepts. Undergraduates and graduates wishing to enter the contest should download application forms from this website and submit them no later than October 8. We look forward to entries capitalizing on the free, unrestrained thinking of students and their research activities and to the participation of anybody interested in the environment and sustainable campuses.
Application forms	Download Guideline Download Application From
Fees	Free
Contact	The Students Council for Sustainable Development in Hokkaido University （Contact: T. Okabe）　TEL: +81-(0)80-5103-2733 E-mail: scsd-hokudai-info[at]freeml.com

Report

The Hokkaido University Students Council for Sustainable Development (SCSD) sponsored the First Sustainable Campus Contest on October 27, 2010. The contest was held as a student-centered initiative and was based on the firm belief that the imagination and creativity of students will change Hokkaido University. Making the University a global model

of campus sustainability is the goal that engendered gathering project ideas from students and provided the impetus for the contest. Applicants made oral presentations on their project ideas before a panel of judges that consisted of three HU faculty members, two members of the SCSD, and audience members present during the presentations. The judges choose winners to receive a Grand Prix Award, Special Judges' Award, and Venue Award. In addition, the project idea chosen for the Grand Prix Award would be implemented jointly by the SCSD and the project designer.

Establishing an eco-coupling tax, a paperless university, an environment department, a fasting camp, creating a social network service (SNS) focusing on sustainability science, promoting the Warm Biz energy conservation campaign, and bicycle generated power were among the ideas presented. During the oral presentation session, students explained their concepts in earnest and a lively Q&A session with the judges followed. The session offered a great opportunity for members of the general public to learn what HU students are thinking, and an audience member commented that they "enjoyed listening to the student's ideas."

Regrettably, none of the entries was selected to receive the Grand Prix Award. The Special Judges' Award was given to the project with the idea of establishing an environment department and bicycle generated power. The bicycle generated power idea also won the Venue Award. The event attracted many people who are interested in sustainable campuses and we believe this contest can become a forum for exchanges of opinions and networking, and lay the foundation for future activities.

Although the number of participants and the size of the audience were both small due to insufficient preparations and PR, members of the audience remarked that the program was "well planned", and that they "had a great time." The event also filled a need as a forum for students to consider what they should do to make their campus sustainable and was significant because it allowed the ideas of people from various specialized fields to be heard. Next year offers the opportunity to increase participants and number of people attending. Hokkaido University is committed to becoming a global model of campus sustainability.

listening to the presentations

contestants give their presentations

Candlize2010

“Candlize2010” – a candle night event – was held in an open area on campus for three hours on an autumn night. Many people both from inside and outside the campus visited the venue to view the 5,000 candles glowing in the darkness and must have been taken into the air of fantasy created by the light.

The theme of Candlize2010 was the four seasons. Many Japanese people are sensitive to the changes of the seasons– spring turns into summer which changes to autumn and is then followed by winter in a pattern that is repeated every year. The members of the Students Council for Sustainable Development (SCSD) realize that the sustainable society we are striving to create and four seasons share a common feature from the viewpoint of sustainability. The theme of the four seasons reflects our firm belief that we should work to establish a society that is as sustainable as the four seasons.

On the day of the event, we put up booths representing the different seasons and expressed the image of each season using candles and works of art. The images were white cherry blossoms for spring, the ocean for summer, wood works and paintings on corrugated paper for autumn, and snow for winter.

The candle night event had two objectives: to have many people feel a close connection with environmental issues; and to encourage them to think about what they could do to help resolve environmental problems.

In order to ensure that the candles and works of art could be recycled after the event, we devised production processes and processing methods to ensure that they could be recycled after the event. Our eco-friendly initiatives included using candles which had either been used before or that had been made from waste oil, and using discarded waste found on campus such as PET bottles and corrugated paper to produce the exhibits.

One thousand of the 5,000 candles lit were produced in collaboration with some 250 local elementary school students. After making the candles, members of SCSD gave the students environmental lessons which focused on water environment and food recycling in conjunction with our awareness-raising activities.

Our achievements with this event were threefold: we were able to contribute toward the university’s efforts to recycle waste; contribute to the reduction of CO_2 emissions since some streetlights on campus were turned off during the candle night; and enhance interest in environmental issues among many people.

We would like to continue these activities, to not just encourage people to take interest in the environment, but to also inspire them to think about what they can do to protect the environment and to share their ideas with other participants.

elementary students learn how to make candles

a warm glow greets visitors on a cold night

International Symposium on Renewable Energy

Overview

Date	October 28 (Thu.)　9:30～ **(Finished)**
Organizer	Hokkaido University Public Policy School, Faculty of Environmental Earth Science (Hokudai Low-Carbon Society Project)
Venue	Hokkaido University Conference Hall
Language: English/Japanese (Simultaneous interpretation will be provided) **Intended Audience:** researchers, general public, college student	
Outline	This symposium will provide a chance for researchers and actors from inside and outside of Japan to discuss together about measures and future prospects to develop and distribute renewable energy such as biomass, solar power, wind power, water power and geothermal heat. Renewable energy can contribute to mitigate global warming because the use yield relatively little amount of CO2. The use of renewable energy also helps to rise the energy self-support ratio of countries like Japan which are not rich in resources such as oil and coal. We welcome participation of citizens and students who are interested in these important issues that must be tackled actively in each country and region including Hokkaido.
Registration	Not-required
Fees	Free
Contact	Hokkaido University Public Policy School (Contact: Y. Kondo) TEL : +81-(0)11-706-4717 E-mail : low-carbon[at]hops.hokudai.ac.jp

Report

poster advertising the symposium on renewable energy

Renewable energy, such as wind power, has recently attracted considerable attention as an energy source that helps combat global warming because it produces less CO2 emission than fossil fuels like oil. It also helps to increase the energy self-sufficiency rate of nations like Japan with scarce supplies of these natural resources. This symposium attracted a capacity audience of nearly 260 people which illustrated that there is a high level of interest in energy issues among the general public.

Professor Fumikazu Yoshida of Hokkaido University's Graduate School of Economics and Business Administration started off the four morning lectures on Day 1 with his lecture entitled *Future Prospects of Renewable Energy in Japan*. He highlighted the direction of and strategy for a new environmentally-friendly energy infrastructure as well as the importance of cooperation with East Asian nations. Next, Professor Martin Jaenicke from Freie Universität Berlin illustrated the potential of renewable energy to replace fossil fuels and nuclear energy. He introduced policy measures taken in Germany under the theme *Renewable energies: The Race Against Traditional Supply*. Professor James Heintz of the University of Massachusetts focused on the initiatives in the U.S. to build a clean energy economy and their challenges under the theme *Creating a Clean Energy Economy in the U.S.: Energy Efficiency and Renewable Energy*. Professor Ma Zhong, Dean of the School of Environment and Natural Resources, Renmin University reported on initiatives for energy conservation and a low-carbon future in the rapidly growing Chinese economy. The theme of his speech was *Energy Saving, Emission Reduction, and Low Carbon Development in the Context of China's Rapid Economic Growth*.

The afternoon session began with a speech by Yoichiro Suzuki, Director-General for the Natural Resources, Energy and Environment Department of the Hokkaido Bureau of Economy, Trade and Industry (METI Hokkaido). Under the theme *Present Situation and Future Tasks of Renewable Energies*, he shed light on projects implemented in Hokkaido. After the speech, Professor Hajime Araki from the Field Science Center for Northern Biosphere took to the podium and illustrated the feasibility of using crop residue, livestock manure, and food waste as fuels under the theme *Local Biomass as a Renewable Energy Source*. The first session was concluded with a panel discussion by the speakers.

On Day 2, Toru Suzuki, Director-General of nonprofit Hokkaido Green Fund introduced the utilization of citizen-funded wind turbines and their challenges under the theme *Present Situation and Future Tasks of Citizens' Windmills*. After the speech, Naoto Kawaguchi from Central Leasing System Co., Ltd. presented, *Large-scale Snow Air Conditioning at New Chitose Airport*, a project that uses stored snow to produce cool energy at the airport. Next, Takashi Kasuga, manager of the Regional Promotion Section of the Shimokawa Town Office, highlighted the town's efforts to achieve sustainable forest management, *Leveraging Local Resources – Shimokawa, an Environmental Model Town*. He was followed by a presentation by Nobuko Yabe, a postdoctoral fellow at Hokkaido University's Faculty of Environmental Earth Science. Under the theme *LCA regarding the Introduction of Biogas Plants in Hokkaido*, she reported on the effects of biogas plant (BGP) use on the reduction of greenhouse gas emissions, energy production, and cost analysis results. She also presented the results of calculation of levels of electricity prices by subprefecture that would enable the introduction of BGPs. The last presenter was Tatsuo Suwa, a postdoctoral fellow from Hokkaido University Public Policy School (HOPS). He presented the results of analyzing the feasibility of BGPs for dairy farmers under a scheme to buy power at fixed prices, and future tasks under the theme *Economic Study regarding the Dissemination of Biogas Plants in Hokkaido*. During the second session, each presentation was followed by a lively Q&A session between the speaker and the audience.

panel discussion by the keynote speakers

a full auditorium

Sustainable Campus Tour

Overview

Date	October 27 (Wed.) Morning Tour 9:00 – 12:00 Afternoon Tour 13:00 – 16:00 **(Finished)**
Organizer	Center for Sustainability Science, Hokkaido University
Co-host	Sustainable Low-Carbon Society Project, Field Science Center for Northern Biosphere, Hokkaido University
Venue	1F Lecture Room, Field Science Center for Northern Biosphere, Hokkaido University

Language: Japanese/English (Consecutive interpretation will be provided)

Intended Audience: researchers, college students, general public

Outline

The Sustainable Campus Tour is aimed at introducing our initiatives to reduce the environmental impact of Hokkaido University's Sapporo Campus. We will take tour participants around a biogas production facility, a composting facility and pellet boiler in Field Science Center for Northern Biosphere, and several facilities at the Graduate School of Environmental Science. Hokkaido University is striving to establish a sustainable campus, and has already inaugurated several facilities as the first step towards achieving this goal. To further reduce our environmental load and CO2 emissions, we will open these facilities to all and offer a forum for an exchange of ideas between the general public, researchers and students. We hope that many participants, including students who are interested in working toward environmental conservation, will join us. Notice: Tour to biogas facilities will be canceled if mouse and foot disease in animals is continued to this October

Poster Download

Registration	Please register via this website by October 24, 2010. >> Registrations
Fee	Free
Contact	Associate Prof. Nobuyuki TSUJI, Center for Sustainability Science, Hokkaido University TEL: +81-(0)11-706-4533 FAX: +81-(0)11-706-4534 E-mail: n-tsuji[at]sgp.hokudai.ac.jp

Report

Students of the HU Graduate School of Environmental Science served as guides on the Sustainable Campus Tour of the University's Sapporo Campus. Local residents, researchers from home and abroad, as well as HU students from other faculties/graduate schools viewed environmentally-friendly facilities.

The tour began at the Field Science Center for Northern Biosphere and lasted three hours. Although the roads were muddy due to snowfall the day before and rainfall the day of the tour, participants did not let that deter them. They rented boots from the experimental farm where they were able to see first hand how agricultural residue pellets are used in the greenhouse boiler, and continued on to visit the Graduate School of Environmental Science, a bio gas production facility, and a composting facility. They also saw a composting toilet and photovoltaic power generation equipment.

The participants expressed their satisfaction with the tour due to the guides' easy to understand explanations and because it afforded the opportunity to visit places that HU students, let alone members of the general public, rarely have the opportunity to see.

participants on the Sustainable Campus Tour

2010 Sustainable Campus Tour participants

CLARK THEATER 2010

Overview

Date	October 29 -November 3 (Fri. – Wed.) **(Finished)**
Organizer	Hokudai Theater Project Execution Committee 2010
Co-host	Hokkaido University GAIA Project
Venue	Hokkaido University Clark Memorial Student Center
Language: Japanese, others **Intended Audience:** researchers, general public, college students, high school students, elementary and junior high school students	
Outline	With the aim of creating a forum for communication through images and movies, this theater will be established to show culturally enlightened movies for a limited period. The concept of this fifth year in the series is “Beyond Borders.” We will show a variety of movies that transcend generations and status as well as movie genres and themes. A number of related events are also scheduled, including the showing of a short film produced at Hokkaido University, a documentary called Gaia Symphony and a talk show with guests. We look forward to the participation of junior and high school students, university students and members of the general public.
Registration	Not-required
Fees	Some films will be free of charge. (TBA)
Contact	Hokudai Theater Project Execution Committee 2010 E-mail: info[at]clarktheater.jp
URL	Hokudai Theater Project http://www.clarktheater.jp/index.php

Report

Clark Theater 2010 featured short films previously unreleased at movie theaters, works by film directors from Sapporo, and a film shot at Hokkaido University entitled Crystallized. The event opened with a talk session on film education led by Professor Teiichi Nishioka from the Graduate School of Library, Information and Media Studies of the University of Tsukuba; Yo Nakajima, a representative of Theater Kino (a nonprofit, citizen-funded movie theater in Sapporo), and Wataru Hayakawa, a Hokkaido University alumnus and film director.

This year, Clark Theater collaborated with the Hokkaido University student organization, GAIA Project, which annually produces the nonprofit documentary movie series “Gaia Symphony”. The latest installment of the series, *Gaia Symphony No.7* was shown and we welcomed Gaia Symphony director Mr. Jin Tatsumura as our guest. In his talk, he shared with us behind the scenes happenings and other valuable stories. Tatsumura remarked that global environmental problems have gone beyond the boundaries of finding individual solutions, and require worldwide attention to solve problems. With this in mind, *Gaia Symphony No. 7* makes us question how we should live in such a situation.

Also shown was a work by Sapporo film artist Akiyoshi Kitagawa, Think Gaia, Act Utonai. We cannot find natural environments that remain completely unspoiled around Sapporo, but this film showcases the rich and splendid natural environment of the Utonai and Yufutsu regions in Tomakomai and highlights the relationship between nature and people. The showing of these two films provided viewers with an opportunity to consider the natural environment both from global and local perspectives.

The Hokudai Theater Project Execution Committee will continue activities toward establishing a permanent movie theater in Hokkaido to further develop the university’s visual culture. Through our work, we would like to highlight problems inherent to modern society from various perspectives.

people lining up to view the films

film director, Jin Tatsumura signs autographs

International symposium on Global Campus for Sustainability Education

Overview

Presentation Data	http://eprints.lib.hokudai.ac.jp/dspace/handle/2115/44145 (Link to HUSCAP)
Date	October 29 (Fri.) 9:00～ **(Finished)**
Organizer	Center for Sustainability Science, Hokkaido University
Co-host	The university of Palangka Raya (Indonesia), International Institute for Water and Environmental Engineering (Burkina Faso), National Cheng Kung University (Taiwan), Zhejiang University (China), Pukyong National University (Korea), Swinburne University of Technology (Australia), University Sains Malaysia (Malaysia), Gajah Mada university (Indonesia)
Venue	Hokkaido University Conference Hall

Language: English

Intended Audience: researchers, college students

Outline

Sustainability Science is a new academic discipline that assimilates the viewpoints of various disciplines from the social and natural sciences in an attempt to resolve all manner of problems faced by modern society and realize a sustainable society.

In this international symposium, we will discuss educational methods of sustainability science and the operational problems involved in establishing global campuses where students in different countries can learn together. Several speakers have been invited from our partner universities in Indonesia, Taiwan, and several other countries with which we have collaborated on e-lectures on sustainability. We welcome the participation of all educators interested in the development of international education programs.

Poster Download

*This symposium will be conducted as a part of “Special coordinated training program for Sustainability Leaders and Sustainability ‘Meisters’ (StraSS)” with financial support from JST/MEXT special coordination funds for promoting science and technology: Strategic program for fostering environmental leaders.

振興調整費

Registration	Not-required
Fees	Free
Contact	Center for Sustainability Science, Hokkaido University (Contact: S.Tanaka) TEL : +81-(0)11-706-4530 FAX : +81-(0)11-706-4534 E-mail : jimu@census.hokudai.ac.jp
URL	Center for Sustainability Science, Hokkaido University http://www.census.hokudai.ac.jp/

Report

This symposium was held as part of Hokkaido University’s Special Coordinated Training Program for Sustainability Leaders and Sustainability “Meisters” (StraSS), which was selected for the Strategic Program for Fostering Environmental Leaders under the Special Coordination Funds for Promoting Science and Technology managed by the Ministry of Education, Culture, Sports, Science and Technology (MEXT).

Following the opening speech by Takeo Hondoh, Hokkaido University Executive and Vice President for International Affairs, representatives of Keio University, the International Institute for Water and Environmental Engineering (2iE) in Burkina Faso, and the United Nations University gave speeches. These three institutions implement Education for Sustainable Development (ESD) programs in Asia and Africa using the internet as well as inter-university networks. Professor Noriyuki Tanaka of the Hokkaido University Center for Sustainability Science followed with a presentation in which he outlined the StraSS program– initial training begun in 2010, program progression, and future operations. The symposium concluded with a panel discussion on the theme of a global campus for sustainability education.

During the panel discussion, each panelist cited a key term related to a global campus and explained its importance. This was followed by a discussion on the connections between the key words and their problems. The expansion of the internet has made it easy to establish a global campus and facilitated multinational exchanges. Panelists discussed a corollary advantage as well: students not only gain knowledge about other countries, but also come to reconsider their own countries and themselves. Drawbacks of global campuses were also pointed out, and included the difficulty of guaranteeing program quality, omission of regional characteristics due to the use of English as the primary language, and imbalance in the information received. In counter of these remarks, the importance and effectiveness of face-to-face communication was given. Taking these discussions into account, the panelists pledged to maintain a strong network and utilize it. They also agreed to work closely together to further improve the quality of a global campus for sustainability education. In closing, it was proposed that the next symposium will be held at the University of Palangka Raya (a partner institution of the StraSS program) in Central Kalimantan, Indonesia. The panelists were asked to participate in the next symposium and to cooperate with future symposiums.


discussing the lecture


answering questions from the audience

◆Download the presentation data：http://eprints.lib.hokudai.ac.jp/dspace/handle/2115/44145
（Link to Hokkaido University Scholarly and Academic Papers （HUSCAP）

Symposium on Northern Mountains: Past Change and Monitoring Network

Overview

Presentation Data	http://eprints.lib.hokudai.ac.jp/dspace/handle/2115/44275 (Link to HUSCAP)
Date	October 29 (Fri.) 13:00～ **(Finished)**
Organizer	IFES-GCOE: Global COE Program “Establishment of Center for Integrated Field Environmental Science” Graduate School of Environmental Science & Division of Environmental Resources, Graduate School of Agriculture
Co-host	”Current situation of biodiversity crisis in the forest-alpine ecotone and mechanism under global change” (The Environment Research and Technology Development Fund D-0904 of the Ministry of Environment, Japan)
Venue	Hokkaido University Conference Hall
Language: Japanese (English support is available) **Intended Audience:** researchers, general public, college students	
Outline	Environmental change is rapidly taking place in the mountains of northern Japan, such as the Daisetsuzan National Park, as represented by the decreasing diversity of alpine plants. This event will outline such changes found through field and satellite observation efforts implemented over a period of many years. The session will also include discussion of the environmental observation and monitoring network needed to assess the sustainability of ecosystem services in northern mountain areas and to prevent weather disasters such as last year’s fatal accident that killed a number of elderly hikers. We look forward to the participation of members of the general public, students and experts who are interested in mountain ecosystems and biodiversity.
Registration	Not-required
Fees	Free
Contact	Global COE Unit, Faculty of Environmental Earth Science, Hokkaido University (Contact: A. Kondoh) TEL: +81-(0)11-706-4862 FAX: +81-(0)11-706-4867 E-mail: a.kondoh[at]ees.hokudai.ac.jp

Report

Mountainous areas far removed from human settlements are undergoing changes due to the impact of human activities. Observations by researchers over a period of many years have shed light on various changes that have taken place in these environments. Phenomena and events that are widely publicized in society are sometimes exaggerated and this symposium served as a forum to inform members of the general public of several phenomena and changes that have been revealed by long-term research observations. Particular emphasis was placed on mountains in Hokkaido, with examples from the Hakkoda Mountains in Aomori Prefecture, and the Himalaya Mountains in Nepal.

A wide range of topics was covered: illegal digging, entrance by people and deer, decreases in plant species due to opportunistic people planting specific species for selfish reasons, pollution of the flora, disappearance of flower fields from alpine regions, and the decline of conifer species in upland moorland areas and subalpine zones which are believed to have been caused by global warming and other worldwide changes. Properties of permafrost soil in the Daisetsu Mountain Range and real changes that have been taking place in the Himalayan glaciers were also discussed. Although the symposium was held on a workday, an audience of nearly 90 people, most of whom were local residents, listened to the speakers and participated in a lively Q&A session and showed a high level of interest in mountain environments. The organizers would like to express our profound respect towards the speakers for the decades of steadfast research efforts and for the opportunity for researchers and the general public to achieve a common awareness of the need to communicate data and observation systems from generation to generation.

a full audience listens attentively

a full audience listens attentively

◆Download the presentation data：http://eprints.lib.hokudai.ac.jp/dspace/handle/2115/44275
（Link to Hokkaido University Scholarly and Academic Papers （HUSCAP）

Key Issues for Carbon Storage and Biodiversity -Tropical Peat and Forest-

Overview

Date	October 30 (Sat.)　9:30～ **(Finished)**
Organizer	Center for Sustainability Science, Hokkaido University
Venue	Hokkaido University Conference Hall
Language: English/Japanese (Interpretation will be provided) **Intended Audience:** researchers, general public, college students, high school students	
Outline	**Morning**: Researchers from Hokkaido University – an institution advocating the Carbon Initiative at the cutting edge of tropical peat and forest research – will discuss the tropical peat forest, biodiversity and the establishment of an international network. **Afternoon**: The present status of tropical peat and forest , which are currently facing widespread destruction, and challenges related to their conservation will be outlined for high school students and members of the general public. Attendees will learn the crises and what will become of the massive amounts of carbon stored in tropical peat lands and rich biodiversity extending over Southeast Asian islands, the Brazilian Amazon and Central Africa.
Registration	Not-required
Fees	Free
Contact	Center for Sustainability Science, Hokkaido University (Contact: K. Hirose) TEL: +81-(0)11-706-4530 FAX: +81-(0)11-706-4534
URL	http://www.census.hokudai.ac.jp/html/JST_JICA/index.html

Report

participants pose for a group picture

This one day symposium was part of the Wild Fire and Carbon Management in Indonesian Peat Forests Project which was selected for the Science and Technology Research Partnership for Sustainable Development (SATREPS) initiatives of the Japan Science and Technology Agency (JST).

The morning session focused on technical topics for stakeholders in the project and international students at Hokkaido University. A representative of the Japan International Cooperation Agency (JICA) outlined the SATREPS initiatives, and a researcher involved in the Wild Fire and Carbon Management in Indonesian Peat Forests Project gave an overview. Six researchers presented their research outcomes, and were followed by discussions by the participants concerning monitoring techniques for tropical peatland and requirements for peatland conservation. The discussions confirmed that the three most important factors of comprehensive tropical peatland management efforts are 1) continuous research activity, 2) capacity building, and 3) network building.

The afternoon session was open to the public and project members introduced their research activities. They discussed the relationships between tropical peatlands and biodiversity and the initiatives taken by the Indonesian government to protect the tropical peatlands. They underscored the importance of tropical peatlands due to their global distribution in areas rich in biodiversity and maintained that the protection of tropical peatlands will lead to biodiversity conservation.

posters on display for the poster contest

Hokkaido Community Care Symposium

Overview

Date	October 30 (Sat.) 13:00～ **(Finished)**
Organizer	Hokkaido Community Health Forum
Co-host	Hokkaido University Hospital Postgraduate Clinical Training Center
Venue	Hokkaido University Conference Hall
Language: Japanese **Intended Audience:**researchers, general public, college students	
Outline	Medical services offered in local regions are at risk of collapse due to doctor shortages. This symposium will feature discussion on the types of cooperation that can be established between the government and local residents to protect medical services as well as on the viability of such cooperation.In the creation of sustainable local communities, health protection can no longer be left to medical professionals alone. It is necessary to form a mechanism for collaboration with clarified roles and challenges for local residents, the government, welfare workers and medical professionals.We look forward to the participation of university students, members of the general public, local government representatives and experts interested in enhancing the quality of medical and welfare services provided.
Registration	Required. Please register via our website by October 22. >> Registration
Fees	1,000yen. (Students: free)
Contact	Hokkaido University Graduate School of Medicine Healthcare Systems Research (Contact: M. Nikaido) TEL: +81-(0)11-706-7005 FAX: +81-(0)11-706-7628 E-mail: nikaido[at]med.hokudai.ac.jp

Report

Brush-up seminar

1. Title: *How and Do health promotion activities to revitalize communities and energize hospitals*
   Speaker: Takamitsu Shimada, physical therapist at San-ikai Azuma Hospital Medical Corporation
   Shimada spoke about various activities implemented at Azuma Hospital (in Ashoro), including health classes, medical lectures, and in-hospital events. He also discussed the aims and advantages of medical activities as well as how those activities are operated.
2. Title: *What is community rehabilitation?*
   Speaker: Masashi Kume, chief engineer of the Physical Therapy Office, Akkeshi Hospital
   Kume highlighted the difference between providing information and actually getting information across. He explained the definition of community rehabilitation practices and efforts taken to put a system in place. He also shared initiatives that are implemented in Akkeshi.

Keynote lecture

Title: *Expectations toward Community Medicine in Hokkaido*
Speaker: Yoshiko Tsujimoto, President of the nonprofit organization, Consumer Organization for Medicine and Law (COML)

What does “consent” mean? What does “collaboration” mean? Tsujimoto spoke about informed consent based on his own experience as a patient. Relationships between health professionals and patients/local residents were also discussed.

Workshop

Title: *Considering Future Regional Medical Care Workshops*
The year 2010 marked the 15th anniversary of the establishment of the Hokkaido Regional Medical Care Workshop. At the workshop, past activities were reviewed and participants were asked the following three questions regarding future operations with a group discussion following.

1. How has your region changed over the past 15 years?
2. What has motivated you to continue community medicine without quitting?
3. What does the Hokkaido Regional Medical Care Workshop mean to you?

Achievements

The symposium attracted nearly 140 people from inside and outside Hokkaido University, including medical professionals, such as doctors, nurses, public health nurses, and physical therapists. Students and members of the general public participated as well.

The workshop built on knowledge attained in the lectures and many issues were discussed which involved a variety of occupations related to community medicine in Hokkaido. The organizers believe that participants took back the energy they will need to continue their work until next year's symposium.

In the future, the Hokkaido Regional Medical Care Workshop will reconsider how promotion activities will commence based on the many recommendations made by the participants.


audience members listen to the speaker


group discussions in the workshops

Symposium on the Possibility of a Green Welfare State : Toward Sustainable and Inclusive Growth

Overview

Date	November 1 (Mon.) 14:00～ **(Finished)**
Organizer	The Advanced Institute for Law and Politics, Hokkaido University
Co-host	Project of JSPS Grants-in-Aid For Scientific Research: New Politics for Welfare Regime and Organized Interests in Japan
Venue	Hokkaido University Conference Hall
Language: Japanese **Intended Audience:** researchers, general public, college students	
Outline	This symposium will consider the feasibility of a green welfare state as a solution to maintaining a harmonious balance among the natural environment, social security and the economy. Much attention these days is paid to sustainable cooperation among the three fields of the natural environment (environmental policy), the reproduction of the next generation (social security policy) and the economy (economic and fiscal policy), which were previously independent of one another. We look forward to the attendance of many people at the keynote lecture by Professor Yoshinori Hiroi from Chiba University, who has discussed welfare policy from the viewpoint of a steady-state society, and the panel discussion involving Professor Jiro Yamaguchi from Hokkaido University and other distinguished panelists.
Registration	Not-required
Fees	Free
Contact	The Advanced Institute for Law and Poltics, Hokkaido University TEL: +81-(0)11-706-4005 E-mail: jcenter[at]juris.hokudai.ac.jp

Report

Social security, the natural environment, and the economy were previously considered to be contradictive and independent of each other; however, cooperation and interrelationships between these fields have attracted much attention and changed this outlook.

This symposium highlighted a green welfare state based on cooperation between these three fields. Professor Yoshinori Hiroi of Chiba University, a leading researcher in this field, delivered the keynote lecture.

Professor Hiroi pointed out that cooperation between the fields of social security, the environment, and the economy requires a joint effort on national, global, and local levels. On a national level, he underlined the need for “social security for the first half of life,” which is implemented by shifting social security expenditure from the elderly to families and children as well as implementing psychosocial care to deal with unemployment and suicide. Other important policy issues he expounded were a shift in wealth distribution from flow (income) to stock (savings, land, assets), and integrating environmental policy and social security policy through the introduction of environmental taxes as revenue sources for social security. On a global level, progressing global aging leads toward a stationary point where population strikes a balance with resource consumption; this is important to developing a steady-state society. On a local level, it is important to take advantage of local communities to bring forth wealth that cannot be measured based on GDP figures alone. This goal can be achieved by designing a comprehensive policy that will factor in social security and community/ urban development.

In summary, Dr. Hiroi reiterated the importance of generating synergistic effects through cooperative efforts between social security, environmental policy, and economics, and redefining productivity so that it is not limited to labor productivity. In this way, various factors, not just an increase in GDP, become measures of social affluence and lead to the creation of a creative welfare state and a creative and stationary economic system.

Professor Jiro Yamaguchi and Professor Taro Miyamoto of Hokkaido University’s Graduate School of Law joined Professor Hiroi in a panel discussion in the second half of the symposium to discuss how such cooperation and generation of synergistic effects can be achieved under the present political and social circumstances. Members of the audience asked questions about future prospects and policy measures and a lively discussion ensued.

the speaker holds the attention of the audience

panelist Professor Yamaguchi (HU Graduate School of Law)

Symposium on EcoDesign of Low Carbon Society Based on Regional Partnership Between Urban and Rural Areas

Overview

Presentation Data	http://eprints.lib.hokudai.ac.jp/dspace/handle/2115/44267 (Link to HUSCAP)
Date	November 1 (Mon.) 13:00～ **(Finished)**
Organizer	Center for Sustainability Science, Hokkaido University
Co-host	Osaka University, Ritsumeikan University
Venue	Hokkaido University Conference Hall

Language: Japanese

Intended Audience: researchers, college students

Outline	This symposium will showcase the results of research activities aimed at creating a low-carbon society – the term given to a society with low levels of CO2 emissions (a major cause of global warming) – in Asia. We have studied the nature of cooperation between rural and urban areas, including investigation of a system for the efficient use of biomass resources produced in rural areas to produce energy for urban areas. We will exchange views on future scenarios in Asia while introducing the ideal material-cycle system for energy and materials as understood from relevant examples in Hokkaido and China.
Registration	Not-required (Charge: Free)
Contact	Hokkaido University Center for Sustainability Science (Contact: T. Sato) TEL : +81-(0)11-706-4586 FAX : +81-(0)11-706-4534 E-mail : toshikisato@census.hokudai.ac.jp
URL	Center for Sustainability Science, Hokkaido University http://www.census.hokudai.ac.jp/

Report

A broad spectrum of people–from the general public to individuals from administrative institutions and businesses–comprised the audience at the symposium on food and energy (biomass) problems in Hokkaido. This symposium was part of the Ministry of Environment's project researching the necessary measures that need to be taken in order to achieve food and energy independence in Hokkaido. The keynote lecturer, Professor Noriyuki Kobayashi of Nihon University Law School, elaborated on the utilization of forests in Hokkaido for the creation of a low-carbon society from the viewpoint of a partnership between urban and rural areas. After the lecture, representatives from Shimokawa Town Office and Furano City Office presented examples of regional initiatives geared toward creation of a sustainable society, and Professor Mitsuru Osaki of Hokkaido University's Research Faculty of Agriculture made several proposals toward the self-sufficiency of Hokkaido. To conclude the event, a panel discussion was held and opinions concerning the prefecture's self-sufficiency were exchanged.

The Ministry's project will conclude in March 2011 and will be summarized based mainly on the regional programs discussed at the symposium toward the creation of a sustainable low-carbon society, the information and views shared by the speakers, and the opinions of panelists and the audience. The achievements of this symposium are not only reflected by its influence on the summary, but also because it helped strengthen the cooperative relationships between the Hokkaido University Center for Sustainability Science and the municipalities participating in the symposium. The relationship with HU joint research partners, Osaka University and Ritsumeikan University was also strengthened and cooperation in a new project is under way.

audience members

the panelists

◆Download the presentation data：http://eprints.lib.hokudai.ac.jp/dspace/handle/2115/44267
（Link to Hokkaido University Scholarly and Academic Papers （HUSCAP）

Workshop for the 2nd Amur-Okhotsk Consortium Meeting 2011

Overview

Date	November 1 (Mon.) – 2 (Tue.)　13:00～ **(Finished)**
Organizer	Institute of Low Temperature Science & Slavic Research Center, Hokkaido University New Energy Resources Research Center, Kitami Institute of Technology
Co-Organizer	Research Institute for Humanity and Nature, Hokkaido University Global COE Program “Reshaping Japan’s Border Studies” Hokkaido Regional Development Bureau, Ministry of Land, Infrastructure and Transport
Venue	Hokkaido University Slavic Research Center
Language: Japanese, Russian, English **Intended Audience:** researchers, college students, general public	
Outline	The Amur-Okhotsk Consortium is an international network of scientists aiming to conserve the environment of the Amur River basin (shared by Mongolia, Russia and China) and the Sea of Okhotsk in its downstream area. This year, the consortium focuses on selecting topics of discussion for its second meeting scheduled for 2011. Established in November 2009, the consortium seeks to develop a common understanding of sustainable environmental use that does not damage the diversity of regional economies, society and culture. We look forward to the participation of students and citizens who are interested in the development of an international framework for environmental conservation.
Registration	Not-required
Fees	Free
Contact	Administration office of the Amur-Okhotsk Consortium, Pan Okhotsk Research Center, Institute of Low Temperature Science, Hokkaido University FAX: +81-(0)11-7142 E-mail : ao-symposium[at]lowtem.hokudai.ac.jp
URL	http://www.chikyu.ac.jp/AMOC/

Report

The Amur-Okhotsk Consortium is an international network of scientists involved in intensive multinational discussions on environmental conservation and sustainable development of the region covering the Amur River basin and the Sea of Okhotsk. The preparatory meeting for the 2nd Amur-Okhotsk Consortium Meeting 2011 included a workshop and the first day began with a lecture meeting for students and members of the general public. In addition to the representatives of the three member countries of the consortium (Japan, China and Russia), two representatives from Mongolia, which expressed interest in joining the consortium, as well as lecturers from the Ministry of Foreign Affairs of Japan, the United Nations Environment Programme (UNEP), and the Economic Research Institute for Northeast Asia (ERINA) spoke about problems in the Amur-Okhotsk region.

On Day 2, additional participants representing the Hokkaido University Institute of Low Temperature Science, Hokkaido University Slavic Research Center, the Kitami Institute of Technology's New Energy Resources Research Center, the Research Institute for Humanity and Nature, Hokkaido University Global COE Program "Reshaping Japan's Border Studies," and the Hokkaido Regional Development Bureau of the Ministry of Land, Infrastructure, Transport and Tourism discussed the operation of the consortium and the topics concerning the consortium. They decided to hold the 2nd consortium meeting in Sapporo on November 4-6, 2011. They also agreed that the member countries will continue to coordinate topics of discussion and that their representatives will make the necessary arrangements in their respective countries.

The workshop took place amid tense conditions due to discord between Japan and China over the collisions between a Chinese trawler and Japan Coast Guard vessels near the disputed Senkaku Islands, and Russian President Dmitry Medvedev's sudden visit to Kunashiri Island on November 1. The scientists from Japan, China, Russia and Mongolia confirmed the need for the consortium as a forum based on scholarship which enables its members to meet regularly to discuss trans-boundary environmental problems. Forum members agreed to boost their activities by various methods, including improving the consortium's web pages. The workshop was introduced in the morning edition of the Hokkaido Shimbun on November 3, 2010.

exchanging opinions

Q&A session

Symposium on Expanding the Potential of Children in Future Society

Overview

Presentation Data	http://eprints.lib.hokudai.ac.jp/dspace/handle/2115/44465 (Link to HUSCAP)
Date	November 2 (Tues.) 13:00～ **(Finished)**
Organizer	Faculty of Health Sciences, Hokkaido University
Co-host	Hokkaido University Center for Environmental and Health Sciences, Support Office for Female Researchers
Venue	Hokkaido University Conference Hall

Language: Japanese

Intended Audience: researchers, general public, college students

Outline	This symposium will include discussion on the physical fitness and health of children, their mental development, culture and child rearing, and parenting in a gender-equal world with the aim of creating a society that values the future potential of children. Due to demographic graying and a falling birthrate, Japan's population has begun to decline. It is therefore imperative to develop a new outlook for the country with ties to the rest of the world and conditions in which children – the guardians of the future – can grow up in perfect health. We hope that members of the citizen, students and experts who are interested in child health and child-rearing will join us in thinking about a society that will expand the potential of children.
Registration	Not-required
Fees	Free
Contact	General Affairs Section, Faculty of Health Sciences, Hokkaido University TEL: +81-(0)11-706-3315 E-mail: shomu[at]hs.hokudai.ac.jp

Report

The symposium on Expanding the Potential of Children in Future Society was held with Professor Kazuko Saeki of the Department of Comprehensive Development Nursing, Faculty of Health Sciences as the chair. Four speakers delivered lectures.

“Prescriptions for Children Living in an Age of Increasing Obesity and Declining Physical Strength – The Physiques and Fitness of Children in Asia and Japan”: Taro Yamauchi, an associate professor of the Department of Comprehensive Development Nursing, Faculty of Health Sciences, compared the prevalence of obesity among children in Japan and Indonesia using the results of fieldwork he conducted in Indonesia. He underlined the importance of children playing in nature as a prescription against obesity and declining physical strength.

“Depression and Developmental Disabilities in Children”: Professor Kenzo Denda of the Department of Functioning and Disability, Faculty of Health Sciences, illustrated with examples the change in the incidence rate of depression among children based on an epidemiological survey, and also the actual state of children with developmental disabilities including information on the latest treatments.

“Child Care through Cultural Activities and Community Ties”: Assistant Professor Hikaru Honda of the Department of Comprehensive Development Nursing, Faculty of Health Sciences, used child care initiatives on Miyakojima Island in Okinawa to illustrate that culture is an intangible community asset and also talked about realizing the full potential of children.

“Gender-Equal Society Considered from the Viewpoint of Children”: Professor Sanae Ariga of the Research Faculty of Agriculture and the Graduate School of Life Science (also serving as the Director of the Support Office for Female Researchers in Hokkaido University) spoke from the stance and viewpoint of children on how female researchers can strike a balance between child rearing and research and also suggested a direction to take to promote a gender-equal society.

The stagnation of present day Japanese society is reflected in the prevalence of health issues that affect children and threaten to affect the health of even more children. Children have become harbingers of adult-onset diseases and holders of psychological problems. To offer an opportunity for us to obtain various perspectives on ideal social systems this symposium took into account that child rearing takes place in a socio-cultural context.

More than 90 percent of participants that answered the post-symposium questionnaire, responded that they either “Strongly agree” or “Slightly Agree” that they were provided an opportunity to consider the future of children. This result shows that we were successful in conveying the symposium themes and 160 participants left the hall with a great sense of satisfaction.

Dean Kobayashi of the Graduate School of Health Sciences greets audience members

Professor Denda lectures on “Depression and Developmental Disabilities in Children”

◆Download the presentation data：http://eprints.lib.hokudai.ac.jp/dspace/handle/2115/44465

（Link to Hokkaido University Scholarly and Academic Papers （HUSCAP）

The 3rd International Symposium on Sentinel Earth－Advance in Satellite Imagery Data and GIS and Their Application-

Overview

Date	November 3 – 5 (Wed. – Fri.) 9:30～ **(Finished)**
Organizer	Hokkaido University（Graduate School of Information Science and Technology, Research Faculty of Engineering, Reserch Faculty of Science, Research Faculty of Enviromental Earth Science, Research Faculty of Fisheries Science, Institute of Low Temperature Science, Support Office for Space Science and Engineering）, Asia Institute of Technology, University of Alasaka, University of Palangkaraya, Japan Aerospace Exploration Agency (JAXA), Remote Sensing Technology Center of Japan (RESTEC)
Venue	Hokkaido University Conference Hall
Language: Public Lecture: Japanese / Symposium: English **Intended Audience**: researchers, general republic, college students	
Outline	This is an open lecture for the general public and an international symposium for experts. The public lecture will focus on problems stemming from CO2 emissions – a major cause of global warming – and give an easy-to-understand overview of the related issues. The symposium will provide a forum for the presentation of findings on research into earth observation using satellite image data and their latest usage.The outcomes of research regarding the latest progress in Geographic Information Science (GIS) and the state of its usage will also be presented, along with the results of studies on using satellite data to detect forest・wild fires in Alaska and Indonesia. Public Lecture on Nov.3 (Japanese Only, 77KB) Download Program (62KB) Download Abstract (3.3MB)
Registration	Not-required
Fees	Free
Contact	Ms. Rina Ishige, Hokkaido University Graduate School of Information Science and Technology TEL : +81-(0)11-706-7691 E-mail :ishige[at]scc.ist.hokudai.ac.jp

Report

Videos and up-to-date data were presented on the first day of the Nov. 3 public lectures titled *Counter Argument to the Hidden Agenda of Global Warming* and *Behind HAYABUSA's Successful Voyage: Ion Engines Save the Day!*

Research workshops were held for experts on the second and third days. The first of these featured remote sensing, and speakers included instructors from the Japan Aerospace Exploration Agency (JAXA) collaborative research group at Hokkaido University's Graduate School of Information Science and Technology. Other sessions concentrated on unmanned aircraft vehicles and wireless sensor networks with researchers from the University of Alaska, Seoul National University, Budapest University of Technology and Economics, Politecnico di Torino as well as private Japanese companies outlining the present status and the latest application systems.

The third day progressed with discussions on geographic information systems based on presentations made by researchers from University College London, Budapest University of Technology and Economics, Ritsumeikan University, and Keio University. The session following focused on the Fire Danger Rating System; a part of the research activities under the Sentinel Asia initiative. Researchers from JAXA, the U.S.A., Indonesia, and Malaysia presented their research outcomes regarding the establishment of an early warning system for fire prevention and management.

Through these presentations and discussions, the participants agreed that a GIS integrated platform that integrates technologies for satellite remote sensing, unmanned aircraft observation, and wireless sensor networks will acquire greater importance for the observation of changes in the global environment. They also shared a common awareness of the importance of public education about new ways to use satellite data.

participants pose for a group picture

visiting the Engineering Dept.

The Instruction on Research Diagnostic Criteria for Temporomandibular Disorders

Overview

Presentation Data	http://eprints.lib.hokudai.ac.jp/dspace/handle/2115/44443 (Link to HUSCAP)
Date	November 3 (Wed.) **(Finished)** 10:00-12:00 Lecture, 13:00-15:00 Practical Training, 15:00-15:30 Discussion
Organizer	Graduate School of Dental Medicine, Hokkaido University
Venue	Hokkaido University Conference Hall
Language: English/Japanese (Consecutive interpretation will be provided) **Intended Audience:** researchers, grad students, dental practitioners	
Outline	Temporomandibular joint disorder is becoming a lifestyle-related disease among Japan's graying population. This workshop offers opportunities to learn about the diagnostic approach to this disease, whose symptoms include jaw pain and reduced ability to open the mouth.Dr. Thomas List from Sweden and Dr. Peter Svensson from Denmark, who played central roles in the recent establishment of international diagnostic criteria for the condition (RDC/TMD), will present the diagnostic approach at the workshop. We hope to see a wide range of dental practitioners and researchers at this world's first workshop covering related leading-edge research.
Registration	Required >> Web Registrations
Admission	Free
Contact	Assistant Prof. Taro Arima, Graduate School of Dental Medicine, Hokkaido University TEL: +81-(0)11-706-4275 E-mail : tar[at]den.hokudai.ac.jp

Report

Despite the rain the morning of the International Discourse on Diagnosing Temporomandibular Disorders (TMD) Workshop supervised by Professor Noboru Ohata of the Graduate School of Dental Medicine, approximately 80 people attended. Assistant Professor Taro Arima, also of the Graduate School of Dental Medicine, informed the audience that the event was part of the National University Festa 2010, and that national universities could contribute to society by publicizing educational and research achievements through lectures and practical training sessions. He also elaborated on the effectiveness of sprints (mouthpieces) as a treatment option for TMD.

Following Arima, Professor Peter Svensson of Aarhus University (Denmark) gave background information on how the international standards establishing diagnostic criteria for temporomandibular disorders (RDC/TMD) were formed as well as information regarding the accuracy and sensitivity of related diagnostic approaches. The workshop concluded with former president of the International RDC/TMD Consortium, Professor Thomas List of Malmö University (Sweden) demonstrating how diagnostic tests are conducted.

Workshop participants were delighted to have the opportunity to learn through demonstration and lecture about international diagnostic criteria from former and present presidents of the consortium. The level of interest on the subjects was so high that the Q&A session continued well beyond the scheduled finish time.

audience members

leading researcher on diagnosing Temporomandibular disorders

◆Download the presentation data：http://eprints.lib.hokudai.ac.jp/dspace/handle/2115/44443
（Link to Hokkaido University Scholarly and Academic Papers （HUSCAP）

Public Program on Health Sciences

Overview

Date	November 3 (Wed.) 13:00～ **(Finished)**
Organizer	Public Program Committee in Faculty of Health Sciences, Hokkaido University
Venue	6th Floor, Faculty of Health Sciences, Hokkaido University

Language: Japanese

Intended Audience:researchers, general public, college students, junior-high and high school students

Outline	This program is a three-hour introduction to a wide range of up-to-date research findings for qualitative improvement of health, from the basics of health sciences to applied technologies for the enhancement of vital functions. The event will focus on three topics in particular: 1. research on functionality assessment of protein foods for the prevention of lifestyle-related diseases; 2. research on diagnosis and treatment of autism, Asperger's syndrome and other diseases; and 3. development of ideal wheelchair and office chair designs in consideration of physical stability. We look forward to the participation of members of the general public, high school and university students, and experts who are interested in basic science concerning healthcare and technologies that will help to promote nursing care and welfare among other developments.
Registration	Required (Charge: free) Please register via website, e-mail or phone to the address listed below by October 29. >> Registrations
Fees	Free
Contact	General Affairs Section, Faculty of Health Sciences, Hokkaido University TEL: +81-(0)11-706-3315 E-mail: shomu[at]hs.hokudai.ac.jp

Report

Despite overcast and changeable weather on Nov.3, the conference room was packed to capacity with an audience of 102 participants.

Professor Hatta explains the vantage from a wheelchair

The Public Program on Health Sciences is an annual event and in 2010 three professors from Hokkaido University's Faculty of Health Sciences introduced their research programs. Other lectures were as follows:

1. *Food Faddism and Health Food – Aren't You Misled by the Media?* (Professor Takanori Moriyama): problems with advertisements and other related issues of so-called diet foods
2. *Neuroscience of Developmental Disabilities – a Brain That Understands How the Other Party Feels* (Professor Junko Fukushima): specific examples, including Asperger's syndrome, and the latest research results
3. *The World as Seen from a Wheelchair – Progress in Wheelchair Seating and Its Application to Office Chairs* (Professor Tatsuo Hatta): from the development of wheelchairs for people with disabilities to the development of office chairs for able-bodied people, and design policies

The lecturer's subjects were in line with the key phrases of the Sustainability Weeks 2010 event – health, sanitation, social welfare and aging society–and were both timely and stimulating to the audience as evidenced by the praise bestowed in the post-event questionnaire. All of the lectures were followed by lively Q&A sessions which attested to the high level of interest in the themes and in-depth understanding of technical presentations among the audience. The University plans to continue public programs such as this one to help local residents lead better lives.

the event exceeded capacity

Seminar on Environmental Policy～Biodiversity and Climate Change～

Overview

Date	November 3 (Wed.)　14:00～17:00 **(Finished)**
Organizer	Hokkaido University Low-Carbon Society Project
Co-host	Ministry of the Environment Hokkaido Regional Office
Venue	Hokkaido University Conference Hall
Language: Japanese **Intended Audience:** researchers, general public, college students	
Outline	This seminar will showcase biodiversity conservation and climate change issues in the context of policy measures while taking international trends into account. This event will introduce the latest trends in regard to topics of discussion by the 10th Conference of Parties to the United Nations Convention on Biological Diversity (COP10), scheduled to be held in Nagoya in October. The session will provide opportunities to examine environmental policies aimed at resolving biodiversity conservation for people in Hokkaido. This seminar also provides the trend of international discussion concerning climate change issues and the trend of domestic measures, staring the 16th Conference of the Parties to the United Nations Framework Convention on Climate Change (COP16), which will be held in Mexico in November.
Registration	Please register via Registrations.
Fees	Free
Contact	Ministry of the Environment Hokkaido Regional Office TEL : +81-(0)11-299-1952 E-mail: reo-hokkaido[at]env.go.jp

Report

The 2010 seminar on Environmental Policy's theme, *Biodiversity and Climate Change*, was selected because the seminar was scheduled immediately after the 10th Conference of the Parties to the United Nations Convention on Biological Diversity (COP10), which was held in Nagoya, Aichi Prefecture, and before the 16th Conference of the Parties to the United Nations Framework Convention on Climate Change (COP16). The event attracted 180 participants, including students and members of the general public.

Shigemoto Kajihara, Deputy Director-General of the Minister's Secretariat of the Ministry of the Environment, gave a lecture entitled Prospects of COP16 and the Japanese Government's Policy Measures to Tackle Global Warming. He illustrated the trend of international discussions on climate change toward COP 16 and the direction of the Japanese government's initiatives to combat global warming. The next speaker was Toshio Torii, Director of the Global Biodiversity Strategy Office of the Ministry of the Environment's Nature Conservation Bureau. Under the theme *What was Discussed at COP10?*, he spoke about the achievements of COP10, including the Nagoya Protocol and the Aichi Target, and future policy prospects. Furthermore, Professor Tetsuya Kondo of Hokkaido University's Research Faculty of Agriculture gave a lecture entitled *Biodiversity Conservation in Hokkaido and Climate Change* in which he commented that even in urban parks there exists a danger of global warming affecting vegetation.

A panel discussion held under the theme *Biodiversity Conservation and Climate Change* concluded the seminar and provided a forum for audience members to discuss related issues from a Hokkaido standpoint and take into account the trend of international discussions on biodiversity conservation and climate change discussed at COP10 and COP16.

the event proceed with a capacity audience

dialogue between the presenters

Business-Academia-Government Collaboration Seminar on Developments of Geo-spatial Information and Future World II

Overview

Presentation Data	http://eprints.lib.hokudai.ac.jp/dspace/handle/2115/44127 (Link to HUSCAP)
Date	November 4 (Thu.) 13:00 ～ **(Finished)**
Organizer	Hokkaido University Graduate School of Letters, GIS Association of Japan Hokkaido Regional Office, Hokkaido GIS/GPS Society, Non-profit Organization “Digital Hokkaido”
Venue	Hokkaido University Conference Hall

Language: Japanese

Intended Audience: researchers, general public, college students, high school students

Outline

This seminar will introduce the latest trends of geo-spatial information usage in industry, government and academia, including its adoption for industrial promotion, conservation and management of the natural environment and the development of new welfare services.Geo-spatial information provides a social information infrastructure with growing expectations as a tool for creating a sustainable society. Using such information together with the geographic information system (GIS) and satellite positioning technologies is expected to help promote agriculture and fisheries – leading industries in Hokkaido – and develop social welfare services that will be effective in an aging society.

We look forward to the participation of representatives from businesses and local governments as well as members of the general public who are interested in the application of this information infrastructure.

Registration	Not-required
Fees	Free
Contact	Hokkaido University, Graduate School of Letters (Contact: Y. Hashimoto) TEL & FAX: +81-(0)11-706-4019 E-mail: you[at]chiri.let.hokudai.ac.jp

Report

Geo-spatial information is a social information infrastructure for which there are increasing expectations as a tool for creating a sustainable society. Using such information together with the geographic information system (GIS) and satellite positioning technologies is expected to help promote agriculture and fisheries – leading industries in Hokkaido – and develop social welfare services that will be effective in the aging society.

This seminar focused on the use of geo-spatial information by local governments. Local government officials in charge of GIS introduced examples of initiatives to improve the efficiency of civil services and enhance the quality of services for residents. The event attracted more than 200 participants, many of which were actually from local governments, and indicated a high level of interest in the use and application of GIS by local governments.

At the outset of the seminar, the organizer, Associate Professor Yuichi Hashimoto of Hokkaido University Graduate School of Letters, explained the aims of the seminar. Tohru Ohba, the representative of the local government sub-committee of the GIS Association of Japan, one of the organizers (who also works for the Resident and Economic Affairs Department, Ichikawa Municipal Office), spoke in his keynote lecture about the utilization of geo-spatial information by local governments and its future prospects.

The following speakers and their themes were: Motoaki Ishiguro of the Department of Construction of Hokkaido Government's Bureau of Public Works, who spoke about GIS for flood control in Hokkaido; Yasuaki Hiratsuka of the Information Technology Promotion Department of Sapporo City speaking on the utilization of geographic information data in Sapporo; and Kazuyuki Sawada of the Industrial Promotion and Information Technology Promotion Office, Economic Affairs Department, Iwamizawa City, about ICT policy measures and the utilization of local government GIS in Iwamizawa. Making presentations during the latter half of the seminar were Tatsuya Fujiwara from Hokkaido GIS/GPS Society and Akihiro Akabuchi from Hunes Co., Ltd. They gave their analysis of the current situation and what they perceived to be the future prospects of local government GIS in Hokkaido. To summarize the seminar, Hidemi Fukada, Associate Professor of Otaru University of Commerce's Department of Information and Management Science made reference to the viewpoints of project management under the title Development Process Analysis and Future Prospects of Local Government GIS.


explaining the aims of the seminar


audience members

◆Download the presentation data：http://eprints.lib.hokudai.ac.jp/dspace/handle/2115/44127
（Link to Hokkaido University Scholarly and Academic Papers （HUSCAP）

Hokkaido Marine Bioscience Symposium

Overview

Presentation Data	http://eprints.lib.hokudai.ac.jp/dspace/handle/2115/44155 (Link to HUSCAP)
Date	November 5 (Fri.)　13:00～ **(Finished)**
Organizer	Hokkaido Marine Bioscience Society, IFES-GCOE Global COE Program `Establishment of Center for Integrated Field Environmental Science', Hokkaido University
Venue	Room# D201, Graduate School of Environmental Science, Hokkaido University

Language: Japanese

Intended Audience: researchers, college students

Outline	This symposium will offer opportunities to consider current and future effects of global warming, ocean acidification and human activities on marine organisms in seas close to Hokkaido. Surrounded by three seas (the Pacific Ocean, the Sea of Japan and the Sea of Okhotsk), Hokkaido has rich marine ecosystem environment and marine resources. In this symposium, citizens, students, fisheries parties and experts will gather in a room to discuss latest research findings towards marine ecosystem conservation and sustainable use of marine resources. >> Program
Registration	Not-required
Fees	Free
Contact	Graduate School of Environmental Science, Hokkaido University (Contact: T. Okino) TEL: +81-(0)11-706-4519 E-mail: okino[at]ees.hokudai.ac.jp

Program

November 5, 2010 (Friday)

Start	Program	Lecturer
13:05-13:45	Properties of Halogenating Enzyme from Seaweed	Takashi OHSHIRO, Tottori University
13:45-14:25	Regional variation in species interactions between goose barnacles and mussels: sustainable coexistence by facilitation in ongoing global warming!?	Takashi KAWAI, Anan National College of Technology
14:25-15:05	Detection of factors controlling seagrass/algal bed formation in nation-wide scale and its relationships with local spatial pattern of the vegetation	Takehisa YAMAKITA, Forestry and Forest Products Research Institute
15:25-16:05	Direct impact of global warming on marine organisms: hypoxia and ocean acidification	Tsuneo ONO, Hokkaido National Fisheries Research Institute, Fisheries Research Agency
16:05-16:45	Plankton dominating oceanic ecosystems: Basis of firm sustainability of pelagic fisheries often criticized as primitive and exploitative activity	Akira TANIGUCHI, Tokyo University of Agriculture Okhotsk

Report

The Hokkaido Marine Bioscience Society, the organizer of this symposium, offered flexible forums for exchanges that transcend the traditional framework of scholarly societies. Since this year's program was planned by students of the Graduate School of Environmental Science, it covered various topics, ranging from the latest research reports by young researchers to recommendations by seasoned scientists. Nearly 70 people from a number of institutions in- and outside Hokkaido University participated.

A lecture entitled *Direct Impact of Global Warming on Marine Organisms: Hypoxia and Ocean Acidification* by Tsuneo Ono from the Hokkaido National Fisheries Research Institute of the Fisheries Research Agency, made a strong impression on many participants. In addition to ocean acidification caused by global warming, he illustrated serious issues concerning the decreased oxygen content of subsurface waters such as the death of large numbers of fish, and predicted several phenomena that might take place in the future.

Many marine organisms contain halogenated compounds. During the symposium, the properties of halogenating enzymes derived from seaweed were analyzed and, two young researchers discussed the ecology of coastal waters and the changes in the environment.

The symposium closed with a fitting end to the Sustainability Weeks symposium as the lecturer explained that although fisheries are often criticized for performing primitive and exploitive activities, extensive fisheries are more civilized, or sustainable, than intensive ones. Although there was enough time for discussions during the symposium, lecturers, students and other participants continued lively exchanges of opinions even after the symposium closed.

a view of the symposium

a student asks a question

◆Download the presentation data：http://eprints.lib.hokudai.ac.jp/dspace/handle/2115/44155
（Link to Hokkaido University Scholarly and Academic Papers （HUSCAP）

International Symposium on Child Poverty and Anti-poverty Strategy

Overview

Date	November 6 (Sat.)　13:00～ **(Finished)**
Organizer	Graduate School of Education, Hokkaido University
Co-host	Society for the Study of Poverty
Venue	Hokkaido University Conference Hall
Language: Japanese/English (Simultaneous interpretation will be provided) **Intended Audience:** researchers, college students	
Outline	The symposium will welcome a representative of the Child Poverty Action Group – a UK charity that promotes pioneering public activities to combat child poverty. The event will provide a forum for participants from Japan and the UK to discuss policy issues related to child poverty and awareness raising and to conceive counter-strategies for the future.Poverty adversely affects the growth and development of children, and Japan also suffers from policy issues and practical problems with child poverty in a wide range of fields including those of education, welfare, health and medical care.We look forward to the participation of members of the general public wishing to address poverty issues as well as the attendance of students, educators and experts.
Registration	Please register via website, e-mail or fax listed below by the end of October. >> Registrations
Fee	Free
Contact	Graduate School of Education, Hokkaido University (Contact: I. Matsumoto, M. Toriyama) FAX: +81-(0)11-706-3114 E-mail: tmadoka[at]edu.hokudai.ac.jp
URL	This symposium will be held as a part of The 3rd Conference of Society for the Study of Poverty. http://www.census.hokudai.ac.jp/ (Japanese only)

Report

This international symposium began with a keynote lecture entitled *Poverty, Families and Children* by Osamu Aoki of Nayoro City University. Next, Fran Bennett of the University of Oxford, former Director of the Child Poverty Action Group (CPAG), a leading civic organization committed to ending child and family poverty in the UK, outlined child poverty in her country and the activities of the CPAG. Her speech was followed by Naomi Yuzawa of Rikkyo University, who also serves as a co-founder of the Children's Anti-Poverty Network (Nakuso! Kodomo no Hinkon Network). She talked on the theme of *Child Poverty and Citizens' Activities in Japan*. After that, designated discussants – Aya Abe of the National Institute of Population and Social Security Research and Toshiro Yokoi of Hokkaido University – commented on the speeches and held discussions involving the audience. Ichiro Matsumoto of Hokkaido University served as the moderator.

In his presentation, Aoki emphasized that to understand poverty issues or issues of child poverty, it is necessary to grasp the relationship between markets and families. He also stressed the need to re-examine John Rawls' theory of justice when poverty is considered in relation to social justice. Bennett outlined the history of the CPAG as well as the challenges it faces in relation to Great Britain's postwar political history. Yuzawa shed some light on the current status of child poverty in Japan and gave an overview and problems with recent anti-poverty activities. The discussions that followed the speeches highlighted the need to re-examine the concept of child poverty itself as well as strategic issues involving consensus building in the society among other topics.

This was the first international symposium on child poverty ever to be held in Japan and was significant because major issues related to future research and practical activities were clarified and pave the way for continued international exchanges in this field.

an audience member interacts with the presenters

symposium presenters

International Symposium on “Reproductive Rights and The Sustainability of Women’s Health in Historical and Contemporary Perspectives”

Overview

Date	November 6 (Sat.)　14:10～ **(Finished)**
Organizer	Hokkaido University Center for Applied Ethics and Philosophy
Venue	Hokkaido University Conference Hall
Language: English (Translation will be provided) **Intended Audience:** researchers, general public, college students	
Outline	At this symposium, leading historians from Japan and the U.S. will discuss women’s health and welfare. Although women’s decisions on reproductive matters such as abortion, contraception and childbirth significantly affect their health and well-being, the enormous economic and social impacts of these issues have caused families, governments, religious organizations among others to impose a variety of related restrictions, including many adverse to the well-being of women and children. This session will provide chances to consider what should be changed and what should be left alone so that individuals can make optimal decisions for a better society.
Registration	Not-required
Fees	Free
Contact	Center for Applied Ethics and Philosophy, Hokkaido University (Contact: M. Nakachi) TEL: +81-(0)11-706-2865 E-mail: mnakachi[at]let.hokudai.ac.jp

Report

Professor Miho Ogino of Doshisha University's Graduate School of Global Studies and Rickie Solinger, a U.S. history researcher from New York City, were on hand on November 6 to give lectures on the political history of reproductive issues in Japan and the U.S.A . As industrial nations these countries have seen an increased interest in women's views on marriage, pregnancy, and childbirth; issues that are often discussed as social problems, but are in truth, not particularly well understood.

Professor Ogino presented a historical review and analysis of Japan's abortion and contraception policies after World War II and underlined in particular political developments stemming from the coincidence of interests between disability groups and feminists. She also analyzed the impact of these historical developments on today's issues of reproductive medicine and surrogate mothers. Dr. Solinger pointed out the limitations of the concept of reproductive rights with a convincing argument particularly focused on racist welfare and immigration policies in the 17th to 21st centuries in the U.S.A. In this regard, she introduced a new concept of reproductive justice. Since the concept of reproductive rights has not been established in Japan, her lecture gave the audience insight into cutting-edge arguments on the matter.

The lectures were followed by a Q&A session, during which reproductive experts from across Japan, as well as local residents actively asked questions which lead to high quality discussions and evidenced a high level of interest in the symposium. A report on these lectures is scheduled for publication.

guest speaker's lecture

an attentive audience

The 14th Ainu Language Speech Contest “ITAK AN RO” ～Let’s Speak in Ainu Language!

Overview

Date	November 6 (Sat.)　10:00～ **(Finished)**
Organizer	The Foundation for Research and Promotion of Ainu Culture
Co-host	Center for Ainu & Indigenous Studies, Hokkaido University
Venue	Hokkaido University Clark Memorial Student Center
Language: Japanese / Ainu **Intended Audience:** researchers, general public, college students, high school students	
Outline	At this event, people learning Ainu language at 14 Ainu language schools in Hokkaido and elsewhere in the country will gather to exhibit the skills they have honed in practice.This year’s ITAK AN RO Ainu language speech contest – the 14th in the series – will consist of the Oratorical Division and the Oral Literature Division. It will include performances of *Kamuy yukar* stories, and roughly 50 contestants of all ages will participate.We hope that many people ranging from elementary school students to adults will take this precious opportunity to experience the rarely heard Ainu language and remember that Japan is a multicultural, multi-ethnical and multilingual country.
Registration	Not-required
Fees	Free
Contact	The Foundation for Research and Promotion of Ainu Culture TEL: +81-(0)11-271-4171 E-mail: ainu[at]frpac.or.jp

Report

Currently, there are 14 Ainu language schools in Hokkaido and several more in the Kanto and other regions in Japan. However, students do not have many opportunities to exhibit the practical skills they have honed. Against this backdrop, the Foundation for Research and Promotion of Ainu Culture annually hosts an Ainu Language Speech Contest with the aims of inspiring and motivating Ainu language learners by providing an opportunity for them to demonstrate their skills, and giving the general public a forum to come into contact with this uncommon language.

The 2010 speech contest was the 14th in this series and was held as part of the Sustainability Weeks 2010 program jointly with the Center for Ainu & Indigenous Studies at Hokkaido University, which co-hosted the event.

The contest consisted of four divisions: a Children's Division for junior high school students and younger children; an Oral Literature Division for adults to present traditional oral literature; an Oratorical Division for speakers to express their principles and opinions clearly in the Ainu language; and a Recital Division for past Grand Prix Award winners to show how their skills have improved. This year's contestants were mainly from Hokkaido, but also included some from various other parts of the country. A total of 45 contestants in 29 groups – 7 groups in the Children's Division, 12 groups in the Oral Literature Division, 4 groups in the Oratorical Division, and 6 groups in the Recital Division – demonstrated their hard-earned speaking skills. Judges selected winners of the Grand Prix Award and the Outstanding Performance Award.

The planners believe in the continuation of an Ainu language speech contest that is meaningful for Ainu language learners and also helps to disseminate and promote the language among visitors and the communities where it is held.


speech contest participant


enthusiastic participants


awarding the prizes

Special Lecture “Intergenerational Justice and Health in an Aging Society”

Overview

Presentation Data	http://eprints.lib.hokudai.ac.jp/dspace/handle/2115/44292 (Link to HUSCAP)
Date	November 7 (Sun.) 13:00 – 14:30 **(Finished)**
Organizer	Center for Applied Ethics and Philosophy, Hokkaido University
Venue	Hokkaido University Center for Experimental Research in Social Science W409
Language: English **Intended Audience:** researchers, general public, college students	
Outline	We will host a special lecture by Harvard University’s Prof. Norman Daniels – a leading expert on public health ethics – on health promotion in an aging society and the allocation of medical resources necessary for such promotion.As a population ages, some can and some cannot afford proper medical care. Professor Daniels will talk about such issues from the viewpoint of Justice. He will also focus on the allocation of medical resources, such as doctors, medicine and medical equipment, that will catalyze the promotion of public health. As a Japanese interpretation service will be provided for this English-language lecture, we hope many young people and members of the general public will attend.
Registration	Not-required
Fees	Free
Contact	Center for Applied Ethics and Philosophy, Hokkaido University (Contact: S.Majima) TEL : +81-(0)11-706-3062 E-mail : caep[at]let.hokudai.ac.jp
URL	Hokkaido University Center for Applied Ethics and Philosophy http://ethics.let.hokudai.ac.jp/

Report

Dr. Norman Daniels, a leading expert in the field of public health philosophy and ethics of the Harvard School of Public Health gave a lecture on John Rawls' theory of reflective equilibrium as part of the 5th International Conference on Applied Ethics that was jointly hosted by Hokkaido University Graduate School of Letters and the Center for Applied Ethics and Philosophy (CAEP).

Dr. Daniels' research on the proper allocation of medical resources is well known in Japan and several of his papers have been translated into Japanese. Under the theme *Intergenerational Justice, Health and Global Aging*, he discussed health promotion in an aging society and the allocation of medical and other resources from the viewpoint of fair allocation in intergenerational justice.

The graying of the population in industrial nations poses serious problems and is also an issue in the field of bioethics. Fair intergenerational allocation of medical resources has become a major issue particularly in Italy, where fertility rates have rapidly declined, and in China, where aging has rapidly progressed due to the combination of low birthrates, low mortality, and the government's one-child policy. Despite this situation, it is difficult to actually resolve the issue of how medical resources should be allocated in an aging society. This is because the issue of resource allocation in an aging society cannot be resolved simply in terms of fair allocation of medical resources between age groups–the equitable allocation between young people and elderly people–it also has to take into consideration that in an aging society those born in a certain generation may have incurred more disadvantages than those born in other generations; and as Dr. Daniels pointed out in his lecture, the task for the future is to come up with ideas on how to rectify these disadvantages.

Professor Virginia Held of the City University of New York and Professor Søren Holm of the University of Manchester, who were both in the audience, as well as international students asked many interesting questions in the Q&A session following the lecture.

Dr. Norman Daniels, Harvard School of Public Health speaks on public health philosophy and ethics

speaker explaining their subject

◆Download the presentation data：http://eprints.lib.hokudai.ac.jp/dspace/handle/2115/44292
（Link to Hokkaido University Scholarly and Academic Papers （HUSCAP）

Public Lecture: Theory and Practice of Fisheries Sustainability Science

Overview

Presentation Data	http://eprints.lib.hokudai.ac.jp/dspace/handle/2115/44246 (Link to HUSCAP)
Date	November 9 (Tues.) 9:30～ **(Finished)**
Organizer	Faculty of Fisheries Sciences, Hokkaido University
Co-host	Science Council of Japan (Plan), Hakodate City
Venue	Hakodate Community Design Center 2F (4-9, Suehiro-cho, Hakodate, Hokkaido)
Language: English/Japanese (Consecutive interpretation will be provided)	
Intended Audience: researchers, general public, college students, fisherman	
Outline	This event will provide opportunities to contemplate what should be done to ensure the sustainability of marine resources, such as salmon, sardines and tuna, so that people around the world can continue to use as seafood.Items on the agenda include food miles (an indicator how far food has travelled before it reaches the consumer), eco-labeling, food traceability, aquaculture and more. To conserve marine ecosystems and ensure the sustainable harvesting of seafood, both academic work and practice must be pursued. We look forward to the participation of students, members of the general public and representatives of businesses who are interested in fisheries sustainability.
Registration	Required Please register via website, e-mail or fax listed below by October 29. >> Web registrations.
Fees	Free
Contact	Prof. Masahide Kaeriyama, Faculty of Fisheries Sciences, Hokkaido University TEL : +81-(0)138-40-5605 E-mail : salmon[at]fish.hokudai.ac.jp

Report

Of the earth's 6.5 billion people more than 2.9 billion of them rely on marine organisms as an important source of food. The phrase, "We Live Through Your Good Graces: Human Dependence on Marine Ecosystems" formed the basis for a discussion on how marine organisms and marine ecosystems should be protected to achieve our goal of creating a sustainable society where people are healthy and live with a sense of safety and security.

Marine ecosystems have contributed to the well-being of humankind by providing a variety of services that provide humans with food, material cycling biodiversity and peace of mind. However, marine ecosystems and the organisms that make up that ecosystem have been disturbed due to human based factors such as global warming and overfishing. The impact of humans in fishing for example, is evident when one considers that of all the fish caught in the world, only 50% is used directly as food. Twenty-five percent is used as fertilizer and fish meal, and the remaining 25% is discarded. Higher-order organisms such as some tuna species, have been decreasing in number due to overfishing and are now designated endangered species. The destruction does not stop there; seabed ecosystems have been simplified due to the destruction of marine habitats by trawl fishing. Marine ecosystems have been disturbed by human activities, resulting in decreased biodiversity and desertified marine habitats. To pass a viable society on to our successors, we have to think globally about how to protect food sources and the sea by acting locally on a case-by-case basis. The slogan, "Think globally, act locally", coined by Rense Dubos, and contracted to "glocal", succinctly states that it is important to think globally and strive to create a sustainable society locally.

The program was as follows:

Introduction:

- "What is Sustainability?" (Masahide Kaeriyama, Hokkaido University Faculty of Fisheries Sciences)

Keynote lecture 1:

- "Sustainability Science as It Applies to Fisheries" (Ussif Rashid Sumaila, Director of the Fisheries Centre, University of British Columbia, Canada)

Keynote lecture 2:

- "Global Citizenry and Sustainable Fisheries – a Day When Mackerel Costs More Than Fatty Tuna" (Tetsuji Ida, Science Division, Kyodo News Service)

Lectures on practical sustainable fisheries science:

- “MSC Eco-label for the Sustainability of Salmon” (Mitsuhiro Nagata, Salmon and Freshwater Fisheries Research Institute of Hokkaido Research Organization)
- “Striving for Sustainable Fish Farming – Examination of Genes” (Shuichi Kitada, Tokyo University of Marine Science and Technology)
- “Sustainable Aquaculture from Space: Application of a Geographic Information System and Satellite Remote Sensing” (I Nyoman Radiarta, Hokkaido University Faculty of Fisheries Sciences)
- “Forefront of Aquaculture Technology That is Immune to Environmental Changes – Utilization of Heat-Transfer Pipes and Ozone” (Yasuhiro Takigawa, Acceptor Techno Inc.)
- “Challenge to Sustainable Fisheries – a Path to Sustainable Fisheries Viewed from Stock Markets” (Gakushi Ishimura, Hokkaido University Center for Sustainability Science)
- “Sustainable Coastal Fisheries and Marine Ecosystem Conservation – with Shiretoko as an Example” (Yasunori Sakurai, Hokkaido University Faculty of Fisheries Sciences)

Discussion:

- “Glocal sustainability?” (Moderator: Sei-ichi Saitoh, Hokkaido University Faculty of Fisheries Sciences)

audience members

speakers and organizers commemorate the event with a group photo

◆Download the presentation data：http://eprints.lib.hokudai.ac.jp/dspace/handle/2115/44246
（Link to Hokkaido University Scholarly and Academic Papers （HUSCAP）

SCJ Hokkaido District Conference “Green Innovations Originating in Hokkaido”

Overview

Date	November 15 (Mon.) 13:30～ **(Finished)**
Organizer	Hokkaido District Conference, Science Council of Japan Hokkaido University
Venue	Hokkaido University Conference Hall
Language: Japanese **Intended Audience:** researchers, general public, college students	
Outline	This lecture meeting highlights proposals for new lifestyles as well as new forms of industry and economy that capitalize on Hokkaido’s characteristics of a vast land area and a rich natural environment and on locally developed science and technology. Green innovation is aimed at creating coexistence between nature and humans by conserving and restoring the natural environment through reduced impacts on it and adapting to environmental changes such as natural disasters. The concept also helps to advance human development in general.This event will involve discussion of future prospects for green innovation and consideration of new roles for science and technology. We look forward to the participation of researchers, university students and members of the general public who are interested in the latest academic achievements in Hokkaido.
Registration	Required >>Registrations
Fees	Free
Contact	Research Department, Hokkaido University （Contact: Y. Harada） TEL: +81-(0)11-706-2155, FAX: +81-(0)11-706-4873, E-mail: suishin[at]general.hokudai.ac.jp

Report

Green innovation aims to create coexistence between nature and humans by conserving and restoring the natural environment through reducing human impact and adapting to environmental changes such as natural disasters. This concept also helps to advance human development in general. The aims of this event were to discuss the future prospects of green innovation and to consider new approaches to science and technology. Among other topics, the conference highlighted new lifestyles as well as new forms of industry and economy that can capitalize on Hokkaido's characteristics of a vast land area and a rich natural environment and on locally developed science and technology.

The keynote lecture, *Vision for Japan and New Science and Technology*, was given by Shinichiro Ohgaki, Vice President of the Science Council of Japan and was followed by four presentations by researchers from Hokkaido University which explained the latest locally developed scientific achievements in simple terms to members of the general public:

- "Solar Cells Using Invisible Light, Infrared Rays" (Professor Hiroaki Misawa, Director of Hokkaido University Research Institute for Electronic Science)
- "Environmental Contribution by Geothermal Heat Pump Systems and Their Economic Effects in Hokkaido" (Professor Katsunori Nagano, Hokkaido University Faculty of Engineering)
- "Nanotechnology Developed by Hokkaido University That Enhances Convenience in Our Daily Lives" (Professor Bunshi Fugetsu, Hokkaido University Faculty of Environmental Earth Science)
- "Solar Energy Utilization and New Photocatalytic Technology for Environmental Cleanup" (Associate Professor Ryu Abe, Hokkaido University Catalysis Research Center)

Part 2 of the program consisted of a panel discussion with six panelists. Noriyuki Sato, a visiting professor of Hokkaido University's Creative Research Institution Sousei (CRIS) acted as the moderator. Professor Takemi Chikahisa of Hokkaido University Faculty of Engineering, and Professor Masako Kato of Hokkaido University Faculty of Science joined the lecturers of the first part in a lively exchange of opinion under the theme *What Will Be the Main Energy Source in Our Life?*

panel discussion

Vice President of the Science Council of Japan, Shinichiro Ohgaki delivers the keynote lecture

Fishing Down and Fisheries Sustainability Science

Overview

Presentation Data	http://eprints.lib.hokudai.ac.jp/dspace/handle/2115/44517 (Link to HUSCAP)
Date	December 7, 2010 (Tues.) 14:30～ **(Finished)**
Organizer	International Exchange Committee in the Faculty of Fisheries
Venue	Hakodate Campus, Hokkaido University (3-1-1, Minato-cho, Hakodate, Hokkaido)

Language: English

Intended Audience: researchers, general public, college students

Outline

is a Professor and Director of the Fisheries Centre at the University of British Columbia and Project Leader of the Sea. Around Us Project. Some of his primary work involves documenting the effects of overfishing.He authored a book entitled In a Perfect Ocean. For working to protect the environment, he earned a place in the 2003 Scientific American 50 and the 2005 International Cosmos Prize.

Poster Download

Registration	Not-required
Fees	Free
Contact	Prof. Kaeriyama, Hokkaido University Faculty of Fisheries Sciences TEL : +81-(0)138-40-5605 E-mail: salmon[at]fish.hokudai.ac.jp

Report

We welcomed Professor Daniel Pauly of the University of British Columbia (UBC, Canada), a partner institution of Hokkaido University, who gave a special lecture on the *Present Trends and the Future of Fisheries*. The event, which took place at Hokkaido University's Hakodate Campus, attracted a total of 150 participants. Not only people from fisheries near the Hakodate Campus, but also many faculty members and students from the Sapporo Campus as well as members of the general public partook in animated discussions.

The summary of Professor Pauly's lecture is as follows:
The global fish catch has increased significantly since the end of World War II, particularly during the 1960s. However, catches began to fall in the 1970s due to global overfishing, and this downward trend has intensified. Industrialized countries in the Northern Hemisphere are not only responsible for the initial overfishing-induced decline in catches, but have also spread the effect toward deeper waters and further south to the coastal waters off developing countries and beyond into the Southern Hemisphere all the way down to Antarctica. As we entered the 21st century, the global expansion of fisheries is over, and global catches, which peaked in the 1980s, are continuing to decline. On the other hand, the collateral damage to marine ecosystems and biodiversity continue to increase as countries step up efforts to increase catches based on government subsidies. In developed countries, several factors contribute to the general public's ignorance of the scope of the fishery crisis: the amounts of fish imported by developed countries from developing nations have significantly increased, and there is a misleading perception that aquaculture can make up for any shortfalls stemming from fish catch decreases. These problems have a decisive impact on the future and bode ill for the next decade. Global warming will cause a decline in the potential catches in tropical areas and high-altitude regions will suffer extensive collapse of fisheries. Despite this, people are currently preoccupied with efforts to justify the failed resource management. These problems will cause a serious impact on marine ecosystems.

After the lecture, faculty members of the Graduate School of Fisheries Sciences had a meeting with Professor Pauly and agreed that UBC and Hokkaido University will promote educational exchanges of graduate students and make efforts to improve and expand FishBase, a comprehensive global database of information on fish and marine ecosystems.

Dr. Daniel Pauly of the University of British Columbia

the topic of global fisheries attracted many people

◆Download the presentation data：http://eprints.lib.hokudai.ac.jp/dspace/handle/2115/44517
（Link to Hokkaido University Scholarly and Academic Papers （HUSCAP）

JSPS Core University Program Seminar “Proposal for Sustainable Fisheries”

Overview

Date	December 8 (Wed.) 13:00～ **(Finished)**
Organizer	Hokkaido University Pukyong National University
Co-host	Japan Promotion of Science Korea Research Foundation
Venue	Hanabishi Hotel, Yunokawa Onsen, Hakodate-city (1-16-18, Yunokawa-cho, Hakodate)
Language: Japanese / Korean (Translation will be provided) **Intended Audience:** researchers, general public, college students	
Outline	This seminar will focus on future cooperative relations in fisheries between Japan and Korea and offer the opportunity to review a project implemented by Hokkaido University and Korea’s Pukyong National University over the past decade entitled Elucidation of fish resource fluctuation and development of zero-emission fishery with low environmental burden.The two countries will propose a new form of fisheries for the maritime environment they share to make effective use of marine resources while avoiding waste and the imposition of burdens on the surrounding environment; that is, they will make a proposal for sustainable fisheries in the future.
Registration	Not-required
Fees	Free
Contact	Faculty of Fisheries Sciences, Hokkaido University (Contact: K.Sawada) TEL: +81-(0)138-40-5504 E-mail: sawa3[at]jimu.hokudai.ac.jp

Report

Since 2001, Hokkaido University and Pukyong National University in South Korea have jointly undertaken a research project entitled *Elucidation of fish resource fluctuation and development of zero-emission fishery with low environmental burden*. 2010 marked the final year of this research project whose aim was to establish a new form of fisheries that make effective use of finite marine resources without causing waste or imposing burdens on the surrounding environment.

The two institutions have taken turns to host an annual seminar on research projects, and the last was held in Hakodate, Hokkaido, Japan. Thirty-five researchers from South Korea attended the two-day discussions which involved a total of 100 participants.

The seminar's theme *Proposal for Sustainable Fisheries* was divided between four joint-research groups that researched the environment, fisheries, aquaculture, and food. Their research outcomes were reported and then discussed from the context of ways to realize sustainable fisheries as they recapitulated 10 years of research.

To mark the last year of this project, a poster session was included to present the work of graduate students who will shape the next generation. The selection of the Best Poster Award winners and the subsequent award ceremony helped enliven the atmosphere.

Because Japan and Korea share common migratory fish habitats, the two day event allowed researchers and graduate students to get together to study the present status of the marine environment and contemplate what constitutes an ideal future. Hokkaido University and Pukyong National University are expected to continue to build on the intellectual exchanges fostered over the past 10 years to center on young researchers who will lead the next generation.

graduate student award recipients of the poster session pose with Japanese and Korean coordinators

seminar participants pose for a group photo

3. Report of the Symposium

Symposium Report
報　告　書

October 25-26, 2010
Sapporo, Hokkaido, Japan
Hokkaido University Conference Hall

Supported by Ministry of Education, Culture, Sports, Science and Technology (MEXT)
後援：文部科学省

Contents
もくじ

Message from the President

The forth annual Sustainability Weeks has ended, and I can happily report that it was a success. I would like to express my sincere appreciation to everyone that contributed this year. Your efforts are what made SW 2010 possible.

This year's theme, *Toward a Society Offering Quality of Life and Human Dignity for All* covered a two-week period from October 25 to November 7, and followed an intensive program involving 38 individual sessions—47 if pre- and post-events are included. SW 2010 expanded the menu of annual offerings: international symposiums, public seminars, museum exhibitions, film screenings, and debates to include opportunities to consider global challenges via contests highlighting students' ideas, a candle night event with candles made from waste oil, a tour of test sites, and the operation of velo taxis (a human-powered taxi) to help reduce CO_2 emissions. With the participation of individuals from the academic world, educational communities, industrial circles, and government/non-government organizations as well as students and members of the general public, we shared the latest research achievements and forged cooperative relations toward the resolution of global challenges.

The Sustainability Weeks program was held as part of the National University Festa 2010 campaign in October and November with the aim of encouraging national universities to win public understanding by extensively sharing their activities and proactively explaining their functions to the general public.
This role includes guaranteeing educational opportunities, nurturing future leaders, promoting basic and advanced research programs, establishing industrial infrastructure, and contributing to regional communities in order to promote the development of not only Japan, but also mankind. Hokkaido University is committed to fulfilling its obligations as a national university, and will continue to make every effort and instill ingenuity and originality into our operations toward the creation of a sustainable society.

This commitment carries over to giving concrete form to the Sapporo Sustainability Declaration (SSD) adopted by the presidents of 35 major universities around the world here in Sapporo in 2008. As part of this effort, we will not only host the Sustainability Weeks again in 2011, we will uphold our pledge to be a driving force behind the development of a sustainable society. To this end, we will prepare thoroughly to provide contributors to this year's program with opportunities to expand on and communicate their research achievements and activity results next year. We sincerely hope that our endeavors will continue to gain momentum on a global scale, and include new participants each passing year.

Hiroshi Saeki
President
Hokkaido University

* For the text of the Sapporo Sustainability Declaration, see the end of this booklet.

ご挨拶

4回目となるサステナビリティ・ウィークが、豊かな実りを得て無事に終了したことを喜んでおります。これも、多くの方々からご協力を戴いたお陰と、心より感謝申しあげます。

2010年のテーマは「ひとり一人がすこやかに人間らしく生きる社会を目指して」でした。このテーマの下、10月25日から11月7日までの2週間に38もの行事を集中的に開催しました。これにウィーク前後を合わせると、47 の行事が集いました。

連日開催された行事は実に多様で、国際シンポジウムをはじめ、市民向けのセミナー、博物館展示、映画上映、ディベート大会といった例年行事に加え、学生の発想を競うコンテストや実験場を巡るツアー、廃油から作ったキャンドル点灯、二酸化炭素の排出削減に向けた自転車タクシーの運行など、様々な方法で地球規模の課題を考える機会が設けられました。そこでは、学術界や教育界、産業界、行政やNGOの関係者、学生そして市民が集まり、最新の研究成果を共有すると共に、解決に向けた協力関係を築くことができました。

なお、このサステナビリティ・ウィークは、全国の国立大学がこの10月から11月の間に一斉に開催している「国立大学フェスタ2010」事業の一環として開催しました。これは、全国の国立大学が、大学の活動を広く社会に発信し、大学の果たすべき役割を積極的に国民に説明し、理解を得ることを目的としています。

国立大学は、国民の教育機会の保障、将来を担う人材の育成、先端的・基礎的研究の推進、産業基盤の確立、地域社会への貢献など、日本そして人類の発展のために重要な責務を担っております。北海道大学は、「持続可能な社会づくり」をテーマに、これからも国立大学としての責務を果たしていくよう、不断の努力や運営の工夫を図っていく所存であります。

その努力のひとつとして、2008年に世界35大学の代表がここ札幌市に集まり採択した『札幌サステナビリティ宣言』を忘れることなく、2011 年もサステナビリティ・ウィークを開催する予定です。今年集まった同志が、これから1年間の研究成果と活動成果を持ち寄る機会となるよう、北海道大学はしっかり準備をしたいと思います。そして新たな仲間にも加わっていただき、持続可能な社会の実現に向けた取り組みが、これまで以上に世界規模で活発になるように心から願っております。

2010年12月
北海道大学 総長
佐伯 浩

※『札幌サステイナビリティ宣言』は、文巻末をご覧下さい。

Outline of the Sustainability Weeks 2010

1.Theme of the Sustainability Weeks Event

When we consider sustainability, we first ask whether the civilized society we currently enjoy is sustainable. If the answer is negative, then we must consider what measures can be taken to achieve sustainability.

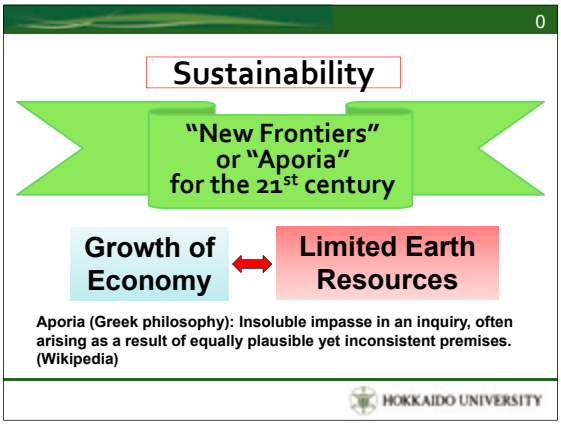
The pursuit of economic growth has also highlighted limitations in other areas. This situation can be described using the Ancient Greek term aporia, which means a seemingly insoluble impasse in relation to an inquiry stemming from premises that are plausible but at the same time inconsistent. Its dictionary definition includes the phrase "without passage." The road toward breaking this aporia and creating a world of harmony for the environment, society, economy, and people can be called the 21st centuries' new frontier.

2.Basic Philosophies and Sustainability at Hokkaido University

Hokkaido University upholds practical learning, all-round education, a frontier spirit, and a global perspective as its basic philosophies.

Practical learning as mentioned here includes the high ideal that the aim of education is to help solve the problems facing humankind rather than simply being limited to serving society. All-round education is not just about mastering specialized fields; it also involves training individuals to recognize the social significance and value of their existence and behavior and accept the responsibilities with which they are entrusted.

To create a sustainable society, we need to change our ways of thinking and reform our social systems. The task of finding a path in the current aporetic situation invokes the frontier spirit as is needed today. Many of the challenges we now face are both regional and global in that they defy resolution by any one state or region and require global cooperation. It is essential to develop people into next-generation leaders with an internationally minded outlook and a wide network of contacts.



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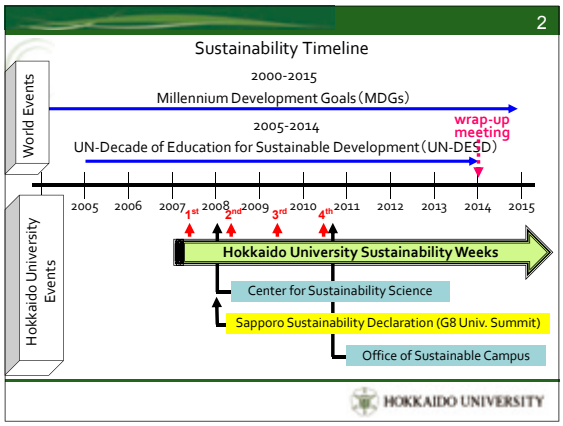
3. Theme of the Sustainability Weeks 2010 Event

This year's Sustainability Weeks (the fourth of its kind) highlighted humanity under its main theme – *Toward a Society Offering Quality of Life and Human Dignity for All.*

Now that the limitations of our mass-consumption society have become clear, there has been considerable discussion on the view that a sustainable society should allow its members to achieve physical, mental, and social well-being toward a high quality of life rather than judging the affluence of nation states or the happiness of their people from GDP figures or other quantifiable indexes.

The health and lifestyles of individuals are affected by the structure of society and the natural environment. Conversely, human activities have an influence on these matters. From this perspective, in the Opening Symposium, we offered a range of programs to promote consideration for the sustainability of human society,. This included the natural world, with a focus on health, ecosystems, poverty, and aging societies with falling birthrates.



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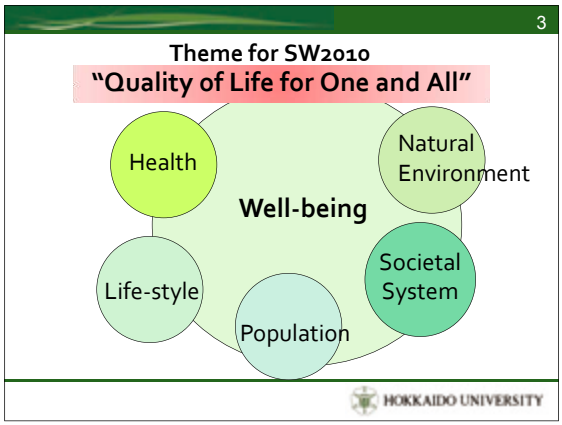

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We sincerely hope that the annual Sustainability Weeks event will continue to generate new ideas, new directions, and new connections from various angles through discussions involving researchers, students, and the general public so that we can pass a better global environment and an improved society on to future generations.

Takeo Hondoh
Chairperson of the Committee for Sustainability Weeks 2010
Executive and Vice-President of Hokkaido University

サステナビリティ・ウィーク 2010 の概要

１．サステナビリティ・ウィークの主題

持続可能性つまりサステナビリティ（Sustainability）を考えるとき、今われわれが享受しているこの文明社会は、孫やその先の代まで持続可能だろうかと問うことから始まります。次に、もし持続しないとしたら、どういう方策があり得るのかを考えます。

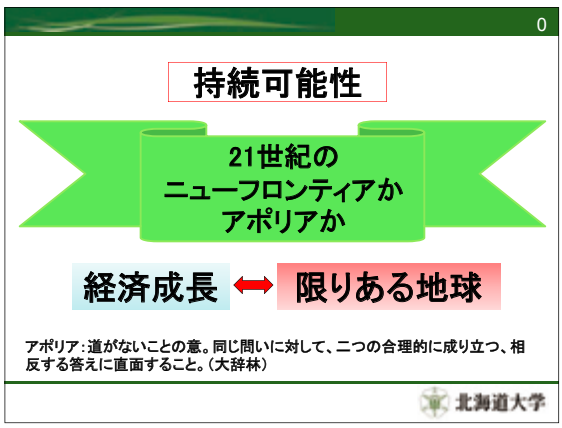
経済成長を追い求める一方、他方で成長の限界が警告されるという状況は、古代ギリシャの言葉でいうところのアポリアかもしれません。アポリアというのは、同じ問いに対して、２つの合理的に成り立つ相反する答えに直面すること、または、道がないという意とも辞書に書かれています。アポリアを解決し、環境・社会・経済・個人が全体として調和する世界を実現させようとする道は、まさしく21世紀のニューフロンティアと言うべきものでしょう。

２．北海道大学の基本理念とサステナビリティ

北海道大学は基本理念とし「実学の重視」「全人教育」そして「フロンティア精神」「国際性の涵養」を掲げています。ここで言う「実学」とは、単に世の中に役立つということにとどまらず、人類が抱える問題の解決に貢献する学問という高い理想が込められています。また、「全人教育」とは、専門性を極めるだけではなく、自らの存在や行動について社会的意義や価値を認識し、責任を引き受ける人材の育成を標榜するものです。

また、持続可能な社会を実現するためには、発想の転換や社会システムの改革が必要でしょう。現代のアポリアすなわち、道のないところに道を見つけること、それはまさに今求められているフロンティア精神です。

さらに、今われわれが直面している多くの問題は、地域の問題であると同時に、国際的な協調なしには解決し得ない問題が多々あります。持続可能な社会を実現するためには、国際的な思考や人脈を持った次世代を担う人材育成が不可欠なのです。



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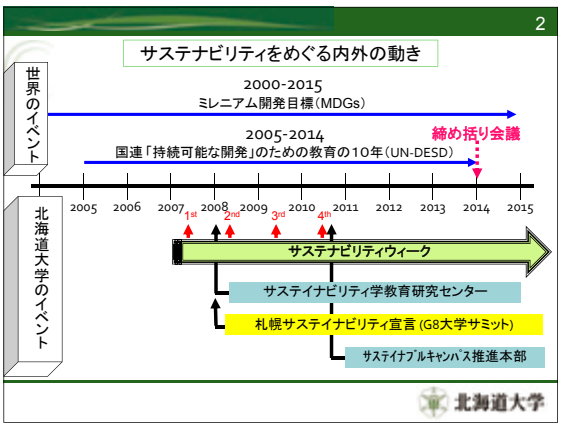
３. 2010 年のテーマ

4回目となるサステナビリティ・ウィークは、 人間にスポットを当て、『ひとり一人がすこやかに人間らしく生きる社会を目指して』がメインテーマです。

大量消費社会の限界が見えている今日、 持続可能な社会を実現するためには、 国の豊かさや国民の幸せの指標を GDP（国内総生産）のような量を競う指標から、 ひとり一人が身体的、 精神的、 社会的に良好な状態（well-being）や生活の質 (Quality of Life : QOL) に求める議論が最近盛んに行われています。

また、 ひとり一人の健康や生活は、 社会の仕組みや自然環境の影響を受け、 逆に人間の活動はそれらに影響を与えます。 このような視点で、 オープニング・シンポジウムでは、 健康、 生態系、 貧困、 少子高齢社会を切り口に、 自然界も含めた人間社会の持続可能性を考えるプログラムを用意しました。



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サステナビリティ・ウィークとは、 人類共通の課題について最新の研究成果や知識を共有し、 様々な角度から問題点や解決策を議論する期間です。 世界各地から、 研究者や教育関係者が集まり、 様々な課題に対して専門的な議論を行うと同時に、 それを社会に提示する機会でもあります。 研究者、 学生、 市民による議論を通じて、 将来の世代へより良い地球環境と社会を手渡すための、 新たなアイデア、 新たな方向そして新たなつながりが産まれることを願っています。

北海道大学理事・副学長
サステナビリティ・ウィーク 2010　実行委員長
本堂　武夫

Opening Ceremony

9:00-9:05	Opening Address Hiroshi Saeki, President, Hokkaido University
9:05-9:10	Greeting Nobuo Fujishima, Director-General for International Affairs, Ministry of Education, Culture, Sports, Science and Technology, Japan
9:10-9:25	Outline of the Sustainability Weeks 2010 Takeo Hondoh, Executive and Vice-President, Hokkaido University
9:25-10:25	Keynote Lecture: Sustainability at Dalhousie Keith F. Taylor, Associate Vice-President Academic, Outreach & International Programs, Dalhousie University
10:25-10:55	Ceremony for Emeritus Professor Akira Suzuki for Winning the 2010 Nobel Prize in Chemistry
10:55-11:10	Break

Plenary Lecture

Session 1 Effects of the Natural & Social Environments on Human Health

Chair: Takeshi Saito, Professor, Faculty of Health Sciences, Hokkaido University

11:10-12:10	Environmental Health Issues for Future Sustainability Yun-Chul Hong, Professor, Seoul National University College of Medicine
12:10-12:55	Outline of Research Projects at the Hokkaido University Center for Environmental and Health Sciences and Future Tasks - including the Significance of the Center's Establishment to Hokkaido University Reiko Kishi, Professor and Dean of Center for Environmental and Health Science, Hokkaido University
12:55-13:10	Q & A
13:10-14:00	Lunch

Session 2 The Deterioration of Ecosystems and it's Impact on Human Life

Chair: Mamoru Ishikawa, Associate Professor, Faculty of Environmental Earth Science, Hokkaido University

14:00-14:45	Issues on Forest Rehabilitation of Degraded Forestland in Mongolia Jamsran Tsogtbaatar, Institute of Geoecology, Mongolian Academy of Sciences
14:45-15:30	Sustainable Use and the Ecosystem Network of Mongolian Nomadic Pastures Noboru Fujita, Visiting Associate Professor, Research Institute for Humanity and Nature
15:30-15:45	Hokkaido University's Efforts to Tackle Regional Environmental Problems in Mongolia Mamoru Ishikawa, Associate Professor, Faculty of Environmental Earth Science, Hokkaido University
15:45-16:00	Q & A
16:00-16:15	Break

Session 3 Reflections on Societal Structure

16:15-18:00	【TALK】Actual Conditions of Poverty Issues in Japan and the Direction to Take for their Resolution Makoto Yuasa, Chief of the Secretariat, Anti-Poverty Network Takeshi Nakajima, Associate Professor, Hokkaido University Public Policy School (HOPS)
18:00-18:15	Q & A
18:15-18:20	Closing Address
18:45-20:00 (Door open at 18:15)	Welcome Party at Room 1 (1st floor)

Parallel Sessions

Session 1 Children for Sustainable Development—Present Crisis Affecting Children
Host: Faculty of Education, Hokkaido University

9:30-12:30

Health Crisis-Developmental Origins of Health and Disease
Akito Kawaguchi, Professor, Faculty of Education, Hokkaido University

Leaning Crisis—Toward a Total Understanding of Developmental Disabilities
Harumitsu Murohashi, Professor, Faculty of Education, Hokkaido University

Development Crisis—Difficulties Faced by Children and the Recreation of Their Developmental Environments
Ichiro Matsumoto, Professor, Faculty of Education, Hokkaido University

Session 2 The Eurasian Ecotone: Sustainable Ecosystem Use in Mongolia
Host: Faculty of Environmental Earth Science, Hokkaido University

9:30-12:30

Permafrost and Forests in Mongolia
Mamoru Ishikawa, Faculty of Environmental Earth Science, Hokkaido University

Meteorological Observation Related to Stock Farming in Mongolia
Yuki Morinaga, Meiji University

Environmental Risk Assessment around Mining Areas of Mongolia
Oyuntsetseg Bolormaa, National University of Mongolia

General Discussion and Recommendations
Moderator: Shin Miyazaki, Faculty of Environmental Earth Science, Hokkaido University

Session 3 Global Water Crisis and Well-being
Host: Faculty of Engineering, Hokkaido University

9:30-12:30

Water and Health
Xiaochang C. Wang, Professor, Xi'an University of Architecture and Technology

Water Education for Health, Development and Peace
Robert W. Nairn, Associate Professor, School of Civil Engineering and Environmental Science, University of Oklahoma

Water and International Cooperation
Ryuji Matsunaga, International Cooperation Manager, Hokkaido University

General Discussion and Recommendations
Moderator: Naoyuki Funamizui, Professor, Facult of Engineering, Hokkaido University

Session 4 Health and Care for Ageing Society: Are the Senior People in Japan Happy?
Host: Graduate School of Medicine, Hokkaido University

9:30-12:30

Fostering Well-being among Senior People in Japan
Hiko Tamashiro, Professor, Graduate School of Medicine, Hokkaido University

Long Term Care Prevention in Hokkaido – Trials of Home Visits
Tamiko Ikeno, Visiting Scientist, Center for Environmental and Health Sciences, Hokkaido University

Older Adults Living in a Motorized Society
Asuna Arai, Assistant Professor, Graduate School of Medicine, Hokkaido University

Modern Society and Mental Health – Suicide in Japan
Eiji Yoshioka, Assistant Professor, Graduate School of Medicine, Hokkaido University

General Discussion and Recommendations
Moderator: Hiko Tamashiro, Professor, Graduate School of Medicine, Hokkaido University

The 2nd Hokkaido University Sustainability Research Poster Contest

12:30-15:30 Students with odd numbers: 12:30-14:00, Students with even numbers: 14:00-15:30

Panel Discussion

Chair: Fumikazu Yoshida, Professor, Graduate School of Economics and Business Administration, Hokkaido University
Reiko Kishi, Professor and Dean of Center for Environmental and Health Science, Hokkaido University

15:45-18:05 Report from Parallel Sessions and Discussion

18:05-18:10 Closing Address

オープニングセレモニー

9:00-9:05 開会の挨拶
佐伯浩（北海道大学総長）

9:05-9:10 来賓挨拶
藤嶋信夫（文部科学省国際統括官）

9:10-9:25 サステナビリティ・ウィーク2010開催趣旨
本堂武夫（北海道大学副学長・理事）

9:25-10:25 基調講演: ダルハウジー大学における持続可能性
キース・F・タイラー（ダルハウジー大学副学長）

10:25-10:55 鈴木章名誉教授のノーベル賞受賞を祝す会

10:55-11:10 休憩

全体会

セッション 1: 自然と社会の健康への影響

司会: 齋藤健（北海道大学保健科学研究院教授）

11:10-12:10 今後の持続可能性に関わる環境衛生問題
ホン・ユン・チュル（ソウル国立大学医学部教授）

12:10-12:55 環境健康科学研究教育センターにおける研究の概要と今後の課題について
本学におけるセンター設立の意義を含めて
岸玲子（北海道大学教授、環境健康科学研究教育センター長）

12:55-13:10 質疑応答

13:10-14:00 昼食

セッション 2: 生態系劣化と生活劣化

司会: 石川守（北海道大学地球環境科学研究院准教授）

14:00-14:45 モンゴルにおける荒廃森林地帯再生の課題
ジャムスラン・ツクトバータル（モンゴル科学アカデミー地球生態学研究所長）

14:45-15:30 モンゴル遊牧草原の持続的利用と生態系ネットワーク
藤田昇（総合地球環境学研究所客員准教授）

15:30-15:45 モンゴルの地域環境問題に対する北大の取り組み
石川守（北海道大学地球環境科学研究院准教授）

15:45-16:00 質疑応答

16:00-16:15 休憩

セッション 3: 社会のしくみと生活

16:15-18:00 【対談】日本における貧困問題の実態と解決の方向性
湯浅誠（反貧困ネットワーク事務局長）
中島岳志（北海道大学公共政策大学院准教授）

18:00-18:15 質疑応答

18:15-18:20 閉会の挨拶

18:45-20:00 ウェルカムパーティー（1階第1会議室）
（開場/18:15）

分科会

セッション 1: 社会の持続的発展の次世代主体―いまある「こども」の危機―

主催: 北海道大学教育学院

9:30-12:30

子どもの「健康」の危機ー疾患感受性胎児期起源説(DOHaD)ー
河口明人(北海道大学大学院教育学研究院教授)

子どもの「学び」の危機ー発達障害のトータルな理解に向けて
室橋春光(北海道大学大学院教育学研究院教授)

子どもの「成長」の危機ー子どもの困難と「育つ場」の再構築
松本伊知朗(北海道大学大学院教育学研究院教授)

セッション 2: ユーラシア・エコトーン帯: モンゴルにおける生態系の持続的利用

主催: 北海道大学地球環境科学研究院

9:30-12:30

モンゴルにおける永久凍土と森林
石川守(北海道大学地球環境科学研究院)

モンゴルの牧畜気象観測
森永由紀(明治大学)

モンゴル鉱業地域周辺の環境リスクアセスメント
オユンチェチェグ・ボロルマ(モンゴル国立大学)

討論・提言
進行役: 宮崎真(北海道大学地球環境科学研究院)

セッション 3: 世界の水の危機とWell-being

主催: 北海道大学工学研究院

9:30-12:30

水と健康
王暁昌(西安建築科技大学副学長)

健康・開発・平和に向けた水教育
ロバート・W・ネアン(オクラホマ大学土木工学・環境科学部准教授)

水と国際協力
松永龍児(北海道大学国際協力マネージャー)

討論
進行役: 船水尚行(北海道大学工学研究院教授)

セッション 4: 高齢社会の健康と介護: 幸せとは?

主催: 北海道大学医学研究科

9:30-12:00

日本の高齢者のウェルビーイングに向けて
玉城英彦(北海道大学大学院医学研究科教授)

北海道における介護予防活動～予防型家庭訪問の事例
池野多美子(北海道大学環境健康科学研究教育センター学術研究員)

現代社会と高齢者～自動車運転を考える～
新井明日奈(北海道大学大学院医学研究科助教)

現代社会と心の悩み～自殺問題を中心に～
吉岡英治(北海道大学大学院医学研究科助教)

討論・提言
進行役: 玉城英彦(北海道大学大学院医学研究科教授)

第2回 北海道大学サステナビリティ学生研究ポスターコンテスト

12:30-15:30 奇数番号:12:30-14:00 偶数番号: 14:00-15:30

総合討論

司会: 吉田文和(北海道大学経済学研究科教授)
岸玲子(北海道大学環境健康科学研究教育センター長)

15:45-18:05 討論課題説明、全体セッションと分科会からの報告、総合討論

18:05-18:10 閉会の挨拶

Congratulatory Ceremony for Nobel Prize Laureate, Professor Emeritus Akira Suzuki

On October 25, the students, staff, and faculty of Hokkaido University held a congratulatory ceremony during the Sustainability Weeks 2010 opening ceremony for Professor Emeritus Akira Suzuki for being selected to receive the 2010 Nobel Prize in Chemistry.

After a congratulatory message from university president Hiroshi Saeki was read by Vice President Masaaki Henmi, Professor Norio Miyaura, who conducted joint research with Professor Emeritus Suzuki, gave a congratulatory address. This was followed by messages from an international student who is studying the application of the Suzuki-Miyaura coupling reaction on electronic materials, and Japanese student who is emulating Professor Emeritus Suzuki's life work of chemical synthesis of organic boron compounds as student representatives. Afterward, a flower bouquet was presented by a representative of the university staff.

The ceremony ended with a message from Professor Emeritus Suzuki. He talked about the importance of contributing toward the realization of a sustainable society for future generations, and that in his field of chemistry, there is a movement to conduct research via "eco-chemistry" and "eco-organic synthesis" in such a manner that does not pollute the environment. Professor Emeritus Suzuki went on to appeal to the audience by saying that in addition to the efforts of the government and the university, it is important for each one of us to take the message of sustainability to heart. He expressed admiration for Hokkaido University's timely action of taking the first steps toward furthering its sustainable efforts by sponsoring Sustainability Weeks, and that in the future, he expects HU's efforts to blossom and reverberate throughout society.

From right:
* Professor Norio Miyaura
* Professor Masaaki Hemmi, Executive and Vice-president
* Professor Emeritus Akira Suzuki
* Ms. Momoko Watanabe, a first year master student in the Graduate Schools of Chemical Sciences and Engineering. She is emulating Professor Emeritus Suzuki's life work of chemical synthesis of organic boron compounds.
* Mr. Gaoqiang Li, a second year PhD candidate in the Graduate Schools of Chemical Sciences and Engineering. He is studying the Suzuki coupling reaction and its application on electronic materials.
* Ms. Nanae Tanaka, staff of Sustainability Weeks 2010

鈴木章名誉教授のノーベル賞受賞を祝す会

ノーベル賞受賞が決まった鈴木章名誉教授へ、北海道大学の教職員及び学生がお祝いの気持ちを伝える機会として、10 月 25 日に開催したサステナビリティ・ウィークのオープニングセレモニーの中に、受賞を祝す会を設定した。

はじめに佐伯浩総長のお祝いの言葉が逸見勝亮副学長により代読され、続いて、共同研究者であった宮浦憲夫教授、触媒を使った物質変換の研究をしている日本人学生や留学生がお祝いを述べた後、教職員の代表から花束が贈られた。

最後に鈴木先生からメッセージがあり、ご自身の専門である化学の分野でも、持続性のある社会づくりを目指して、環境を汚さない方法で化学の務めを果たすための研究が盛んになっているとの紹介があった。そして、政府や大学の努力に加え、ひとり一人がサステナビリティの精神を肝に銘じ協力していくことが大切さであり、時機を得た北海道大学の取り組みの発展に期待しているとの言葉があった。

右から：
* 宮浦憲夫教授
* 逸見勝亮理事・副学長
* 鈴木章名誉教授
* 渡邉桃子（鈴木先生のライフワークである有機ホウ素化合物の研究の流れを引き継ぎ研究をしている総合化学院修士課程1年生）
* 李高強（Li Gaoqiang）（鈴木カップリング反応とエレクトロ ニクス材料への応用を研究している総合化学院博士課程2年生）
* 田中奈々絵 サステナビリティ・ウィーク事務局スタッフ

Keynote Lecture

Sustainability at Dalhousie

Keith F. Taylor

Associate Vice-President
Academic, Outreach & International Programs, Dalhousie University

Abstract:

Creating a sustainable future is one of the greatest challenges that mankind has ever faced. It is widely recognized that the planet will not sustain our current levels of fossil fuel usage. However, there are no clear plans on how move to a collective lifestyle that can be supported without depleting the earth's resources. The economy and the environment are both incredibly complex systems which interact via energy generation and usage. I will discuss the difficulties in predicting how a complex system will evolve and the impossibility of successful centralized control. I believe the path to a sustainable future is through education and I will describe the Environment, Sustainability and Society Program at Dalhousie University as our contribution to what must turn into a world-wide education movement.

Profile:

Keith Taylor is the Associate Vice-President Academic, Outreach and International Programs at Dalhousie University. He received his PhD in Mathematics from the University of Alberta (1976) and served as a faculty member at the University of Saskatchewan (U of S) for 26 years. He was promoted to the rank of Full Professor in 1987. In 2001, he received the Master Teacher Award at the U of S. His research interests are in Harmonic Analysis, Signal Processing, and Mathematical Chemistry. His efforts to assist students in their transition from high school to university led to the establishment of the annual Math Readiness Summer Camp at the U of S. Dalhousie University appointed him Professor of Mathematics & Statistics and Dean of Science for the 2003-08 period. On August 1, 2008, he moved to his current position with dual responsibilities for outreach into the pre-university education system and for the development of international relations and programs for Dalhousie.

ダルハウジー大学における持続可能性

キース・F・タイラー

ダルハウジー大学副学長
（学術・アウトリーチ・国際交流担当）

要　旨：

持続可能な未来を創造することは人類が経験したことのない最大の課題の一つである。 地球の資源には限界があり、 現在のレベルで化石燃料を消費し続けられないことは周知の通りである。 しかし、 地球資源を枯渇させずに維持することのできるコレクティブ・ライフスタイルへと、 どのように転換していくのかという具体策は立っていない。 経済と環境はともに極めて複雑なシステムであり、 これらはエネルギーの生成と利用により相互に影響をおよぼしている。 本講演では、 経済と環境の複雑なシステムがどのように進化するかを予測することの難しさ、 そして一元的管理は成功不可能であることを論じる。 持続可能な未来への道は教育により開かれるものであることを信じ、 世界的な教育活動への発展に寄与するものとして、 ダルハウジー大学が行う「環境・サステナビリティ・社会プログラム（Environment, Sustainability and Society Program）」を紹介する。

経　歴：

ダルハウジー大学学術・アウトリーチ・国際交流プログラム担当副学長。 1976 年にアルバータ大学より博士号（数学）を取得、 サスカチュワン大学教員として 26 年間勤務。 1987 年に教授となる。 2001 年、 サスカチュワン大学の「最優秀教授賞」を受賞。 研究分野は調和解析、 信号処理、 および数理化学。 高校から大学へと進学する学生への支援活動がサスカチュワン大学で毎年実施されている数学準備サマーキャンプの設立へと発展した。 2003 年から 2008 年まで、ダルハウジー大学で教授（数学・統計学）、理学部長を務める。 2008 年 8 月 1 日にダルハウジー大学の現職に着任、 大学入学前教育システムへのアウトリーチと国際交流プログラム開拓を兼務している。

Plan of the lecture

- General remarks on sustainability
- Introduction of Dalhousie University
- Our Office of Sustainability
- Our innovative degree program
  - *Environment, Sustainability and Society*
- Time for questions

1

A sustainable world: What we need to understand
Complex interacting systems

- Human systems
  - World economy
  - World politics
  - Energy generation and usage
  - Global food
- Natural systems
  - Ocean and atmosphere: and their interface
  - Marine biodiversity
  - Terrestrial biodiversity

Complex systems cannot be controlled, but they can be understood !!!

2

2

Understanding is critical to sustainability:

- Scientists must reveal the principles of the natural systems.
- Scientific modelers must improve their models.
- Economists and sociologists must reveal the human factors and how they interact.
- Politicians must understand basic principles to pass informed legislation.
- Energy use per person must go down, so every individual must have improved understanding.

Universities play a critical role.

3

3

Universities have a vital role to play in meeting the millennium development goal of environmental sustainability:

Whatever field our graduates work in they will require an understanding of complex sustainability issues

Universities must develop the research capacity to generate the new knowledge and understanding necessary to address complex social and technical problems and help society meet the goal of environmental sustainability

4

4

But universities have actually been blamed for the sustainability issues we face:

If universities don't adapt to prepare our leaders to face the sustainability challenges who will?

The segregated nature of academic study at universities poses barriers to innovative interdisciplinary programs and research

At Dalhousie University, we are acting on two fronts:

- Office of Sustainability to improve our own actions.
- Program of study: Major in ESS (Environment, Sustainability and Society).

5

5

Dalhousie University, founded in Halifax, Canada, in 1818.

6

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Dalhousie facts:

- 11 Faculties: Arts & Social Sciences, Architecture & Planning, Computer Science, Dentistry, Engineering, Graduate Studies, Health Professions, Law, Management, Medicine, Science
- 13,000 Undergraduate + 4,000 Graduate Students
- More than 1,000 faculty members.
- Student:faculty ratio of 15 is lowest in Canada.
- Annual research funding: $140 million.
- Among the top 5 Marine Science clusters in the world.

College of Sustainability

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7

History – Office of Sustainability

- Office established in January of 2008 with the Director of Sustainability.
- Reports to the Vice-President of Finance and Administration.
- DSU Sustainability Office and Dalhousie College of Sustainability also established in 2008.

8

Office Pillars of Action

- Behaviour
- Design (policy and planning)
- Physical Upgrades
- Measurement & Monitoring

9

Sustainability at Dalhousie - Background

- More than 140 academics addressing environment and sustainability across nine Faculties
- Environmental academic programs in six Faculties
- Outreach activities such as the Cities and Environment Unit and Ocean Tracking Network
- Office of Sustainability in place
- Many years of student activism on sustainability
- President's Advisory Council on Sustainability - 2008

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The drivers and process for change

- A university strategic focus on sustainability
- A sense we could accomplish more through broader collaboration
- Support from the President
- A strong push from Provost to start with an undergraduate program
- A steering committee of faculty and students was convened in 2007 and through broad consultation and workshops developed a concept for a new academic program and administrative structure:

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The outcome of the workshops was consensus:

That in this century an understanding of sustainability will be critical for every person in a leadership role in society.

That we should provide an understanding of sustainability to all our graduates and develop the capacity to generate new knowledge and understanding necessary to help society meet the goal of environmental sustainability

The College of Sustainability was the next step

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The College of Sustainability Approach

- Issues relating to environment and sustainability are complex and diverse, requiring new ways of problem-solving
- Challenges such as economic globalization, climate change, energy, water, human population, food and urbanization all need new knowledge, leadership and ideas.
- Decisions need to be made from many perspectives: social, political; business, scientific, and technological; design and culture.

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The Environment, Sustainability & Society Major

- Draws on virtually every academic discipline
- Energetic, problem-based classes and a team-teaching approach
- A strong hands-on community component, offering experiential learning, with opportunities to tackle real-world sustainability issues
- Available as a double major with any disciplinary undergraduate area of study in five Faculties and degrees
- (BA, BSc, BCD, BCSc, Binf, BMgmt)

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The Environment, Sustainability & Society Major

- **Large-scale interdisciplinary, team-taught lecture classes supported by small tutorials in first and second year - issue and problem focus**
- **Interdisciplinary methods, experiential learning and community engagement classes in third and fourth years**
- **Capstone class in final year - interdisciplinary student teams work with community groups on real-world issues and problems**
- **Strong links to community groups and issues, in collaboration with graduate students**
- **Sustainability lecture and seminar series on Thursday nights, building public knowledge and interest**
- **Core electives list includes 100 classes from 5 faculties**

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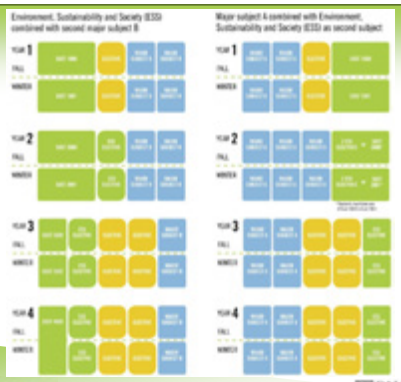

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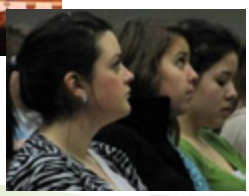

"You have three professors, all on stage teaching about sustainability, but from their perspectives… you can have a historian, a biologist, and an architect… and it's super interesting and engaging as a student to be able to see what's going on on stage, how they're discussing these issues, and an amazing learning experience."

Camila Das Gupta, ESS student

Change College of Sustainability DALHOUSIE UNIVERSITY 17

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Key drivers of the project

- Institutional and Administrative Support
- Grassroots Support
- Detailed Background Research
- A University-wide Planning Process
- Open Communication with Stakeholders
- Working Within Existing Structures and Capacities

Change College of Sustainability DALHOUSIE UNIVERSITY 18

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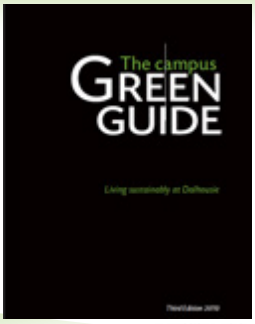
The Green Guide: Living Sustainably at Dalhousie

- Prepared by students and interns with the College
- A major internal outreach project
- 3rd edition, 4000+ copies distributed
- On-line edition launched
- An adaptation for a university in Kenya is in preparation



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Environment, Sustainability & Society - 2009/10

- **2009 Anticipated enrollments:**
- **September 2009: 100-150 incoming 1st year students**
- **September 2014: 1000 undergraduate students total in the ESS program**

- **2009 Actual enrollments:**
- **March 23: 67 returning students enrolled in SUST 1000 in first 12 hours**
- **June 25: 80 incoming students enrolled in SUST 1000 in first 12 hours**
- **September 15: 301 students in SUST 1000 and 220 in SUST 1001**

- **64% of students said the ESS major was influential in their decision to come to Dal;**
- **43% said it was a major or primary factor;**
- **19.5% said they would not have chosen Dal if the ESS major was not available**

- **2010 enrolments at maximum classroom space**

Change College of Sustainability DALHOUSIE UNIVERSITY 20

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Environment, Sustainability and Society Program – impacts at Dalhousie

- The new College demonstrates a university can change to offer interdisciplinary education in sustainability
- It has already prompted two other interdisciplinary program initiatives in health professions and design

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Environment, Sustainability and Society – the future

- By 2020, we envisage virtually every undergraduate student at Dalhousie University will be enrolled in the Environment, Sustainability and Society program
- This program model may be transferable to other institutions and offers a way for universities to prepare students for the sustainability challenges they will face

Change DALHOUSIE UNIVERSITY Inspiring Minds

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Environment, Sustainability & Society - recognition

- College of Sustainability and ESS Major recognized as a "Best Practice" in Education for Sustainable Development by UNESCO; only North American project invited to ESD projects exhibition in Bonn, March 2009
- CoS & ESS were among 16 finalists in the "Sustainability" theme of the World Innovation Summit for Education Awards, sponsored by the Qatar Foundation, October 2009
- Steven Mannell presented the podcast "Making Change Happen: University leadership for a sustainable future" in the series "Intellectual Muscle: University Dialogues for the 2010 Olympic Games"

Change College of Sustainability DALHOUSIE UNIVERSITY 23

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Environmental Health Issues for Future Sustainability

Yun-Chul Hong

Professor
Seoul National University College of Medicine

Abstract:

We often forget we cannot survive even a moment without air, water and other environment which provides us life-support and protection. However, recent series of weather events and natural disaster have reminded us of the critical linkages between environment and health. WHO/UNEP recently reported that avoidable environmental risks currently cause almost a quarter of the total burden of disease. Particularly, the greatest impacts are on children and other vulnerable populations. Not only natural environment, but man-made environment also challenges us to address how to harmonize them and to secure sustainability and human health. The Millennium Ecosystem Assessment estimates that approximately 60% of Earth's major ecosystem are being degraded or used unsustainably. Global environmental changes can impact on agricultural production, vector-borne diseases, and spur more extreme weather conditions, causing injuries and deaths. One of the extreme weathers is frequent heat wave in the summer. It is probable that temperature exceeding certain level have adverse effect on mortality and morbidity. Respiratory and cardiovascular diseases are thought to be the main cause of mortality and morbidity inflicted by heat wave. Air pollution, another challenge we face, is also shown to be associated with various health outcomes. Particularly urban air pollution is estimated to kill about 800,000 every year. Elevated levels of fine particulates in ambient air are associated with increases in daily and long-term premature mortality.

Newly made industrial chemicals are introduced everyday and used commonly in our daily life. Bisphenol A is commonly used to synthesize polycarbonate plastics and epoxy resins, and these plastic polymers are extensively applied to the manufacture of various articles of daily use. Phthalates are another ubiquitous environmental chemicals with widespread use as plastic additives. These chemicals are often called endocrine disrupting agents and concerns have been directed largely toward its endocrine or sexual/reproductive consequences. On the other hand, these chemicals seem to play important roles in development of metabolic syndrome and brain development. Given that these chemicals are nowadays detected in most of people living in developed countries, with daily intakes likely to be highest in children, endocrine disrupting chemicals could be very challenging threats to human sustainability in the future.

Profile:

Yun-Chul Hong is Professor of Preventive Medicine and is also Director of Environmental Medicine at the Seoul National University. He has conducted research in the areas of air pollution, climate change, gene-environment interactions, and endocrine disrupting agents in relation to human health. Several investigations he has been involved are the Elderly Panel Study, the Children's Environmental Health Study, and the Mothers and Children's Environment Health Study focusing on susceptible population in relation to environmental exposure. He also served as an expert scientist of WHO/WPRO for Asia-Pacific country projects for adaptation strategies to climate change. Recently he successfully organized the 2010 Conference of International Society of Exposure Science and International Society for Environmental Epidemiology in Seoul as the chair of steering committee.

今後の持続可能性に関わる環境衛生問題

ホン・ユンチュル

ソウル国立大学医学部教授

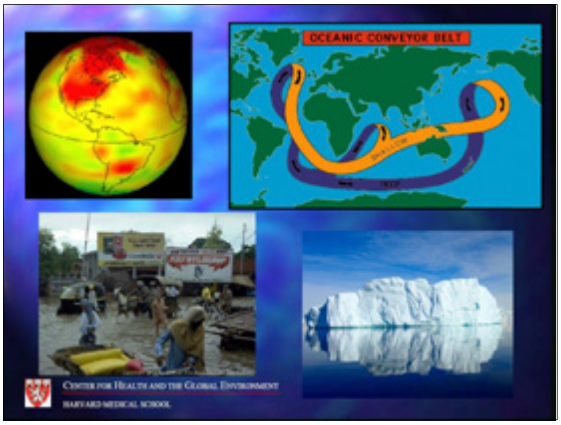
要　旨：

空気や水がなければ、人間はたちまち死んでしまうこと、そして他の自然環境も、人々の命を支え、守ってくれていることを私たちは忘れがちであるが、近年生じている一連の気象や自然災害によって、人々は自然環境と健康の重要な関係を再認識している。WHO/UNEP の最近の報告によれば、現在人々を苦しめている病気の約 4 分の1が、回避可能な環境リスクを原因とするものである。特に大きな影響を受けているのは、子供を始めとする、被害を受けやすい人々である。私たちは自然環境のみならず、人間が作った環境への対応も迫られている。環境と調和していく方法、そして持続可能性を確保し、人々の健康を守る方法を探っていかねばならない。「ミレニアム・エコシステム・アセスメント（Millennium Ecosystem Assessment）」の評価によれば、悪化が進んでいる生態系、あるいは持続可能なやり方で利用されていない生態系が、地球上の主要な生態系の約 6 割を占めている。地球環境の変化は、農業生産や生物媒介の病気に影響を与え、より極端な気象状態を引き起こす。その結果として死傷者が出ることになる。極端な気象の 1 例として、酷暑が長く続く夏が頻繁になることが挙げられる。酷暑によって気温が一定のレベルを超えると、死亡率や罹病率に悪影響を及ぼす。また私たちが直面している難題の 1 つである大気汚染も、様々な健康上のアウトカムの 1 因であることがわかっている。特に都市部の大気汚染によって、年間 80 万人が死亡していると推定されている。周囲空気中の微粒子物質の含有値が高まると、早期死亡率（日間死亡率・長期的死亡率）が上昇する。

新たに作られた工業化学物質が、日々の生活にもたらされ、日常的に広く使われている。ビスフェノール A は一般的にポリカーボネート･プラスチックとエポキシ樹脂の合成に使われており、これらのプラスチックポリマーは、様々な日用品を製造するのに広く利用されている。フタル酸エステルも、プラスチック添加物として広く使われている環境化学物質である。このような化学物質はしばしば内分泌かく乱物質と呼ばれ、特にそれが内分泌腺や生殖機能に及ぼす影響が懸念されている。一方これらの化学物質は、メタボリック症候群の進行や脳の発達において重要な役割を演じるとされている。現在、発展途上国における人々の生活はこれらの化学物質に著しく影響されている。その日々の摂取量が最も多いのは子供たちであることから、内分泌かく乱物質は、今後の人類の持続可能性にとって非常に困難な脅威となる可能性がある。

経　歴：

ホン・ユンチュルは、ソウル国立大学予防医学教授・環境医学研究所長を務めている。大気汚染、気候変動、遺伝子と環境の交互作用、人間の健康に関わる内分泌かく乱物質の分野における研究を行っている。環境曝露の影響を被りやすい層の人々に焦点を当てた調査研究に取り組んでおり、これまでに高齢者のパネル調査、子供の環境衛生研究、そして母子環境衛生研究等に関わってきた。また WHO/WPRO による気候変化への適応戦略のためのアジア太平洋諸国プロジェクトに、その専門科学者として携わった。近年では、ソウルで開催された国際曝露科学会・国際環境疫学会 2010 合同年会運営委員会の委員長として、同会議を成功に導いた。



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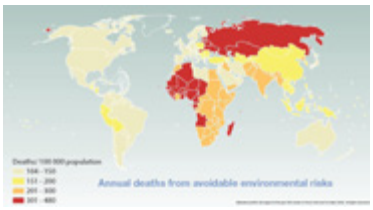
Global Disease Burden

- "24% of global disease burdens and 23% of all deaths can be attributed to environmental factors. Of the 102 major diseases --- environmental risk factors contributed to disease burdens in 85 categories"



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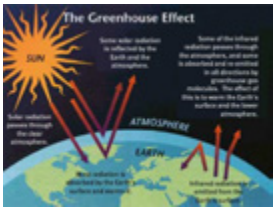
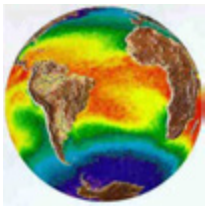
Climate Change





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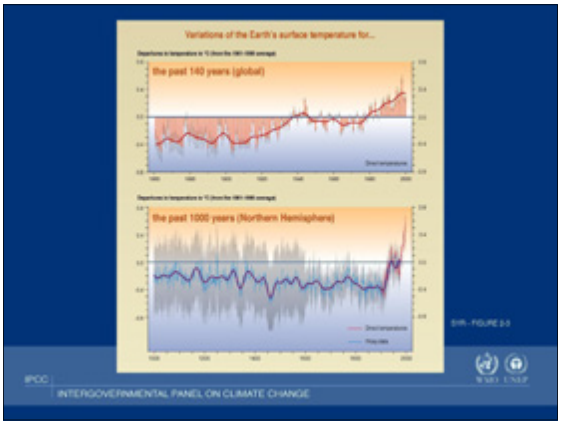

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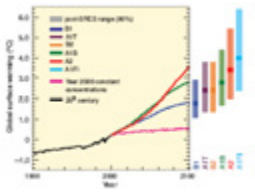

•Projected global surface warming at the end of the 21st century is scenario-dependent. Projected temperature increases for six SRES scenarios are:
B1: 1.8 [1.1 to 2.9]°C;
A1T: 2.4 [1.4 to 3.8]°C;
B2: 2.4 [1.4 to 3.8]°C;
A1B: 2.8 [1.7 to 4.4]°C;
A2: 3.4 [2.0 to 5.4]°C;
A1FI: 4.0 [2.4 to 6.4]°C
(Source: IPCC AR4 WG-I, 2007)

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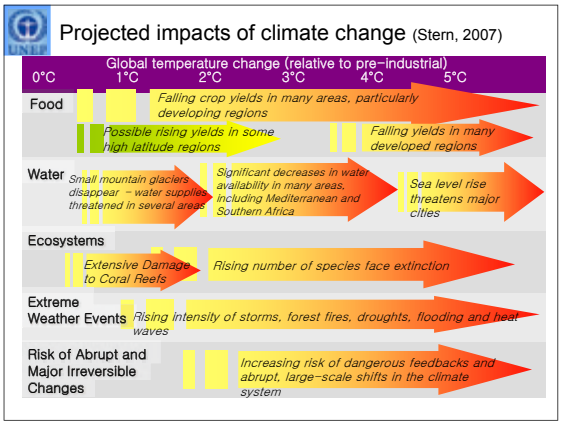

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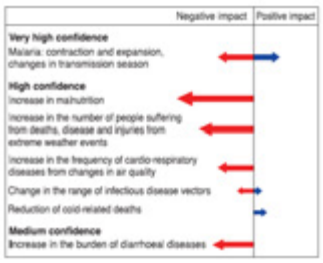

Direction and magnitude of change of selected health impacts of climate change
[Source: IPCC AR4 WG-II, 2007]

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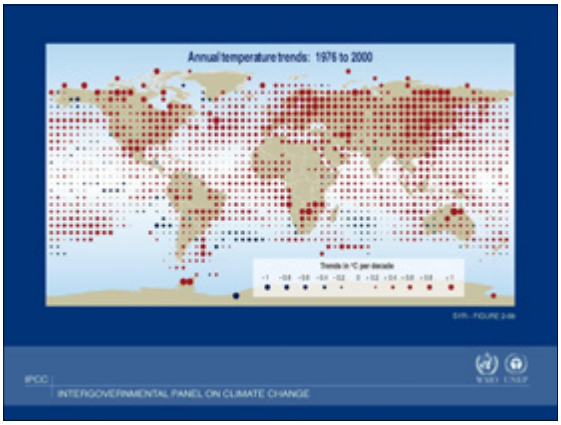

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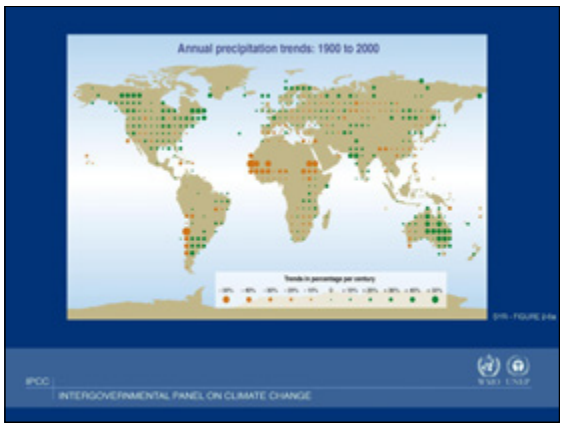

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Climate Change Impacts on Health: Increase in Climate Sensitive Health Outcomes

- Injuries, disability, drowning
- Heat stress
- Water and food-borne diseases
- Malnutrition
- Vector-borne diseases
- Psychological stress

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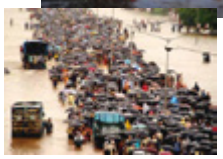
More Injuries, Disabilities, and Drowning from Extreme Weather Events



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Rapid Glacier Melting = Less Freshwater

http://msnbcmedia3.msn.com

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Scarcity of Food = Malnutrition

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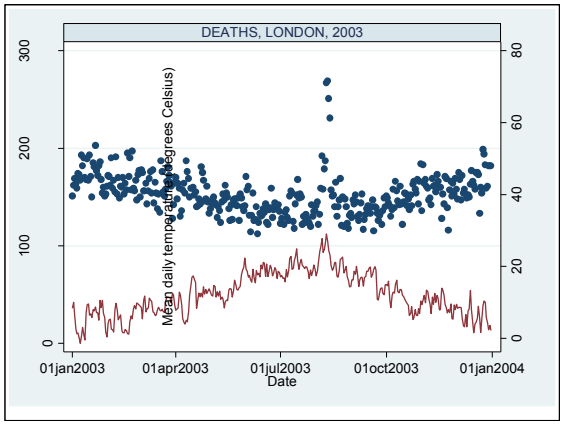

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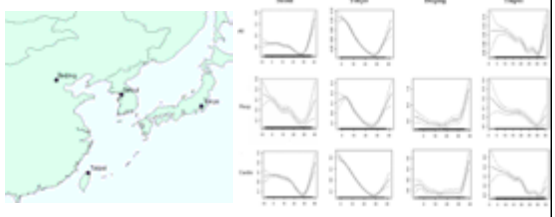
Ambient Temperature and Mortality: An international study in 4 capital cities of East Asia



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Spread of Vector Borne Diseases

- Warmer temperatures and disturbed rain patterns could alter the distribution of important disease vectors
- Combined with altered rainfall patterns, hotter conditions may increase the spread of disease, such as malaria, dengue, and chikungunya, to new areas

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More Water Borne Diseases

- In 2005, diarrhoeal diseases accounted for 20.1% of deaths in children less than five years

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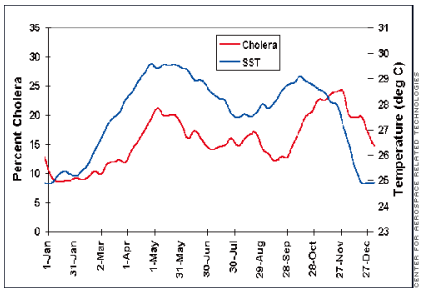
Sea Surface Temperature Rise Enhances Cholera Outbreaks



Space.com, 2000

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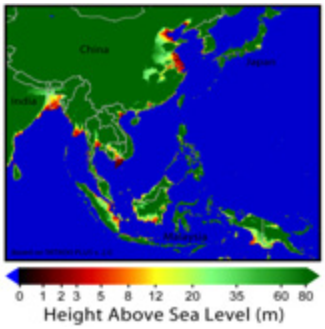
Sea Level Rise Risks in South East Asia



- IPCC, 2007: "Coastal areas, especially the heavily-populated mega deltas regions in South, East and South East Asia, will be at greatest risk due to increased flooding from the sea and, in some mega deltas, flooding from the rivers"

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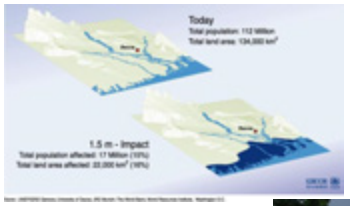
Sea Level Rise



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Air Pollution

- Health impacts of air pollution increased in Summer or high temperature season.
- Ozone levels are higher with increased temperature
  - Evidences showing the association between ozone and excess mortality
- Global warming affects forest fires
  - Increased hospital visits due to respiratory illnesses (Malaysia)
  - Increased ER visits due to asthma, bronchitis, chest pain (Florida)
- Desertification increased Dusts and Sandstorms

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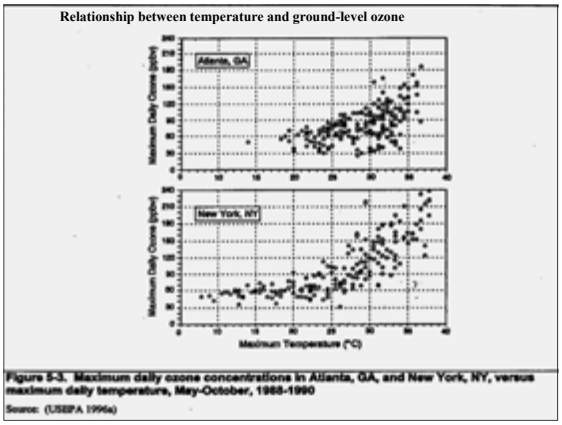

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Climate Change Will Affect Flora and Fauna

24

Allergens

- With warm winter, grass pollen season comes earlier and birch pollen increases
- With CO2 increase, biogenic allergens such as ragweed increase in ambient air
- Increase of allergic rhinitis and its duration and intensity

25

Psychosocial Stress Will Affect the Health of Communities and Individuals

26

Sustainable Health

1) Water Pollution
2) Indoor Air Pollution
3) Urban Air Quality
4) Traffic Conditions
5) Food Intake
6) Home Environment
7) Urban Planning
8) Fossil Fuel

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Water Pollution

Indoor Air Pollution

Urban Air Quality

Traffic Conditions

28

Food Intakes

Home Environment

Urban Planning

Fossil Fuel

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Who is susceptible?

- Pregnant women and babies
- Children
- Elderly
- Preexisting conditions
- Genetically susceptible people
- People with low SES

30

31

Pregnant women and babies

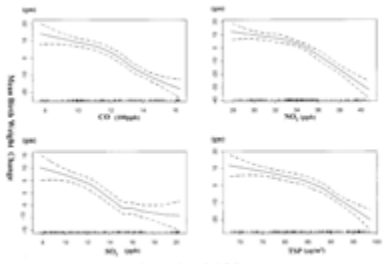
- Early life is a potentially susceptible period for pollution-induced perturbation of respiratory and immune system
- Abnormal pregnancy outcomes may lead to alterations of respiratory function later and increased susceptibility to other environmental factors

32

Epidemiology. 2001 Nov;12(6):643-8.

Is Air Pollution a Risk Factor for Low Birth Weight in Seoul?

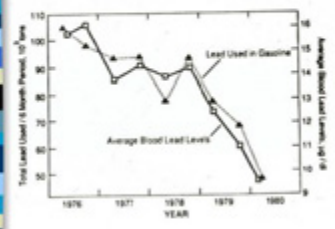
Eun-Hee Ha,[1,2] Yun-Chul Hong,[1] Bo-Eun Lee,[2] Bock-Hi Woo,[3] Joel Schwartz,[1] and David C. Christiani[2]



Concentrations of Air Pollutants

33

Progressively lower population levels of lead in blood…

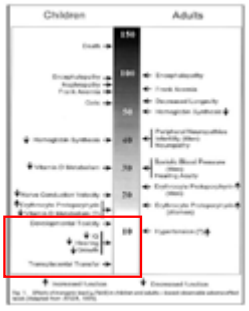


- One of the great environmental health successes…
- Current mean blood lead levels around 2-3 µg/dL

34

Effects of inorganic lead

- Different between children and adults
- Children can have developmental toxicity at lead exposure levels which are safe or subclinical in adults.

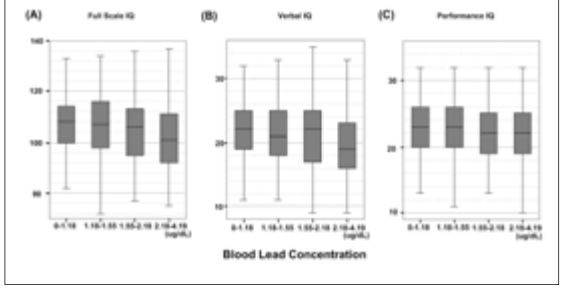


35

Neuro Toxicology

Co-exposure to environmental lead and manganese affects the intelligence of school-aged children

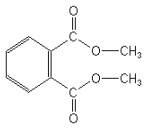
Yeni Kim [a], Bung-Nyun Kim [a], Yun-Chul Hong [b], Min-Sup Shin [a], Hee-Jeong Yoo [c], Jae-Won Kim [a], Soo-Young Bhang [d], Soo-Churl Cho [a,*]



36

Phthalate

- General chemical structure of phthalates.
  R and R' = C_nH_{2n+1}; n = 4-15



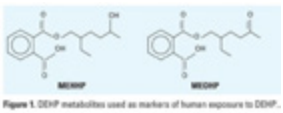


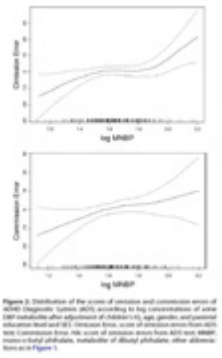
Figure 1. DEHP metabolites used as markers of human exposure to DEHP.

37

Biological Psychiatry

Phthalates Exposure and Attention-Deficit/Hyperactivity Disorder in School-Age Children

Bung-Nyun Kim, Soo-Churl Cho, Yeni Kim, Min-Sup Shin, Hee-Jeong Yoo, Jae-Won Kim, Young-Hee Yang, Hyo-Won Kim, Soo-Young Bhang, and Yun-Chul Hong

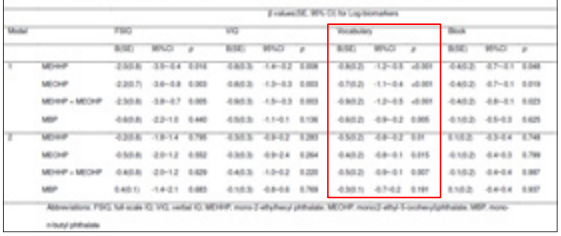


38

Phthalate and IQ

ehp ENVIRONMENTAL HEALTH PERSPECTIVES

Table 4. Multiple regression analysis of the relationship of phthalates with IQ adjusted for influences of covariates



39

Susceptibility of Children

- Different and unique exposures
- Dynamic developmental physiology

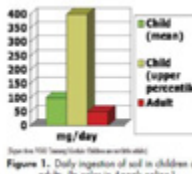


Figure 1. Daily ingestion of soil in children and adults. (In color in Annals online.)

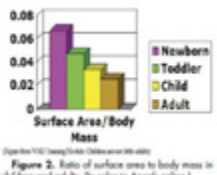


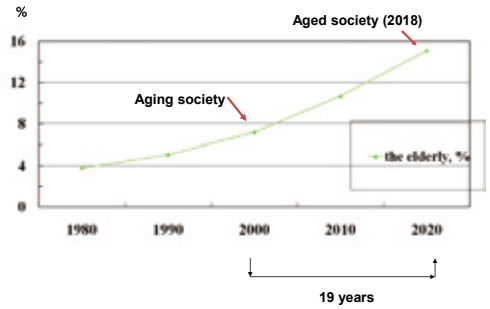
Figure 2. Ratio of surface area to body mass in children and adults. (In color in Annals online.)

40

The Elderly

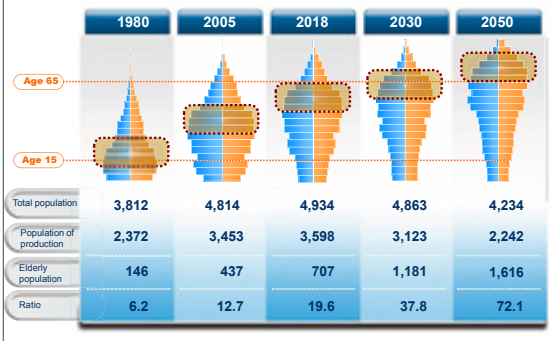
41

Rapid transition from aging to aged society (Korea)



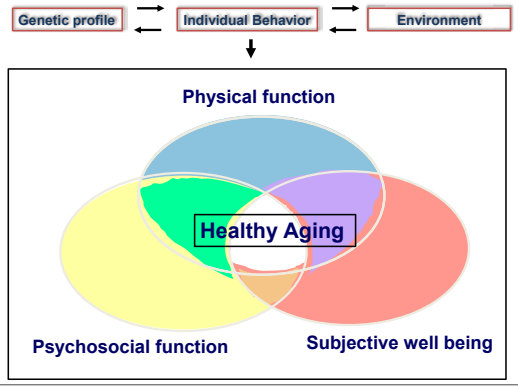
42

Population Projections in Korea



	1980	2005	2018	2030	2050
Total population	3,812	4,814	4,934	4,863	4,234
Population of production	2,372	3,453	3,598	3,123	2,242
Elderly population	146	437	707	1,181	1,616
Ratio	6.2	12.7	19.6	37.8	72.1

43



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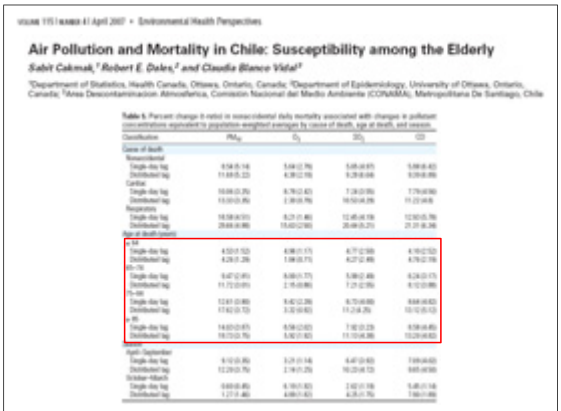
Susceptibility of Elderly

- Changes in physiologic, biochemical, immune, and homeostatic parameters
- Diminished functional reserve
- Decreased xenobiotic metabolism, increased production of toxic metabolites, less successful chromosome repair
- Long exposure period to toxin and increasing life span

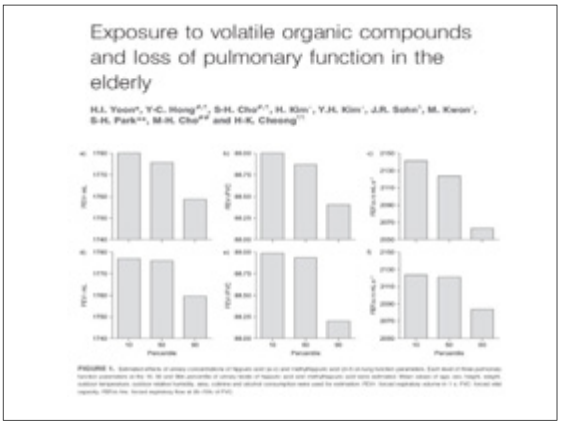
45



Air Pollution and Mortality in Chile: Susceptibility among the Elderly

Sabit Cakmak,[1] Robert E. Dales,[2] and Claudia Blanco Vidal[3]

46



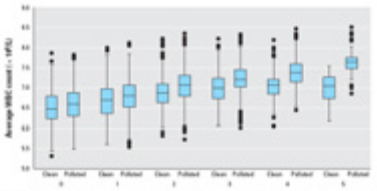
Exposure to volatile organic compounds and loss of pulmonary function in the elderly

47

Preexisting Medical Conditions or Diseases

48

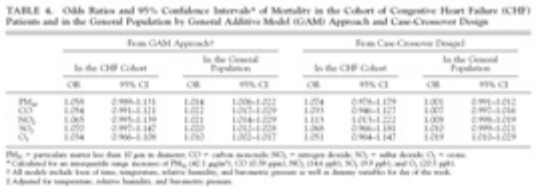
Metabolic Syndrome and Inflammatory Responses to Long-Term Particulate Air Pollutants



49

Effects of Ambient Air Pollution on Daily Mortality in a Cohort of Patients with Congestive Heart Failure

Ho-Jang Kwon,[1,2] Soo-Hun Cho,[3] Fredrik Nyberg,[1] and Göran Pershagen[1]



50

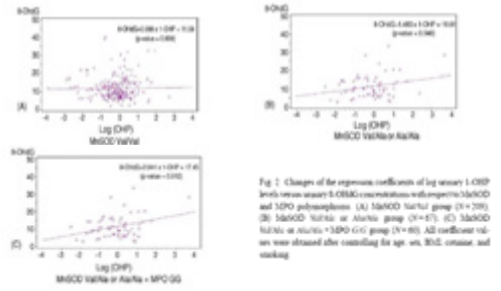
Genetic susceptibility

- Large variation between individuals in the response to pollutants
- Identifying the factors for the variability would help to recognize at-risk groups who would benefit the most from preventive strategies

51

Effect of genetic polymorphisms of MnSOD and MPO on the relationship between PAH exposure and oxidative DNA damage

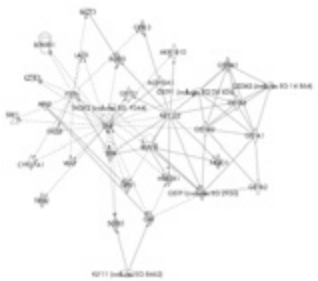
So-Yeon Park[a,b], Kyoung-Ho Lee[a,b], Daehee Kang[a,b], Kwan-Hee Lee[c], Eun-Hee Ha[d], Yun-Chul Hong[a,b,*]



52

Genetic susceptibility to the respiratory effects of air pollution

I A Yang,[1,2] K M Fong,[1,2] P V Zimmerman,[1,2] S T Holgate,[3] J W Holloway[3,4]



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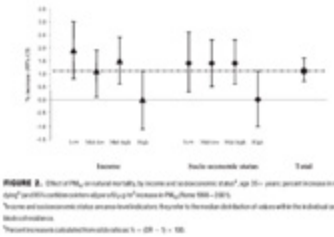
AMERICAN JOURNAL OF INDUSTRIAL MEDICINE 50:208–216 (2007)

Socioeconomic Status, Particulate Air Pollution, and Daily Mortality: Differential Exposure or Differential Susceptibility

Francesco Forastiere, MD,[1]* Massimo Stafoggia, MD,[1] Carola Tasco, MD,[2] Sally Picciotto, PhD,[3] Nerina Agabiti, MD,[1] Giulia Cesaroni, MD,[1] and Carlo A. Perucci, MD[1]



54

Conclusion

- Greater magnitude of harm from environmental pollutions are with susceptible populations.
- The approach of targeting 'high-risk individuals' or 'susceptible population' is likely to be more appropriate for future sustainability.

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Plenary Lecture

Session 1: Effects of the Natural & Social Environments on Human Health

Outline of Research Projects at the Hokkaido University Center for Environmental and Health Sciences and Future Tasks – including the Significance of the Center's Establishment to Hokkaido University

Reiko Kishi

Professor
Dean of Center for Environmental and Health Science,
Hokkaido University

Abstract:
The natural environment has an enormous impact on human health and safety, and the risks people face in their lives are intricately related to natural and social conditions. In her presentation, Reiko Kishi will: 1. highlight global trends involving the environment and health; 2. give an outline of the Hokkaido University Center for Environmental and Health Sciences and clarify the significance of its establishment; and 3. detail the present situation of research in the field and related problems. With regard to 3 in particular, Prof. Kishi will highlight ongoing large-scale research project work at the Center from four perspectives: (1) the present status around the world of studies on health risks caused by environmental exposure, and (2) the direction of research on environmental risks (including: a. promotion of epidemiological research especially by prospective study design; b. investigative research using the most vulnerable, high-risk groups; c. risk assessment for combined contamination; and d. promotion of risk communication with people).

Profile:
Reiko Kishi was born in Obihiro in 1947. She graduated from the Department of Public Health at Hokkaido University's School of Medicine in 1971 and earned a Doctor of Philosophy degree in 1977. In 1990, she gained a Master of Public Health degree from Harvard University. After serving as an associate professor at Sapporo Medical University's Department of Public Health, she became a professor at Hokkaido University Graduate School of Medicine's Department of Public Health in 1997. Since 2010, she has served as Dean of the Hokkaido University Center for Environmental and Health Sciences. At the center, she is involved in a wide range of research projects on natural/social environments and public health, including the Research on the Environment and Child Health project and the Nationwide Epidemiological Study of Sick House Syndrome. She received the Japan Society for Occupational Health Award in 2002 for establishing methods to detect latent neurological disorders in the workplace and evaluate related risks, and was also recognized with The Japan Medical Association's Medical Award in 2009 for her studies to elucidate health risks from environmental chemicals and their impacts on the next generation in particular.

2010 Inauguration of the Inter-departmental Center for Environmental and Health Sciences at Hokkaido University

Significance and Future Tasks

Reiko Kishi
Hokkaido University Center for Environmental and Health Sciences

1

Lecture outline

I. The environment surrounding humans and health influences of natural and social environments

II. Trends in research on the environment and health

III. Current research programs at the Center (introduction to selected programs)

IV. Significance of establishing the Center for Environmental and Health Sciences as a joint-use inter-departmental institute, and an outline of the Center

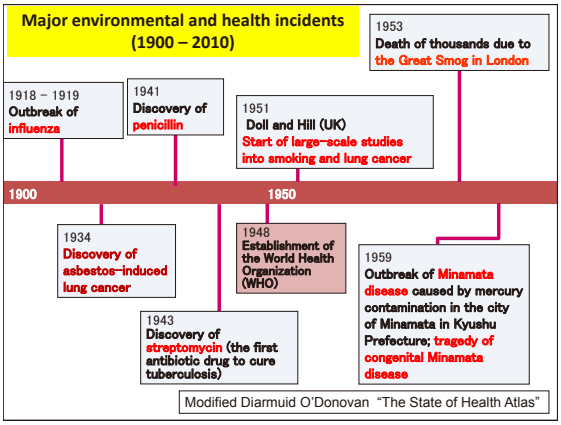
V. Future direction of the Center

2

Humans are surrounded by natural and social environments that are closely related.

- Natural environments:
  - Global – climate change, ecological environment
  - Biological – microorganisms (e.g., viruses, bacteria), fauna and flora
  - Chemical – air, water, soil, waste
  - Physical – sunshine, heat, radiation, electromagnetic waves, noise
- Social environments:
  - Political – wars, conflicts, terrorist attacks
  - Economic – poverty, income
  - Labor – employment forms, industrial structure
  - Regional – social capital, vital statistics, welfare system
  - Housing – amenities
  - Cultural – art, religion, learning, morals

3



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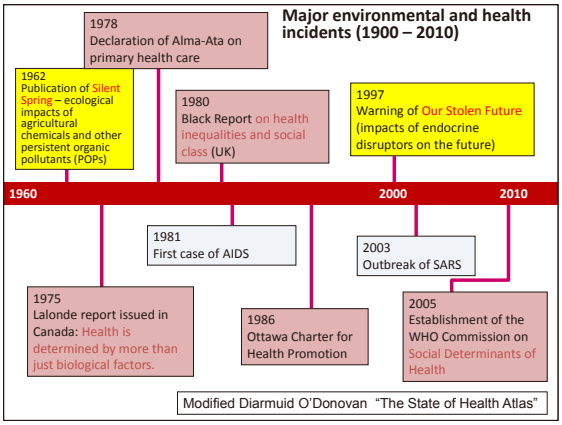

5

I. Changes in the environment and the health status of Japanese people (1900 – 2000)

Japan's status over the last 100 years and current conditions (2010)

6

Changes in the environment and the health status of Japanese people Last 100 years (1900 – 2000)

Year	1900	1920	1940
Environment and people's livelihoods	Plan to build a rich country with a strong army; nutritional deficiency	Long working hours; poverty, malnutrition	World War II; National Mobilization Law
Primary industry Urban population Population aged 65 years or older	60% (-) 4%	50% 20% 5.3%	43% 35% 4.8%
Birthrate (per 1,000 people) Crude death rate (per 1,000 people) Infant mortality rate (per 1,000 births) Life expectancy at birth	32.4 20.8 155 About 35 years	36.2 25.4 165 About 42 years	29.4 15.6 90 About 50 years
Health issues	Acute infectious diseases (e.g., cholera and dysentery), waste treatment measures	Chronic infectious diseases (e.g., tuberculosis), maternal and child health, improvement of working environments, e.g., enactment of factory acts	Devastation due to war, malnutrition

Modified figure 1-1 Reiko Kishi "NANKODO'S ESSENTIAL WELL-ADVANCED SERIES"

7

Changes in the environment and the health status of Japanese people Last 100 years (1900 – 2000)

Year	1960	1980	2000
Environment and people's livelihoods	Post-war national reconstruction; period of rapid economic growth; pollution-related diseases	Urbanization and depopulation; waste and environmental problems; long working hours and death from overwork	Industrial globalization, economic depression and unemployment; declining birthrate and aging population
Primary industry Urban population Population aged 65 years or older	30% 30% 5.7%	10% 75% 9.1%	5% 80% 17.5%
Birthrate (per 1,000 people) Crude death rate (per 1,000 people) Infant mortality rate (per 1,000 births) Life expectancy at birth	17.2 7.6 30 About 65 – 70 years	13.6 6.2 7.5 About 73 – 78 years	9.5 7.6 3.2 Men: 78 years; women: 85 years
Health issues	Pollution-related diseases, occupational health (acute poisoning, work-related accidents), stroke prevention	Increased incidence of lifestyle-related diseases (diabetes, circulatory conditions), occupational health (death from overwork, chronic poisoning)	Increased incidence of stress disorders, prevention of lifestyle-related diseases, nursing care for the elderly, domestic violence and abuse

Modified figure 1-1 Reiko Kishi "NANKODO'S ESSENTIAL WELL-ADVANCED SERIES"

8

Environment and human health
(Summary from 1900 to 2000)

1. Steady and painstaking public-health activities have brought about substantial reductions in rates of mortality for infants and pregnant women/nursing mothers and created the world's highest life expectancy (25 years of the 30-year average life expectancy increase are considered attributable to improved public health; Blanc et. al., 1996).
2. Many infectious diseases have been overcome thanks to improvements to environmental elements such as water and sewage systems.
3. During Japan's period of high economic growth, large areas were exposed to contamination from air/industrial pollution (repairs and restoration were required).
4. The previous poor working environments that gave rise to many occupational diseases and work-related accidents have been improved thanks to a host of occupational safety and health measures.

9

Japan in 2010
Human health and well-being

- Increased incidence of depression, and more than 30,000 suicides annually
- Ongoing high incidences of cancer, circulatory diseases and diabetes
- Ongoing high percentage of smokers
- Ongoing high incidence of death from overwork (due to long working hours)
- Difficulty of finding new-graduate employment (more non-permanent positions)
- Collapse of regional medicine and crisis in the medical insurance care system due to doctor shortages
- Revisions of the medical system for latter-stage elderly people (aged 75 and over) and the nursing-care insurance system
- Rapidly increasing incidence of child abuse cases and young people with psychological issues
- Increasing incidence of drug dependence cases

10

. Research on environmental risks (trends)

11

II. Research on environmental risks (trends)

1. **Strong interest in persistent organic pollutants (POPs)**

2. **Important scientific research on high-risk groups**
   - **Children and fetuses (vulnerable)**
   - **Workers – risk of stress and exposure to high-level environmental exposure**
   - **Senior citizens**

3. **Importance of a life-course approach**
   - **1) Endocrine disruption effects due to exposure in the fetal stage**
   - **2) Fetal origins hypothesis for many diseases**
   - **3) Inter-generational follow-up surveys on poverty issues, etc.**

4. **Increasing importance of epidemiological studies**
   - **Large-scale prospective cohort study**
   - **Intervention study**

12

I-8

Children with congenital Minamata disease

I wondered if it would be possible to identify subclinical potential neurologic dysfunction before the emergence of critical pathological changes (the foundation of my research).

13

Biological half-lives

PCB, dioxins and chlorinated pesticides have long half-lives.

Substance	Half-life
PCB	7 years
2,3,7,8-TCDD (dioxins)	7 years
DDE (DDT metabolites)	Approx. 10 years
HCB	2 – 3 years
Mercury	40 – 60 days
Methyl mercury	70 days
Lead	10 years

Calculated based on the data of Konishi et al., (Arch Environ Contam Toxicol 40:571-578, 2001)

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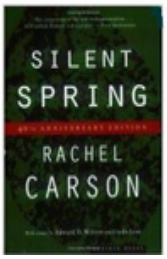
Silent Spring

Rachel Carson



1962

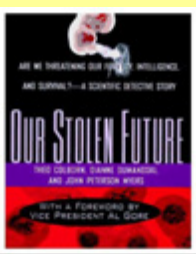
Japanese translation

1964

15

Significance of potential health hazards in the fetal stage

1. Since around 1997, the endocrine disruption effects of environmental chemicals have attracted attention. In particular, the effects on children were highlighted in Our Stolen Future.



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III. Implementation of a variety of large-scale research projects at the center by full-time instructors and those from other institutions

1. Hokkaido Study of Environmental and Children's Health
2. Nationwide Epidemiological Research on Sick House Syndrome
3. Large-scale Cohort Study on Working People
4. Study on Social Support Networks for the Elderly and Intervention to Prevent the Need for Nursing Care
5. Japan Eco & Child Study (Ministry of the Environment)

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(1) Associations between congenital anomalies in the urogenital system (e.g., hypospadias and cryptorchidism) and environmental chemicals

・An increase in the number of hypospadias and cryptorchidism cases has recently been reported by several Western countries. What is the situation in Japan?

・As the development of the urethra and the descent of the testes are androgen-dependent, associations with exposure to endocrine disruptors in the organogenesis stage are suspected.

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Hypospadias

A relatively common congenital anomaly

Lower incidence in Japan than in other countries

Urethral opening on the ventral surface of the penis, or on the scrotum or perineum

Department of Renal and Genitourinary Surgery, Hokkaido University Hospital

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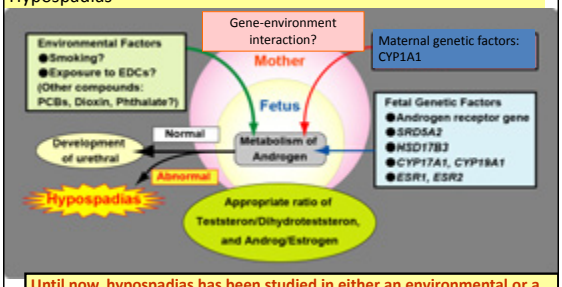
Ultimate goal: elucidation of interaction between environmental and genetic factors
Hypospadias



Until now, hypospadias has been studied in either an environmental or a genetic context. Now, however, comprehensive studies covering both sides are necessary. Elucidation will be made possible for the first time by a large-scale prospective cohort study. Kishi et al. (2008)

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Several limitations of case-control study in retrospective study design

- Risk of selection bias in hospitals of countries with no registry system for birth defects
- Risk of recall bias as mothers have to recall their past pregnancies to answer questionnaires
- Risk of control selection bias due to the difficulty of ensuring control group compliance
- Unclear temporal causal relationships
- Difficulty of accurately assessing exposure levels (of chemical substances and others) due to insufficient sampling of blood and other biological factors (from the organogenesis stage in which congenital anomalies may arise)

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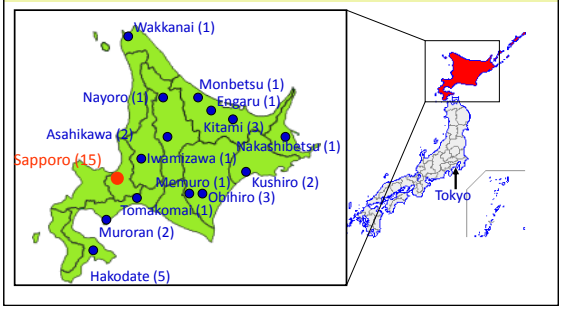
Hokkaido Study of Environmental and Children's Health (congenital anomalies, development and allergies)

Hokkaido's population of 5.6 million represents a suitable sample for epidemiological study (cooperation among three medical schools).



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Hokkaido cohort characteristics

1. Impacts on the general public of low-concentration background levels
2. Prospective cohort study to obtain accurate data from measurement of exposure to various environmental factors in the fetal stage
3. Risk assessment of outcomes regarding congenital anomalies, neural development, thyroid function and immunity/allergies from follow-up after a given period of time
4. Study of high-risk groups regarding susceptibility factors for individuals from the viewpoint of preventive medicine
5. (1) Large-scale cohort study (goal: 20,000 subjects; currently 17,000)
   Exposure in the 12th and 13th weeks of gestation (the organogenesis stage) and congenital anomalies
   (2) Cohort – maternity clinic in Sapporo (514 mothers and children): follow-up on detailed postnatal neurobehavioral development

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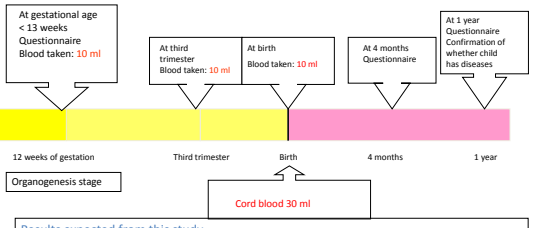
Prospective cohort (1)



Results expected from this study

1. Direct associations between concentrations of chemicals in the organogenesis stage and congenital anomalies
2. Associations between parental nutritional conditions (such as folic acid intake), lifestyles and congenital anomalies
3. Associations between individual sensitivity factors and congenital anomalies through analysis of genetic polymorphism factors such as chemical metabolizing enzymes of mother and child

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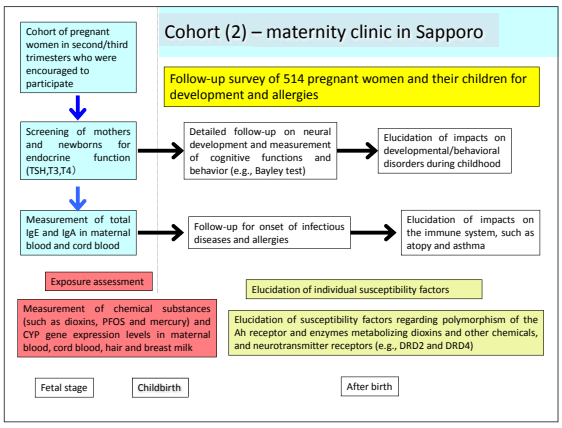

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Exposure assessment

- The world's first individual isomeric-level measurement of PCBs and dioxins
- 7 PCDDs, 10 PCDFs
- 4 non-ortho Co-PCBs
- 8 mono-ortho Co-PCBs
- 2 di-ortho PCBs
- Total and TEQ values also calculated

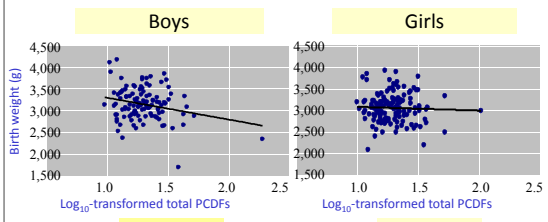
Additionally, 68 PCBs were measured in 64 of the subjects for comparison of concentrations with those of other countries.

26

Effects of PCBs/Dioxins on Intrauterine Growth and Postnatal Development

27

Infant birth weights and levels of PCDFs in maternal blood by gender (blood levels expressed after logarithmic transformation)



Konishi et. al. (Dioxin 2007)

28

Multiple linear regressions for birth weight in relation to PCDDs/PCDFs and DL-PCBs by infant gender

$\log_{10}$ scale	Male Beta [a]	Male (95%CI)		Female Beta [a]	Female (95%CI)
Total (pg/g lipid)					
Total PCDDs	-125.7	(-402.3 - 150.8)		-19.3	(-294.0 - 255.5)
Total PCDFs	-237.6	(-595.2 - 119.9)	†	-304.9	(-620.6 - 10.7)
Total PCDDs/PCDFs	-136.6	(-418.3 - 145.1)		-28.7	(-307.5 - 250.1)
Total non- *ortho* PCBs	-90.7	(-350.4 - 169.0)		-122.4	(-347.9 - 103.2)
Total mono- *ortho* PCBs	-138.6	(-372.7 - 95.4)		-104.3	(-308.7 - 100.1)
Total DL-PCBs	-138.7	(-373.1 - 95.7)		-105.3	(-309.9 - 99.3)
Total PCDDs/PCDFs and DL-PCBs	-148.5	(-391.1 - 94.1)		-106.8	(-317.6 - 103.9)
WHO-2006 (TEQ pg/g lipid)					
Total PCDD TEQ	-331.1	(-607.4 - -55.5)	*	-126.3	(-384.5 - 131.9)
Total PCDF TEQ	-269.8	(-561.5 - 21.9)		-241.7	(-491.7 - 8.4)
Total PCDD/PCDF TEQ	-338.7	(-628.2 - -49.1)	*	-173.9	(-437.6 - 89.8)
Total non- *ortho* PCB TEQ	-107.3	(-306.1 - 91.5)		-114.8	(-289.4 - 59.8)
Total mono- *ortho* PCB TEQ	-138.6	(-372.7 - 95.4)		-104.3	(-308.7 - 100.1)
Total DL-PCB TEQ	-112.1	(-315.1 - 91.0)		-117.5	(-295.6 - 60.5)
Total TEQ	-289.5	(-561.7 - 17.3)	*	-144.2	(-386.7 - 98.4)

[a] Beta coefficients represent the change in birth weight (g) for a 10-fold increase in the dioxin level.
*p <0.05

Significant relations were observed only for boys, indicating a greater weight loss range for boys than for girls.

Konishi et al., Environ Res (2009)

29

Evaluation of infant development

- Infant neurodevelopment was evaluated on mental and motor scales using a Japanese translation version of the Bayley Scale of Infant Development (BSID-II). BSID-II is an infant development test standardized in the United States and used widely in clinical and research settings (Bayley, 1993). It is an effective method of assessing the development of healthy young children.

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Infant neurobehavioral development

BSID-II
(Bayley Scale of Infant Development, second edition)

31

Association between the isomer level of PCBs and dioxins in pregnant women's blood and MDI/PDI scores of their six-month-old infants (1)

	MDI β	MDI t	MDI p		PDI β	PDI t	PDI p	
PCDD								
2,3,7,8-TCDD	-0.150	-1.714	0.089		-0.105	-1.235	0.219	
1,2,3,7,8-PeCDD	0.067	0.771	0.442		-0.036	-0.423	0.673	
1,2,3,4,7,8-HxCDD	-0.035	-0.394	0.694		-0.124	-1.462	0.146	
1,2,3,6,7,8-HxCDD	0.023	0.259	0.796		-0.045	-0.520	0.604	
1,2,3,7,8,9-HxCDD	0.002	0.026	0.979		-0.189	-2.284	0.024	*
1,2,3,4,6,7,8-HpCDD	-0.219	-2.395	0.018	*	-0.240	-2.749	0.007	**
OCDD	-0.173	-1.864	0.065		-0.172	-1.927	0.056	
PCDF								
2,3,7,8-TCDF	-0.050	-0.584	0.560		-0.178	-2.175	0.031	*
1,2,3,7,8-PeCDF	0.014	0.158	0.875		-0.196	-2.412	0.017	*
2,3,4,7,8-PeCDF	0.022	0.252	0.801		-0.046	-0.544	0.588	
1,2,3,4,7,8-HxCDF	-0.107	-1.199	0.233		-0.137	-1.615	0.109	
1,2,3,6,7,8-HxCDF	-0.099	-1.117	0.266		-0.167	-1.990	0.049	*
2,3,4,6,7,8-HxCDF	0.026	0.302	0.763		-0.167	-2.012	0.046	*
1,2,3,7,8,9-HxCDF	ND	ND	ND		ND	ND	ND	
1,2,3,4,6,7,8-HpCDF	-0.042	-0.482	0.631		-0.064	-0.763	0.447	
1,2,3,4,7,8,9-HpCDF	ND	ND	ND		ND	ND	ND	
OCDF	-0.057	-0.656	0.513		-0.032	-0.390	0.697	

Adjusted for gestational age, smoking during pregnancy and blood sampling time * p < 0.05, ** p < 0.01

Nakajima et al., Env. Health Perspectives, 2006

32

Effects on immunity and allergies

- IgE levels in newborn infants
- Risks of developing postnatal infections and allergies

(Washino et al., Miyashita et al.)

33

Maternal dioxin isomer levels and cord serum IgE in male infants (regression coefficients)

	Crude	P	Adjusted	P
Total				
Total PCDD	0.032	N.S.	-0.061	N.S.
Total PCDF	-0.630	N.S.	-1.097	＜0.05
Total PCDD/PCDF	0.012	N.S.	-0.088	N.S.
Total non-ortho PCBs	-0.201	N.S.	-0.587	N.S.
Total mono-ortho PCBs	-0.252	N.S.	-0.482	N.S.
Total coplanar PCB	-0.253	N.S.	-0.484	N.S.
Total dioxins	-0.246	N.S.	-0.521	N.S.
WHO-2005				
Total PCDD TEQ	-0.630	＜0.1	-1.008	＜0.05
Total PCDF TEQ	-0.689	＜0.1	-1.229	＜0.01
Total PCDD/PCDF TEQ	-0.681	＜0.1	-1.144	＜0.05
Total non-ortho PCB TEQ	-0.234	N.S.	-0.498	＜0.1
Total mono-ortho PCB TEQ	-0.252	N.S.	-0.482	N.S.
Total coplanar PCB TEQ	-0.242	N.S.	-0.514	＜0.1
Total TEQ	-0.535	N.S.	-1.011	＜0.05

Adjusted for mother's age, maternal allergy history, paternal allergy history, smoking during pregnancy, parity, gestational age, frequency of marine fish consumption, distance of highway to home and blood sampling period +p < 0.1, *p < 0.05, ***p < 0.01.

Washino, Dioxin (2007)

34

Adjusted OR between otitis media and dioxin levels

	Total		Male		Female	
	OR	P	OR	P	OR	P
Total (pg/g lipid)						
Total PCDD	1.01	＜0.05	1.02	N.S.	1.01	N.S.
Total PCDF	1.81	＜0.01	2.42	＜0.01	1.51	N.S.
Total PCDD/PCDF	1.01	＜0.05	1.02	N.S.	1.01	N.S.
Total non-ortho PCBs	1.07	N.S.	1.12	＜0.05	1.04	N.S.
Total mono-ortho PCBs	1.00	N.S.	1.00	N.S.	1.00	N.S.
Total coplanar PCB	1.00	N.S.	1.00	N.S.	1.00	N.S.
Total dioxins	1.00	N.S.	1.00	N.S.	1.00	N.S.
WHO-05 (TEQ pg/g lipid)						
Total PCDD TEQ	1.04	N.S.	1.16	N.S.	1.01	N.S.
Total PCDF TEQ	1.36	＜0.05	1.56	＜0.05	1.30	N.S.
Total PCDD/PCDF TEQ	1.05	N.S.	1.12	＜0.05	1.02	N.S.
Total non-ortho PCB TEQ	1.05	N.S.	1.12	N.S.	1.00	N.S.
Total mono-ortho PCB TEQ	1.14	N.S.	6.03	N.S.	0.24	N.S.
Total coplanar PCB TEQ	1.04	N.S.	1.11	N.S.	0.99	N.S.
Total dioxin-TEQ	1.03	N.S.	1.07	＜0.05	1.01	N.S.

Adjusted for maternal educational level, parity, infant gender, breast-feeding duration, environmental tobacco exposure, day care attendance and blood sampling period

Total: OR for each 10 increase in dioxin concentration *p ＜ 0.05, **p ＜ 0.01

Miyashita et al., (submitted)

35

Comparison of exposure levels with those in other countries

- **The levels of exposure to dioxins in TEQ were lower than those in the Netherlands and Germany.**
- **In a previous study conducted by Longnecker et al., PCB 153 levels were compared to data from 10 other research projects. However, data from Japan were not included. In order to compare Sapporo's PCB 153 levels to those of previous study data from other countries, 64 subjects out of 134 were considered. The PCB 153 levels in Sapporo were found to be lower than those in Germany, the Netherlands and North Carolina in the United States.**
- **The PCB 153 exposure levels of pregnant women in Sapporo were found to be almost the same as those in New York and Massachusetts, U.S.A.**

36

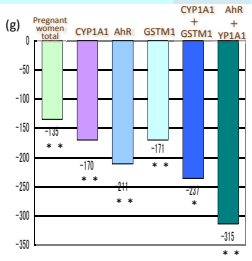
Genetic susceptibility factors

(What types of women are at high risk?)

Effects of maternal passive smoking on babies in the fetal stage

37

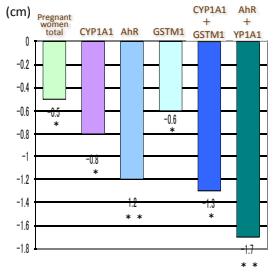
Infant birth size in the maternal smoking group (mean weight) by maternal genetic polymorphism in PAH metabolism



Adjusted for mother's age, height/weight before pregnancy, amount of alcohol intake during pregnancy and birth history, gender of the newborn, gestational age and household income * p < 0.05, * * p < 0.01 (Sasaki et al., 2005)

38

Infant birth size in the maternal smoking group (mean length) by maternal genetic polymorphism in PAH metabolism



Adjusted by mother's age, height/weight before pregnancy, amount of alcohol intake during pregnancy, birth history, gender of the newborn, gestational age and household income * p < 0.05, * * p < 0.01 (Sasaki et al., 2005)

39

From Barker's hypothesis to DOHaD

- Wholly different viewpoint: Fetal Origins Hypothesis
  Diseases such as circulatory conditions and diabetes mellitus type 2 are related to malnutrition in the fetal stage. The fetus adapts itself to an environment with a limited nutritional supply, resulting in a thrifty phenotype. Those with this kind of phenotype who grow up in an affluent environment (involving overnutrition) after birth develop obesity and chronic diseases in adulthood (Barker et al., The Lancet, 1993).
- This hypothesis moves further into the developmental origins of health and disease (DOHaD) concept.

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Recent Increase of Newborn under 2.500 g In Japan

Nihon Keizai Shimbun "Miki Obara *Keizaikyousitsu" (2010)*

41

Large-scale Cohort Study on Working People

42

Outline of the Hokkaido occupational cohort study

2003 (baseline survey): questionnaire, health checkup, hsCRP, baPWV, helicobacter pylori infection

2004 – 2009 (outcome follow-up survey) Results of health checkup, disease history, questionnaire

The six-year follow-up survey involved a total of 8,000 people from three local governments and one freight company.

Clarification of risks and mechanisms in work environments and social/economic factors on stress, insomnia, atherosclerosis and metabolic syndrome

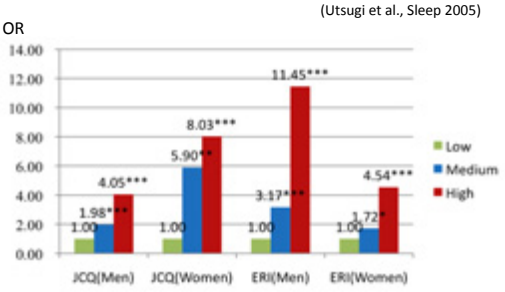
Survey items:
- Individual attributes: academic background, marital status, housemates, etc.
- Work environment: job category, job class, work hours, holidays
- Occupational stress (demand-control model, effort-reward model), etc.
- Mental health: insomnia (Athenes Insomnia Scale), depression (CES-D), etc.
- Lifestyle habits: smoking, drinking, exercise, etc.

A large number of findings have been reported, including the relationship between occupational stress and insomnia, the effects of insomnia on the development of DM, and the relationship between helicobacter pylori infection and atherosclerosis.

43

Occupational stress (JCQ, ERI) and insomnia

(Utsugi et al., Sleep 2005)

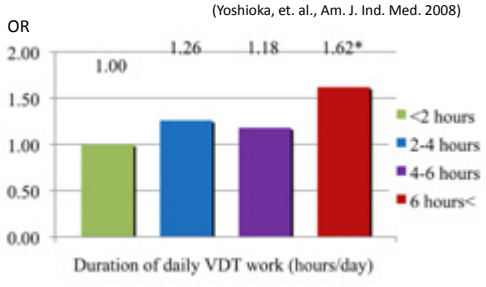


Adjusted for age, education, occupation, exercise, smoking, drinking, working hours and shift work
* p < 0.05 (vs. low), ** p < 0.01 (vs. low), *** p < 0.001 (vs. low)

44

Duration of daily VDT work and insomnia

(Yoshioka, et. al., Am. J. Ind. Med. 2008)

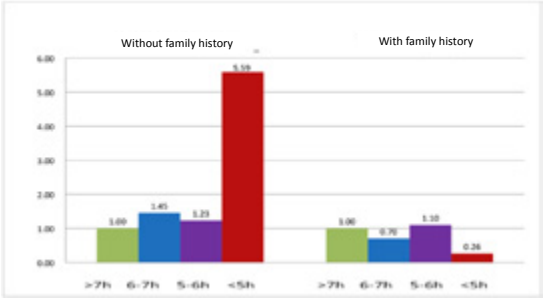


Adjusted for gender, age, education, wearing of glasses, drinking, exercise, BMI, days off, working hours and occupational stress
* p < 0.05 (vs. < 2 hours)

45

Daily sleep duration and diabetes mellitus occurrence

(Kita et al., in progress)



Adjusted for age, gender, BMI, smoking, drinking, working hours, occupational stress, education and shift work
*p < 0.05, ** p < 0.01, *** p < 0.001

46

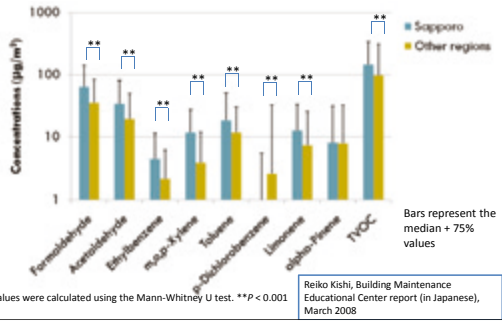
Nationwide Epidemiological Study on Sick House Syndrome

47

Setting: 6 regions of Japan

48

Chemical concentration differences between Sapporo and other regions



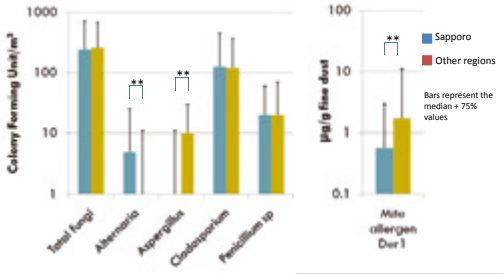
Bars represent the median + 75% values

P-values were calculated using the Mann-Whitney U test. **$P < 0.001$

Reiko Kishi, Building Maintenance Educational Center report (in Japanese), March 2008

49

Fungus and mite concentration differences between Sapporo and other regions



Bars represent the median + 75% values

P-values were calculated using the Mann-Whitney U test. **$P < 0.001$

Reiko Kishi, Building Maintenance Educational Center report (in Japanese), March 2008

50

Associations between atopic dermatitis and phosphate levels

	Floor		Multi-surface	
	OR (95% CI)	P-value	OR (95% CI)	P-value
TBP	1.84 (1.06 – 3.18)	0.030	1.03 (0.43 – 2.48)	0.954
TCiPP	2.27 (1.29 – 3.98)	0.004	1.13 (0.60 – 2.14)	0.695
TCEP	1.89 (1.01 – 3.52)	0.045	1.15 (0.68 – 1.94)	0.603
TEHP	2.25 (1.11 – 4.56)	0.025	1.39 (0.61 – 3.15)	0.433
TBEP	1.26 (0.75 – 2.12)	0.382	0.85 (0.45 – 1.60)	0.611
TDCPP	1.92 (1.28 – 2.89)	0.002	1.26 (0.67 – 2.38)	0.467
TPhP	1.71 (0.88 – 3.32)	0.114	1.08 (0.59 – 1.96)	0.805
DEHP	1.82 (0.86 – 3.83)	0.117	1.62 (0.83 – 3.15)	0.156

Each variable was introduced separately in the logistic regression model and adjusted for gender and age strata. Odd ratios were calculated using $\log_{10}$-transformed variables.

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III. Overview of the Japan Environment & Children's Study (Ministry of the Environment)

52

Worldwide Birth Cohorts

- Hokkaido Cohort Study (2001～): 20,000 participants
- Tohoku Cohort Study （2001～ 1,300）participants

Japan Environment & Children's Study (to be launched in 2011 with 100,000 participants)

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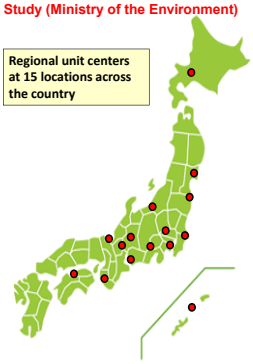
the Japan Environment & Children's Study (Ministry of the Environment)

Regional unit centers at 15 locations across the country



No.	Regional unit center name
1	Hokkaido
2	Miyagi
3	Fukushima
4	Chiba
5	Kanagawa
6	Koshin
7	Toyama
8	Aichi
9	Kyoto
10	Osaka
11	Hyogo
12	Tottori
13	Kochi
14	Fukuoka
15	Southern Kyushu/Okinawa

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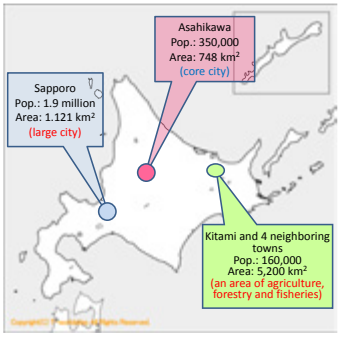
Fig. 3 **Framework and characteristics of the Hokkaido unit**



1. **Four universities collaborate to cover the Hokkaido region, which accounts for 20% of the national land area (a cooperative structure as a unit is created).**
2. **Based on previous experience, in the large city of Sapporo, samples are taken from across the city to ensure freedom from hospital selection bias.**
3. **The same study design is used in Asahikawa (a core city).**
4. **In the eastern Hokkaido/Kitami area, where the major industries are agriculture, forestry and fisheries, one city and four towns are involved in the study.**

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Establishment of the Hokkaido University Center for Environmental and Health Sciences (a joint-use facility for education and research)

- Established on April 1, 2010
- The focus of the center is not on receiving large research grants.
- Research and education related to the environment and health cannot be covered fully by the medical field alone. An approach based on interdisciplinary integrated cooperation is essential.
- It is important for the 21st century environment and health research that education should work to empower people (those involved) and lead to a reform of social systems.
- Research and education should have a philosophy of further development to meet the needs of society and the times (with universities playing an important role).

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IV. The Significance of Establishing the Center for Environmental and Health Sciences as a Joint-Use inter-departmental Institute at Hokkaido University

57

New efforts for sustainability at Hokkaido University

The Hokkaido University Initiative for Sustainable Development was established in 2005 (with the university president as Executive Director) in order to enhance research and education related to sustainable development with the aim of contributing to international society using the achievements of our activities.

Priority fields

Besides the five current major academic fields, there is great significance in adding a new field focusing on the environment and health.

1. Global warming
2. Integrated water resource management
3. Construction of a sound material-cycle society
4. Securement of a stable food supply and sustainable forest resource management
5. Measures against infectious diseases
6. Environment and health

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Future efforts

1. **International cooperation is vital, especially for tackling global warming. Specific measures, including those for human adaptation to rapid climate change and disaster control, are needed.**
2. **Social and economic environments: Japan's poverty rate has been the second-highest among OECD members since 2006 after that of the United States.**
3. **It is necessary to realize the importance of empowering the people who are the central players in society.**
4. **In addition to risk studies, environmental studies are also important in helping people to live healthier lives.**
5. **Environmental issues can be approached more comprehensively by looking at them from the new viewpoint of safety (e.g., city planning, food safety, etc.).**

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Health – Safety – Wellbeing (Public Health)

Besides medicine (i.e., disease prevention), the following issues must also be addressed:

Global environmental change and **public health**
Environmental deterioration and climate change/biodiversity loss and **public health**
Urbanization and public hygiene/health crisis management and public health
City planning to protect vulnerable groups from disasters, and public health
Decent work and public health
Prevention of child abuse, and public health

- **Hokkaido University emphasizes the three concepts of health, safety and wellbeing as major pillars for education and research.**

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Thank you very much

環境健康科学研究教育センター
Center for Environmental & Health Sciences（CEHS)

61

環境健康科学研究教育センターにおける研究の概要と今後の課題について：本学におけるセンター設立の意義を含めて

岸　玲子
北海道大学特任教授
環境健康科学研究教育センター長

要　旨：
環境が人々の健康と安全に与える影響は多大でかつ人びとのリスクは自然と社会の有り様が複雑に絡む。講演では 1.「環境と健康」をめぐる世界な動向 、 2. 北海道大学環境健康研究教育センターの概要と設置の意義、特に3. 研究の現状と今後の課題について、環境健康研究教育センターにおける on going な大規模研究を例に、（1）環境暴露による健康リスク研究の世界的な現状、（2）環境リスク研究の方向性、1）前向き研究デザインによる疫学研究の推進、2）最も脆弱なハイリスク集団での調査研究、3）複合汚染のリスクアセスメント、4）リスクコミュニケーションの推進について述べることとする。

経　歴：
1947年帯広生まれ。1971年北海道大学医学部医学科卒業。医学博士（1977年）。1990年、米国ハーバード大学にて（公衆衛生学修士）取得。1997年、札幌医科大学公衆衛生学講座助教授を経て、北海道大学医学部公衆衛生学講座教授、2010年環境健康科学研究教育センターセンター長に就任、現在に至る。当センターでは「環境と子どもの健康に関する研究」「シックハウス症候群の全国規模の疫学研究」など、自然および社会環境と人々の健康に関する多様な研究を行っている。2002年日本産業衛生学会学会賞受賞（産業職場における潜在的な神経障害の発見とリスク評価手法の確立）。2009年日本医師会医学賞受賞（環境リスクによる潜在的な健康障害の解明－特に次世代影響に関する研究）。

2010年4月　北海道大学に「環境と健康全学センター」が発足

その意義と課題

環境健康科学研究教育センター
岸　玲子

1

講演の概要

Ⅰ　人間を取り巻く環境（自然環境と社会環境）

Ⅱ　「環境リスク研究」：最近の世界的な動向

Ⅲ　現在センターで実施中の研究（紹介）

Ⅳ　全学共同利用施設としての環境健康科学センター設置の意義、センターの概要

Ⅴ　今後の方向性

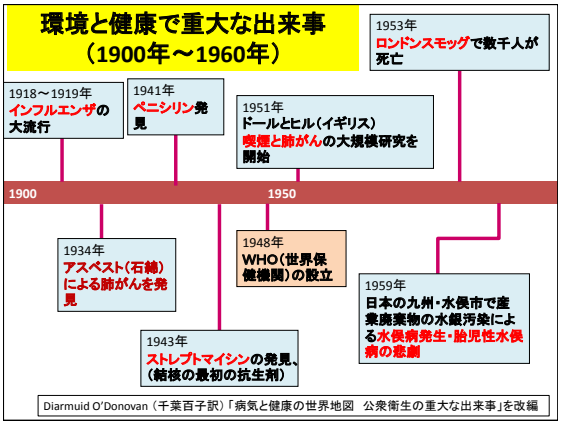
2

Ⅰ　人間を取り巻くのは自然環境と社会環境の両方

- 自然環境　地球環境－気候変動、生態学的環境
  生物環境－微生物（ウィルス、細菌など）　動植物
  化学環境－大気、水、土壌、廃棄物
  物理環境－日照、温熱、放射線、電磁波、騒音
- 社会環境　政治－戦争、紛争、テロ
  経済－貧困、所得
  労働－就業形態、産業構造
  地域－社会資本、人口動態、福祉システム
  住居－アメニティー
  文化－芸術、宗教、学問、道徳

3

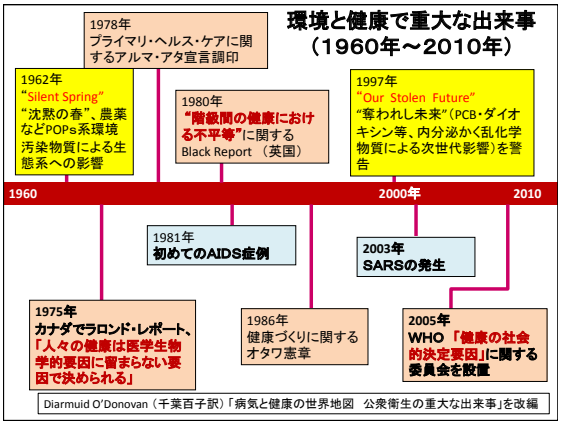
環境と健康で重大な出来事（1900年～1960年）



Diarmuid O'Donovan（千葉百子訳）「病気と健康の世界地図　公衆衛生の重大な出来事」を改編

4

環境と健康で重大な出来事（1960年～2010年）



Diarmuid O'Donovan（千葉百子訳）「病気と健康の世界地図　公衆衛生の重大な出来事」を改編

5

日本国民の健康状態 過去100年間の状況

（環境と健康が密接に関連していることがわかる）

6

国民の健康状態 (1900年から2000年）前半

	1900年（明治33年）	1920年（大正9年）	1940年（昭和15年）
環境と国民生活	富国強兵 栄養不足	長時間労働 貧困、栄養失調	第二次世界大戦 国家総動員法
第1次産業（農業等） 都市人口 65歳以上	60% （－） 4%	50% 20% 5.3%	43% 35% 4．8%
出生率（人口千対） 粗死亡率（人口千対） 乳児死亡率（出生千） 0歳平均余命	32．4 20．8 155 35歳前後	36．2 25．4 165 42歳前後	29．4 15．6 90 50歳前後
健康の課題	急性感染症（コレラ・赤痢など） 汚物処理対策	慢性感染症（結核） 母子衛生 工場法など労働環境の改善	戦争による被災 栄養失調

岸玲子　南江堂「NEW予防医学・公衆衛生学　改訂第2版」表1-1を改編

7

環境の変遷と国民の健康状態 (1900年から2000年）後半

年代	1960年（昭和35年）	1980年（昭和55年）	2000年（平成12年）
環境と国民生活	戦後復興 高度成長期 公害病の発生	都市化と過疎 廃棄物問題 長時間労働過労死	産業グローバル化 経済不況と失業 少子高齢化
第1次産業 都市人口 65歳以上	30% 30% 5．7%	10% 75% 9．1%	5% 80% 17．5%
出生率（人口千対） 粗死亡率（人口千対） 乳児死亡率（出生千） 0歳平均余命	17．2 7．6 30 65－70歳前後	13．6 6．2 7．5 73-78歳前後	9．5 7．6 3．2 男78歳、女85歳
健康の課題	公害病 労働衛生(急性中毒、労働災害) 脳卒中予防対策	生活習慣病（糖尿病、循環器）増加 労働衛生（過労死、慢性中毒）	ストレス疾患増加 生活習慣病の予防 高齢者介護問題 DV家庭内暴力・虐待

岸玲子　南江堂「NEW予防医学・公衆衛生学　改訂第2版」表1-1を改編

8

環境と人々の健康
（1900年～2000年　まとめ）

1. 過去100年、地道な公衆衛生活動により、乳児死亡率や妊産婦死亡などは大幅に低下、世界一の長寿が達成
2. 上下水道など環境改善の結果、感染症の多くは克服されつつある
3. しかし、高度経済成長期は大気汚染や産業公害で広範囲の地域が汚染され、修復と再生の歴史であった
4. 労働現場では職業病と労働災害が多発、労働安全衛生上の種々の対策取り組みがなされ劣悪な労働環境は改善された

9

今年（2010年）
日本の人々の健康と　well-being

- 年間30000人を超える自殺が10年以上続いている
- 減らないがん・循環器疾患・糖尿病の患者
- 高い喫煙率がまだ続いている
- 依然減らない労働者の“過労死”（背景に長時間労働）
- 新卒者の就職難、非正規雇用の増加
- 医師不足と“医療崩壊”、保険医療制度の危機
- 後期高齢者医療制度と介護保険制度の改正
- 子どもの虐待と青少年のこころの問題
- 薬物依存の増加

10

Ⅱ．環境リスク研究
（世界の動向）

11

1. POPs（Persistent Organic　Pollutants）に関心
2. ハイリスク集団が重要に
   最も脆弱な子ども・胎児、
   労働者（高濃度の環境暴露とストレス）
   高齢者（心肺機能が低下）
3. ライフコース・アプローチの重要性
   ①胎児期暴露による内分泌かく乱作用の追跡
   ②多くの（成人期）疾病で胎児期オリジン仮説
   ③生涯を通じての貧困の影響研究など
4. 疫学研究の重要性が高まる
   大規模前向き研究
   介入研究

12

I－8

胎児性水俣病の子供たち

重篤な病理学的変化が出現する前に、サブクリニカルな、潜在的な神経機能障害を見出すことができないか？と考えた（私の研究の原点）

13

生物学的半減期

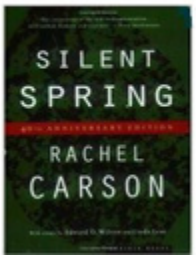
POPs　PCB・ダイオキシン・塩素系農薬は長い

物質	半減期
PCB	7年
2，3，7，8－TCDD（ダイオキシン）	7年
DDE（DDTの代謝産物）	約10年
HCB	2～3年
水銀	40～60日
メチル水銀	70日
鉛	10年

Konishiら（Arch Environ Contam Toxicol 40: 571-578, 2001）のデータをもとに算定

14

SILENT SPRING　春がきても花が咲かず鳥のさえずりのない、、、沈黙の春



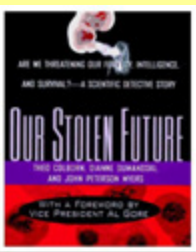
1962年

1964年

15

胎児期の潜在的な健康障害の重要性

1．1997年頃から、環境化学物質の内分泌かく乱作用が注目される。特に子どもへの影響が指摘された。（Our Stolen Future：邦訳　“失われし未来”）



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Ⅲ. 環境健康科学センターでは専任および兼務教員が現在　多くの大規模プロジェクト研究を実施

1. 環境と子どもの健康に関する北海道研究
2. 全国規模のシックハウス研究
3. 大規模な職域前向きコホート研究
4. 高齢者の社会的サポートネットワークと介護予防のための介入研究
5. 環境省エコチル研究

17

（1）尿道下裂・停留精巣など泌尿生殖系の先天異常と環境化学物質の関係

・近年、いくつかの欧米諸国より、尿道下裂・停留精巣の発生率の増加が報告された。日本では？

・尿道の形成や精巣の下降は、アンドロゲン依存性におこるため、器官形成期における内分泌撹乱物質曝露との関連も疑われてきた

18

Hypospadias（尿道下裂）

比較的多い先天異常

日本は海外より低い

尿道口が陰茎の腹側表面、陰のう、あるいは会陰部に開口する

Department of Renal and Genitourinary Surgery, Hokkaido University Hospital

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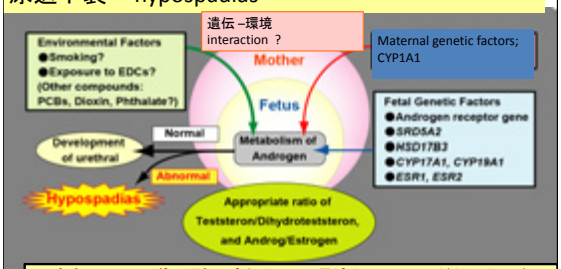
最終目標：環境遺伝交互作用の解明

尿道下裂　hypospadias



現時点では、尿道下裂は遺伝か？　環境か？　そのどちらかの側からしか研究がなされていなかった．今後はその両面から総合的な研究が必要。大規模前向きコーホート研究で初めて解明できる

Kishi et al.,　Basic Clin Pharmacol Toxicol (2008)

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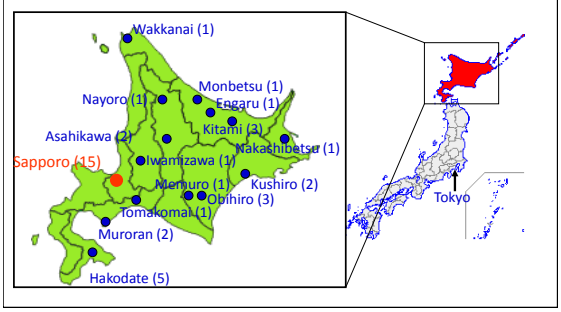
しかし、“後ろ向き研究”デザインの症例対照研究には種々の限界がある

- 先天異常登録制度がない国では症例は“病院による選択バイアス”が入る可能性
- 調査票で過去の妊娠中のことをふりかえるので“思い出しバイアス”の可能性
- 対照群の協力がなかなか得られにくいため、“対照選択時にバイアスが入る”可能性
- 時間的な因果関係があいまい
- （先天異常を起こす可能性のある器官形成期の）血液など生体試料採取が行われていないので曝露濃度（化学物質など）評価が困難

21

「環境と子どもの健康　に関する北海道研究（先天異常・発達・アレルギー）」

人口:560万人、疫学研究を実施しやすい規模、3医科大学の協力



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北海道コーホートの特徴

1. 一般人の低濃度バックグラウンドレベルでの影響
2. 胎児期の種々の環境要因について正確な曝露測定データを得る前向き研究
3. 一定期間追跡後、先天異常、神経発達、甲状腺機能、免疫アレルギーのそれぞれのアウトカムについてリスク評価を行う。
4. 予防医学的な見地から個体の感受性素因についてもハイリスク群の検討を行う。
5. 1）大規模コーホート(2万人目標：現在17,000人）
   妊娠12-13週の器官形成期の曝露と先天異常
   2）札幌Ｉ産院コホート(514人の母児）：
   生後の詳細な神経行動発達を追跡

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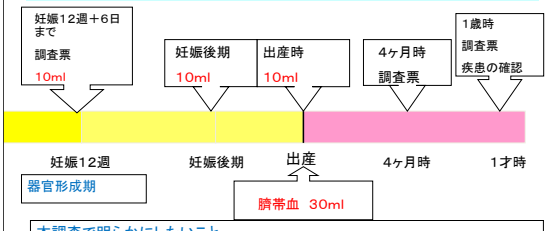
前向きコーホート①



本調査で明らかにしたいこと

①器官形成期の化学物質濃度と、先天異常の直接の因果関係

②栄養（葉酸など）、生活習慣と先天異常との関連

③母子の化学物質代謝酵素などの遺伝子多型の解析により、個人の感受性素因と先天異常との関連

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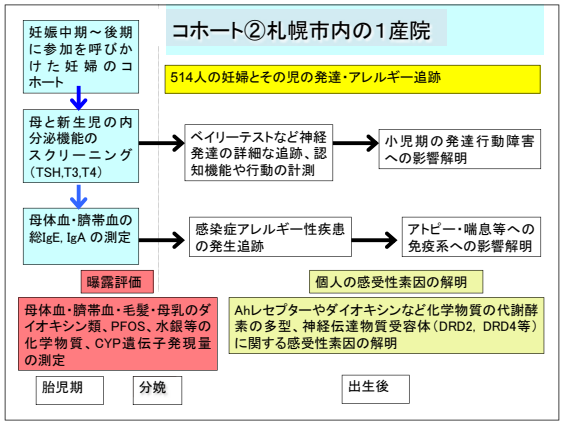

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Exposure assessment

- The world's first individual isomeric-level measurement of PCBs and dioxins
- 7 PCDDs, 10 PCDFs
- 4 non-ortho Co-PCBs
- 8 mono-ortho Co-PCBs
- 2 di-ortho PCBs
- Total and TEQ values also calculated

Additionally, 68 PCBs were measured in 64 of the subjects for comparison of concentrations with those of other countries.

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PCBダイオキシン類の胎内発育と生後発達への影響

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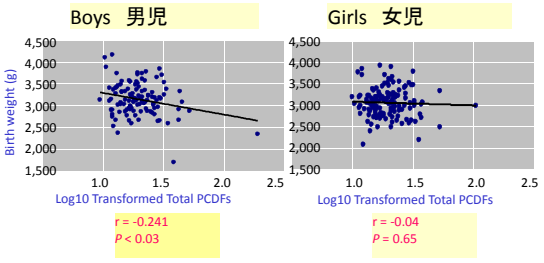
児の出生体重と母の血液 中PCDFs 濃度 男女別 （濃度は対数変換 ）



Konishi et. al. (Dioxin 2007)

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Multiple linear regressions for birth weight in relation to PCDDs/PCDFs and DL-PCBs by infant's gender

$\log_{10}$ scale	Male Beta [a]	Male (95%CI)	Female Beta [a]	Female (95%CI)
<Total> (pg/g lipid)				
Total PCDDs	-125.7	(-402.3 - 150.8)	-19.3	(-294.0 - 255.5)
Total PCDFs	-237.6	(-595.2 - 119.9)	-304.9	(-620.6 - 10.7)
Total PCDDs/PCDFs	-136.6	(-418.3 - 145.1)	-28.7	(-307.5 - 250.1)
Total non-*ortho* PCBs	-90.7	(-350.4 - 169.0)	-122.4	(-347.9 - 103.2)
Total mono-*ortho* PCBs	-138.6	(-372.7 - 95.4)	-104.3	(-308.7 - 100.1)
Total DL-PCBs	-138.7	(-373.1 - 95.7)	-105.3	(-309.9 - 99.3)
Total PCDDs/PCDFs and DL-PCBs	-148.5	(-391.1 - 94.1)	-106.8	(-317.6 - 103.9)
<WHO-2006> (TEQ pg/g lipid)				
Total PCDDs TEQ	-331.4	(-607.4 - -55.5) *	-126.3	(-384.5 - 131.9)
Total PCDFs TEQ	-269.5	(-561.5 - 21.9)	-241.7	(-491.7 - 8.4)
Total PCDDs/PCDFs TEQ	-334.0	(-628.2 - -49.1) *	-173.9	(-437.6 - 89.8)
Total non-*ortho* PCBs TEQ	-107.3	(-306.1 - 91.5)	-114.8	(-289.4 - 59.8)
Total mono-*ortho* PCBs TEQ	-138.6	(-372.7 - 95.4)	-104.3	(-308.7 - 100.1)
Total DL-PCBs TEQ	-112.1	(-315.1 - 91.0)	-117.5	(-295.6 - 60.5)
Total TEQ	-289.5	(-561.7 - -17.3) *	-144.2	(-386.7 - 98.4)

[a] Beta coefficients represent the change in birth weight (g) for a 10-fold increase in the dioxins level.
*$p<0.05$

男児においてのみ有意な関連、男児の方が女児より体重の減少幅が大きく有意であった.

Konishi et al., Environ Res (2009)

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発達評価

- 児の神経発達評価はベイリー乳幼児発達検査－第2版（BSID－Ⅱ）を日本語に訳して使用し，精神発達面，運動発達面を評価した。
- BSID－Ⅱは，アメリカで標準化され，臨床や研究領域で広く使用されている発達検査（Bayley, 1993），健常児の発達状況を測定するには有効な検査

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子どもの神経行動発達

BSID--Ⅱ
（ベイリー乳幼児発達検査・第2版）

31

母の妊娠時の血液中PCBs and Dioxins 異性体濃度と児の6か月時の精神運動発達スコアとの関係①

	MDI β	MDI t	MDI p	PDI β	PDI t	PDI p	
<PCDD>							
2,3,7,8-TCDD	-0.150	-1.714	0.089	-0.105	-1.235	0.219	
1,2,3,7,8-PeCDD	0.067	0.771	0.442	-0.036	-0.423	0.673	
1,2,3,4,7,8-HxCDD	-0.035	-0.394	0.694	-0.124	-1.462	0.146	
1,2,3,6,7,8-HxCDD	0.023	0.259	0.796	-0.045	-0.520	0.604	
1,2,3,7,8,9-HxCDD	0.002	0.026	0.979	-0.189	-2.284	0.024	*
1,2,3,4,6,7,8-HpCDD	-0.219	-2.395	0.018	* -0.240	-2.749	0.007	**
OCDD	-0.173	-1.864	0.065	-0.172	-1.927	0.056	
<PCDF>							
2,3,7,8-TCDF	-0.050	-0.584	0.560	-0.178	-2.175	0.031	*
1,2,3,7,8-PeCDF	0.014	0.158	0.875	-0.196	-2.412	0.017	*
2,3,4,7,8-PeCDF	0.022	0.252	0.801	-0.046	-0.544	0.588	
1,2,3,4,7,8-HxCDF	-0.107	-1.199	0.233	-0.137	-1.615	0.109	
1,2,3,6,7,8-HxCDF	-0.099	-1.117	0.266	-0.167	-1.990	0.049	*
2,3,4,6,7,8-HxCDF	0.026	0.302	0.763	-0.167	-2.012	0.046	*
1,2,3,7,8,9-HxCDF	ND	ND	ND	ND	ND	ND	
1,2,3,4,6,7,8-HpCDF	-0.042	-0.482	0.631	-0.064	-0.763	0.447	
1,2,3,4,7,8,9-HpCDF	ND	ND	ND	ND	ND	ND	
OCDF	-0.057	-0.656	0.513	-0.032	-0.390	0.697	

Adjusted for gestational age, smoking during pregnancy, and blood sampling time. * p < 0.05; ** p < 0.01

Nakajima et al., Env. Health Perspectives, 2006

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免疫アレルギーへの影響

- 新生児IgE レベルと
- 生後感染症罹患、アレルギーのリスク

（Washino et al.，2007
Miyashita et al.，submitted)

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母のdioxin異性体 levels と 男児のcord serum IgE
（回帰係数 Regression coefficients）

	Crude	P	Adjusted	P
Total				
Total PCDD	0.032	N.S.	-0.061	N.S.
Total PCDF	-0.630	N.S.	-1.097	＜0.05
Total PCDD/PCDF	0.012	N.S.	-0.088	N.S.
Total Non-ortho PCBs	-0.201	N.S.	-0.587	N.S.
Total Mono-ortho PCBs	-0.252	N.S.	-0.482	N.S.
Total Coplanar PCB	-0.253	N.S.	-0.484	N.S.
Total Dioxins	-0.246	N.S.	-0.521	N.S.
WHO-2005				
Total PCDD TEQ	-0.630	＜0.1	-1.008	＜0.05
Total PCDF TEQ	-0.689	＜0.1	-1.229	＜0.01
Total PCDD/PCDF TEQ	-0.681	＜0.1	-1.144	＜0.05
Total Non-ortho PCBs TEQ	-0.234	N.S.	-0.498	＜0.1
Total Mono-ortho PCBs TEQ	-0.252	N.S.	-0.482	N.S.
Total Coplanar PCB TEQ	-0.242	N.S.	-0.514	＜0.1
Total TEQ	-0.535	N.S.	-1.011	＜0.05

Adjusted for mother's age, maternal allergic history, paternal allergic history, smoking during pregnancy, parity, gestational age, frequency of deep sea fish consumption, distance of highway to home and blood sampling period. +p<0.1, *p<0.05, ***p<0.01.

Washino, Dioxin (2007)

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Adjusted OR between Otitis media and dioxin levels

	Total		Male		Female	
	OR	P	OR	P	OR	P
<Total> (pg/g lipid)						
Total PCDD	1.01	＜0.05	1.02	N.S.	1.01	N.S.
Total PCDF	1.81	＜0.01	2.42	＜0.01	1.51	N.S.
Total PCDD/PCDF	1.01	＜0.05	1.02	N.S.	1.01	N.S.
Total Non-ortho PCBs	1.07	N.S.	1.12	＜0.05	1.04	N.S.
Total Mono-ortho PCBs	1.00	N.S.	1.00	N.S.	1.00	N.S.
Total Coplanar PCB	1.00	N.S.	1.00	N.S.	1.00	N.S.
Total Dioxin	1.00	N.S.	1.00	N.S.	1.00	N.S.
<WHO-05> (TEQ pg/g lipid)						
Total PCDD-TEQ	1.04	N.S.	1.16	N.S.	1.01	N.S.
Total PCDF-TEQ	1.36	＜0.05	1.56	＜0.05	1.30	N.S.
Total PCDD/PCDF-TEQ	1.05	N.S.	1.12	＜0.05	1.02	N.S.
Total Non-ortho PCBs-TEQ	1.05	N.S.	1.12	N.S.	1.00	N.S.
Total Mono-ortho PCBs-TEQ	1.14	N.S.	6.03	N.S.	0.24	N.S.
Total Coplanar PCB-TEQ	1.04	N.S.	1.11	N.S.	0.99	N.S.
Total Dioxin-TEQ	1.03	N.S.	1.07	＜0.05	1.01	N.S.

Adjusted for maternal educational level, parity, infant gender, breast-feeding duration, environmental tobacco exposure, day care attendance and blood sampling period
<Total> OR; Per each 10 increase in dioxins concentration *p＜0.05; **p＜0.01

Miyashita et al., (submitted)

35

諸外国の曝露濃度との比較

- ダイオキシン類のレベルをTEQで比較すると、オランダやドイツに比べると低かった。
- Longneckerらの文献では、PCB153の濃度を10の研究間で比較をしているが、日本のデータは含まれていない。そこで過去の諸外国データとの比較のために、対象者134名中64名についてPCB153の濃度を検討したところ、ドイツ，オランダ，アメリカ・ノースカロライナよりも低い値で、
- 札幌の妊婦の曝露濃度は、アメリカ・ニューヨーク、マサチューセッツ州とだいたい同じレベルだった。

36

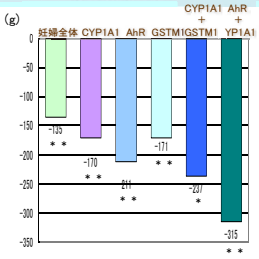
遺伝的感受性素因

（どのような人がハイリスク・
グループか？）

胎児期における母の喫煙や
受動喫煙による児への影響から
研究を開始した

37

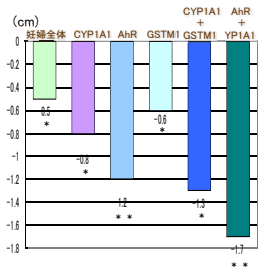
喫煙群の新生児体格（平均体重）
母のPAHs代謝関連の遺伝子多型別



妊婦の年齢，身長・妊娠前体重，妊娠中飲酒量，出産歴，新生児性別，在胎週数，世帯収入で調整　＊p<0.05　＊＊p<0.01　(Sasaki et al, 2005)

38

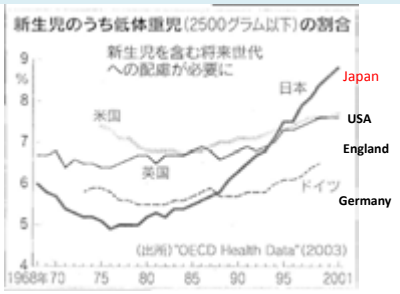
喫煙群の新生児体格（平均身長）
母のPAHs代謝関連の遺伝子多型別



妊婦の年齢，身長・妊娠前体重，妊娠中飲酒量，出産歴，新生児性別，在胎週数，世帯収入で調整　＊p<0.05　＊＊p<0.01　(Sasaki et al, 2005)

39

Recent Increase of Newborn under 2,500g in Japan（OECD Health Data, 2003)



2010.10.21 日本経済新聞 「小原美紀 経済教室」より抜粋

40

“Barker仮説”から”DOHaD“へ

- “疾病の胎児期起源Fetal Origins Hypothesis”

  循環器疾患や2型糖尿病などは胎児期の低栄養が関係している。理由は厳しい胎内環境に適応し生まれる前に“倹約型”にプログラミングされ、生後の過栄養状態が肥満や成人期の慢性疾患につながる （Barker et al., Lancet 1993）

- さらに小児期発達の健康と疾病起源仮説へと発展
  Developmental origins of health and disease (DOHaD).

41

働く人を対象にした大規模コホート研究

42

北海道職域コーホート研究の概要

2003年(ベースライン調査)・調査票、健診・高感度CRP・動脈の脈波測定 H.b.pyrori感染

2004～2009年（アウトカム追跡）健診結果・疾病記録・調査票

3自治体職員、1運輸会社の計8，000名を対象に6年間の追跡調査

労働環境や社会経済要因がストレス、不眠、動脈硬化性疾患、メタボリック症候群に及ぼすリスクとそのメカニズムを解明

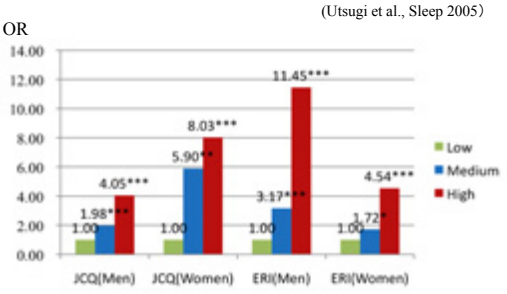
調査項目
- 個人属性：学歴、婚姻、同居者など
- 労働環境：職種、職階、労働時間、休日、
- 職業性ストレス（要求−裁量モデル、努力−報酬モデル）など
- 精神的健康度：不眠（アテネ不眠尺度）、抑うつ症状（CES−D）など
- 生活習慣：喫煙、飲酒、運動習慣など

これまで、職業性ストレスと不眠との関連、不眠がDM発症に及ぼす影響、H.b.pyrori感染と動脈硬化との関連など多くの知見を報告

43

Occupational stress (JCQ,ERI) and Insomnia

(Utsugi et al., Sleep 2005)

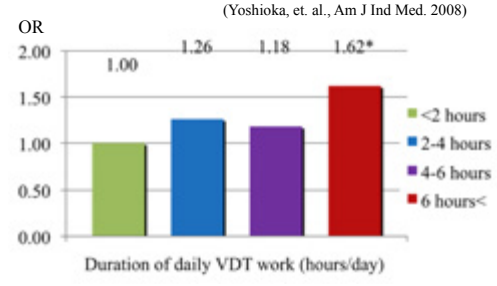


Adjusted for age, education, occupation, exercises, smoking, drinking, working hours and shift work.
*; p< 0.05 (vs. low). **; p< 0.01(vs. low). ***; p< 0.001(vs. low).

44

Duration of daily VDT work and Insomnia

(Yoshioka, et. al., Am J Ind Med. 2008)

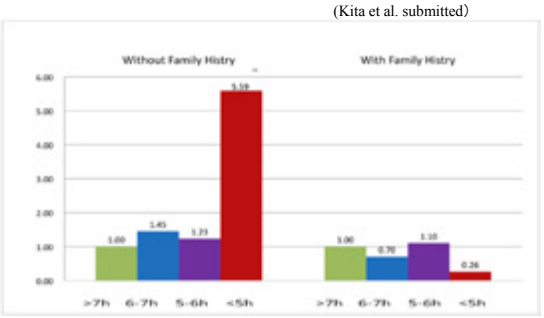


Adjusted for sex, age, education, glasses, drinking, exercises, BMI, day-off, working hours, and job strain.
＊； p<0.05 (vs. < 2 hours)

45

Daily sleep duration and Diabetes mellitus Occurrence

(Kita et al. submitted)



Adjuted for age, sex, BMI, smoking, drinking, working hours, occupational stress, education and shift work.
*p<0.05,**p<0.01,***p<0.001

46

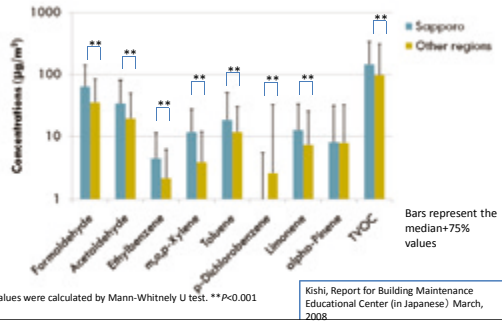
シックハウス症候群の全国規模の疫学研究

47

Setting: 6 regions in Japan

48

Chemical concentration differences between Sapporo and other regions



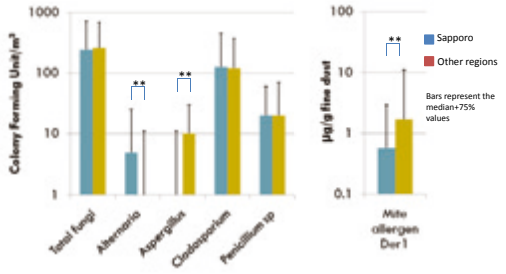
Bars represent the median+75% values

P-values were calculated by Mann-Whitnely U test. **P<0.001

Kishi, Report for Building Maintenance Educational Center (in Japanese) March, 2008

49

Fungi and mite concentration differences between Sapporo and other regions



Bars represent the median+75% values

P-values were calculated by Mann-Whitnely U test. **P<0.001

Kishi, Report for Building Maintenance Educational Center (in Japanese) March, 2008

50

Associations between Atopic dermatitis and levels of phosphate

	Floor		Multi-surface	
	OR (95%CI)	p-value	OR (95%CI)	p-value
TBP	1.84 (1.06-3.18)	0.030	1.03 (0.43-2.48)	0.954
TCiPP	2.27 (1.29-3.98)	0.004	1.13 (0.60-2.14)	0.695
TCEP	1.89 (1.01-3.52)	0.045	1.15 (0.68-1.94)	0.603
TEHP	2.25 (1.11-4.56)	0.025	1.39 (0.61-3.15)	0.433
TBEP	1.26 (0.75-2.12)	0.382	0.85 (0.45-1.60)	0.611
TDCPP	1.92 (1.28-2.89)	0.002	1.26 (0.67-2.38)	0.467
TPhP	1.71 (0.88-3.32)	0.114	1.08 (0.59-1.96)	0.805
DEHP	1.82 (0.86-3.83)	0.117	1.62 (0.83-3.15)	0.156

Each variable was introduced separately in the logistic regression model and adjusted for sex, age strata.
Odd ratios were calculated using $\log_{10}$-transformed variables.

51

51

Ⅲ. 環境省エコチル研究の概要

52

Worldwide Birth Cohorts

- Hokkaido Cohort Study (2001～): 20,000 participants
- Tohoku Cohort Study(2001～): 1,300 participants

Japan Environment & Children's Study 2011年から開始（10万人）

53

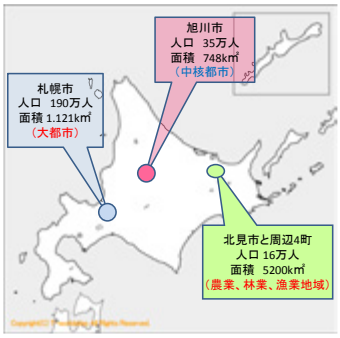
環境省環境と子どもの健康に関する全国研究

NO	ユニットセンター名
1	北海道
2	宮城
3	福島
4	千葉
5	神奈川
6	甲信
7	富山
8	愛知
9	京都
10	大阪
11	兵庫
12	鳥取
13	高知
14	福岡
15	南九州・沖縄

54

図3

北海道ユニットの構成と特徴



1. 日本の面積の2割を占める広大な北海道で4大学が共同（1つのユニットとして協力体制をとる）
2. （これまでの実績を生かして）大都市・札幌では「病院選択によるバイアス」がかからないように全域でリクルート
3. 中核都市・旭川も同様のデザイン
4. 農林・漁業地域を多く含む道東・北見周辺は1市4町で

55

「環境健康科学センター（全学共同教育研究施設）」設置へ

- 2010年4月1日から発足
- “大型研究費をとるためではない“
- 「環境と健康に関する研究教育」は医学のみではカバーできず、学融合的な協力が大切
- 21世紀「環境と健康」に関する研究は教育は人々（当事者）をエンパワーし、社会システム変革に結びつくことが大事
- 理念を掲げた教育研究が社会的にも時代から見ても発展できる（大学の役割は重い）

56

Ⅳ. 本学に全学共同利用施設としての環境健康科学センター設置の意義

57

本学におけるSustainability取り組みの新たな発展

北海道大学は、「持続可能な開発」に関連する研究と教育の高度化を図り、その成果を活用し国際社会に貢献するため、総長を本部長とする「持続可能な開発」国際戦略本部を2005年に設置。

重点領域

現在の5つの代表的な学問領域に今後、6.「環境と健康」が加わる意義は大きい

1.地球温暖化
2.水の統合的管理
3.循環型社会の構築
4.食糧・森林の安定的確保
5.感染症対策
6. 環境と健康

58

今後の課題

1. 国際協力が不可欠。特に地球温暖化：急激な気候変動の生体の適応や災害などへの取り組みが必要

3.「社会経済的環境」：2006年から日本の貧困率はOECDの中でアメリカに次いで2位。

4. 当事者である人びとの力を強める（エンパワーメント）の視点が重要

5.「リスク研究」とともに人々の「健康を増進」する環境研究も重要

6.「安全safety 」の視点を加えることにより一層環境への取り組みが総合的になる：
例）食の安全も都市計画も健康とともに安全が重要

59

Health・Wellbeing・ Safety
（健康）：（安寧）：（安全）

地球規模の環境変化と Public Health
気象変化・生物多様性の損失と Health
都市化と Public Health
災害で弱者を死なせない防災計画とPublic Health
働きがいのある人間らしい労働と Health
小児の安全　虐待予防と Health

・健康と安全・安寧、
この3つを教育研究の柱に位置づけること
それにより世界から優秀な学生と研究者が
北海道大学に集まることでしょう

60

Thank you very much

環境健康科学研究教育センター
Center for Environmental & Health Sciences（CEHS)

61

Issues on Forest Rehabilitation of Degraded Forestland in Mongolia

モンゴルにおける荒廃森林地帯再生の課題

Jamsran Tsogtbaatar
Institute of Geoecology
Mongolian Academy of Sciences

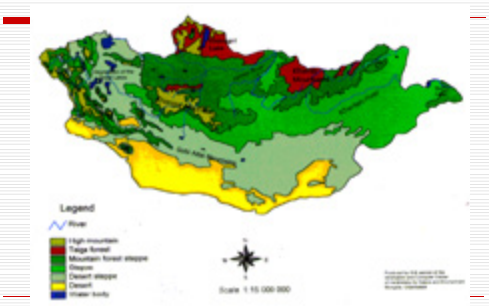
ジャムスラン・ツクトバータル
モンゴル科学アカデミー地球生態学研究所長

Context

- Forest Condition in Mongolia
- Forest degradation and deforestation
- Forest rehabilitation and tree planting
- Problems and limitations in tree planting and forest rehabilitation
- Recommendations

1

The natural zones of Mongolia



2

Forest zones in Mongolia

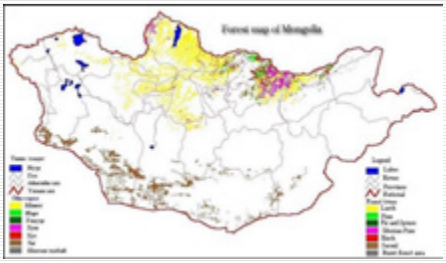
(Classification based on elevation)

- Sub-alpine forest zone
- Mountain taiga forest zone
  Pseudotaiga forest zone
- Sub-taiga forest zone
- Forest-steppe zone



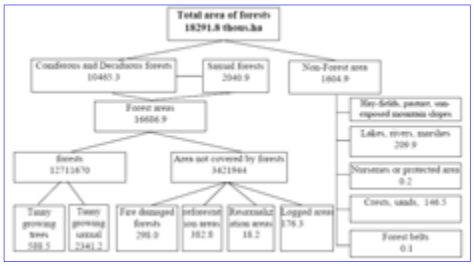

3

Forest distribution in Mongolia



4

The structure of Forest fund



Source: Ministry of Nature and Environment , 2006

5

Environmental issues facing in Mongolia

The Government of Mongolia has identified following issues as priority environmental areas:

- Land degradation
- Desertification
- Deforestation
- Biodiversity loss
- Air and water pollution

6

Main role of Mongolian forests - to conserve and maintain soil and water resources.

7

Main causes of deforestation

- Population demography
- Increasing livestock numbers
- Increasing demand for wood material
- Low enforcement of environmental laws
- Weak development of forest institutions

8

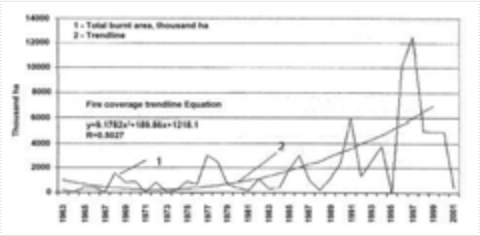
Key factors of Forest degradation

Forest fire

Grazing Logging

9

Forest fire frequency in Mongolia



Source: MNE, 2002

10

Forest insect and pest outbreaks

The main species of forest insect pests

- *Lymanthria dispar (adult)*
- *Dendrolimus superans sibiricus (pupa)*
- *Lymanthria dispar (larva)*
- *Dendrolimus superans sibiricus (adult)*

11

Annual wood harvesting volume

('000 m^3)

Year	Industrial use	Private use timber	Fuel wood	Wood from thinning	Total volume
2001	72,6	n/a	603,5	n/a	676,1
2002	39,0	n/a	580,0	n/a	619,0
2003	39,5	10,0	571,0	2,0	620,5
2004	44,3	18,5	585,0	5,0	647,8
2005	39,9	-	570,0	-	609,9
2006	32,5	14,0	570,7	n/a	617,2

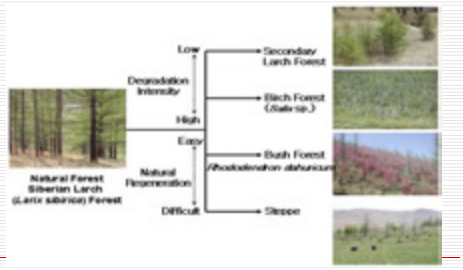
12

Current phenomenon of forest use

- Estimates of the sustainable annual allowable cut (AAC) in Mongolia, and also annual wood consumption, vary widely due to lack of reliable data.
- Between 36 and 80% of total harvest is illegal logging.
- Fuel wood constitutes between 65 and 80% of total wood harvest.

13

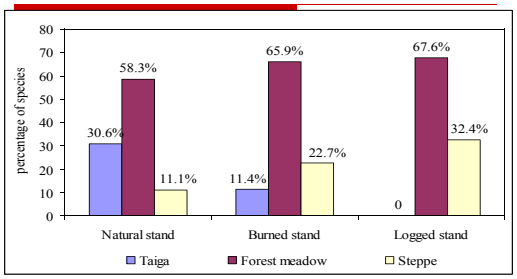
Development of *Larix sibirica* stands after fire or logging



Source: Park Yeong Dae, Tsogtbaatar, 2002

14

Changes in plant community after forest fire and logging



15

Grazing intensity and survival rate of planted larch trees

Site no.	Survival rate (%)	Distance from forest (km)	Altitude (m)	Aspect	Grazing intensity
1	83.3	0.1	1560	20	Light
2	5.0	5.0	1680	10	Heavy
3	38.9	0.1	1621	350	Heavy
4	50.5	0.1	1750	20	Medium
5	70.8	0.1	1710	350	Light
6	58.2	0.5	1700	30	Medium
7	2.7	4.0	1705	340	Heavy
8	13.4	2.5	1700	330	Heavy

16

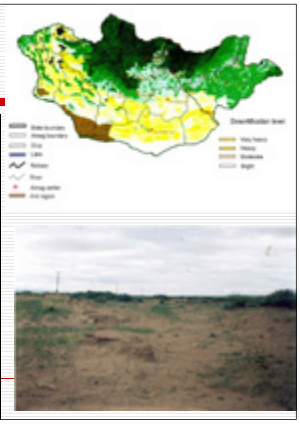
Factors of land degradation

- Vast rangeland area and nomadic lifestyle
- Long tradition of rangeland use and livestock breeding
- Climate change and extreme weather evidence
- Overgrazing and mismanagement of rangeland
- Compliance and enforcement of Land law

17

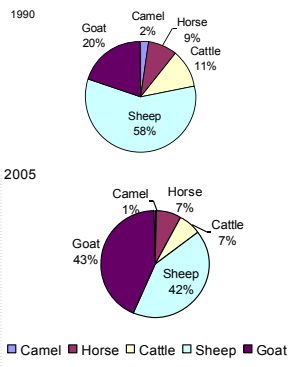
Land degradation/ desertification

Desertification classes	1990	2000
Slightly	76.0	34.9
Moderate	20.0	38.7
Heavy	3.0	16.1
Very heavy	1.0	1.8
Arid desert region	-	8.5
Semi-arid, arid territories	41.3	44.7



18

Increase of number of livestock



Since 1990s total number of domestic animals has increased up to 40.0 million and the carrying capacity of pastureland has changed drastically.

19

Impact of livestock on land cover

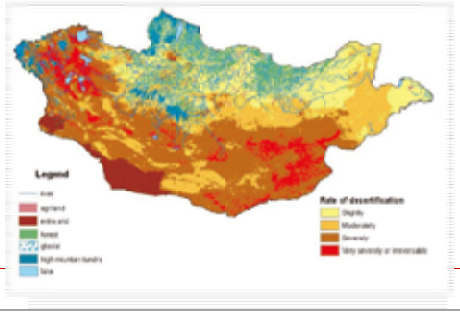
20

Pasture land degradation and Overgrazing

- Due to climate change almost 1,5 million hectares of land has eroded, which has been used for agriculture during the last more than 40 years.
- Almost 80% Mongolia's total pasture land has changed, of which 3.2 million hectares is considered degraded.
- Yield of severely degraded pasture has decreased by 5 times.

21

Desertification map of Mongolia 2007

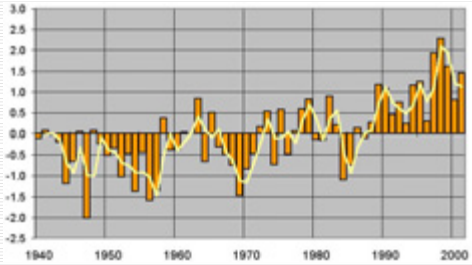


22

What is climate change impact on deforestation?

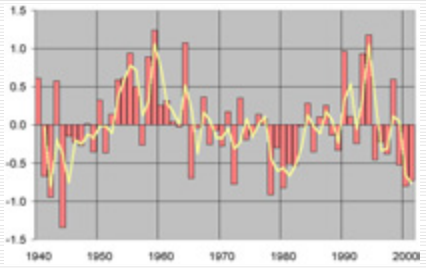
23

Trend of changes of mean annual temperature



24

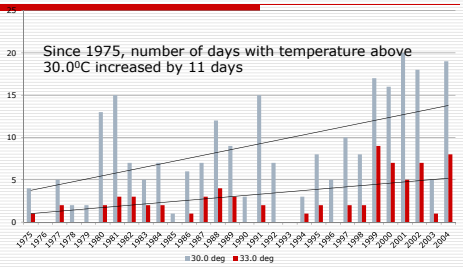
Annual precipitation changes



25

Number of days with above 30.0 degrees temperature in July

(Bogd soum of Ovorkhangai aimag)



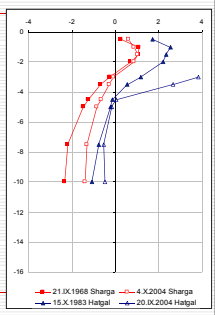
By Dr.Natsagdorj, 2006

26

Permafrost degradation

- Climate warming leads to recent degradation of permafrost.
- In generally the permafrost in Hovsgol Mountain region is degrading more intensive than in other mountains of Mongolia
- Mean annual permafrost temperature and the depth of active layer have increased by 0.6⁰C and 60 cm, respectively

Ground Temperature



27

Key indicators for Sustainable Forest Management in Mongolia

- Increase in the Extent of Forest and Tree Cover
- Conservation and maintenance of soil and water resources
- Maintenance and enhancement of Ecosystem Function and Vitality
- Adequacy of Policy, Legal and Institutional Framework

28

How can do rehabilitation work in degraded forestland area?

29

Criteria for selection of tree species

- Good adapting ability
- Ability to stand moisture stress
- Adaptation to drought
- Adaptable to soil condition
- Nitrogen fixing capacity
- Fast growth

30

Pre-conditions of tree planting activity

The selected sites of tree plantation are briefly described basing on following aspects:

- Objective of the planting activity
- Success and performance of planting activity
- Factors influenced on success/failure of plantation
- Lessons learned

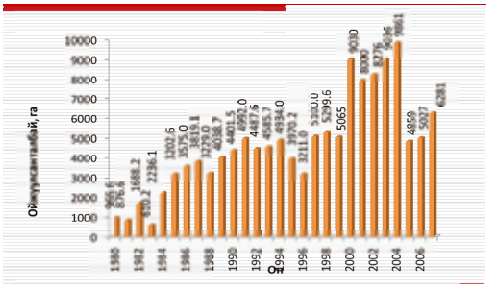
31

Implementation of reforestation

- Reforestation activities in Mongolia commenced in 1971.
- Main species planted are pine (*Pinus silvestris*), larch (*Larix sibirica*), poplars (*Populus* spp) and elm (*Ulmus pumila*).
- Total plantation area recorded by the end of 2006 is 117,940 ha.

32

Reforstation activity (1980-2006)



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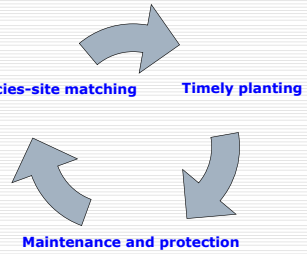
Steps for successful reforestation



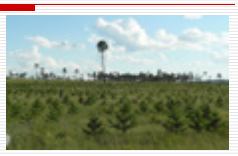
34

Plantation technology

- Site selection
- Species selection
- Nursery technology
- Establishment methods and tools
- Tree planting technology
- Silvicultural techniques
- Economic and ecological analysis

35

Cases of reforestation activities in northern Mongolia

36

Key considerable areas to enhance forest ecosystem functions

- Impact of drought on forest growth and post fire regeneration
- Climate - disturbance interactions in forest ecosystems
- Seasonal development of forest stand under global warming
- Response of boreal forest ecosystems to permafrost degradation

37

National Programs and Activities in forest rehabilitation

38

Forestry related National programs

- *Mongolian Action Program for the 21st Century – MAP 21*
- *National Action Program for Combat desertification, 1995*
- *Environmental Action Program, 1995*
- *National Action Program on Climate Change, 2000*
- *National Forest Program, 2001*

39

GREEN BELT PROGRAM

- Green belt program was approved by Mongolian Government on 09 March, 2005.
- First stage - 2005-2015
- Second stage- 2015-2025
- Third stage-2025-2035

40

What are a problems on reforestation and tree planting activities in Mongolia?

41

Current problems in tree planting

- Labor intensive technique
- Time consuming method
- Insufficient skilled labor
- Limited financial allotment
- Poor maintenance
- Weak system of land management

42

Main problems and limitations

- Difficulty in collecting quality seeds and producing quality seedlings
- Lack of supportive inputs and incentives for plantation activities
- No effective application of participatory approaches
- High conflict between forestry and livestock sector

43

Main problems and limitations

- Insufficient staff to properly maintain, protect and supervise plantation work
- Lack of skilled man power in tree planting process
- No any extension service in tree planting activity
- Weak monitoring system of post plantation activity

44

Recommendations

- The plantations should be established on a manageable scale
- Agroforestry systems and community forestry could play crucial role for successful implementation of plantation work
- Establishment of community nurseries in preparation for the long term community plantations

45

Recommendations

- Stimulate private sector investment in tree planting activity
- Giving forestry professional services and technical support
- Strengthening Professional Capacity in Extension Participatory forestry
- Integrate tree planting with income generation activity

46

Plenary Lecture

Session 2: The Deterioration of Ecosystems and it's Impact on Human Life

Sustainable Use and the Eecosystem Network of Mongolian Nomadic Pastures

Noboru Fujita
Visiting Associate Professor,
Research Institute for Humanity and Nature

Abstract:
In Mongolia, nomadism started in the third BC century in the Hsiung-nu period and has continued up to now. While, after democratization and market economy in 1990, due to the privatization of livestock by nomads, the rapid increase in the number of livestock has caused overgrazing of pasture. In this lecture, based on the analysis of the present status of the pasture, I would like to consider how to use the pasture by nomadism for the sustainable future from the view of the ecosystem network. It is normal that species diversity and production of the pasture is maintained highly by livestock grazing, so not the grazing by livestock but the strength of the grazing pressure is a question. First, I make clear the relation between the grazing pressure, and the species diversity and the production of pasture plants. Second, I show effects of the overgrazing by livestock on degradation of the pasture in each vegetation zone.

Profile:
I was born in Osaka in 1946. I received my Ph.D. in science at Kyoto University. I have done special research on plant ecology after I got a job at Laboratory for Plant Ecology, Kyoto University in 1974. I visited Mongolia first in 1999. The original plan to study Mongolia was watershed research of Lake Baikal. I already visited watershed of Tuul River and Selenge River from the upper to the lower and the famous pasture of Northern Khangai. At present, I join the project, 'Collapse and Restoration of Ecosystem Networks with Human activity' , of Research Institute for Humanity and Nature. I investigate the central Mongolia along a north-south line from Ulan Bator to South Gobi, including the forest steppe, steppe, desert steppe zones.

1

2

What is Mongolia?

A landlocked country between Russia and China

Highlands (the averaged altitude: 1500 m)、Ulan Bator (1350 m)

Land area: 1,567,000 Km^2 (4 times more than Japan)

Population: 2,562,400 (2005), Population density: 1.64/Km^2

Climate and vegetation: Taiga forest (conifer forests in the subarctic zone) in the north and Gobi Desert in the south, Humid gradient from the north to the south is large.

Religion: Lamaism

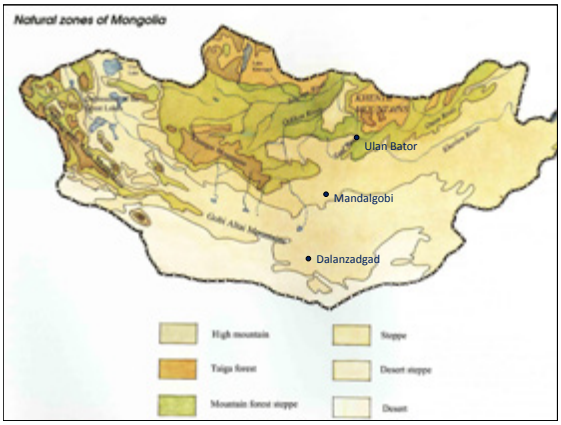
3

Mongolian nomadism

Basic primary industries

It continues from the Hsiung-nu (the 3rd century BC)

4



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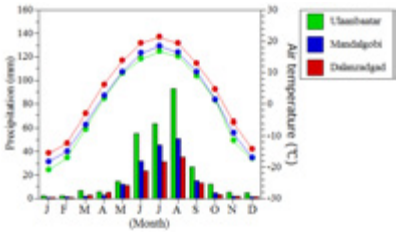
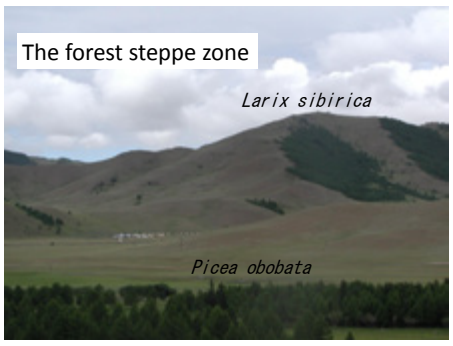


Although annual precipitation is normally ca. 300 mm around Ulan Bator, almost all rain falls during the summer and the winter where it rains little is very cold. So, forests can grow around Ulan Bator

6



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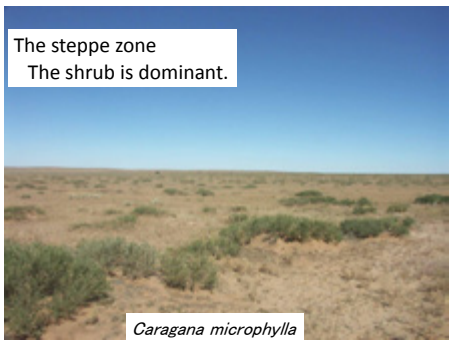


8

A legume: nitrogen fixation, spines

9

The desert steppe zone : mainly two shrub types

Caragana stenophylla

10

Dry type of *Caragana*
Small, narrow leaves with thin spines

11

A mixture of *Kalidium foloatum* and *Reaumuria soongolica*

12

Kalidium foliatum : Chenopodiaceae, C_4 plant

13

What is Mongolian nomadism?

A family moves with the tent and livestock at every season and even within the season.

Kinds of livestock are sheep, goat, horse, cattle including yak, and camel. Sheep and goat make a mixed group.

Livestock graze freely in the pasture, but the nomad often leads livestock to good sites. Cattle, and sheep and goat go back to the nomad tent every night.

14

A watering place is important for summer place of residence.

Near the watering place like a river or a well

15

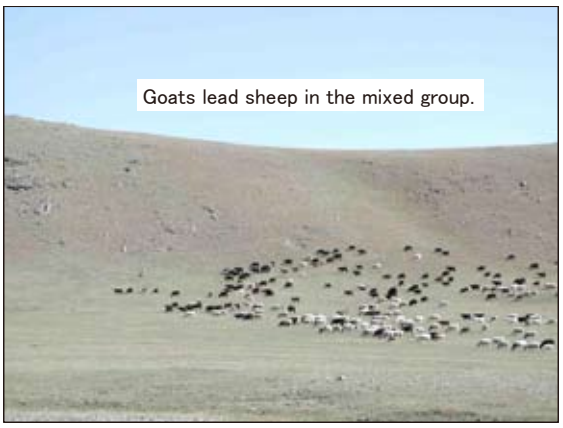
It is important for the winter place of residence to shelter from the cold north–west wind.

Spring quarters **Winter quarters**

The foot of the south–facing slope

Why does the residence moves at a short distance from winter to spring?

16



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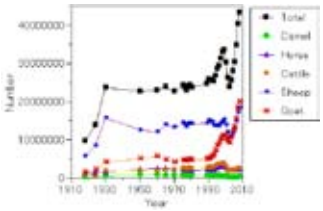
Yearly change of livestock number



Rapid increase after democratization (1990) especially in goats due to market economy and privatization of livestock.

18

Sustainable use of nomadic pasture

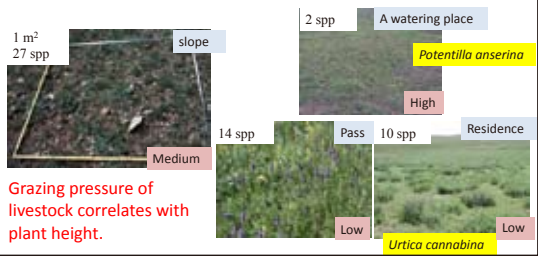
The forest steppe zone, and the steppe and desert steppe zones faces commonly a crisis of over-grazing by livestock, but natural environments, vegetation, and kind of dominant livestock are different between them. So, the present status is clarified differently.

The forest steppe zone	The steppe, and desert steppe zones
Drought is relatively low	Drought is high
Forests and pastures	Shrubs and herbs
Cattle is popular	Goats and camels are dominant

19

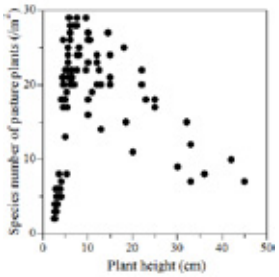
The forest steppe zone

Pasture plants can live under grazing pressure by livestock. In many taxa, the forest species and the pasture species are differentiated. Therefore, livestock grazing is not an adverse condition for pasture plants. Too strong grazing, overgrazing is the adverse condition.



Grazing pressure of livestock correlates with plant height.

20



Species diversity of pasture plants become the highest at the intermediate grazing pressure.

Intermediate disturbance theory
(the forest, the intertidal zone)

21

What is the relation between annual production of pasture plants and grazing pressure of livestock？

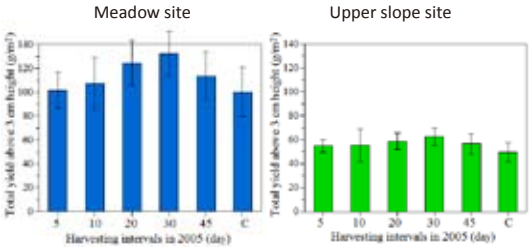
Mowing experiments to determine effects of mowing height and frequency, and selection of mowing species on the annual production of pasture plants

22

Gachuurt（north east of Ulan Bator）

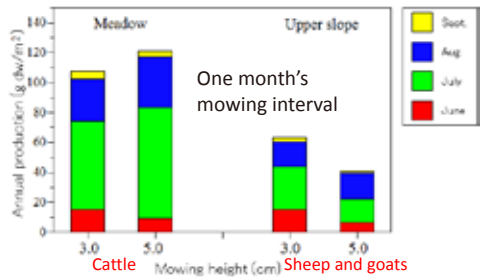
Different topography (soil moisture)

23



Annual production of pasture plants becomes the highest at the mowing interval of 30 days. Livestock grazing increase actually the annual production of pasture plants. But, too much frequent grazing makes it worse.

24



Remaining height of pasture plants after livestock grazing
Cattle: 5 cm; Sheep and goats: 3 cm

In the meadow where plant growth is high, annual production of pasture plants shows better at mowing height of 5 cm compared with 3 cm, while, in the upper slope, it becomes reverse.

25

It is not easy to determine the grazing tolerance of pasture plants.

Defense of pasture plants against livestock grazing: physical (hardening, spine), chemical (poison, a bad smell), ecological (lying down-avoidance, hiding)

Livestock grazing: It depends on the hunger of livestock, because livestock can graze hard or poisonous plants due to large mouth and body.

Grazing-tolerant plants become edible after dying of above-ground parts in the autumn.

The same plant shows different grazing-tolerance between the forest steppe zone and the steppe and desert steppe zones.

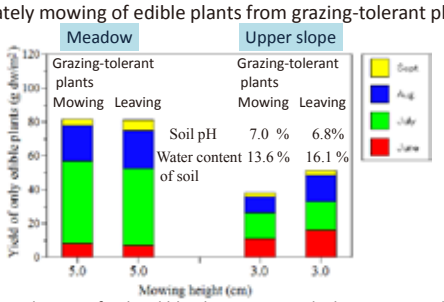
26

Continuous over-grazing makes the domination by large grazing-tolerant plants

Achnatherum splendens (A grass hardens stems of the last year to prevent the grazing of leaves from livestock in the forest steppe zone, while it becomes good feed for livestock in the steppe and desert steppe zones.

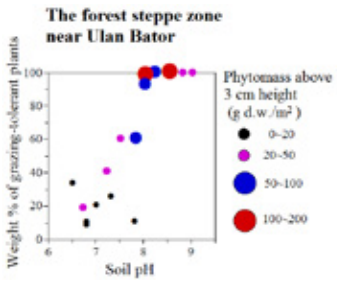
27

Separately mowing of edible plants from grazing-tolerant plants



Annual production of only edible plants increased when grazing-tolerant plants were left without mowing on the upper slope compared with the case of simultaneous mowing of grazing-tolerant plants. This may be due to better keeping of soil moisture. Under dry condition, mixture of grazing-tolerant plants may be not negative for edible plants.

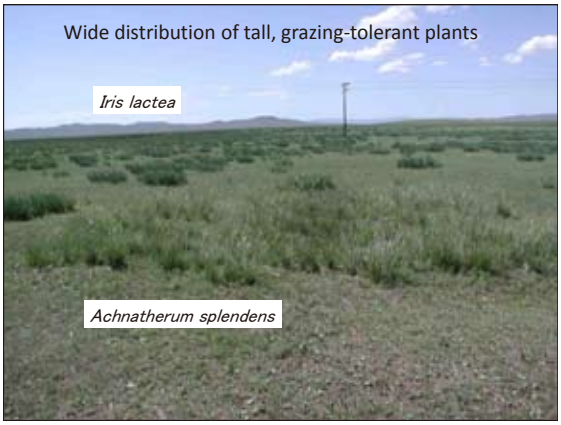
28



Weight percent of grazing-tolerant plants rises with increase of soil pH. Soil alkalization of the pasture advances under continuous over-grazing.

29

Wide distribution of tall, grazing-tolerant plants



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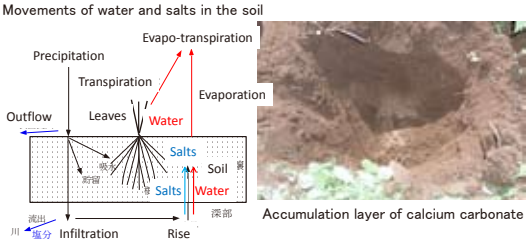
Overgrazing → Grazing and trampling by livestock → Disturbance of soil surface → A win by evaporation → Accumulation by salts in the soil surface → Progress of soil alkalization

Movements of water and salts in the soil



Accumulation layer of calcium carbonate

31

Artemisia macrocephalla

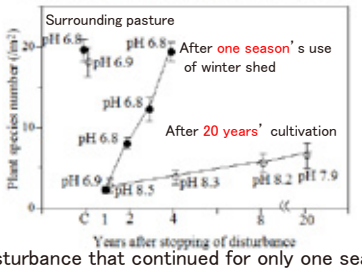
32

Around the residence, temporary strong disturbance is inevitable.

After disturbance, only few annuals occur.

33

Recovery of plant species number



After disturbance that continued for only one season, plant species number recovers in only four years. But, after long-term disturbance, it does not recover in a short time due to soil alkalization. This means the importance of movement in the nomadism.

34

Reversible based on biological interaction!

Domination by edible plants

Unnecessary of protection

Drop of grazing pressure

Change

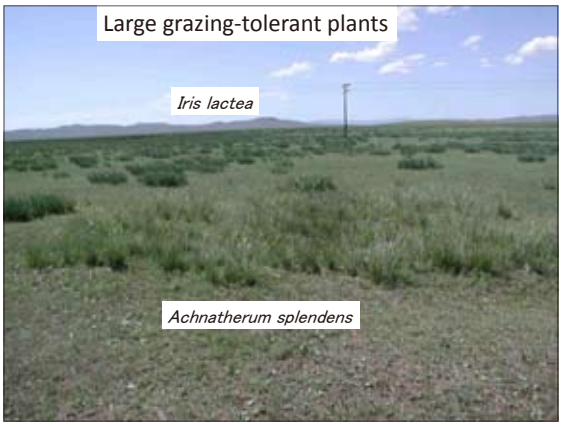
Rise of grazing pressure

Plant protection

Domination by grazing-tolerant plants

However, environmental change due to soil alkalization prevents the recovery of edible plants even under low grazing pressure by livestock.

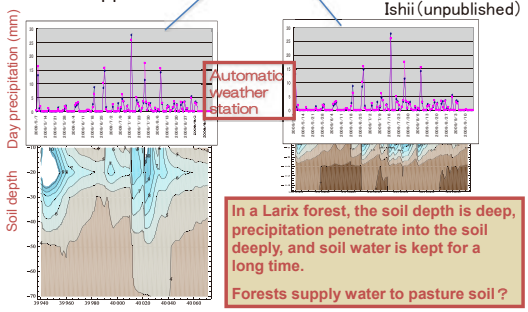
35



36

Interaction between forests and pastures in the forest steppe zone

Ishii (unpublished)

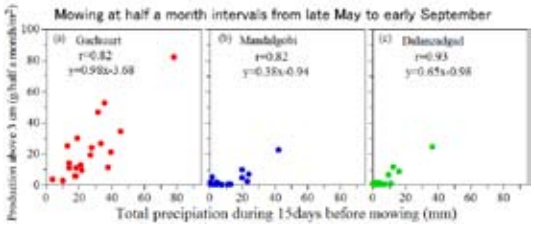


In a Larix forest, the soil depth is deep, precipitation penetrate into the soil deeply, and soil water is kept for a long time.

Forests supply water to pasture soil?

37

The steppe and desert steppe zones



Production of herbs during half a month correlates with total rain during half a month before mowing. Small rain lower than10 mm is not effective for growth of pasture plants in the steppe and desert steppe zones.

38

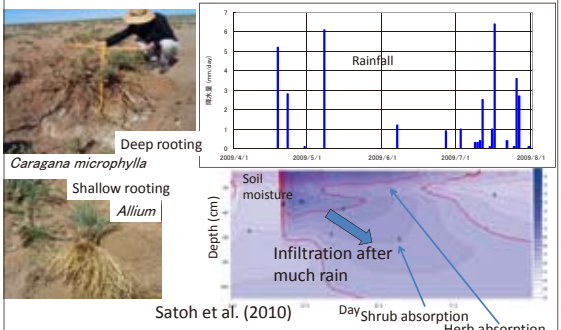
Growth of herbs

The pasture becomes green from herb growth after much rain.

Continuous little rain makes the pasture like the desets due to no green of above-ground plants.

39

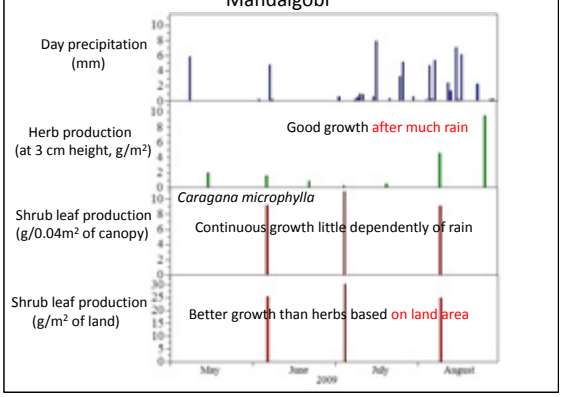
Water use of a shrub (the steppe zone, Mandalgobi)



Satoh et al. (2010)

Herbs absorbs water rapidly from shallow soil layer.
Shrubs absorbs water slowly from deep layer for a long time.

40



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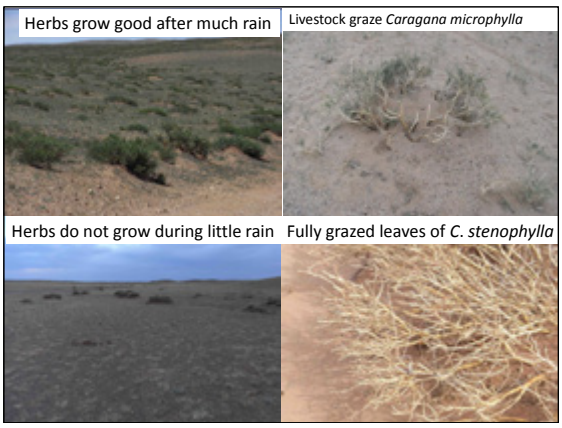

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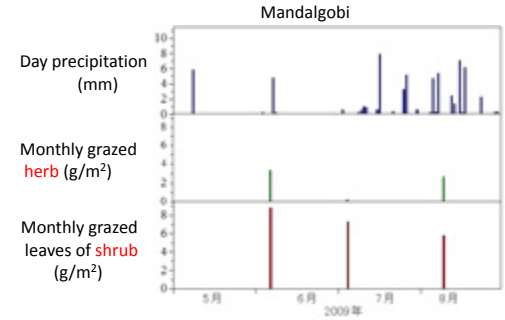
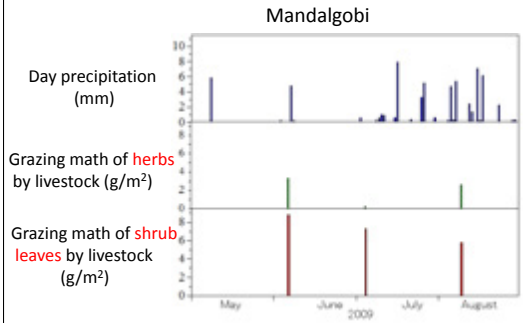


Actually grazed math per land area was larger in shrub.

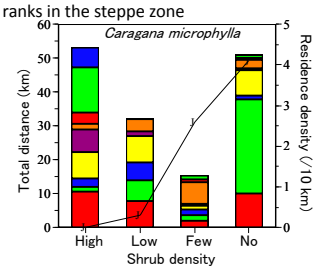
43



Actual grazing math of shrub leaves is higher than that of herbs, especially in spring and at the time of little rain.

44

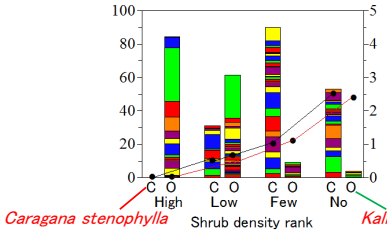
Distance distribution of four shrub density ranks in the steppe zone



Distance distribution of four density ranks of *Caragana microphylla* along the road from Ulan Bator to Mandalgobi. It degrades nearly for a half distance.

45

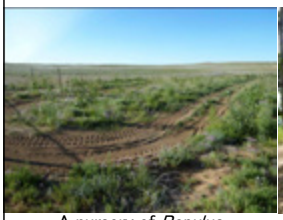
Distance distribution of four shrub density ranks of two shrub types in the desert steppe zone



Degradation is remarkable in *Caragana stenophylla*. Individual size is reduced in *Kalidium foliatum*と*Reaumuria soongorica*.

46

Plantation in the steppe and desert steppe zones



A nursery of *Populus* near Mandalgobi

Plantation of *Populus* in Inner Mongolia

It is often tried to plant high trees in dry areas. But, it has troubles. Irrigation is inevitable and established high trees prevent the growth of shrubs and herbs.

47

Comparative rearing of goats and sheep

Is there any difference between goats and sheep in grazing effects on pasture plants?

Compared with sheep, goats are considered bad livestock, because they graze completely pasture plants even from underground parts. Is this true?

48

Bayan－Unjuul

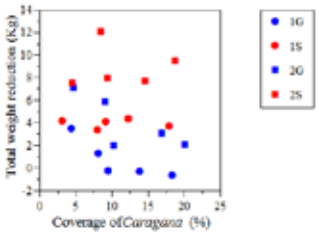
Shrub (*Caragana microphylla*) and herb (*Stipa krylovii*)

49

Four days later from the start of experiment, the goat like leaves of shrub, while the sheep like the herb. The sheep can graze the herb from underground.

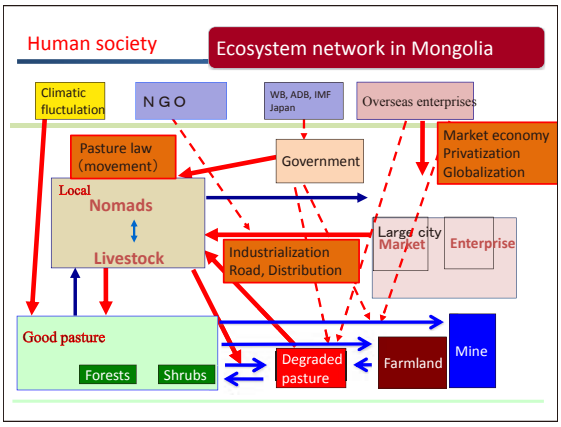
50

Weight reduction four days later from the start of experiment



Under large coverage of *Caragana*, goat did not reduce (1G) and reduced a little the weight, while sheep decrease the weight independently of the coverage.

51



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Conclusions

Sustainable use of nomadic pastureland

It is indispensable to avoid a long term overgrazing, because it brings about irreversible changes like soil alkalization and degradation of shrubs.

It is inevitable that a lean year arises due to the unseasonable weather, however, it is possible to recover.

It is necessary to continue movement without settlement.

It is necessary not to cause the soil alkalization due to overgrazing and settlement in the forest steppe zone.

It is urgent to conserve and recover shrub vegetation in the steppe and desert steppe zones. It is not trees but shrubs for plantation.

Policy problems (pasture law, livestock tax, developments (farmland, mine etc.)

53

モンゴル遊牧草原の持続的利用と生態系ネットワーク

藤田　昇
総合地球環境学研究所客員准教授

要　旨：
モンゴルでは、紀元前3世紀の匈奴時代には遊牧が始まり、今日まで長期に持続的に行われている。一方、1990 年の民主化、市場経済化以降、家畜は遊牧民の私有財産となって家畜が急増し、過放牧が問題視されている。本講演では、草原植生の現状診断をもとに、遊牧による草原の持続的利用がいかにすれば可能かを生態系ネットワークの視点から論じたい。草原は、遊牧家畜の摂食によって、植物の種多様性や生産力が維持されており、家畜の摂食自体が問題ではなく、摂食圧の程度が問題である。はじめに、摂食圧と草原植物の種多様性、生産力の関係を明らかにする。次に、森林ステップ、ステップ、砂漠ステップの植生帯別に、植生の劣化に対する家畜の過放牧の影響を示す。

経　歴：
1946 年大阪府生まれ。京都大学理学研究科博士課程植物学専攻終了。1974 年に京都大学理学部付属植物生態研究施設に助手として就職以来、植物生態学を専門として研究する。モンゴルには 1999 年に初めて調査に行く。当初は、バイカル湖の主要な集水域の研究として始めたので、トール川、セレンゲ川の上流から下流まで、優良な遊牧地としての北ハンガイを調査したが、現在は、総合地球環境学研究所の「人間活動下の生態家ネットワークの崩壊と再生」プロジェクトとして、ウランバートルから南ゴビにかけてのモンゴル中部を南北に、森林ステップ、ステップ、砂漠ステップ地帯を調査している。

1

2

モンゴルとは
ロシアと中国に挟まれた内陸国
高原の国（平均標高1500 m）、ウランバートル 1350 m
国土面積：1,567,000平方Km（日本の4倍強）
人口：2,562,400人(2005)、人口密度1.64
気候・植生：北はタイガ（亜寒帯針葉樹林）、南はゴビ砂漠で南北の乾湿傾度が著しい。
ラマ教：チベット侵攻（1277）がきっかけ、アルタン・ハンが黄帽派に帰依し（1573）、チベット指導者のノナム・ギャンツォにダライ・ラマ （モンゴル語で知識の大海の意味）称号を授けた。

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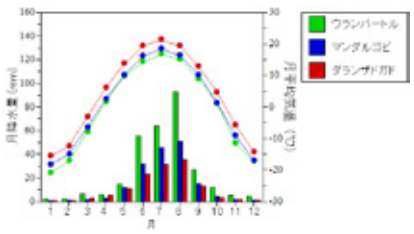


北から南に向かって気温は高くなり、降水量は減少する。
森林ステップ地帯でも年降水量は300ミリ足らずだが、短い夏に降水が集中し、小雨の冬は寒いので、森林が成立する。

6

7

8

マメ科：窒素固定、とげをもつ

9

10

11

12

Kalidium foliatum ：アカザ科、C_4植物

13

モンゴルの遊牧とは

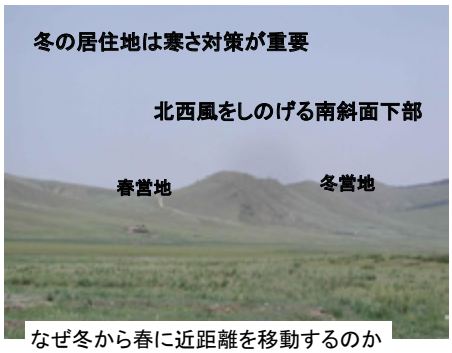
家族単位で家畜をつれて居住テント（ゲル）を季節ごと、および季節内にも移動する。

家畜はヒツジ、ヤギ、ウマ、ウシ・ヤク、ラクダ。ヒツジとヤギは同じ群れとして行動する。

家畜は草原を自由に行動して摂食するが、草の多い場所に誘導もする。夕方は、ウマとラクダ以外の家畜はゲルの場所に戻す。

14

15

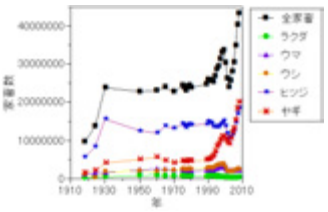


なぜ冬から春に近距離を移動するのか

16

17

家畜数の経年変化



民主化（1990年頃）以降、とくにヤギが急増した。市場経済化と家畜の私有財産化による収入増のため。

18

遊牧草原の持続的利用

森林ステップ地帯とステップ、砂漠ステップ地帯では家畜の急増による過放牧の危機が生じている点では共通だが、自然環境、植生、家畜の種類が異なるので、別々に考察する。

森林ステップ地帯	ステップ、砂漠ステップ地帯
乾燥が相対的に小	乾燥の影響が強い
森林と草原	灌木と草本
ウシが多い	ヤギとラクダが多い

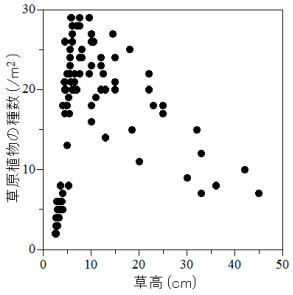
19

森林ステップ地帯

遊牧草原の植物は家畜の食害を前提に生きている。多くの系統群で、草原生の種と森林生の種が分化している。したがって、草原植物にとって家畜の摂食があること自体はマイナスではない。摂食圧が強くなりすぎれば問題になる。

家畜の摂食圧は植物の草高と相関する。

20



中ほどの摂食圧で草原植物の種多様性は最大となる
中規模攪乱説（森林、潮間帯）

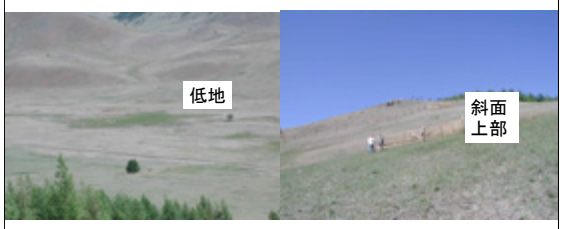
21

植物の年生産と家畜の摂食圧の関係はどうか？

立地、刈り取り頻度、刈り取り高、刈り取り植物を変えた刈り取り実験

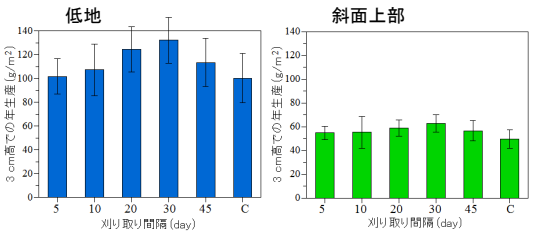
22

ガチューールト（ウランバートル北西）



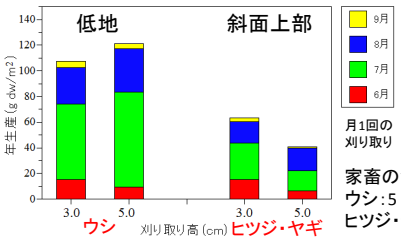
地形（土壌水分）の違い

23



月1回の刈り取り間隔で植物の1年の生産は最大となった。家畜の摂食は植物の年生産を増加させる。しかし、過剰な摂食はかえって植物の年生産を低下させる。

24



月1回の刈り取り

家畜の食い残し高
ウシ：5 cm
ヒツジ・ヤギ：3 cm

植物の生長が良い低地では、3 cmより5 cmで刈り取る方が年生産が高くなった。植物の生長が劣る斜面上部では逆に5 cmより3 cmで刈り取る方が高くなった。

25

家畜の摂食に対する草原植物の耐性は簡単ではない

植物の防御：物理的（固化、とげ）、化学的（毒、臭い）、生態的（生活型：伏せる一逃避、隠れる）

家畜の摂食：空腹状態によって変わる（家畜は大型の植食性ほ乳類であるため、その気になれば少々堅くても、毒があっても摂食は可能）

秋に枯れると耐性植物も食べられるようになる

森林ステップ地帯とステップ、砂漠ステップ地帯で、同じ植物であっても耐性が変化する場合がある

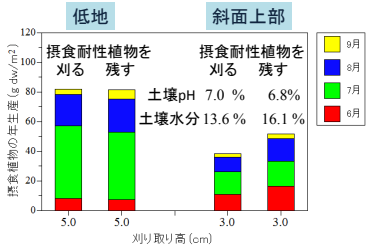
26

強い摂食圧が継続すると大型の摂食耐性植物が優占するようになる。

Achnatherum splendens（イネ科、前年の茎が堅くなって葉の摂食を防止する）、森林ステップ地帯では摂食耐性植物であるが、ステップ・乾燥ステップ地帯では家畜の食用となって有用植物である。

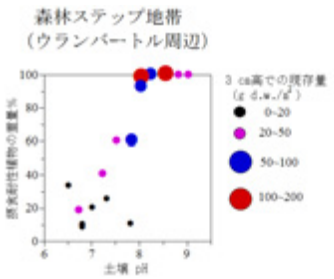
27

家畜の摂食植物と摂食耐性植物を分けた刈り取り実験



摂食耐性植物を刈り残しても低地では摂食植物の年生産は低下せず、斜面上部ではかえって増加した。摂食耐性植物を刈り残すと乾燥条件では土壌水分が保たれる可能性がある。摂食耐性植物が混じること自体は乾燥条件ではプラスかもしれない。

28

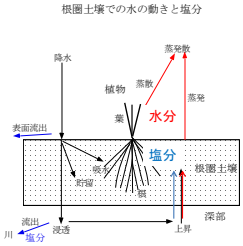


摂食耐性植物の比率は土壌のpHが高い場所で大きくなる。過放牧状態が続くと土壌のアルカリ化が進行する。

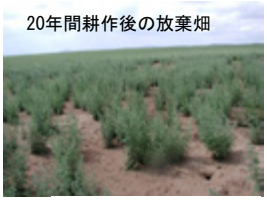
29

30

過放牧 ― 強い植物の摂食と踏みつけ ― 地表面の攪乱 ― 蒸発の優先 ― 表層への塩類の集積 ― 土壌のアルカリ化の進行



31



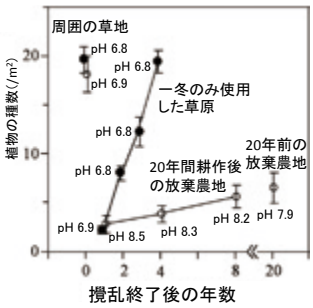
Artemisia macrocephalla

32

ヒツジとヤギを集める場所など居住地周辺の一時的な撹乱は避けられない

冬の家畜小屋周辺は春になっても1、2種の一年草が生えるのみ

33



一季節の攪乱では4年で植物の種数は回復した。長年の攪乱で土壌のアルカリ化が進行すると植物の種数は容易には回復しない。遊牧における移動は重要である。

34

生物間相互作用としては可逆的なはずである。

食用植物の優占

防御への投資は必要なし

摂食圧の減少

交代

摂食圧の増加

植物は防御する

耐性植物の優占

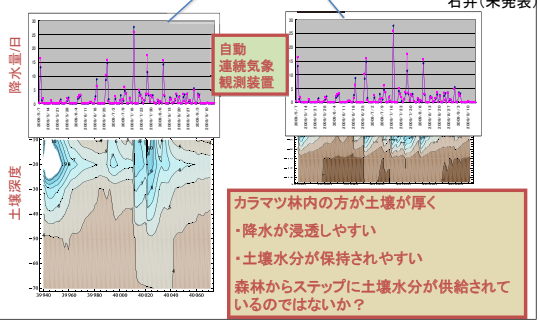
しかし、土壌のアルカリ化という環境改変が生じるため、アルカリ化からの回復に時間がかかり、食用植物はなかなか優占しない。

35

36

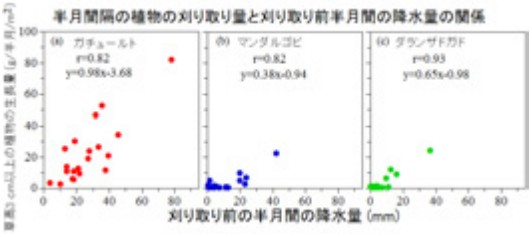
森林ステップ地帯における森林とステップ間の作用

石井（未発表）



37

ステップ、砂漠ステップ地帯



半月間の草本の生長量はその間の総降水量とよく相関する。ステップと砂漠ステップ地帯では10 mm以下の降水量は植物の生長に有効ではない。

38

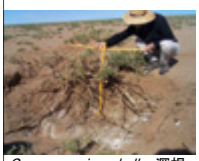
草本の生育

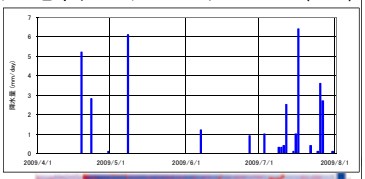
まとまった降水後は草本が生育して草原は緑になる。

降水がないと草本の地上部は生長しないので、草原は砂漠のように見える。

39

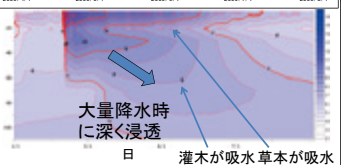
灌木の水利用（ステップ地帯、マンダルゴビ）Satoh et al. (2010)





Caragana microphylla 深根

Allium 浅根



草本は浅い層から急速に吸水するので、大量降水後しか生長できない。灌木は深い層からゆっくり吸水するので降水と関係なく展葉できる。

40

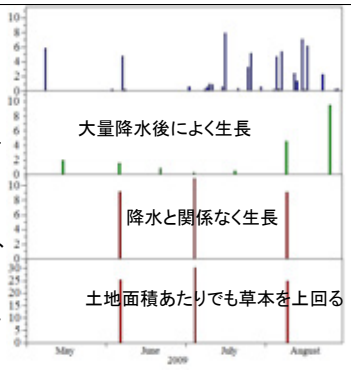
マンダルゴビ

日降水量

草本生産量
（3 cm高、一平方メートル、半月）

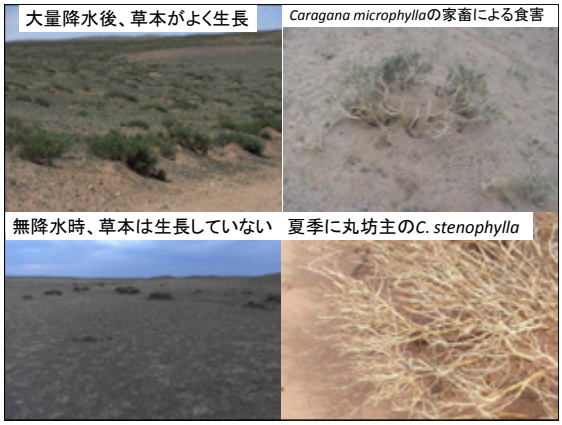
灌木葉生産量
（樹冠20 cm平方、一ヶ月）

灌木葉生産量
（土地一平方メートル、一ヶ月）



灌木の年生産量は草本と比べて劣らない。
とくに、小雨時や冬季にも食用となる。

41



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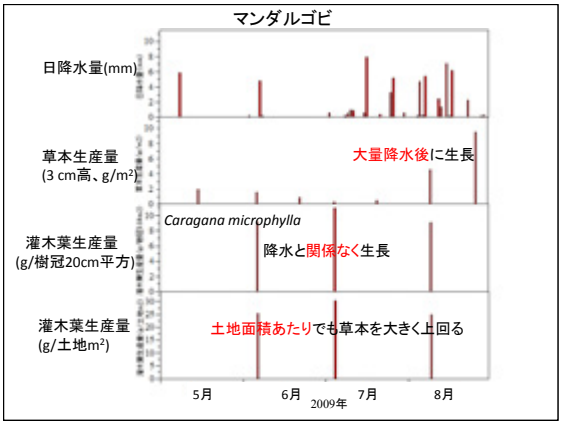
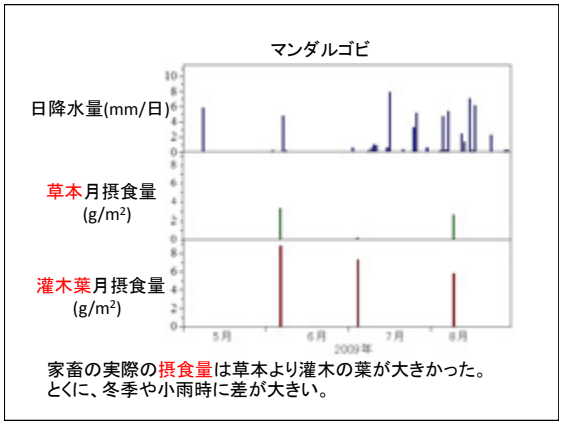
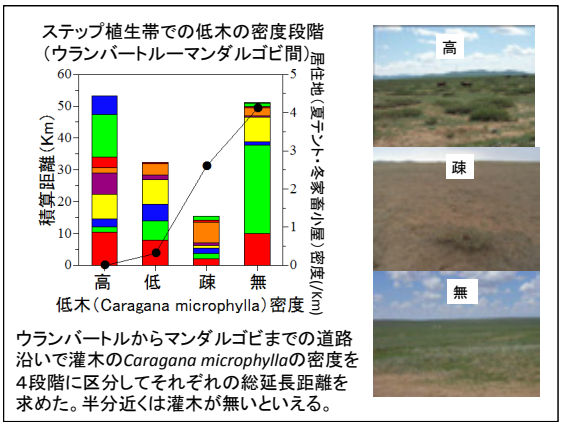


43



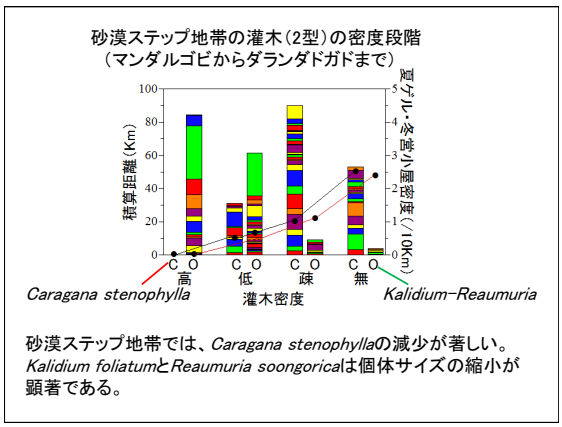
家畜の実際の摂食量は草本より灌木の葉が大きかった。
とくに、冬季や小雨時に差が大きい。

44



ウランバートルからマンダルゴビまでの道路沿いで灌木のCaragana microphyllaの密度を4段階に区分してそれぞれの総延長距離を求めた。半分近くは灌木が無いといえる。

45



砂漠ステップ地帯では、Caragana stenophyllaの減少が著しい。
Kalidium foliatumとReaumuria soongoricaは個体サイズの縮小が顕著である。

46

ステップ、乾燥ステップ地帯の植林

マンダルゴビのPopulusの苗床　　内モンゴルのPopulusの植林

灌木と草本で成り立っている乾燥地帯に高木を植えようとするが、問題がある。高木を定着させるためには灌水が必要であり、定着しても土壌が乾燥して、灌木や草本が育たない。

47

ヤギとヒツジの飼育実験

餌不足の際の植生に対する食害に
ヒツジとヤギでは違いがあるか

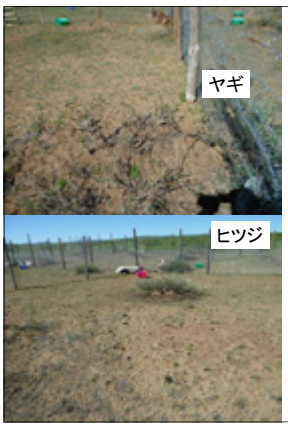
ヒツジに比べてヤギは植物の地下部まで食べるとして悪者にされているが、果たしてヤギは言われているほどに悪者か？

48

バヤンウンジュール（10 m平方）

*Caragana microphylla*と草本（*Stipa krylovii*が主）

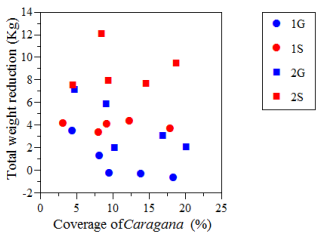
49



4日後、ヤギは灌木をよく食べ、ヒツジは草本をよく食べていた。

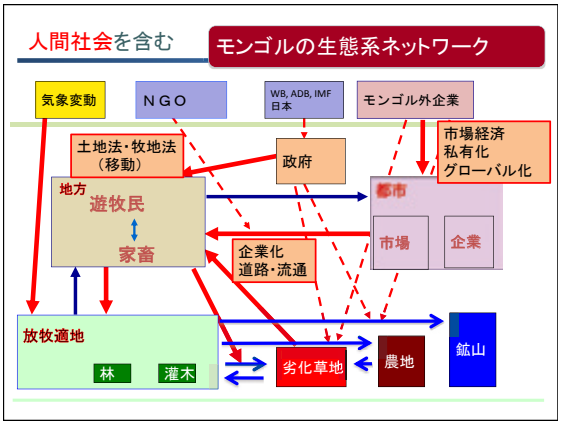
50

飼育4日後の体重の減少



ヤギは*Caragana*の被度が大きいと体重減がない（1頭）か、小さい（2頭）。
ヒツジの体重減は*Caragana*および草本の被度とは関係がない。
ヤギは灌木を好み、ヒツジは草本の地下部を食べる。

51



52

結論

遊牧草原の持続的利用
　過放牧状態を続けない。不可逆的変化（土壌のアルカリ化、灌木の衰退）が生じるため。
　気候変動による不作年は不可避だが、回復可能。
　移動を保ち、定住を避ける。

森林ステップ地帯
　土壌のアルカリ化を起こさない（過放牧、定住）。

ステップ、砂漠ステップ地帯
　灌木の保全・回復が緊急課題。植林には灌木を。

政策の問題（牧地法、家畜税、開発（農業・鉱業）等）

53

Plenary Lecture

Session 2: The Deterioration of Ecosystems and it's Impact on Human Life

Hokkaido University's Efforts to Tackle Regional Environmental Problems in Mongolia

Mamoru Ishikawa
Associate Professor,
Faculty of Environmental Earth Science, Hokkaido University

Abstract:
Developing nations with fragile economic infrastructures are less capable of adapting to and recovering from environmental degradation. This becomes quite serious and poses problems close to home because the foundation of local residents' livelihoods in such nations depends on their surrounding natural environments. Mamoru Ishikawa will offer a broad overview of the present status of environmental degradation with Mongolia as an example, and will introduce efforts by Hokkaido University to deal with the situation, including field courses for students and collaboration with nonprofit organizations to raise awareness of environmental issues among the various stakeholders involved.

Profile:
Mamoru Ishikawa was born in 1967. He completed a doctoral degree program at Hokkaido University's Graduate School of Environmental Earth Science, where he earned a Ph.D. in Environmental Earth Science. He is married with two sons. As an extension to his favorite pastime of mountain climbing, he received a Ph.D. for research on permafrost in Hokkaido's Daisetsu Mountains. Since academic 2002/2003, he has continued observational studies regarding permafrost and water circulation in Mongolia. Assuming his present post in 2006, he has remained active in broadening the scope of his studies together with graduate students to include monitoring actual conditions of grassland and forest degradation there, increasing local residents' awareness of environmental issues and more. He has authored a variety of articles and books on Mongolia and high mountains. For more information, see his website at http://wwwearth.ees.hokudai.ac.jp/~ishikawa/ (Japanese language only).

Hokkaido University's Efforts to Tackle Regional Environmental Problems in Mongolia

Mamoru Ishikawa, Shin Miyazaki
Faculty of Environmental Earth Science
Hokkaido University

1

IFES-GCOE

Global COE Program – Establishment of Center for Integrated Field Environmental Science
(Program Leader: Yasuhiro Yamanaka)
Graduate School of Environmental Science & Division of Environmental Resources, Graduate School of Agriculture, Hokkaido University

Objective of the IFES-GCOE:
To establish integrated field environmental science (IFES) that transcends researcher generations and national borders

- Overseas Research & Student Exchange Promotion Office: establishment of a network of overseas field observation bases
- Regional Education & Outreach Promotion Office: strengthening of cooperation with communities and society
- International Network & Training Office: promotion of international joint use of fields in Hokkaido

2

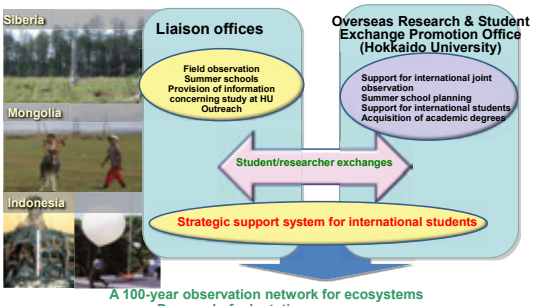
IFES-GCOE

Overseas Research & Student Exchange Promotion Office: establishment of a 100-year observation network

- Impracticality of maintaining observation equipment for 100 years
- Maintenance of a field observation system transcending researcher generations
- Voluntary generation changes among local researchers (continuous education system)
- Extreme importance of the general public and policymakers understanding the significance of field observation

3

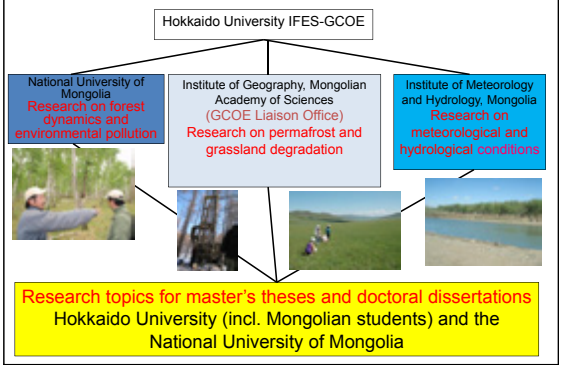
IFES-GCOE Overseas Research & Student Exchange Promotion Office
Establishment of a 100-year observation network in environmentally vulnerable regions



A 100-year observation network for ecosystems
Proposal of adaptation measures
Self-sustaining local human resource development cycle (not limited to researchers)

4

Hokkaido University IFES-GCOE's Joint Implementation of Research and Education Programs with Various Mongolian Institutions

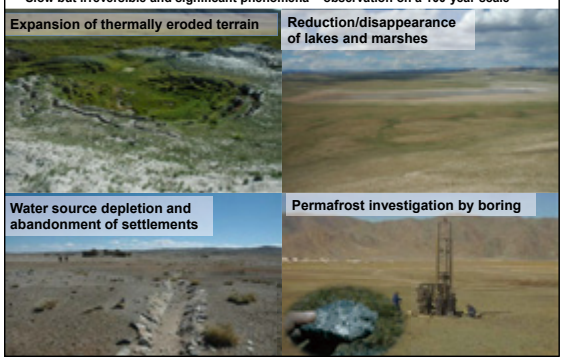


Research topics for master's theses and doctoral dissertations
Hokkaido University (incl. Mongolian students) and the National University of Mongolia

5

Changing Permafrost and its Impacts

Slow but irreversible and significant phenomena – observation on a 100-year scale



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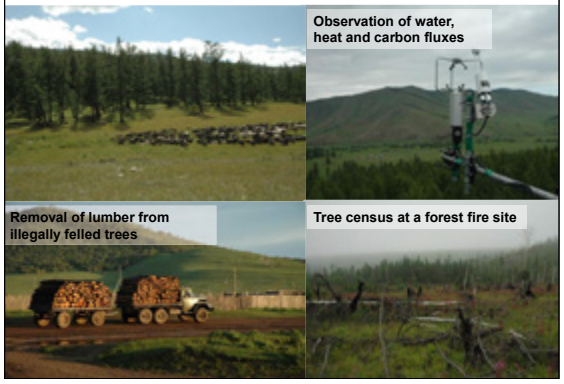
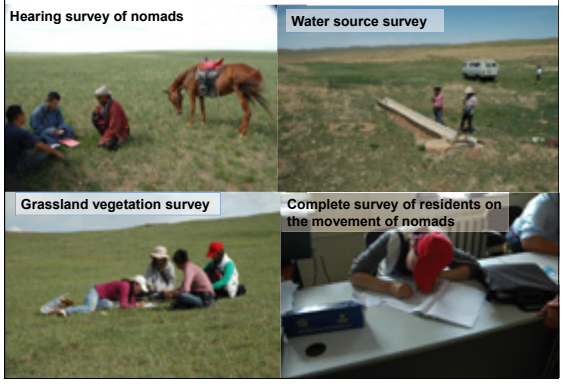
Forest Dynamics at the Southern Limit of Boreal Forests



7

Grassland Degradation – Usage and Recovery



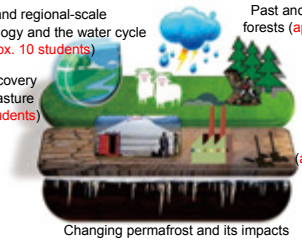
8

Field Summer School in Mongolia
(July 2010)

Local- and regional-scale hydrometeorology and the water cycle (approx. 10 students)

Past and present status of forests (approx. 10 students)

Usage and recovery process for pasture (approx. 30 students)



Environmental pollution (approx. 10 students)

Changing permafrost and its impacts (approx. 10 students)

- Planning and implementation of research plans by summer school students
- Lectures and group discussions (2 days), fieldwork (7 days), group discussions and presentations (2 days)
- International group compositions, cultivation of international perspectives

9

Communication of Information to the General Public and Policymakers
(Japan Mongolia Environmental Synergy)

Publication of the Japan Mongolia Environmental Newspaper

Publication of Japanese and Mongolian environmental issues for easy-to-understand communication to the general public; publicity for Hokkaido University's GCOE activities

Japan Mongolia Environmental Round-table Discussion

Provision of the latest findings in the environmental field by Japanese and Mongolian researchers and graduate students; emphasis on exchanges of opinions with participants

Japan Mongolia Environmental Day (Week)

An enlarged version of the round-table discussion; a showcase of lectures for policymakers and the general public alike; *Japan Mongolia Environmental Oasis* round-table discussion in regions also being planned

10

Japan Mongolia Environmental Newspaper (*Sonin*)

First issue:
Differences and similarities between Mongolia and Hokkaido
Second issue:
Special summer school feature
Third issue:
Forest dynamics, annual ring analysis of trees and climate change
Fourth issue:
Meteorological and hydrological conditions, summer school report

11

Distribution of *Sonin* to regional residents

12

Japan Mongolia Environmental Round-table Discussion

1st (February 26, 2010, JICA Mongolia-Japan Center) Approx. 150 participants; keynote speech on overall environmental problems in Mongolia by Mongolian Academy of Sciences Institute of Geography Director Dechingungaa Dorjgotov

2nd (February 26, 2010, Circle Auditorium of the National University of Mongolia) Lecture on research outcomes using tree-ring chronology by National University of Mongolia Professor Baatarbileg Nachin

3rd (July 30-31, 2010, JICA Mongolia-Japan Center) Lecture on forest decline in Mongolia by Mongolian Academy of Sciences Institute of Geoecology Director Jamsran Tsogtbaatar; lecture on global warming by GCOE Program Leader Yasuhiro Yamanaka; summer school presentation by a summer course attendee

4th (October 10, 2010, JICA Mongolia-Japan Center) Lecture on water resources in Mongolia by Dr. Gombo Davaa, Institute of Meteorology and Hydrology

13

What kind of policy proposals can universities make?
Production and communication of information
Toward the establishment of the Mongolian Environmental Consortium (tentative name)

Governments/ embassies

JICA

- Ministry of the Environment of Japan and other ministries/agencies
- Mongolian Academy of Sciences
- Institute of Meteorology and Hydrology, National Agency of Meteorology, Hydrology and Environment Monitoring, Mongolia
- Mongolian University of Science and Technology
- National University of Mongolia
- Mongolian Academy of Sciences Institute of Geography (Liaison Office)

- **Hokkaido University GCOE**
- **Other universities**
- **NPOs**
- **(Mongol Eco Forum)**

Production of information
- **Sustained implementation of joint observation and research**
- **Sustained exchanges of international students and researchers**

Communication of information
- **Organization of a consortium including government institutions**

14

モンゴルの地域環境問題に対する北大の取り組み

石川　守
北海道大学地球環境科学研究院准教授

要　旨：
経済基盤がぜい弱な途上国では環境劣化に対する適応力や復元力は低くなります。ここでは地域住民の生活基盤は周辺の自然環境に依存しているため，環境劣化は極めて深刻で身近な問題となります。この講演ではモンゴルを例に環境劣化の現状を概観し，それらに対する北大の取り組みとして，学生野外実習や、様々なステークホルダーの環境意識を高揚するための NPO との協働などについて紹介します。

経　歴：
1967年生まれ。北海道大学大学院地球環境科学研究科博士課程修了。博士（地球環境科学）。妻・長男・次男の4人家族。好きな山登りの延長として、北海道大雪山の永久凍土研究で学位（地球環境科学）を取得。2002 年度から、モンゴルにおける永久凍土と水循環に関わる観測研究を継続。2006年に現職へ着任して以降、当地における草原・森林の劣化の実態やそれを巡る地域住民の環境意識など、大学院生とともに研究の幅を広げている。モンゴルや高山を対象とした論文・著書多数、詳しくはホームページを参照。 http://wwwearth.ees.hokudai.ac.jp/~ishikawa/

モンゴルの地域環境問題に対する北大の取り組み

石川 守・宮崎 真
（北海道大学地球環境科学研究院）

1

IFES-GCOE

グローバルCOEプログラム「統合フィールド環境科学の教育研究拠点」
（拠点リーダー：山中康弘）
北海道大学大学院　環境科学院　/　農学院環境資源学専攻

拠点形成の目的:
研究者世代を超えて持続する
国境を越えた
統合フィールド環境科学の確立

- 海外観測留学生推進室：　海外の観測拠点の構築
- 環境教育研究交流推進室：地域・社会との連携強化
- 国際プロジェクト推進室：　北海道フィールドの国際共同利用化

2

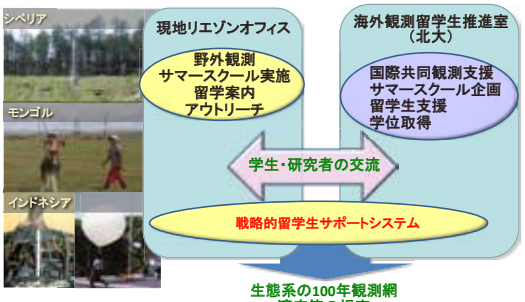
IFES-GCOE

海外観測留学生推進室：100年観測網の構築

- 観測機器を100年維持することではない
- 研究者世代を超えた観測体制の維持
- 現地の自発的な研究者の世代交代（継続的な教育体制）
- 市民・政策決定者が観測の意義を理解することが極めて重要

3

IFES-GCOE　海外観測留学生推進室
環境脆弱地域に100年観測網の構築



生態系の100年観測網
適応策の提案
現地での自立的な人材育成サイクル
（研究者に限らない）

4

北大IFES-GCOE がモンゴル各機関と共同で
教育研究の実施

5

永久凍土変動とその影響

ゆっくりだが不可逆的かつ重要な現象：100年規模で監視すべき

6

北方林南限での森林動態

7

草原劣化の利用と回復

8

モンゴルフィールドサマースクール (2010/July)

局地・地域スケールの水文気象と水循環（約10名）

森林の過去と現在の状況（約10名）

牧草地の利用と再生（約30名）

環境汚染（約10名）

永久凍土変動とその影響（約10名）

- 参加学生自ら、研究計画を立案・実施
- 講義とグループ討論（2日）、各地で外調査（7日）、グループ討論と成果発表（2日）
- 国際的なグループ構成、国際的視野の練成

9

一般市民や政策決定者への情報発信（日モ環境シナジー）

日モ環境新聞の発行

環境に関するトピックについて、日本語とモンゴル語版を作成し、一般を対象に分かりやすく伝える。北大GCOEの活動を広報

日モ環境座談会の実施

日モの研究者や大学院生が講演者となり、環境分野に関する最新の知見を提供する。参加者との意見交換を重視する。

日モ環境デー（ウィーク）の実施

座談会の拡大版、広く政策決定者・市民向けに講演会を実施
地方での出張オアシスも企画中

10

日蒙環境新聞（ソニン）

創刊号：
モンゴルと北海道の相違点と共通点
第2号：
サマースクール特集
第3号：
森林動態、樹木の年輪解析と気候変動
第4号：
気象と水文、サマースクール報告

11

地方の住民へ配布

12

日モ環境座談会の実施

第1回（2010年2月26日、JICAモンゴル日本センター）、約150名参加。モンゴル科学アカデミー地理研究所長Dorjgotov氏によるモンゴル環境問題全般の基調講演

第2回（2010年2月26日、モンゴル国立大学大講堂）、モンゴル国立大教授、Baatarbileg氏による樹木年輪年代学による研究成果の講演

第3回（2010年7月30,31日、JICAモンゴル日本センター）、モンゴル科学アカデミー地生態研究所所長Tsogtbaatar氏によるモンゴルの森林衰退に関する講演、GCOE拠点リーダー山中氏による地球温暖化に関する講演、サマースクール参加学生による成果報告

第4回（2010年10月10日、JICAモンゴル日本センター）、水文気象局Davaa博士によるモンゴルの水資源に関する講演

13

大学ができる政策提言とは？：情報を生み出し発信すること モンゴル環境コンソーシアム（仮）に向けて

政府・大使館 ⇔ JICA

・環境省、他省庁
・モンゴル科学アカデミー研究所
・国家水文気象局、水文気象研究所
・モンゴル科学技術大学
・モンゴル国立大学
・MAS地理学研究所（リエゾンオフィス）

⇔

・北大GCOE
・他大学
・NPO法人
（モンゴルエコフォーラム）

情報の生産
- 共同観測・研究の持続的実施
- 留学生・研究者の持続的交流

情報の発信
- 政府機関も含めたコンソーシアムの組織化

14

Actual Conditions of Poverty Issues in Japan and the Direction to Take for their Resolution

Photo by Masatoshi Nakagawa

Makoto Yuasa

Chief of the Secretariat,
Anti-Poverty Network

Abstract:

The conventional Japanese-style social system became dysfunctional in the 1990s. Since the collapse of Lehman Brothers in 2008, all-out efforts have been made to establish a new social system, but its vision has yet to be shared in society. Makoto Yuasa considers the future direction that should be taken for the resolution of Japan's poverty issues from both microscopic and macroscopic points of view.

Profile:

Makoto Yuasa, born in 1969, serves as Chief of the Secretariat for the Anti-Poverty Network, Deputy Chief of the Secretariat of the Moyai Support Center for Independent Life and Adviser to the Cabinet Office. He has been involved in efforts to help the homeless since the 1990s, and is vocal about the need to address poverty issues in present-day Japan. In this regard, over the last several years he has pointed out problems with "Internet cafe refugees" – people without a fixed abode who constantly stay in Internet cafes – and has sparked national debate on issues related to poverty. He has also denounced the practice known as poverty business, which exploits the poor. He served as the organizer of the Toshikoshi Hakenmura shelter for laid-off temporary workers and homeless people at the end of 2008 and for the first few days of 2009, and was inaugurated as Adviser to the Cabinet Office in 2009. He resigned from the post, but was reappointed in May 2010. He acquired the credits necessary to complete a doctor's program at the University of Tokyo's Graduate Schools for Law and Politics, but left the school without submitting a dissertation. He authored *Han-hinkon* (lit. Anti-poverty), published by Iwanami Shinsho in 2008, and received the 14th Peace & Cooperative Journalist Fund of Japan Award and the 8th Jiro Osaragi Rondan Award. His books also include *Hinkon Shurai* (lit. Arrival of Poverty) (Yamabuki Shoten, 2007) and *Honto ni Komatta Hito notameno Seikatsuhogo Shinsei* Manual (lit. Manual for Public Assistance Application for Those who Really Need It) (Dobunkan Publishing, 2005). He also co-authored *Seishain ga Botsuraku Suru* (lit. Fall of Regular Workers) with Mika Tsutsumi (Kadokawa Shinsho, 2009) and *Hakenmura* (lit. Temp Workers' Village), published by Iwanami Shinsho and Mainichi Newspapers in 2009. His recent publications are *Dontokoi! Hinkon* (lit. Come on, Poverty!) (Rironsha, as a part of the *Yorimichi Pan Se* Series, June 2009) and *Ganban o Ugatsu* (lit. Dig a Hole in Rock) (Bungeishunju, 2009).

日本における貧困問題の実態と解決の方向性

写真：中川賢俊

湯浅　誠
反貧困ネットワーク 事務局長

要　旨：
1990 年代以降、 それまでの「日本型社会システム」は機能しなくなってきた。 2008 年のリーマン・ショック以降、 本格的に新しい社会のあり方への構築が始まりつつあるが、 そのビジョンは社会的に共有されていない。 日本の貧困問題の実像を微視的・巨視的に見ながら、 今後の解決策の方向性を考える。

経　歴：
反貧困ネットワーク事務局長、 NPO 法人自立生活サポートセンター・もやい事務局次長、 内閣府参与。 90 年代より野宿者（ホームレス）支援に携わる。「ネットカフェ難民」問題を数年前から指摘し火付け役となるほか、 貧困者を食い物にする「貧困ビジネス」を告発するなど、 現代日本の貧困問題を現場から訴えつづける。 2008 ～ 09 年年末年始の「年越し派遣村」では村長を務める。 2009 年内閣府参与に就任し、 いったん辞職するも 2010 年 5 月再任用。 東京大学大学院法学政治学研究科博士課程単位取得退学。 1969 年生。 著書に『反貧困』（岩波新書、 2008 年、 第 14 回平和・協同ジャーナリスト基金賞大賞、 第 8 回大仏次郎論壇賞）、『貧困襲来』（山吹書店、 2007 年）、『本当に困った人のための生活保護申請マニュアル』（同文館出版、2005 年）、『正社員が没落する』（堤未果氏と共著、角川新書、2009年）、『派遣村』（いずれも共著、岩波書店・毎日新聞社、2009年）など。最新刊に『どんとこい！貧困』（理論社「よりみちパン！セ」シリーズ、 2009 年 6 月刊）、『岩盤を穿つ』（文藝春秋社、 2009 年）。

Plenary Lecture

Session 3: Reflections on Societal Structure

Actual Conditions of Poverty Issues in Japan and the Direction to Take for their Resolution

Takeshi Nakajima
Associate Professor,
Hokkaido University Public Policy School (HOPS)

Abstract:
Hakenmura (lit. the Temp Workers' Village) – a shelter for laid-off temporary workers and homeless people – hit the headlines in early 2009, thereby highlighting poverty issues and making them a topic of conversation. In the summer of the same year, the Democratic Party of Japan won the nation's Lower House election, ousting the Liberal Democratic Party. Since then, however, interest in social poverty issues has waned significantly. As society repeatedly becomes obsessed with passing fads and fragmentary trends, what should be done to maintain interest and keep up efforts to solve the related problems? Takeshi Nakajima offers his observations on the subject along with Mr. Makoto Yuasa Who is working on the front lines of the fight against poverty.

Profile:
Takeshi Nakajima was born in 1975 in Osaka. He majored in Indian politics at Kyoto University's Graduate School of Asian and African Area Studies and published Hindu Nationalism (Chuko Shinsho La Clef) in 2002. He also studied modern relationships between Japan and other parts of Asia and published Nakamuraya no Bosu = Rash Behari Bose (1886 – 1945): Indo dokuritsu undo to kindai Nihon no Ajia shugi (Hakusuisha Publishing) in 2005. He has received the Jiro Osaragi Rondan Award and the Asia Pacific Award for his work. Currently, he serves as an associate professor at Hokkaido University's Public Policy School.

日本における貧困問題の実態と解決の方向性

中島　岳志
北海道大学公共政策大学院准教授

要　旨:
派遣村が話題になったのは 2009 年の初め。貧困問題が可視化され、世の中で大きな話題になった。そして、この年の夏、政権が自民党から民主党に交代した。しかし、以降、貧困問題への社会的関心は一気に低下する。社会がカーニバル化し、瞬間的で断片的な熱狂をくり返す中、問題解決への関心と取り組みをサステナブルなものにするためにはどうすればいいのか。最前線で活躍する湯浅誠さんと共に考える。

経　歴:
1975 年、大阪生まれ。京都大学大学院アジア・アフリカ地域研究研究科でインド政治を研究し、2002 年に『ヒンドゥー・ナショナリズム』（中公新書ラクレ）を出版。また、近代における日本とアジアの関わりを研究し、2005 年『中村屋のボース』（白水社）を出版。大仏次郎論壇賞、アジア太平洋賞大賞を受賞する。現在、北海道大学公共政策大学院准教授。

Symposium Photos
シンポジウムの様子

Hokkaido University Main Gate

Plenary Session 3


Parallell Session 1


Parallell Session 2

Parallell Session 3


Parallell Session 4

Parallel Session 1

Children for Sustainable Development – Present Crisis Affecting Children

Agenda

Amid growing concern over the concept of sustainable development, a number of crises threaten the healthy growth of children – the very people who are expected to address crises in the future. Society must wake up to a number of essential truths: a child's in-utero environment during fetal development determines its susceptibility to diseases; the widening gap between rich and poor hinders the development of children from poor families; and social distortion is reflected in developmental disorders among children. To achieve sustainable development (which depends on healthy human reproduction), the major challenge is to overcome crises that threaten our voiceless children – the leaders of tomorrow. Through discussions with individuals who face the same challenges, including local residents, students and researchers, we will consider what should be done to achieve sustainable development.

Timetable

09:00 – 09:30 Registration
09:30 – 09:35 Greeting by the Dean
09:35 – 10:05 Presentation 1
10:05 – 10:20 Discussion
10:20 – 10:50 Presentation 2
10:50 – 11:05 Discussion
11:05 – 11:20 Break
11:20 – 11:50 Presentation 3
11:50 – 12:05 Discussion
12:05 – 12:30 Overall discussion

Presentation 1 (9:35 – 10:05)

Health Crisis – Developmental Origins of Health and Disease

Akito Kawaguchi, Professor, Faculty of Education, Hokkaido University

Since the late 1970s, the BMI (body-mass index) of Japanese females of childbearing age has decreased, while the number of low birth weight (LBW) babies has increased. This trend means that such females are more likely to give birth to LBW babies, who are then likely to continue the cycle by being stunted in adulthood. Moreover, LBW is well recognized as a risk factor for chronic conditions such as cardiovascular disease and diabetes. Children's health is jeopardized at the fetal stage by maternal malnutrition (over-slimming) and the risk of chronic disease. What should we do to cut off this vicious cycle in order to ensure sound human reproduction and guarantee the healthy growth of children?

Host : Faculty of Education, Hokkaido University
Venue: Room 1

Presentation 2 (10:20 – 10:50)

Learning Crisis－Toward a Total Understanding of Developmental Disabilities

Harumitsu Murohashi, Professor, Faculty of Education, Hokkaido University

The concept of developmental disabilities is a social consideration that transcends the boundaries of medicine and includes the areas of education and welfare. As indicated in the International Classification of Functioning, Disability and Health (ICF: WHO, 2001), developmental disabilities are related to biological structures and functions, and are dependent on a variety of circumstances – especially social ones. The interactions between biological structures, functions and circumstances are organized processes for humans, and the number of people with developmental disabilities serves to highlight the various distortions in our society. Understanding the process involves improving the sustainability of education, which is eventually expected to heighten the sustainability of our world as a whole.

Presentation 3 (11:20 – 11:50)

Development Crisis－Difficulties Faced by Children and the Recreation of Their Developmental Environments

Ichiro Matsumoto, Professor, Faculty of Education, Hokkaido University

In this presentation, two subjects will be discussed. One focuses on the nature of the difficulties encountered by children in society. Child abuse is associated with a concentration of difficulties in child rearing and child development. According to the results of a survey on child abuse, the difficulties and disadvantages that families and children face can be seen as a variety of combinations of poverty, isolation and physical/mental health problems. The other subject involves a proposal of the need to recreate environments for children to grow up in with the goal of reducing disadvantages. Assuming that difficulties and disadvantages come in complex forms, multi-faceted countermeasures will be necessary. Social protection for children with difficulties can be enhanced if the environments in which they grow up involve not only families and schools but also multi-level support.

分科会 1

社会の持続的発展の次世代主体－いまある「こども」の危機－

討論課題

社会の持続的発展への懸念はますます深刻の度を増している。しかし、きたるべき更なる危機と最もよく戦うべき次世代の子ども達には、すでに健全な成長を阻む危機がある。胎内の環境が子ども達の将来の疾病を規定し、拡大する格差社会は、貧困家庭に縛られたこどもの貧困を介して成長を阻み、さらに社会のゆがみは、こどもの発達障害に反映されて社会に警鐘を鳴らしている。声なき次世代の主体であるこどもたちの危機の克服は、人間の健全な再生産なしにはありうべくもない社会の持続的発展の最も重要な課題である。市民、学生、研究者を問わず、課題を共有する人々との議論を通して、「何をなすべきか」を考える。

タイムテーブル

09:00- 09:30 受付
09:30- 09:35 教育学院長挨拶
09:35- 10:05 講演1:子どもの「健康」の危機－河口
10:05- 10:20 議論
10:20- 11:50 講演2:子どもの「学び」の危機－室橋
11:50- 11:05 議論
11:05- 11:20 休憩
11:20- 11:50 講演3:子どもの「成長」の危機－松本
11:50- 12:05 議論
12:05- 12:30 総合討論

講演 1 (9:35-10:05)

子どもの「健康」の危機－疾患感受性胎児期起源説 (DOHaD)－

河口明人（北海道大学大学院教育学研究院教授）

我が国は 1970 年代後半から、妊娠可能年齢女性の痩身傾向が持続し、それと連動するように低出生体重児（LBW）の割合が増加している。痩身女性が LBW を産み、その児が青年期にまた LBW を産むという世代間効果が指摘されるとともに、低出生体重児は、中年以降に生活習慣病罹患のリスクであることが認識されている。この痩身の母親、低出生体重児、世代間効果と生活習慣病拡大が絡み合う構造は、社会の持続的発展を阻害する極めて重要な現代的課題である。このことは、こどもが産まれる以前からすでに将来的な成長と健康が脅かされていることを示唆する。社会の持続的発展の不可欠の課題として、人間自身の健全な再生産に関する我が国の現状と課題および解決への方向性について議論する。

主催 : 北海道大学教育学院
会場 : 第 1 会議室

講演 2 (10:20-10:50)

子どもの「学び」の危機ー発達障害のトータルな理解に向けて

室橋春光（北海道大学大学院教育学研究院教授）

発達障害は医学的概念を越えた、 教育的、 福祉的概念を包含する社会的概念であるといえる。 WHO による国際生活機能分類（ICF）に示されるように、 発達障害も生物学的構造と機能を基盤としてもち、 他方で環境、 ことに社会的環境に依存して生起する。 人という生体におけるそれらの相互作用がまさに人間のありかたである。 発達障害は、 そこに生ずる歪みを先端的に示す役割を負っているとみることができる。 その発生機構とプロセスをトータルに理解することが、 教育を豊かなものにすることにつながり、 教育における持続的可能性を高め、 ひいては社会全体の持続可能性を高めることになるであろう。

講演 3 (11:20-11:50)

子どもの「成長」の危機ー子どもの困難と「育つ場」の再構築

松本伊知朗（北海道大学大学院教育学研究院教授）

本報告では、以下の二つの点について述べ、 議論の素材としたい。 第一は、 子どもの直面する困難の社会的性格についてである。 子ども虐待は子育てと「子育ち」の困難の集中的な形であるが、これに関わる調査結果をもとに、家族と子どもの直面する困難、 不利が、 貧困と孤立、 心身の健康問題の複合的な形態を現実にはとることを示す。第二に、 その不利を緩和するために、 子どもの「育つ場」の再構築の必要を提起したい。 困難と不利が複合的な形をとるのだとすれば、 それに対する対応策も多面的な必要がある。 子どもが育つ場と関係が、 家族と学校のみならず重層的な回路になっていることが、 子どもの困難に対する社会の抵抗力を高めることになるだろう。

Parallel Session 2

The Eurasian Ecotone: Sustainable Ecosystem Use in Mongolia

Agenda

Regional deterioration of the natural environment is a particularly serious problem for communities where inhabitants depend on the natural resources at hand (known as ecosystem services) to live. In this session, Mongolia will be highlighted for its location in a distinct ecotone (a transition area between desert, grassland and boreal forest) to allow consideration of economic development and sustainable use of natural resources.

Timetable

09:00- Registration
09:30- Introduction
09:45- Presentations
11:30-12:30 General Discussion and Recommendations

Presentation 1

Permafrost and Forests in Mongolia

Mamoru Ishikawa, Faculty of
Environmental Earth Science, Hokkaido University

The permafrost discontinuously distributed in northern Mongolia supports the daily lives of local residents as the soil helps to maintain forests and supply surface water. Elements of climate change such as global warming are believed to adversely affect permafrost, but what is the situation in Mongolia? Over the past several years, we have worked to establish an observation network that covers the entire permafrost region of Mongolia. This lecture will focus on past achievements in this regard, and will also highlight the significance and difficulties of long-term observation related to environmental changes in developing countries.

Presentation 2

Meteorological Observation Related to Stock Farming in Mongolia

Yuki Morinaga, Meiji University

Meteorological observation related to stock farming in Mongolia was started in the 1980s to clarify the relationship between livestock and environmental factors and enable use of the findings to improve nomadic techniques. This observation is unique in that it is entrusted to nomads, who move around with their *gers* (portable dwellings), and a significant collection of invaluable data has been accumulated. With the collapse of the former Soviet system, however, the quality of observation has fallen, and many other issues have arisen. This presentation will highlight an initiative that aims to re-establish a meteorological observation network for livestock farming together with researchers at Mongolia' s Institute of Meteorology and Hydrology (IMH).

Host : Faculty of Environmental Earth Science, Hokkaido University
Venue: Auditorium

Presentation 3

Environmental Risk Assessment around Mining Areas of Mongolia

Oyuntsetseg Bolormaa, National University of Mongolia

The present study of the environmental media and humans in Mongolia serves to estimate the transfer rates of heavy metals (HM) in the food chain (soil - water - livestock - plant), to develop land use, livestock production and public health strategies to reduce the health risk of HM in severely contaminated areas affected by mining activities. The overall goal of this study is establish baseline contaminant concentrations associated with soils, water and plants within selected mining areas of Mongolia and identify potential pollutant factors between soil-plant-water ecosystems. This study showed that environmental pollution around mining activities give a serious attention to government and responsible environmental regulation bodies.

General Discussion and Recommendations (11:30-12:30)

Moderator: Shin Miyazaki
Faculty of Environmental Earth Science,
Hokkaido University

分科会 2

ユーラシア・エコトーン帯: モンゴルにおける生態系の持続的利用

討論課題

地域の自然環境の劣化は、 身近な自然環境資源（生態系サービス）に依存した生活を行う地域コミュニティにおいて、 特に深刻な問題である。 砂漠－草原－北方林へと遷移する鮮明なエコトーン帯（生態系遷移域）に位置するモンゴルを取り上げ、 経済発展と持続的な自然環境資源利用について考える。

タイムテーブル

09:00- 受付
09:30- 開会の挨拶・趣旨説明
09:45- 講演
11:30-12:30 討論・提言

講演 1

モンゴルにおける永久凍土と森林

石川　守（北海道大学地球環境科学研究院准教授）

モンゴル北部に不連続に分布する永久凍土は、 森林の維持や地表水の供給などを介して地域住民の生活を支えている。 温暖化をはじめとする気候変動は永久凍土を衰退させるといわれているが、 はたしてモンゴルではどうなっているのだろうか？私たちは数年前よりモンゴルの永久凍土帯全域を網羅するような観測網の構築に取り組んできた。 講演ではこれまでの成果を紹介するとともに、 途上国での環境変動を長期的に監視することの意義と難しさについても触れたい。

講演 2

モンゴルの牧畜気象観測

森永由紀（明治大学）

モンゴルの牧畜気象観測は、 家畜と環境要素の関係を理解し、 その知見を遊牧技術の向上に役立てるために 1980 年代から始められた。 遊牧民に委託してゲルとともに移動しながら行われるユニークな観測で、 貴重なデータも少なくないが、 社会主義の崩壊とともに質の低下が起きるなど問題点も多い。 モンゴル気象水文研究所の研究員とともに取り組む牧畜気象観測ネットワークの再構築の試みを紹介する。

主催：北海道大学地球環境科学研究院
会場：講堂

講演 3

モンゴル鉱業地域周辺の環境リスクアセスメント

オユンチェチェグ・ボロルマ（モンゴル国立大学）

モンゴルにおける環境媒体と人間に関する本研究により、 食物連鎖（土壌・水・家畜・植物）内での重金属の移動速度の推定が可能となる。 また、 土地利用・家畜生産および公衆衛生計画を策定し、 採鉱による汚染地域での重金属による健康被害の危険性を軽減することができる。 本研究の全体的な目標は、 モンゴルの対象採鉱地域で土ー水ー植物に係わる基本的汚染濃度を決定し、 土ー水ー植物生態系間の汚染要因を特定することにある。 本研究は、 鉱山付近の環境汚染では、 政府や環境規制実施機関に特に注意が払われることを示した。

討論・提言 (11:30-12:30)

進行役：宮崎　真（北海道大学地球環境科学研究院）

Parallel Session 3

Global Water Crisis and Well-being

Agenda

Water is a basic and essential natural resource affecting people's life, health and productivity. This session aims to clarify the present status of the world water crisis as a phenomenon of well-being deterioration, including acceleration of the poverty cycle by global climate change and water pollution.

Background

Water-borne diseases are said to both exacerbate and be exacerbated by poverty.[1)] The World Health Organization (WHO) estimates that about 1.7 million people die every year due to a lack of fresh water. It further calculates that 82 million years' worth of healthy life expectancy is lost annually in developing nations from causes related to polluted water.

The present status of the water crisis is summarized below.

- About one billion people around the world have no access to safe drinking water.
- About 2.4 billion people are without proper sanitation.
- The world's population will grow by two billion people over the next 25 years. This increase will mainly be concentrated in urban areas of developing nations, where people will be forced to live in poverty without solutions to water issues.
- Of all the wastewater generated around the world, 90% is discharged with inadequate or no treatment.
- In developing nations, 80% of human diseases and 25% of deaths are caused by a lack of fresh water.

Waterways run beyond national borders, and more than 250 international areas of water exist around the world. Due to friction over water rights, it is expected that 21st century conflicts will be fought over water.[1)]

1): Robin Clarke and Jannet King: The Atlas of Water (translation supervised by Taikan Oki, translated by Akira Oki), Maruzen

Timetable

09:00 – 09:30 Registration
09:30 – 09:45 Introduction
09:45 – 11:15 Presentations
11:15 – 11:30 Break
11:30 – 12:30 General Discussion and Recommendations

Presentation 1 (9:45-10:15)

Water and Health

Xiaochang C. Wang, Professor,
Xi'an University of Architecture and Technology

Pathogenic contamination of water is still the main reason for infectious diseases in the world. Insufficient provision of proper sanitary facilities attributes to such problems in many countries and regions such as Africa and Southeast Asia where untreated wastewater carrying pathogenic bacteria and viruses is discharged directly to the environment and becomes pollutant source to soil, rivers, lakes, and even groundwater aquifers. This may farther brings about

contamination of source water for drinking water supply, agricultural irrigation, and other utilizations. By direct and/or indirect exposure to the polluted water, human beings can be at high risk of pathogenic infection.
Facing these problems, there is a growing requirement for quicker, more accurate and specific detection of infectious bacteria and viruses from water. The application of molecular biological technique is leading a way for a better evaluation of the microbiological quality of water, more proper human health risk assessment and control. Together with a general review of the worldwide condition, a case study in China is introduced to stress the importance of microbiological quality control of water environment.

Presentation 2 (10:15-10:45)

Water Education for Health, Development and Peace

Robert W. Nairn, Associate Professor, School of Civil Engineering and Environmental Science, University of Oklahoma

Water education in universities must recognize the vital and inextricable links between technical issues, cultural practices, behavioral norms and social understanding that are critical to finding sustainable solutions to the global water crisis. Two related efforts at the University of Oklahoma, the Center for Restoration of Ecosystems and Watersheds (CREW) and the Water Technologies for Emerging Regions (WaTER) Center, focus on development of environmentally and economically sustainable, culturally-sensitive, and technically sound water-related technologies.

Presentation 3 (10:45-11:15)

Water and International Cooperation

Ryuji Matsunaga, International Cooperation Manager, Hokkaido University

JICA is a leading international aid organization in the field of water. The presentation aims to introduce examples (especially successful ones) of its many international cooperation projects in the field. Ryuji Matsunaga also offers observations on how international assistance should be provided in this particular field in the future based on his wealth of experience.

General Discussion and Recommendations (11:30-12:30)

Moderator :Naoyuki Funamizu, Professor,
Faculty of Engineering,
Hokkaido University

分科会 3

世界の水の危機と Well-being

討論課題

水は人の生命、 健康、 生産のすべてに関係する極めて基本的な資源である。 地球規模の気候変動と水汚染が貧困のサイクルを加速するなど、 Well-being の劣化現象の一つとして現在の世界的な水の危機を把握する。 そして、 その解決方策を議論する。

討論の背景

「水を媒体とするすべての病気は貧困によって悪化し、 さらに貧困の原因となる」といわれている[1)]。 世界保健機関（WHO）によれば、 毎年約 170 万人の死が汚染された水に起因すると推定され、 開発途上国では汚染された水により毎年 8200 万年分の健康寿命が失われていると推計されている。
今、 なぜ、 水の危機であるか、 その現状を示す情報を以下に箇条書きにする。

- 世界中で約10億人の人々が安全な飲み水を得ることができない。
- 約24億人の人々が適切な衛生状態におかれていない。
- これから25年間に人口はさらに20億人増加する。 この増加は主に開発途上国の都市域で生じ、水問題の解決が無ければ、 これらの人たちは貧困に苦しめられる運命にある。
- 世界で発生する排水の90%は不完全な処理または全く処理されないで排出されている。
- 開発途上国における疾病の80%、 死亡原因の25%は汚染された水に起因している。

水路は国境とは関係なく流れている。 世界には250をこえる国際河川がある。 水をめぐるあつれきから「今世紀の戦争は水をめぐる争いになる」ともいわれている[1)]。

1）: Robin Clarke and Jannet King: The Atlas of Water（沖大幹監訳、 沖明訳：水の世界地図）、 丸善

タイムテーブル

09:00- 受付
09:30- 開会の挨拶・趣旨説明　工学研究院　教授　船水尚行
09:45- 講演
11:15- 休憩
11:30-12:30 討論・提言

講演 1 (9:45-10:15)

水と健康

王暁昌（西安建築科技大学副学長）

貧弱な衛生施設と下水処理の未整備により、 土壌、 河川や湖沼、 地下水が病原微生物に汚染されている。 これらは飲料水、 農業用水、 食物に接触する人々を通じて感染している。 また、 人は水と接触することで感染する。 効率的な水中病原微生物の測定方法の提案、 そして、 その提案測定法による多くの測定データをもとにした病原微生物の実態とその制御の可能性について議論する。

主催 : 北海道大学工学研究院
会場 : 第４会議室

講演 2 (10:15-10:45)

健康・開発・平和に向けた水教育

ロバート・W・ネアン（オクラホマ大学土木工学・環境科学部准教授）

大学における水教育では、世界的な水危機に対する持続可能な解決策の探求に不可欠な技術的問題、文化的慣行、行動規範、社会的理解の相互間に存在する極めて重要かつ個別に切り離すことのできない関連性を認識する必要がある。オクラホマ大学には、関連するふたつの取組みとして、生態系・流域復元センター（CREW: Center for Restoration of Ecosystems and Watersheds）と新興地域水技術研究センター（Water Technologies for Emerging Regions（WaTER）Center）があり、環境および経済的観点から持続可能であり、文化への配慮がなされ、技術的に裏付けされた水関連技術の開発に取り組んでいる。

講演 3 (10:45-11:15)

水と国際協力

松永龍児（北海道大学国際協力マネージャー）

JICA は水分野において、世界有数の国際援助機関である。JICA のこの豊富な水分野における国際協力の内容を紹介する。特に成功例そして、多くの経験をもとに、これからの水分野における国際援助の在り方を議論する。

討論 (11:15-12:30)

進行役 ： 船水尚行（北海道大学工学研究院教授）

Parallel Session 4

Health and Care for Ageing Society: Are the Senior People in Japan Happy?

Timetable

09:00 – Registration
09:30 – 09:35 Greeting and Introduction
09:35 – 10:00 Presentation 1
10:00 – 10:25 Presentation 2
10:25 – 10:40 Break
10:40 – 11:05 Presentation 3
11:05 – 11:30 Presentation 4
11:30 – 12:00 General Discussion and Recommendations

Greetings and Introduction (9:30 – 9:35)

Tamiko Ikeno, Visiting Scientist, Center for Environmental and Health Sciences, Hokkaido University

Presentation 1 (9:35 – 10:00)

Fostering Well-being among Senior People in Japan

Hiko Tamashiro, Professor, Department of Global Health and Epidemiology, Hokkaido University Graduate School of Medicine

The ageing society in Japan is characterized by longevity or long life expectancy, high number of senior adults, rapid population ageing and low fertility.

Japan's 2009 life expectancies are 79.59 years for male and 86.44 years for female, having extended 29.53 years and 32.48 years respectively during the last 60 years. The number of people aged 65 or over is 21 million accounting for 23.1% of the total national population. It took France 115 years and Italy 61 years for their respective ageing populations to reach from 14% to 21%; in contrast, it took Japan only 24 years. The Japanese total fertility rate is 1.3, which is much lower than the replacement fertility level of 2.08.

The countermeasures and infrastructure to address the problems related to ageing society are not well established in Japan. Although older adults are supposed to enjoy their longevity and retirement under the trees which they helped to nourish, their situations are far from being favorable to them.

The stereotypical view of and the injustice towards senior citizens continue to persist in Japanese communities. Only less than 5% of young seniors (65-74 years old) are using the national long-term care insurance, indicating that the majority of them enjoy healthy and independent lives in their communities. However, their potential to contribute to society has been under-utilized and buried.

Senior citizens by themselves have to look for happiness called "L'Oiseau bleu". Our society must lend a hand to senior citizens towards that end of being happy.

The symposium will provide a platform for discussing the problems and solutions related to ageing.

Presentation 2 (10:00 – 10:25)

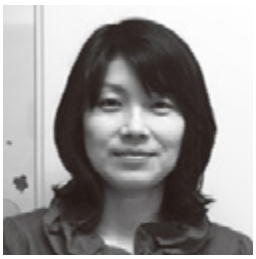
Long Term Care Prevention in Hokkaido – Trials of Home Visits

Tamiko Ikeno, Visiting Scientist, Center for Environmental and Health Sciences, Hokkaido University

Host : Hokkaido University Graduate School of Medicine
Co-host: Center for Environmental and Health Sciences, Hokkaido University
Venue : Lecture Hall

Japan continues to record a rising number of old adults with dementia and who are bedridden. Long-term care insurance system in Japan initiated in 2000 was revised in 2005 with the aim of delaying the occurrence and deterioration of individual inactivity that needs care and support. At present, the Community Care Support Centers established by local governments are responsible for the implementation of prevention activities for older adults. Most of the care support programs include group sessions, but this strategy has difficulties in reaching older adults who are at high risk, such as those housebound and with depression. Therefore, we shifted the programs from the conventional group sessions to home visits which were carried out on a trial basis in four towns in Hokkaido and were aimed towards forming among older adults capacities to independently manage their daily activities. This preventive home visit program has shown to improve cognitive function and reduce depressive symptoms among older adults.

Presentation 3 (10:40 – 11:05)



Older Adults Living in a Motorized Society

Asuna Arai, Assistant Professor, Department of Global Health and Epidemiology, Hokkaido University Graduate School of Medicine

Automobiles are a practical form of transportation for older adults and their family members in a motorized society. In Japan, the number of drivers over 65 has been increasing annually, accounting for 40% of the total older population. Given that advanced age is associated with a higher risk of chronic disease as well as physical, sensory, and cognitive impairments that could affect driving competence, older drivers and their family members will have to face the preparation and consequences of driving cessation. Whether people who quit driving can keep their autonomy and independence in their own communities depends on the capacities of the society to support mobility and decrease difficulties in driving cessation. In this presentation, I would like to show an example of information support for family members of older drivers with dementia. Implications for sustainable society that is supportive of older adults' mobility and autonomy are given.

Presentation 4 (11:05 – 11:30)

Modern society and Mental health - Suicide in Japan

Eiji Yoshioka, Assistant Professor, Department of Public Health, Hokkaido University Graduate School of Medicine

The life expectancy of Japanese people is among the longest in the world. The suicide rate in Japan is the third highest among the OECD member countries, behind Korea and Hungary. From 1998 to 2009, more than 30,000 people committed suicide annually. This means that in the past 12 years, about 90 Japanese were killing themselves each day. In this lecture, I will review and elaborate on the social backgrounds and potential reasons behind the increase in Japan's suicide rates in comparison with parallel data from Asian, American and European countries.

General Discussion and Recommendations (11:30-12:00)

Moderator: Hiko Tamashiro, Professor, Department of Global Health and Epidemiology, Hokkaido University Graduate School of Medicine

分科会 4

高齢社会の健康と介護：幸せとは？

タイムテーブル

09:00-　受付開始
09:30-09:35　開会の挨拶・趣旨説明
09:35-10:00　日本の高齢者のウェルビーイングに向けて
10:00-10:25　北海道における介護予防活動
～予防型家庭訪問の事例～
10:25-10:40　休憩
10:40-11:05　現代社会と高齢者～自動車運転を考える～
11:05-11:30　現代社会と心の悩み～自殺問題を中心に～
11:30-12:00　討論・提言

開会の挨拶・趣旨説明 (9:30-9:35)

池野多美子（北海道大学 環境健康科学研究教育センター 学術研究員）

講演 1 (9:35-10:00)

日本の高齢者のウェルビーイングに向けて

玉城英彦
（北海道大学大学院医学研究科　予防医学講座　国際保健医学分野　教授）

わが国の高齢社会の特徴は、1）平均寿命の長さ（長寿）、2）老年人口（65 歳以上の人口）の絶対数の多さ、3）高齢化のスピードの速さ、および 4）少子化の加速である。

わが国の平均寿命（2009 年）は男 79.59 才、女 86.44 才で、この 60 年間に男で 29.53 才、女で 32.48 才伸びている。老年人口は2,955 万人で、全体の 23.1%（高齢化率）である。フランスやイタリアが高齢化社会（高齢化率 14%未満）から高齢社会（21%未満）に達するのにそれぞれ 115 年、61 年かかったのに比べ、わが国では 24 年、圧倒的に短い。わが国は 1997 年に「超」高齢社会（21%以上）に到達した。合計特殊出生率（1人の女性が一生の間に生む子どもの数）は 1.3 で、人口維持に必要な 2.08 を大きく下回る。

このような環境の中にあって、高齢社会の抱える諸問題への対応やインフラ整備の遅れなどが指摘されている。高齢者は本来なら自ら育てた大きな木の下で、長寿を、余生を楽しむべきなのに、現状では必ずしも歓迎されるべき状況にはない。

高齢者に対するステレオタイプの見方や不公平さなどが社会の中にはびこっているようだ。前期高齢者（65－74 歳）の介護保険の認定率は 5%未満であり、大部分の人が他人の介護の世話にならず社会で元気にしているという事実。社会に貢献できるポテンシャルが埋蔵されているのに、需要が少ない。
他の世代に頼ることなく、高齢者自ら、幸せという青い鳥を捜し求めなければならない。これらの高齢者の努力を後押しする社会であってほしいと願う。

今回、参加者の皆さんと一緒にこれらの問題を考える機会にしたいと思う。

講演 2 (10:00-10:25)

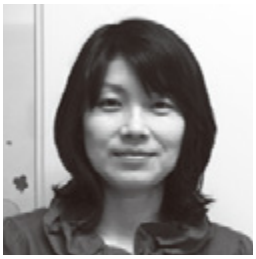
北海道における介護予防活動～予防型家庭訪問の事例～

池野多美子（北海道大学 環境健康科学研究教育センター 学術研究員）

主催 : 北海道大学医学研究科
共催 : 環境健康科学研究教育センター
会場 : 小講堂

日本では 75 歳以上の高齢者の増加が目立ち、加齢に伴い急増する認知症や寝たきりが問題となっている。「介護予防」とは、要介護状態の発生を遅らせる、そして要介護状態の悪化をできる限り防ぐことである。2000 年から始まった介護保険制度は、自立支援を基本理念として現在は予防重視型システムへと転換され、市町村に設置されている地域包括支援センターが中心となって介護予防活動を実施している。これまでの支援プログラムは自発的に参加する高齢者を対象にグループ単位で提供されるものがほとんどであったが、リスクの高い閉じこもりや抑うつなどの高齢者に対しては提供するのが困難であった。私たちはこの点を考慮して、北海道内の本別町、鷹栖町、新ひだか町、日高町において自治体の協力を得て、家庭訪問による介護予防プログラムを実施した。高齢者自らが主体的に生活を見直し目標を立てられるプログラム構成にした結果、認知機能障害や抑うつ症状に改善が認められた。

講演 3 (10:40-11:05)

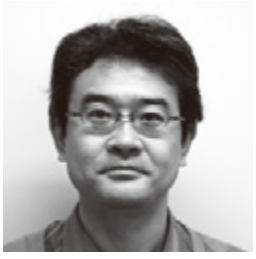


現代社会と高齢者～自動車運転を考える～

新井明日奈
（北海道大学大学院医学研究科 予防医学講座 国際保健医学分野 助教）

現代社会において、私たちの自由な移動や外出を支えている手段の一つが、自動車運転である。さらに、長年、運転を続けてきた高齢者にとって、自動車運転は「生きがい」になっている場合が多い。2008 年時点で、65 歳以上の運転免許保有者は 1,182 万人（老年人口の約 4 割）で、その数は年々増加している。しかし、このことは一方で、加齢や病気の影響などにより、自動車運転を中止せざるを得ない高齢者が増える可能性を示唆している。したがって、地域における自動車運転に代わる移動手段や生きがい支援の整備の程度によって、運転中止後の高齢者の身体的、精神的、社会的自立が左右されるものと考えられる。本講演では、とりわけ、認知症になった運転者とその家族に対する社会的支援のあり方を、具体例を示しながら考えてみたい。

講演 4 (11:05-11:30)



現代社会と心の悩み～自殺問題を中心に～

吉岡英治
（北海道大学大学院医学研究科 予防医学講座 公衆衛生学分野 助教）

日本の平均寿命は世界一の水準である。それにも関わらず自殺率は、先進国（30 ヶ国）の中で韓国、ハンガリーについで 3 番目に高い。自殺者数は 1998 年以降 12 年連続 3 万人を超えており、これは毎日約 90 人が自殺しているという計算になる。本講演では、ヨーロッパ諸国、アメリカ、アジア諸国における自殺統計との比較を行い、我が国で急増している自殺の社会的背景および原因を検討する。

討論・提言 (11:30-12:00)

進行役 ： 玉城英彦（北海道大学大学院医学研究科 予防医学講座 国際保健医学分野 教授）

Panel Discussion Summary

The plenary session of the Sustainability Weeks 2010 program (which was based on the theme "*Toward a Society Offering Quality of Life and Human Dignity for All*" was held on October 25, followed by four parallel sessions on the morning of October 26. After these sessions, a panel discussion was held with the aims of drawing up an overall picture of the talks conducted over the previous day and a half and identifying possible solutions to the problems inherent in creating the desired type of society. With Prof. Fumikazu Yoshida (from the Hokkaido University Graduate School of Economics and Business Administration) and Prof. Reiko Kishi (from the Hokkaido University Center for Environmental and Health Sciences) chairing, representatives of the plenary session on day 1 and the parallel sessions on the morning of day 2, in which different approaches were used to address the problems at hand, reported on the key points discussed during their respective sessions.

The moderator then sorted these reports and divided them into two groups covering specific views. The first was that, based on reports regarding Mongolia and from the viewpoint of the global water situation, the current ecosystem sustainability crisis is directly related to the issue of well-being. The second was that, from the viewpoint of human welfare, biologically vulnerable people are also socially vulnerable, as shown by the current situations of children and elderly people. It was further concluded as a characteristic common to these sets of arguments that problems tend to concentrate in the most vulnerable places. Based on these views, the moderator raised two questions:

(1) How should we protect the vulnerable and support development?
(2) Where should we look to for change?

The panelists enthusiastically articulated their opinions and made proposals regarding these questions. Their remarks covered a wide variety of areas reflecting their diverse fields of specialty, ranging from humanities through natural and social sciences to medicine. One point particularly stressed in relation to the role of universities was the importance of increasing the number of citizens who can make decisions based on scientific truths. Many of the panelists were of the opinion that to play this role, universities must create opportunities for their scientists to continue dialogue with policymakers and citizens, rather than exclusively with students.

Other main opinions expressed were as follows:

- The whole of society must be involved in discussions of what should be maintained and what should be changed.
- A paradigm shift is necessary so that older people will be encouraged to value the creation of a bright future independently rather than considering an increased number of children as a solution to the graying of the population.
- In contemplating well-being, it is essential to consider the sustainability of both the natural and social environments at the same time.
- Proactive introduction of the precautionary principle is important in efforts to promote health and protect the environment.
- To avoid disadvantages to people in daily living as a result of failure to incorporate scientific developments into policies, universities in their role as bodies of scientists should take the lead in providing both student education and public education to prompt members of society at large to play a more significant role in policy-making.
- The paradox of technology must be contemplated. We must acquire the ability to examine whether technological development has in fact helped to advance well-being.
- The shift of production to countries where relevant regulations are lax has meant that industrial pollution and health hazards caused by poor working environments have moved beyond national boundaries. Solutions to this issue may be found by connecting scientific facts with government policies and citizens' power.
- From an engineering perspective, transferring environmental and other technologies is not easy; it is essential for countries and regions with problems to share goals and work closely to solve problems.
- A system is necessary for the provision of incentives to encourage desirable behavior modification.
- Since people's image of sustainability and well-being depends on their cultural background and economic situation, it is important to discuss matters with individuals who hold various viewpoints. To this end, Japanese students must improve their English proficiency.
- Universities should offer more opportunities for students to learn about different perspectives.

To bring the event to a close, Prof. Takeo Hondoh (Chairperson of the Committee for Sustainability Weeks 2010 and Hokkaido University Vice-President) said that the institution would continue to host the Sustainability Weeks event beyond this year as a forum for scientists from different disciplines to share knowledge and as an opportunity for members of the general public, policymakers, scientists and others to converse. He also asked for the continued participation and cooperation of those present.

総合討論

総合討論の概要

サステナビリティ・ウィーク 2010 のテーマである「ひとり一人が健やかに人間らしく生きる社会の実現に向けて」10 月 25 日に全体会を、26 日の午前中に 4 つの分科会を開催したことを受け、総合討論を行った。この目的は、 1.5 日間で行われた議論の全体像を結ぶこと、さらには解決に向けた手がかりを引きよせることである。 吉田文和教授（北海道大学経済学研究科）と岸玲子教授（北海道大学環境科学研究教育センター）が共同司会を務める中、まずは、 当テーマの実現を阻んでいる課題にそれぞれ異なった形でアプローチした全体会（第1日）ならびに分科会（第2日午前）から代表者が出て、 主要な論点について報告を行った。

司会者は、これらの報告を整理し2つに分類した。 一つに、 モンゴルの報告や世界の水事情という観点から、生態系の持続性に係る危機が Well-being の危機に繋がっていること。 次に、人間の Well-being という観点では、 子どもと高齢者の実態から生物的弱者と社会的弱者が重なっていることである。 さらに2つの共通点は、もっとも脆弱なところに色々な問題が集中的に現れているということだと結論づけた。 その上で、 2つの論点が司会者から提示された。

（1） 弱いところをどのように保護し、 そしてどのように発達支援していくか
（2） どこに変革の手がかりを求めるか

これについて、 会場内から活発な発言が続いた。 参加者は、 人文科学、 社会科学、 自然科学そして医学に至る多様な分野であったため、その発言は多岐にわたった。 中でも、大学が果たす役割として、科学的事実に基づいて判断する能力を備えた市民を増やすことの重要性が強調された。 この役割を果たすためにも大学は、 所属する科学者が学生のみならず政策立案者や市民と対話し続けられる機会を創出していく必要があるとの意見が多数出た。

その他の主な意見は次のとおりである。

・何を持続すべきなのか、 そして何を変えるべきかという議論が社会全体で必要である。
・高齢社会の解決策を子どもに見いだすのではなく、 高齢者が自身が明るい未来を築くことに価値を見いだすよう、 パラダイムシフトが必要である。
・Well-being を考える上では、 自然環境と社会環境のサステナビリティを両方一度に考えていくことが欠かせない。
・健康そして環境の保護には、 予防原則（precautionary principle）を積極的に導入していくことが重要である。
・科学で明らかになった事実が的確に政策に反映されないために生じる市民生活の不利益を回避するためには、 科学者で構成される大学が市民が力を持つよう、 学生教育そして市民教育を積極的に担うことが重要である。
・テクノロジーのパラドックスについて考えなくてはいけない。 テクノロジーが発達したことが、 果たして Well-being に寄与しているのかどうか、 検証する術を我々は持つ必要がある。
・厳しい規制が導入されていない国へ生産拠点が移されることから、 産業公害ならびに劣悪な労働環境による健康被害が、 国家間を移動して発生していることの解決は、 科学の事実を政策そして市民力に繋げることで見いだせるのではないか。
・工学の分野から言えば、 環境技術などの技術移転は容易ではない。 課題を抱える国や地域が共通のゴールを持って、 一緒に解決していくプロセスが欠かせない。
・望ましい行動変容に対して、 インセンティブを与える仕掛けしかけが必要である。
・文化的背景や置かれた経済状況が異なると Sustainability や Well-being のイメージが異なるため、色々な視点を持つ人と議論をしていくことが重要である。 そのためにも、 日本人学生の英語力強化が欠かせない。
・大学は、 学生が多様な視点に触れる機会をもっと提供する必要がある。

最後に、 サステナビリティ・ウィーク 2010 実行委員長である本堂武夫 北海道大学副学長が発言し、異なる学問分野の科学者が共通認識を醸成する場として、 さらには市民や政策立案者、 科学者など異なる立場の人が対話を行う場として、 来年以降もサステナビリティ・ウィークを開催するため、 継続的な参加ならびに協力への期待を述べた。

The Second Hokkaido University Sustainability Research Poster Contest

Venue: Hall, 1F

The aim of this contest was for Hokkaido University students to present their current research from the view point of how it can contribute toward the creation of a sustainable society; then present this in poster format with an oral presentation. Posters were classified and judged in seven disciplines according to how their research can contribute to the achievement of sustainability. Winners of the 2nd Hokkaido University Sustainability Research Poster Award received an award certificate and an extra prize at the award ceremony held on November 5.

Data

I. Number of Entries：76 teams（93 students）

II. Number of Judges：141（Researchers 61, Students 80）

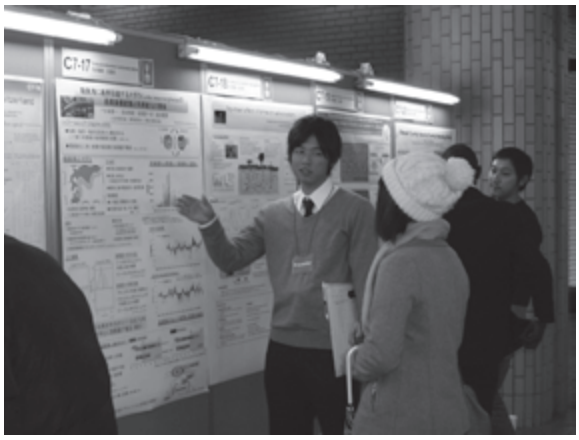
III. Date of Oral Presentation：

[The 1st Week] Tuesday, October 26, 12:30-15:30

Theme Categories：1) Health and public sanitation
2) Social bonds, culture and peace
3) Education and learning
4) Policies and social systems

[The 2nd Week] Tuesday, November 2, 12:30-15:30

Theme Categories：5) Economy, industry and energy
6) Food and water
7) Global environment and ecosystems



Oral Presentation

IV. Number of Award Winners：37 teams (42 students)

The 2nd Hokkaido University Sustainability Research Poster Award

●Grand Prix Award：

Hokkaido University President's Award —— 7 teams

●Basic Awards：

- Pioneer Spirit Award —— 5 teams
- Integrated Understanding Award —— 5 teams
- Trans-disciplinary Initiative Award —— 4 teams
- Breakthrough Proposal Award —— 4 teams

●Special Awards：

- Good Communication Award —— 7 teams
- Attractive Poster Award —— 5 teams

Award Winners

Abstracts of the contest and a list of the award winners are available at the Sustainability Weeks 2010 website.
URL: http://www.sustain.hokudai.ac.jp/sw/jp/events/2010/poster

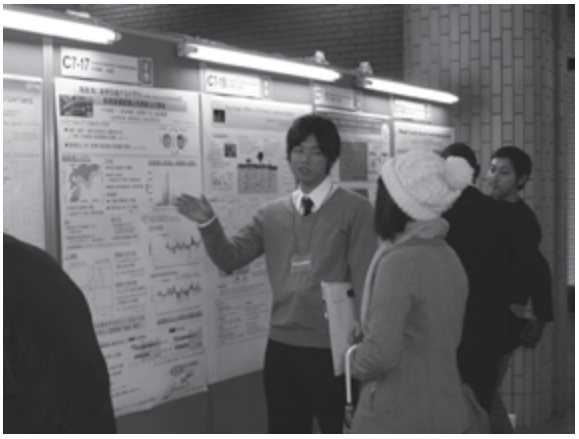
第２回北海道大学サステナビリティ学生研究ポスターコンテスト

会場：１階ホール

北海道大学の学生が、自らの研究と学びを「持続可能な社会づくりへの貢献」という観点で見つめ直し、ポスターと口演によるプレゼンテーションを行いました。 各自の研究と学びが、どの観点から「持続可能性」に貢献しうるのかによって 7 つの課題分野に分かれ、 審査が行われました。 11 月 5 日（金）に執り行われた授賞式では、「第2回北海道大学サステナビリティ研究ポスター賞」の各賞の受賞者に、 賞状と副賞が手渡されました。

データ

Ⅰ. 参 加 数 ：76 チーム（93 名）
Ⅱ. 審査員数：141 名（教員 61 名、学生 80 名）
Ⅲ. 口演説明日 / 審査日：
○第 1 週目　10 月 26 日（火）12:30 ～ 15:30
　課題分野 :①健康・公衆衛生
　　②社会的な絆・文化・平和
　　③教育・学び
　　④政策・社会制度
○第 2 週目　11 月 2 日（火）12:30 ～ 15:30
　課題分野 :⑤経済・産業・エネルギー
　　⑥食糧・水
　　⑦地球環境・生態系



コンテストの様子

Ⅳ. 受賞者数：37 チーム (42 名)
第2回北海道大学サステナビリティ研究ポスター賞
○最優秀賞
・北海道大学総長賞 —— 7 チーム
○基本賞
・未来の開拓者賞 —— 5 チーム
・総合的理解賞 —— 5 チーム
・分野横断的な独創力賞 —— 4 チーム
・ブレイク・スルー提言賞 —— 4 チーム
○特別賞
・グッドコミュニケーション賞 —— 7 チーム
・魅力あるポスター賞 —— 5 チーム

受賞者の集合写真

コンテスト参加者のアブストラクト集および受賞者一覧は、 以下よりダウンロードいただけます。
サステナビリティ・ウィーク 2010 ウェブサイト→第 2 回北海道大学サステナビリティ学生研究ポスターコンテスト
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Winners of Hokkaido University President's Award
北海道大学総長賞受賞者

Poster No. ポスター No	Name of team member チームメンバー	Affiliation 所属	Theme Categories 課題分野
C1-1	Nareethep Ruangthip Yuka Uchida ルングティップ ナリーテップ 内田 裕夏	Graduate School of Agriculture 農学院	Health and public sanitation 健康・公衆衛生分野
C2-1	Risa Takashima 高島 理沙	Graduate School of Health Sciences 保健科学院	Social bonds, culture and peace 社会的な絆・文化・平和分野
C4-2	Kunihito Nagasaka 長坂 邦仁	Graduate School of Letters 文学研究科	Policies and social systems 政策・社会制度分野
C5-9	Yoshihiro Mihara 三原 義広	Graduate School of Environmental Science 環境科学院	Economy, industry and energy 経済・産業・エネルギー分野
C6-7	Natsumi Ishimaru Ikue Sekiguchi 石丸 夏海 関口 郁恵	Graduate School of Environmental Science 環境科学院	Food and water 食料・水分野
C6-8	Arshana Nor Noorul Amin ノール アミン(ノル) アルシャナ	Graduate School of Agriculture 農学院	Food and water 食料・水分野
C7-8	Hisashi Endo 遠藤 寿	Graduate School of Environmental Science 環境科学院	Global environment and ecosystems 地球環境・生態系分野

Category 1: Health and public sanitation

C1-1

Aluminium cookware is an invaluable utensil for healthy and sanitary human life: Inactivating property of aluminium cookware on microorganisms during pasteurization of milk

Nareethep Ruangthip, Graduate School of Agricultural Science
Yuka Uchida, Graduate School of Agricultural Science

The inactivation of *Escherichia coli (E. coli)* was studied to determine the effect of aluminium cookware on microorganism during milk pasteurization. Cells of E. coli were suspended in commercial milk in order to achieve a final concentration of colony-forming units of 10^8 per mL. Milk samples in aluminium cups were immersed in a temperature-controlled water bath for pasteurization. The inactivation effects were compared with those obtained by using stainless-steel cups. The results clearly showed that cells of *E. coli* were killed more rapidly in aluminium cups than in stainless-steel cups. Furthermore, pasteurization times of milk samples in the aluminium cups were significantly shorter than those in stainless-steel cups. This result indicates that aluminium cookware is an invaluable utensil for healthy and sanitary human life.

C1-2

Regional characteristics of water quality of the reservoirs along the Tokachi River -To control the impact of hormonal water pollution future generation-

Masato Tanaka, Graduate School of Health Sciences
Ryo Nishimura, Graduate School of Health Sciences

Pollutant substances in the river contain organic chemicals which involve in house hold and industrial effluent and various other substances, those water contaminants reflect the characteristics of surrounding environments such as natural and living environments. In this study, we investigate current status of water pollution in Tokachi River through the urban area and Satunai River through the rural area that are the reservoirs along the Tokachi River. As a result, higher hormonal level of 17β estradiol is detected in Satunai River as compared to in Tokachi River. There is fear that it affects ecological and biological systems in surrounding environments. It is suggested that 17β estradiol pollution may derive from dairy waste which include cow's urine. Investigation, reality check and management of water pollutants such as 17β estradiol which is considered the future generation's thread, are necessary for us to create a sustainable society.

C1-3

Research using aging model mouse that aims to create a sustainable society where elderly person can also live richly by aging control

Miki Miyajima, Graduate School of Health Sciences

We want to advance the research aiming the construction of the system of the aging control by finding aging promotion material and clarifying the mechanism, and create a more affluent society for the elderly person, the family. The purpose in this study was to elucidate contribution of catecholamines to the decline of learning and memory with aging of senescence-accelerated mouse prone 10 (SAMP10). Concentrations of catecholamines in the cerebral cortex of aged SAMP10 were significantly lower than those in the control. BH4 concentration, which is an essential cofactor for tyrosine hydroxylase (TH) activity, in SAMP10 showed significantly higher value as compared with control. These results demonstrated that the decline of catecholamines was related to dysfunction of learning and memory with aging of SAMP10, and BH4 may not directly cause the decline of catecholamines, although abnormal BH4 metabolism was observed in the cerebral cortex of SAMP10.

C1-4

Histochemical assessment for cells engulfing bone and cartilage matrices in RANKL-/- mice

Yukina Miyamoto, Graduate School of Dental Medicine

Osteoclasts are multinuclear giant cells responsible for bone resorption, which originate from macrophage/monocyte lineages, and are terminally-differentiated by the interaction between receptor activator of the nuclear factor κB (RANK) and RANK ligand (RANKL). RANKL deficient mice have macrophage/monocyte lineages, but lack osteoclasts and their precursors, featuring osteosclerosis. However, in this study, we have found multinuclear giant cells engulfing bone and cartilage matrices in the RANKL -/- bone, which is negative for tartrate-resistant acid phosphatase, a hallmark of osteoclasts. This cell-type in RANKL-/- mice showed Mac2-immunopositivity, which are also seen in authentic osteoclasts in the wild-type mice. Under transmission electron microscopy, this cell-type demonstrated phagocytosis of bone and cartilage matrices, many vacuoles and clear zone-like structures with which this cell-type attached bone. In summary, this cell-type seems to share the cellular characteristics of osteoclasts and macrophages, and enable to digest bone and cartilage matrices instead of authentic osteoclasts.

C1-5

Sustainability in Health Condition of the People Living in Rural Province of Zambia

Sayuri Kon, Graduate School of Health Sciences
Harutaka Kubo, Graduate School of Health Sciences

In Zambia, located in southern part of Africa, drought is frequently happened in dry season but recently heavy rainfall seriously damages crops in rainy season. Life of the people depending on farming are liable to be greatly affected by environmental change, which decrease provision of food, furthermore it affects their nutritional and health conditions.
We have conducted longitudinal body measurements for the people living in rural villages to reveal the variation of nutritional status which reflects environmental change. In this summer, we stayed with villagers for two months to conduct dietary and physical activity surveys to know their energy balance and dietary consumption. We can detect factors related with nutritional variations by examining what types and how much amount of food villagers actually eat and how they actually work. Moreover they will be useful in understanding how the people are living in rugged environment maintain their health condition.

C1-6

An efficacy of a support program for pervasive developmental disorder patients in adolescence

Takao Inoue, Graduate School of Health Scieces

In Japan, the interest in pervasive developmental disorder (PDD)has been growing recently.However,there is no study that have examined the efficacy of a support program for PDD patients in adolescence.
Many cases of social withdrawal at Sapporo Mental Health Welfare Center have been diagnosed as PDD in adolescence. The Center has established three groups, A, B, and C, for these cases, and carries out therapeutic intervention through occupational therapy and daycare. We carried out a clinical study of 30 patients who participated in the three groups from april 2009 to march 2010, and observed their participation in the groups. Here we present the patients' clinical features and the support activities of each group, and report on practical activities for PDD patients in adolescence in Sapporo. Results showed the GAF scales of patients improved and outcome research also changed positively. Therefore, this support program appears to be effective.

C1-7

The growth and nutritional status of "Pygmies' hunter and gatherers'" children in South-East Cameroon

Izumi Hagino, Graduate School of Health Sciences

Pygmies' hunter and gatherers have the smallest body sizes in all the population in the world, still keep hunting and gathering in their unique daily lives.
They have two different daily lifestyles and occupations. In the semi-settlement village, they work on agriculture in own field or do paid work in agricultural people. And sometimes they encamp in the forest, and do hunting and gathering.
There are many studies about BAKA pygmies from many directions of learning, such as sociology, economics, and cultural anthropology. And there may be a hint for "sustainable society" in their special and traditional lives.
In this study, we did the anthropometric measurement for BAKA pygmies' children (2-19 years old) in South-East Cameroon. To know the nutritional status, we assess their unique lifestyles is consisted on the human premise of "living" or not.

C1-8

Low cost composting toilet for developing country

Emi Nakaoka, Graduate School of Engineering

In Japan mixing and warming of compost by electrical power can control water evaporation because moisture content is higher after urine and feces collect together. But in developing country electricity is very expensive and valuable. Feces separated from human waste translate into compost with sawdust and compost is mixed by hand. In this study, in order to achieve low cost we made container and impeller with wood. We evaluated durability of them and examined how much higher the needed power stirring was. At the same time, we evaluated biodegradability by high load driving.
We had to prevent deformations by moisture content changing. We had no problem about biodegradation of feces during the experiment. We determined several types of impeller, but each type was not fitted because they had poor strength.

C1-9

Child obesity is prevalent in developing countries!

Azusa Uemura, Graduate School of Health Sciences

-If you hear the word "obesity", what do you imagine? Western people or middle-aged men or fatty foods…?
Now obesity is prevalent not only in developed countries but also in urban areas of developing countries. And especially, child obesity is serious health concern around the world. Because it leads to adult obesity and closely relates to lifestyle-related diseases in the future.
We observe prevalence of child obesity in urban area of Central Java, Indonesia. Around the elementary school or junior high school, there are many "outside food store", where sell various snacks, fried noodles and chicken and so on. During break between classes or after school, almost all the children eat something. Also surprisingly, most of them go to school by car.
So in this study, we focus on lifestyle of obese children in urban area of Indonesia and examine sustainable society in terms of child health.

C1-10

Analysis of polysaccharides that affect membrane fouling in membrane bioreactors

Ippei Tanaka, Graduate School of Engineering

It is widely known that polysaccharides in activated sludge affect to memberane fouling in membrane bioreactors (MBRs). At present, however, little is known about the details of polysaccharide fractions that cause membrane fouling. Information on characteristics of the polysaccharides causing severe membrane fouling should be very useful to establish a strategy to mitigate membrane fouling in MBRs.
In this study, lectin affinity chromatography was applied to assess the fouling potentials of specific polysaccharides. Lectins are proteins that can bind with specific polysaccharides with high selectivities. After this, we investigated the relationship between degrees of reduction in filtration resistance and amounts of organic matter removed by lectins, and monosaccharide component of polysaccharides that have high fouling potential. Additionally, now we focus on the characteristics of polysaccharides that have high fouling potential as polymeric substances, for example molecular structure. These data should be a great advance in understanding of membrane fouling.

C1-11

Health effects of modernization in suburban village, Solomon Islands

Hideki Takahasi, Graduate School of Health Science
Chiaki Maeda, Graduate School of Health Sciences

Solomon Islands have been developing and modernizing rapidly recent years. Because of westernized diets and reduction of physical activity, obese tendency is already confirmed in urban area. Not only urban area but also rural area has experienced rapid modernization such as population growth, dependency on purchased food and so on.
One of the problems for modernization is the rise in adults obesity. Analyses of nutritional status revealed that adults and children were different and some adults were obesity. Another problem is Malaria, which remain endemic disease in a suburban village in spite of modernization.
The objective of this study is to think and suggest that how we can support health problems of suburban villagers in Solomon Islands. It is expected that modernization will continue in a suburban village in a future. We need supporting that villagers can manage healthy lifestyle by blending traditional lifestyle and modernization.

C1-12

The development of novel anti-tumor angiogenic drugs for sustainable healthcare

Nako Maishi, Graduate School of Dental Medicine
Taisuke Kawamoto, Graduate School of Dental Medicine

Cancer is the first cause of death in Japan. Chemotherapy is a common strategy for cancer treatment. However, its out-of-pocket medical cost is even one million yen per year, and healthcare expenditure for malignant neoplasm amounts to 3 trillion yen. The increasing health expenditure would cause financial collapse.
One of the reasons why these drugs are so expensive is that most of the drugs are imported from abroad. Thus, it is demanded to develop new effective therapeutic drugs in Japan. “Antiangiogenic therapy” inhibit neovascularization in tumor, and are thought to be attractive strategy for cancer treatment. However, several side effects have been reported recently, since the drugs attack tumor blood vessels but also normal blood vessels. We found endothelial cells in tumor blood vessels express several specific markers, which can be used for development of novel antiangiogenesis drugs. These novel drugs may lead to sustainable healthcare in our county.

C1-13

Environmental assessment: Investigation of the amount of heavy metal ions in water and sediment in the mining area of Mongolia

Yoshihiro Mihara, Graduate School of Environmental Science
Md. Tajuddin Sikder, Graduate School of Environmental Science

Environmental pollution from mining activity is one of the major concerns on the aquatic environment and ecosystem in Mongolia. We have assessed the water quality of the mining waste water and also measured ion with extracted solution from sediment of the river and the artificial lake where waste water from a mining company are drained. The general water qualities were measured by using the ion selective pack test and the multiple water quality checkers. The metal ions were measured by ICP-MS and AAS. Toxic heavy metal ions such as cadmium, lead, copper and arsenic were found out from mining waste water and sediment in artificial lake. These metal ions might be precipitated to sediment by higher pH condition of the waste water. Therefore, the dissolution of heavy metal ion from the sediment has the possibility to cause serious pollution and degradation in environments for animals and ecosystem.

C1-14

Water Quality Analysis and Pollution Remediation with Functionalized Cyclodextrin Polymer

Md. Tajuddin Sikder, Graduate School of Environmental Science

This study aims to evaluate and compare the water quality in developing and developed countries along with to propose some sustainable technologies to remedy the pollution. Industrial, agricultural and domestic water is discarding into the aquatic bodies with tremendous concentration of toxic substances of organic and inorganic chemicals especially heavy metals. Some parameters exceeded the threshold limit in Indonesia, Mongolia and Bangladesh. The presence of these contaminants in drinking water poses a major risk to human health. An integrated, low-cost, effective and environmental friendly remediation technique has been searched in this study that can simultaneously remove both organic and inorganic contaminants. Current simulation studies have shown that functionalized cyclodextrin (CD) polymers are capable of removing heavy metals from water with an enhanced absorption capability. This polymer has proved to possess excellent capabilities for the removal of model pollutants such as ‘Cadmium ion’ (Cd+) with the absorption efficiency around 60%.

C1-15

Study of Novel Evaluation and Analyses of the Effects of Environmental Chemical Substances on Organisms by Using Cell Lines

Yongkun Sun, Graduate School of Environmental Science

The main epigenetic modification in humans is known as DNA methylation. When DNA methylation happens, some genes become silent, which may inhibit the RNA transcription and prevent protein synthesis and lead to related illnesses.
Now human exposure to methylating factors, for example, some chemical substances, such as insecticides, food additives, chemical materials and medicines, which are widely used in food, drug, plastics, elastomer and other aspects. However, the traditional analyses of the chemicals are hard to clearly indicate the mechanism how it works to regulate the genome, and how it influences on the phenotypes.
In this study, to confirm a novel assessment method for low concentration chemical substances affected organism, the relationship between DNA methylation and chemical dose will be investigated by using cell biological techniques. If the new assessment can be established, it can be applied to remedy the polluted environment and cure the diseases of patients.

C1-16

Simulation of drinking water distribution system with low chlorine dose

Koichi Sugiyama, Graduate School of Engineering

In Japan chlorine is a main disinfectant in drinking water treatment systems. It has several advantages as microbial effect, residual capability and its low cost. However, some of the chlorine disinfection by-products (DBPs) that remain in drinking water have potential effects for human health. The purpose of this research is to develop a simulation model for bacteria-regrowth in distribution system and to assess the health risk balances between bacteria-regrowth and DBPs. After that it may be possible to calculate the adequate chlorine dose using the results obtained from the model.

Category 2: Social bonds, culture and peace

C2-1

How disabled people live in a rapidly ageing society?

Risa Takashima, Graduate School of Health Sciences

The aging rate of Japan was ranked the worst in the world in 2005, and it is expected to become 23.1% in 2010(National Institute of Population and Security Research, 2010). About 460,000 people per year suffer from stroke. The total number of patients amounts to about 1,340,000 (Ministry of Health, Labour and Welfare, 2008). It is thought occurrence of stroke is increasing, because of rising numbers of elderly people and life-style related diseases.
Most stroke sufferers must live with disability. It is necessary to consider how people who have a disability can live happily in society. Factoring in the viewpoint of disabled people is important. We need to try to understand what kind of experience disabled people have and how they feel in society. Therefore I will try to reveal the world where they live using a phenomenological method in my study.

Category 3: Education and learning

C3-1

Not-kept Poster

Rin Syu, Graduate School of International Media, Communication, and Tourism Studies

At present, what I can do for sustainability is to come up with a way of disposing the poster appropriately after the competition. Lying on my cupboard is not expected, neither does being thrown away as large garbage. But it will be kept by all of us in another way, which is what a poster can do for sustainability possibly, however, necessarily.
It seems that sustainability is extremely far away from normal people, as we are not engaged in studying courses such as chemistry and biology. But the key point is that, we should take sustainability into consider no matter what we do in our daily life.
By this way, back to the theme, I'm wondering how the poster itself can be used for sustainability. I hope more people could receive the 'present' from my poster. However, it's up to your own understanding.

C3-2

Feature of Kuroshio Current separation point

Yasunori Sue, Graduate school of Environmental Science

General circulation has a strong meridional current at its western side. In this domain, heat flax is very large and it is very important to determine neighboring climates. This strong current leaves the west side in certain latitude and returns to the ocean interior again. In the real ocean such as the Kuroshio Current, this separation point is farther than that of linear solution of Stommel (1948) and Munk (1950) .
In this study, Parameter dependence of the separation latitude was investigated using a basin-scale 2-layer beta-plane puasi-geostrophic model driven by single-gyre wind stress in meridional direction. Parameter is an inertial boundary layer thickness and Munk's boundary layer thickness non-dimentionalized by Rossby deformation radius. As a result, the separation point was roughly two points, and a difference between parameters was not almost seen in a certain parameter domain.

Category 4: Policies and social systems

C4-1

The contribution of international students to Japan beyond their educational experience: the case of tourism

Yaoxuan Shi, Graduate School of Agriculture
Hao Sun, Graduate School of Agriculture

In 2008 the Japanese government launched a policy to recruit a total of 300,000 international students by the year 2020. Such an increase in the number of international students would have several positive effects on Japan. In this paper we focus on the effects of tourism. Specifically, it is to examine international students' travel characteristics. The results from our survey show the following. The respondents tended to travel to places that are located within day-trip distance. Nature-related activities were more preferred than city-related activities. The results will provide fundamental information on international students as consumers, and thus help policy makers and travel marketers improve their policies and marketing plans.

C4-2

Development of Emission Trading Game from a social psychological viewpoint

Kunihito Nagasaka, Graduate School of Letters

We investigate intergroup conflict and social dilemma using gaming techniques. We developed an Emission Trading Game (ETG) in which the social psychological factors in the emissions trading system are considered. Gaming technique extracts the selected significant factors intuited from real world. Gaming impresses a reality on participants, which is subtly felt in real world. For example, no matter how people know the seriousness of global warming, they cannot come to realization. But Gaming helps to arouse participants' realization through dynamic interactions among participants. In addition, unlike the real world where fatal failure is not allowed, the gaming allows us to learn from failure. The different emission trading systems currently examined may cause potential conflict between countries. Social psychological perspective using gaming technique will help us to understand and to find out the resolution of the potential problem of emission trading. Our study would contribute to fulfill a sustainable society.

C4-3

Life Cycle Management of Civil Infrastructure

Wataru Satoh, Graduate School of Engineering
Naoya Matumoto, Graduate School of Engineering
Kouichi Furuya, Graduate School of Engineering

An un-expected short service-life of civil infrastructure is a serious problem worldwide nowadays. It is very essential to establish economic and efficient management strategies for existing or newly built infrastructure in order to achieve their designed service lives and even to extend them. The lifecycle management (LCM) is a series of action to assess the grade of deterioration and structural performance degradation by inspection, to predict the future progress of performance degradation, and to propose the appropriate remedial action based on lifecycle cost minimization or performance maximization under budget capping. To establish the LCM system for civil infrastructure, we are trying to make various aspects of the lifetime of a structure toward establishment of sustainability.

C4-4

Why the condom production is decreased? : Japanese sex life and globalization

Moeka Moriizumi, Public Policy School

The condom is the most important tool for family plannning and STI prevention. However, the Japanese condom industry faces a contradiction.
On one hand, the domestic condom market in Japan has expanded, thanks in large part to reforms enacted under the Pharmaceutical Affairs Law in 1995. On the other hand, domestic production of condoms has decreased in the same period. We examine two reasons to explain this phenomenon.
-1) Cultural Change → Changes in Japanese sex life : concsciousness regarding family plannning has been decreasing over the past several decades, while couples who experience sexual problems or do not engage in sex has increased substantially.
-2) Economic change → The Japanese condom industry is threatened by competition by national companies founded in developing countries.
The goal of this analysis is to positively contribulte to building a sustainable population, a healthy society, and contributing to the prevention of STI/AIDS in Japan.

C4-5

Are Environmental Taxes Effective in Real Economy? —Environmental Taxes Policy in China—

Wang Lei, Graduate School of Economics
Wang Tianhe, Graduate School of Economics

Energy saving and emission reduction have become an important task for economic globalization and social development.
As one of important economic instruments, environmental taxes often are used to solve the environment problems. Some countries have paid more attention in establishing the environmental taxes system more than before. Environmental taxes policy has been implemented in developed countries and has achieved some success. Environmental taxes system is the next breakthrough in Chinese environmental policy reform. Compared to other environmental policies, such as pollution charge and emission trading, economic and environmental benefits of environmental taxes are evident. The condition of implementing environmental taxes in China is not mature, but due to its significant function, China should implement the environmental taxes gradually and convert into the tax-based system ultimately.

C4-6

The Simulation to decrease research cost for HIV medicine

Yuya Uchida, Graduate School of International Media, Communication, and Tourism Studies

The spread of HIV becomes a serious problem in Africa. However, the price of HIV medicine is very expensive, and a lot of poor people cannot obtain enough medicine. The main factor is a rise of the research and development cost in drug company. The phenomenon called “Tragedy of the Anticommons” causes this rise.
There is the research system called “Open source biotechnology” to restrain this phenomenon. The purpose of this research is showing effective operation of this system. This system has managerial, political, legal, and scientific problems, and needs multidisciplinary and comprehensive strategy. Therefore, this research uses the simulation that contains complex system. This simulation uses agent program that has a learning function. Each agent has each purpose, always learns past process, and changes an effective strategy in this program. Thereby this simulation shows more practical and active process.

C4-7

Simulation and optimization of control strategies for Nitrogen export by SWAT

Rui Jiang, Graduate School of Agriculture

Hokkaido is known as Japan’s primary dairy farming area and large amount of livestock excreta are produced. Approximately 93% of excreta are used as organic fertilizers. Manure associated with excessive fertilizer application led to high surplus Nitrogen (N) as over 200kg N ha^{-1} in uplands. Researches have shown that about 25% of surplus N in this dairy farming areas was exported in river system and has resulted in serious eutrophication problem in the estuaries. However, there is no strategy showing how to reduce the N export in the dairy farming area, thus the non-point pollution is getting worse and worse with the increase of agriculture production. Therefore, this study is applying Soil and Water Assessment Tool (SWAT) to achieve an optimal strategy for N export reduction as well as high agricultural production. We hope the simulation can give the decision support for agricultural and environmental managements.

C4-8

Assessment of the endangered species: using analyses of DNA sequence

Yuichiro Kogura, Graduate School of Fisheries Sciences

It is no need to mention that biodiversity is very important for the nature. The basic of the biodiversity is GENE diversity. In this presentation, I will introduce you why it is important to investigate the variation of the genome and how to analyze the scientific results by the latest technique, using the example of sockeye salmon (also known as HIMEMASU in Japanese) which is designated as an endangered species in Japan. Although the result of our research showed the gene diversity of the Japanese sockeye salmon were very low, they are still maintain the characteristics of the native sockeye salmon despite of the great number of transplants from another populations. This will be one of the most fundamental and important scientific knowledge when we assess the health of the mild populations.

Category 5: Economy, industry and energy

C5-1

The farm village's new role ~The case of Naganuma Town, Hokkaido Prefecture's Green-Tourism~

Tomoko Koga, Graduate School of Environmental Science

Naganuma Town, a typical rural area in a suburb of Sapporo, producing rice, wheat and vegetables, developed Green tourism since 2006.In 2010, 167 farmers among 800 in Naganuma Town receive 24 Schooltrips mainly of junior high and high schools (total students:14,720 individuals) coming from the Mainland of Japan.
In most cases 3 or 4 students are stayed in each farm, overnight or 2 nights. Host family serves them food and some agricultural experiences. This farm stay got a high reputation both form school teachers and students because agricultural experience and communication with host family are not only impressive but also instructive from viewpoint of environmental education.
Therefore all farm stay programs in 2011 has been already reserved.
This success stimulates the farmers to continue their agriculture, although they have faced a lack of their successors.
Green tourism will be a key of sustainable agriculture in Hokkadio.

C5-2

Does bio-ethanol contribute to mitigation of climate change? : The case of bio-ethanol produced from crops in Japan

Yusuke Yoshida, Graduate School of Agriculture

The purpose of this study is to evaluate the environmental effects of bio-ethanol using a life cycle assessment method. The Japanese government decided to expand domestic production of bio-ethanol in 2007. Bio-ethanol use for energy generation is considered "carbon neutral," so the use of bio-ethanol has a potential of mitigating climate change. However, greenhouse gasses are emitted in manufacturing the final product. To evaluate the validity of bio-ethanol use as a means to reduce greenhouse gas emissions, bio-ethanol systems need to be compared with fossil reference systems producing the same amount of final products/services. In this study, we focus on bio-ethanol produced from wheat and sugar beet.

C5-3

Phosphorus recovery from source-separated urine using scallop shell.

Yutaka Fujita, Graduate School of Engineering

The objectives of this research were to examine possibility of phosphorus recovery from urine and to attach phosphorus on the surface of scallop shells for easy separation. Three experiments were established to study them.
They were first, just putting ground scallop shells in synthetic urine (Method 1), second, stirring the solution to mix them after putting ground scallop shells in synthetic urine (Method 2), third, stirring the solution to mix them after submerging mesh case, which was packed with ground scallop shells, in synthetic urine (Method 3). The results showed phosphorus recovery occurred over time in each case. Besides, Method 2 resulted in white turbidity in the solution. However, Method 1 and 3 could determine attachment of white precipitation on the surface of ground scallop shells without any white turbidity in the solution. Consequently, this research indicated Method 3 is the best way for phosphorus recovery from urine so far.

C5-4

Renewable Cold Energy from Snow Pile for Cooling a Rice Storehouse to Realize Sustainable World

Sakiko Fujikawa, Graduate School of Agriculture
Takamasa Doi, Graduate School of Agriculture
Shuo Qiu, Graduate School of Agriculture
Rui Li, Graduate School of Agriculture
Cong Ren, Faculty of Agriculture

A Low-temperature rice storage system, in which grain temperature is maintained below 15℃ during storage, has been commercially used for preserving high-quality rice in Japan. However, the storage system requires an electric cooling system and electric energy to cool rice in summer. We have been challenging to replace the electric energy with renewable cold energy from snow pile removed from streets downtown in winter. About 27% of the electric energy for cooling a rice storehouse could be replaced by using the snow pile in summer. The quality of rice stored in the storehouse was preserved at a level almost similar to that of freshly harvested rice. These results indicate that snow piles made in winter can be used for cooling a rice storehouse without electric energy consumption. This new technique contributes to utilization of renewable energy, high-quality food supply and sustainable world.

C5-5

Development of supported heteropolyacid catalyst for selective oxidation for realizing green chemistry

Mitsuru Kanno, Graduate School of Environmental Science

Many important chemicals are produced from fossil resources by oxidation processes. Development of oxidation catalysts is essential for effective use of fossil resources. One of the important oxidation processes in industry is catalytic oxidation of methacrolein (MAL) to methacrylic acid (MAA).
Molybdovanadophosphoricacid (POM) is the efficient catalyst for the oxidation of MAL to MAA. We have studied on SiO_2-supported POM (POM is highly dispersed on SiO_2) for oxidation of MAL to MAA. SiO_2-supported POM showed lower selectivity to MAA but showed higher reaction rate. Low selectivity was caused by decomposition of POM. Decomposition of POM occurs at reaction temperature (300℃) because thermal stability of POM decreases by interaction with SiO_2.
To prevent the decomposition of POM, SiO_2-supported POM ammonium salt (NH_4-POM/SiO_2) was investigated. Formation of POM ammonium salt increase thermal stability. NH4-POM/SiO_2 showed higher reaction rate and higher selectivity to MAA than SiO_2-supported POM.

C5-6

ECONOMIC, POLITIC AND MANAGERIAL INTERACTION OF COPPER INDUSTRY IN D.R. CONGO

John Ngoy Kalenga, Graduate School of Economics and Business Administration

Copper is one of non-renewable natural resources. The DR Congo has high potential in copper production. Many developing countries rely on one or two mineral resources exportation as their primary source of income to finance their development programs. The adoption of sustainable development values increases socio-environmental costs to producer firms in Less Developed Countries (LDCs). The big issue in the industry is how copper producer should manage these costs to achieve a sustainable development. The consumption of copper depends on the stage of economic development of a given country. This hypothesis implies that the LDCs do not consume enough copper though they produce large share of total output. The situation leads to market instability. The fluctuation of price on world copper market requires stabilization to promote balanced commercial relationship between developed and developing producer countries.

C5-7

Potential Use of Aluminum Drinking Water Treatment Residuals (Al-WTRs) Couple with Electrokinetic Remediation for Removal Lead in Soil

Rudy Syah Putra, Graduate School of Environmental Science

There have been increasing interests in finding new and innovative solution for removal of contaminants from soil recently. Al-WTRs, a by-product of water treatment facilities that use aluminum salts as coagulant. It is the most widely generated water treatment residual in Japan, and is mostly land filled at huge cost since it is regarded as by-product of little known reuse value. In this study the asses of potential of Al-WTRs, an inexpensive and readily available waste material coupled with a well known technology, Electrokinetic Remediation (EKR) to remove lead from kaolinite clay soil was investigated. It is expected that the results reported in this study would provide useful information for remediation of lead contaminated sites and also the economic value of an industry by-product.

C5-8

Study on implementing renewable portfolio standard and Feed-in Tariff in China

Liping, Graduate School of Environmental Science

In recent years, under the guidance of the government, China's wind power generation has experienced rapid development. Due to the late launch of China s wind power industry, many of the problems still exist. After analyzing the development of China's wind power and main problems of the wind power generation, the effect of Feed-in Tariff policy in China is discussed. At last, the international incentive policies (mainly RPS of Spain, Japan, America) on renewable energy development are summarized and the detail for implementing renewable portfolio standard are proposed in this article.
The most important point I'm interested in is that China has set up the framework of policy basically however the implementation measures need to be enhanced. Some detailed suggestions related to renewable power grid connection issue are proposed too.

C5-9

Control of specific gravity of alginate porous gel beads for easy collection of adsorbent from environments

Yoshihiro Mihara, Graduate School of Environmental Science

I have developed a new type of alginate porous gel beads which can floated on the water after adsorption of pollutants on the beads. It is based on the control of the specific gravity of the beads by the inclusion of bubbles in the bead and also salts as a weight. In order to prepare the gel beads, $NaHCO_3$ and $CaCO_3$ were added to the alginate solution and the mixture was dropped to $CaCl_2$ solution containing citric. The specific gravity of the obtained bead was larger than that of water when the amount of $CaCO_3$ was increased and therefore the bead went to the bottom of the solution. However, as $CaCO_3$as a weight dissoluted, the bead floated up. The floating time of the alginate porous gel beads under pH (1-4) condition was investigated statistically. Properties of the gel beads facilitated the easy collection of adsorbents from aquatic environments.

C5-10

Proposals to CO_2 reduction at Hokkaido University and Graduate School of Environmental Science

Kenichiro Takagi, Graduate School of Environmental Science

In Japan, about 90% of greenhouse gas emission is resulting from the use of energy. Therefore, to reduce greenhouse gas emission and save energy is important. Sapporo Campus of Hokkaido University is one of the most energy-consuming business institution in Sapporo City, and it is necessary to take measures for reducing energy use.

In April 2010, there was a renovation at Graduate School of Environmental Science, Hokkaido University. Accordingly, an electric power monitoring system and two (fixed and mobile) solar photovoltaic systems were installed, as a model case of future environmental planning on campus. In this study, data from the solar photovoltaic system and the electric power monitoring system are used to examine the ways to save energy and reduce carbon emission. The differences of the solar photovoltaic systems between fixed and mobile are also discussed.

C5-11

Effects of temperature on organic matter decomposition process in anaerobic marine sediment

Takato Matsui, Graduate School of Environmental Science

Organic matter sedimented in aquatic environments plays a significant role in the global carbon cycle as a major sink of carbon. Whether such organic carbon is recycled or remains buried largely depends on microbial activity. Degradation of the organic matter in marine sediments mainly proceeds anaerobically. Under anaerobic conditions, high molecular weight organic matter is gradually degraded via hydrolysis, fermentation, and terminal oxidization of the low molecular weight organic compounds. These steps are mediated by microorganisms specialized for each processes, and therefore, the total mineralization rate might be affected by the activities of various microorganisms that respond to environmental changes in different ways. In fact, it has been shown that too high or too low temperatures can result in decoupling of the key phases in anaerobic mineralization in marine sediments. In this study, an enrichment culture experiment was conducted to examine the effect of temperature on mineralization under sulfate-reducing conditions.

C5-12

Removal of Cadmium (Cd) from water using sludge of drinking water treatment plant as adsorbent

Eko Siswoyo, Graduate School of Environmental Science

Sludge of drinking water treatment plant which is usually disposed as solid waste was converted into adsorbent for removing cadmium from water. The purpose of the research was to know the capacity of adsorbent using sludge from different water treatment plant in removing cadmium. Adsorbent was prepared using sludge from Nishi no and Mya machi treatment plants. Before batch adsorption process, sludge was dried on the 100℃ for 24 hours, burned on the 550℃ for 2 hours, kept at the 100℃for 24 hours and then crushed into powder form. The capacity of adsorption was depend on the source of the sludge, the concentration of cadmium and pH of the solution. The maximum adsorption capacity were 5.56 mg/g on the pH 5.50 and 5.56 mg/g on pH 5.6 of the solution, respectively. The highest efficiency of removing cadmium was 91.5 % from initial concentration 100 mg/l into 8.50 mg/l.

C5-13

Assessing effects of environmental load reduction in the hot spring area -A case study in the Nagareyama Hot Spring in Hokkaido-

Sayaka Fujiwara, Graduate School of Environmental Science

In hot spring areas, the water is generally heated by heavy oil boilers. However, substantial CO_2 is emitted in process of the heating and the process is always affected strongly by oil prices. Therefore, the Nagareyama Hot Spring, which is possessed by the Hokkaido Railway Company, has recently introduced a boiler that is fueled by lubricating oil discarded by the company. On the other hand, drainage water from the hot spring is thrown away and the heat is not recollected so far. Considering the current situations, we consider the possibility of changing the boiler fuel from the heavy oil to the used lubricating oil in the hot spring and utilizing the heat of the water in the hot spring to raise farm products in greenhouse, with regards of both environmental and economic aspects. The effects are evaluated quantitatively by using a method of life cycle assessment.

C5-14

Measuring the economic impacts of climate change on Japanese agriculture

Ki-Ryong Kim, Graduate School of Agriculture
Yusuke Yoshida, Graduate School of Agriculture
Yaoxuan Shi, Graduate School of Agriculture

Climate change has become one of the biggest concerns to many people in the world. Agriculture is expected to be most vulnerable to climate changes because it is strongly influenced by climate factors such as temperature. In spite of these concerns, not many studies have been undertaken in Japan on the economic impacts resulting from climate change to agriculture. The purpose of this study is to measure the economic impacts of climate change on Japanese agriculture. In this study, Ricardian model is used to predict how the gross agricultural income per hectare changes due to climate change.

C5-15

The estimate of the denitrification using nitrogen gas excess in the Sea of Okhotsk

Masanori Ito, Graduate School of Environmental Science

We measured argon and nitrogen gasses and firstly tried to estimate quantitatively the extent of denitrificaion in the Sea of Okhotsk with considering the bubble injection process. Dissolved N2, Ar and DO were obtained at six stations within this region in August, 2007 by using the method of a gas chromatography developed by Tanaka and Watanabe [2007].

With considering several recent hydrological physical data [Itoh et al., 2003; Ohshima et al., 2006], we estimated the total water-column inventory of the nitrogen gas excess above background and the denitrification rate in the Sea of Okhotsk to be 4.3±1.7 mol m-2 and 0.4-1.3±0.5 T mol y-1, respectively. This estimation of the denitrification rate in the Sea of Okhotsk was about half of that in the Arabian Sea where is known as the oxygen deficient zones, contributing significantly to the global water-column denitrification .

C5-16

Application of MBT/CBT-index to lacustrine sediments

Taku Ajioka, Faculty of Environmental Science

MBT/CBT-index based on distribution of branched glycerol dialkyl glycerol tetraethers (GDGTs), membrane lipids potentially produced by bacteria, was suggested by Weijers et al. (2007) as a novel paleotemperature proxy. In this study, to estimate the validity of the global soil calibration, we constructed a local calibration using soil samples around Lake Biwa. Additionally, we applied MBT/CBT-index to Lake Biwa sediments and reconstructed paleotemperature.
The local soil calibration is not consistent with the global one, which suggests that temperature responses of branched GDGT distributions might be largely attributed to kinds of bacteria. Also the compositions of branched GDGTs in the sediments are quite different from those in soils, which infers branched GDGTs in the sediments are not produced in soils, but are produced in situ. The variability in paleotemperature during the last 50,000 years using lake calibration suggested by Tierney et al. (2010) is consistent well with pollen record.

Category 6: Food and water

C6-1

Economic and environmental effects of agricultural trade liberalization: The case of a Japan-EU Free Trade Agreement

Ichino Tsuge, Graduate School of Agriculture

Whether agricultural trade liberalization will have a positive or negative impact on the natural environment is an empirical matter. In order to contribute to the debate over agricultural trade liberalization and environment, we measured the economic and environmental effects caused by the JEUFTA (Japan-EU Free Trade Agreement) using the GTAP (Global Trade Analysis Project) model and the OECD Nitrogen Balance Database. The scenario we model assumes the complete removal of all import tariffs between Japan and the EU, not only in the agricultural sector but in non-agricultural sectors, as well. The nitrogen balance is used to estimate the potential changes in nitrogenous pollution from agriculture caused by the JEUFTA. The nitrogen balance is defined by OECD as the physical difference (surplus/deficit) between nitrogen inputs into, and outputs from, an agricultural system.

C6-2

Production of slow release nitrogen fertilizer from urinemarine sediment

Eri Takahashi, Graduate School of Engineering

In recent years, nitrogen fertilizer demand is increasing due to population growth. However, to synthesize compounds of nitrogen in the fertilizer will need a lot of energy. In addition , nitrogen in fertilizer discharge into the environment and has become a cause of eutrophication and nitrate pollution . The purpose of this research is to make slow-release nitrogen fertilizer from urine.Urea formaldehyde is as known slow-release nitrogen fertilizer. This compound is made by reaction of urea and formaldehyde at acid condition. In each case, synthetic urine and real urine, urea formaldehyde formed by reacting urea with formaldehyde at acid condition.

C6-3

Development of eco-friendly biodegradable flocclant

Liu Xin, Faculty of Fisheries Sciences

Separation of soil particles in water is very important in both environment and industry. Recently, chemical flocculants are widely used to improve solid–liquid separation, but they are environmentally undesirable. Thus, extracellular polymers produced by bacteria (bioflocculants) has been a topic of intense research. However, it is deficient in practical application. In our laboratory, a novel bioflocculant, methylated soy protein (MeSP), has been developed and its flocculation performance was tested with kaolin suspensions. The flocculation performance of MeSP was much higher than that of commercial polyaluminum chloride (PAC) in terms of supernatant clarity and floc settling velocity. In freshwater and at a fixed flocculant dosage of 1wt%, MeSP reduced the relative absorbance to 0 within 1 min over a wide pH range, while PAC was effective only at around pH 6. In seawater, MeSP (0.5wt% to 3wt%) reduced the relative absorbance to less than 0.1, while PAC was ineffective.

C6-4

Understanding sediment cascades along river networks for sustainable catchment management

Takashi Kimura, Graduate School of Agriculture

River network characterizes not only water supply but also erosion and subsequent sediment transport by water flow within a catchment. Thus, understanding sediment cascades along river networks is the key for sustainable catchment management. Because tributaries compose major sediment sources within a catchment, sediment cascades of tributaries mainly operate processes of sediment delivery to the main stream. As some remarkable papers have suggested from viewpoint of downstream linkages of river networks, sediment cascades can differ among tributaries, reflecting spatial and temporal variations of hydrologic and geomorphic conditions within a catchment. However, researches quantitatively addressed differences in sediment cascades among tributaries and hydrogeomorphic thresholds of sediment delivery to the main stream are still limited. Here, based on examples from a headwater catchment in Hokkaido, we demonstrate geomorphic and rainfall thresholds of sediment delivery, which significantly differ sediment cascades of tributaries.

C6-5

Fate of endotoxin in soil treatment system of reclaimed water

Hideaki Kato, Graduate School of Engineering

Now, Reclaimed water is used widely and there are many methods of using reclaimed water. Groundwater recharge is the one of the methods for reclaimed water use. This method has many advantages. For example, prevent land subsidence, improvement of water quality in soil treatment, water storage for long term.
Reclaimed water shows endotoxic activity. Endotoxin has bad effect for human health. Blood vessel injection and dialysis are well known, but the effect of it in water is not well known for human health. In this study, I studied fate of endotoxin in soil treatment system with column and reclaimed water.

C6-6

Management of scallop culture based on material cycling in Lake Saroma

Emi Terasaki, Graduate School of Environmental Science

Lake *Saroma* has an area of 150km^2 with a maximum depth of 20m and is the biggest lagoon in Japan. This lake houses the cultivation of scallops and the average scallops production amounts to 7000 tons per year. Bivalves, filter-feeding organisms, play a significant role in material cycling. However, water quality problems such as anoxic events do occur in summer affecting natural productivity in the lake for bivalve culture. This study examined the physico-chemical properties, to understand the material cycling and ascertain the seasonality of the remarkable phytoplankton community. We found the threshold food amount required for scallop growth is 0.9g C/m^2/day, but the primary production of phytoplankton in the lake was slightly less than this value. Our analysis suggests that if we reduce the scallop culture by 8%, the primary production of phytoplankton, attached microalgae and benthic microalgae would be able to stabilize the scallop culture in Lake *Saroma*.

C6-7

Seasonal change of nitrogen cycling in Hichirippu lagoon: Get tough for sustainable use of the coastal area.

Natsumi Ishimaru, Graduate School of Environmental Science
Ikue Sekiguchi, Graduate School of Environmental Science

Hichirippu lagoon is inhabited by many animals and benthic plants (e.g. Japanese red-crowned crane, swan and seagrass), and is designated as a wetland under the Ramsar Convention. We quantified the nitrogen cycling in Hichirippu lagoon with a focus on food web and mass balance. The fishery yield (bivalves) in this lagoon is estimated at 25 ton/km^2/yr, as high as that of the Seto Inland Sea. The aim of this study was to determine the major biological process supporting the high bird's population and fishery yield. We conclude that (1) the mass balance of Hichirippu lagoon is perfect for sustainable use, (2) it is informative to understand ecosystem of Hichirippu lagoon for all who have the same goal as sustainable society. Consequently, we point out that researchers will have to pay attention to not only what happens in polluted area, but also to what we can learn from unpolluted ecosystem.

C6-8

Understanding how parasitic nematodes infect agricultural crops: a path to replace toxic chemicals with sustainable control methods

Arshana Nor Noorul Amin, Graduate School of Agriculture

Root-knot nematodes (RKN) are a devastating parasite of agricultural crop plants. They are worm-like animals that invade and destroy plant roots. They have a major impact worldwide, and are responsible for loss of approximately 5% of total agricultural crops. Unfortunately, no effective safe or sustainable control methods exist. Current control methods require use of toxic chemicals, and Japan is one of the biggest users of these chemicals. The mechanism by which RKN successfully establishes an infection in plants remains unknown. This research undertakes the challenge of revealing the molecular process by which RKN establishes feeding sites in plant roots. The new understanding from this research can be expected to directly facilitate the development of new, environmentally safe control methods for sustainable agricultural production.

C6-9

Proteome analysis of the response of *Pseudomonas putida* F1 to aromatic hydrocarbon in soil

Morimoto Hajime, Graduate School of Environmental Science

To understand the global response of *Pseudomonas putida* F1 to aromatic hydrocarbon (BTE: benzene, toluene, ethylbenzene) in soil, we analyzed the dynamic changes of the cellular proteins by proteomic approaches. *P. putida* F1 was incubated in soil with glucose for 3 days, and then BTE was added to the soil. Bacterial cells were recovered from the incubated soil by Nycodenz density gradient centrifugation. The protein extracts were characterized using one-dimensional (1-D), and two-dimensional polyacrylamide gel electrophoresis (2-D PAGE), and nano-LC-MS/MS. In 2-D PAGE-MS analysis of BTE soil proteins, toluene dioxygenase enzymes involved in degradation of BTE were found to be notably induced. For benzene and ethylbenzene soil proteins, CatB and PrpB related to degradation metabolism were up-regulated, respectively. Many proteins involved in glycolysis were down-regulated. Information about expressed proteins in bacteria in soil provides our understanding of the physiological and genetic responses in its natural state.

C6-10

Heterotrophic microorganisms isolated and detected from Antarctic hypersaline lakes

Kohei Suematsu, Graduate School of Environmental Science

Investigating extremophiles could extend our recognition of possible life on Earth. Antarctic hypersaline lakes harbor various kinds of halophilic and psychrophilic microorganisms. Many heterotrophic bacteria were isolated from Lake Hunazoko and Lake Suribati, hypersaline lakes near Syowa station. The phylogenetic analyses of 16S rRNA sequences showed that isolates belonged to *Alphaproteobacteria (Brevundimonas, Roseovarius), Gammaproteobacteria (Marinobacter, Halomonas, Idiomarina), Bacteroidetes (Psychroflexus, Salegentibacter),* and *Actinobacteria (Dermacoccus, Micrococcus)*. The 16S rRNA sequences of *Halomonas, Marinobacter, Psychroflexus,* and Salegentibacter are closely related to the sequences determined by culture independent PCR-DGGE analyses. Physicochemical analyses showed some of isolates are both euryhalophilic (NaCl: 3.4-25% [wt/vol]) and eurypsychrophilic (3-28℃). These heterotrophs might be able to survive harsh conditions of brine channels in sea ice. Strains of *Psychroflexus* and *Idiomarina* produce highly viscous material, extracellular polymeric substances (EPS), in batch culture. The cryoprotectant roles of EPS in subfreezing environments need to be investigated in the near future.

C6-11

Analysis of the granule formation by Anammox bacteria

Fuyumi Tojo, Graduate School of Environmental Science

Effective removal of ammonium is an important issue in modern wastewater treatment systems. Anaerobic ammonium oxidation (Anammox) process has been recognized as a potentially useful and an innovative technology for this purpose because it proceeds under anoxic conditions without high aeration costs. It is known that *Brocadia anammoxidans*, which is one of the Anammox bacteria, shows efficient ammonium oxidation upon forming granules. The purpose of this study is the analysis of mechanisms involved in granule formation. We hypothesize that membrane proteins function key roles in the granule formation. Previously, I examined the profile of cellular membrane proteins of *B. anammoxdans* and found that three specific protein bands, 35kDa, 45kDa and 90kDa. In order to obtain further information about membrane proteins, I treated the granule of *B. anammoxidans* with proteinase K and analyzed by HPLC.

C6-12

Recent Climatic Effects on Rice Yields with Implication for Future Trends in Bangladesh.

Mohammed Rezaul Karim, Graduate School of Environmental Science

As economy of Bangladesh is mainly agriculture oriented, crop failure either by drought or excess rainfall comes as a significant strain to its socioeconomic structure. Eighteen meteorological stations distributed over the major rice growing regions of Bangladesh were chosen to analysis the crop climate relationship. Climatic and rice yield data were collected from Bangladesh Meteorological Department and Bangladesh Bureau of Statistics respectively. Statistical procedures, such as correlation coefficient, t-test were used for the analysis. Since improvement in irrigation and use of high yielding rice varieties has provided a general increase in crops, the trends were removed from all parameters in prior to the analyses. Results suggested that in entire Bangladesh monsoon temperature had a significant negative effect on rice while winter rice had been benefited by higher temperature. Winter rainfall had no correlation with rice yield whereas excessive rainfall both in summer and monsoon affected the rice yield unfavorably in different regions.

C6-13

Regional climate changes of El Niño/La Niña Southern Oscillation (ENSO) impacts on the spatial distribution and catch of bigeye tuna (*Thunnus obesus*) in the Southern Indonesian Seas

Mega Laksmini Syamsuddin, Faculty of Fisheries Sciences

This study observes El Niño/La Niña Southern Oscillation (ENSO) affect on oceanographic conditions relate to bigeye tuna distribution and catch in the Southern Indonesian Seas. We utilize Sea Surface Height Anomaly (SSHA), Sea Surface Temperature (SST), Chlorophyll-a, Conductivity Temperature Depth (CTD) and bigeye tuna catch data. Data analysis are taken from 1997-2000 which represents the 1997/1998 of El Niño and the 1999/2000 of La Niña. The results show that during El Niño (La Niña), negative (positive) SSHA related to colder waters <29ºC (warmer waters >29ºC) SST, higher of 0.5-10 mgm^{-3} (lower of 0.05-0.1 mgm^{-3}) chlorophyll-a, and higher of 0.67 averaged (lower of 0.44) hook rate of bigeye tuna. The increasing bigeye tuna catch occurs on the locations of convergent and divergent currents, meandering currents and eddies. The result also indicates that the occurrence of Rossby waves in the region could be a good proxy to have increasing bigeye tuna harvest.

C6-14

Clarification of water cycle system in eastern Siberia taiga

Akihiro Ueta, Graduate School of Environmental Science

Eastern Siberia locates under continental severe arid climate with annual precipitation amount of less than 300mm and occupies 1/4 of surface forest. Since it is reported that evapotranspiration exceeds precipitation occasionally and 2/3 of annual precipitation is observed during summer period, contribution of transpiration to atmosphere from vast taiga forest is essential for water cycle system which maintains taiga for a long time. The water movement from taiga forest to atmosphere through transpiration was observed with variations in isotopic composition of atmospheric water vapor, rain water, soil water, and sap water in eastern Siberia taiga during summer period. The result of variations in isotopic composition of water vapor showed good correlation with atmospheric mixing ratio and indicated that contribution of water vapor generated from transpiration occupied nearly 80% of atmosphere during summer. Thus the result revealed importance of contribution of transpiration of taiga for water cycle system.

C6-15

Assessment of Denitrification process in Ishikari river system, Hokkaido, Japan

Pawan Kumar Jha, Graduate School of Environmental Science

In-stream denitrification process is permanent sink of dissolved nitrogen load thus helps in maintain the stream water quality and reducing the input into N-sensitive costal environment. It shows high spatial and temporal variation within the river channel depending upon the nutrient load and hydrological property of stream. The aim of present study is to determine spatial and temporal variability of sediment denitrification and associated environmental conditions (dissolve nutrient load, sediment C and N content); substrate (C and NO3−) and temperature limitation on denitrification in Ishikari river system, Hokkaido, Japan. Denitrification rates showed high spatial variability within Ishikari river system with barato lake showing high rate compare to main river channel. The δ15N values of bed and suspended sediments also indicate the importance of oxbow lakes in removing nitrogen load from the river system. Nitrate concentration and temperature variation limits the rate of denitrification process in river system.

C6-16

Membrane fouling in a baffled membrane bioreactor (BMBR) operated under short hydraulic retention time

Eri Watanabe, Graduate School of Engineering

We have developed a baffled membrane bioreactor (BMBR), in which aerobic and anoxic conditions are simultaneously created by inserting baffles and appropriate feeding of wastewater. In this study, membrane fouling in a pilot-scale BMBR operated under short HRT was investigated.
In the BMBR used in this study, two suction pumps were installed, to carry out membrane filtration with 10 flat-sheet MF membrane modules (PVDF, Toray).Each pump was connected to 5 membrane modules. The two pumps could be operated independently at different flow rates. Therefore, influence of membrane flux on membrane fouling could be investigated while maintaining of the constant HRT of 2.9 hours in this study. Two different membrane fluxes (16.7 LMH and 33.1 LMH) were examined in this study in terms of characteristics of foulants in reversible fouling and irreversible fouling.

Category 7: Global environment and ecosystems

C7-1

Extratropical forcing of temperature change in tropical tropopause layer of January 2009

Kohei Yoshida, Graduate School of Environmental Science

Thermodynamic changes in the tropical tropopause layer are investigated in the major stratospheric sudden warming event starting on about 16 January 2009. At the same time, the temperature in the tropical upper stratosphere starts to descend and then cold anomaly propagates downward, while the tropical uppermost troposphere (TUT) starts to cool from 18 January, prior to 70-hPa temperature drop. We performed thermodynamical and dynamical analyses with ERA-Interim data. It is found that on 18 January tropical ascent dominantly contributes to cool the TUT. After that, convergence of the vertical eddy heat flux, which is closely tied with the convection structure, gradually decreases the temperature in the TUT. Eliassen-Palm flux, 3-dimensional wave activity flux and vertical flow estimated by the external forcings show dissipation of waves, which propagate from Alaska to the region at around 10˚N, 100 hPa, drives the tropical ascent between 150 and 100 hPa.

C7-2

Applications of TEX86 and MBT/CBT indices to paleotemperature estimations in Holocene sediments from the Chukchi Shelf

Park Yu-Hyeon, Graduate School of Environmental Science

Paleotemperature estimation is required to understand environmental changes in the Arctic region. We investigated the molecular distribution of glycerol dialkyl glycerol tetraethers (GDGTs) to explore possibilities in the paleotemprature estimation in the Chukchi-Alaskan margin sediments. The regioisomer of creanarchaeol was not detected in all the analyzed samples. This is the unique character specific in sediments from this region. We try to apply several calibrations proposed by Kim et al. (2008) and Kim et al. (2010) to estimate paleotemperatures from GDGT compositions and found that the GDGT-1 (TEX86L) calibration of Kim et al. (2010) gives the most probable values. We also apply MBT/CBT index to estimate paleo-air temperatures. The calibration based on the world soils by Wijers et al. (2008) gives the most probable values. We thus are optimistic about temperature estimates using TEX86 and MBT/CBT indices in the Chukchi-Alaskan margin.

C7-3

Measurement of electrostatic charge of blowing snow particles in a wind tunnel focusing on collision frequency to the snow surface

Satoshi Omiya, Graduate School of Environmental Science

Blowing snow particles have an electrostatic charge. This charge may be a contributing factor in the formation of snow drifts and snow cornices and changing of the trajectory of particles. In previous studies, the charges measured in fields were larger 10 to 100 times than that measured in wind tunnel. One reason of the gap is speculated to be due to difference of the collision frequency of particles to the snow surface. The purpose of this experiment is to measure the charges of blowing snow particles focusing on the collision frequency and clarify the relationship between them. The experiments were carried out in a cryogenic wind tunnel. Results showed that the particles accumulate negative charges with increase of the collision frequency. Assuming an approximation function between the measured charges and the collision frequency, the charges will reach roughly the same value obtained in fields with several hundreds collisions.

C7-4

Evaluation of forest fire severity in Mongolia by using field data & remote sensing data.

Koji Nakasaka, Research Faculty of Environmental Science

Forest area in Mongolia is 175, 000 km^2, 8.1% of total Mongolia land (Mongolia Statistics Bureau, 1996). 51,000 km^2, 30% of Mongolia forest is affected by fire event. Fire severity strongly influences post-fire vegetation succession, soil erosion, and wildlife populations. To assess satellite-derived measurements of fire severity we calculated the Normalized Different Vegetation Index (NDVI) and the Normalized Burn Ratio (NBR) from pre- and post-fire Landsat TM/ETM＋data. And to assess field-derived measurements of fire severity we established 23 plots, and measured trees, soil surface and soil at Udleg site in 2010 summer. According to Landsat data, band4 reflectance decreased, band5 & band7 increased after fire. Variations of indices value are different in each plot. We compared two severity between satellite and field data.

C7-5

Evaluation of pasture degradation around the Ger (Example near the Ulaanbaatar city)

Chifumi Ono, Graduate School of Environmental Science

Recent year, in Mongolia it is said that pasture has degraded around the herder' s camp site (Ger) and near the water resource. This objective of study was to clarify whether the changes in percent cover of plant functional types and grazing pressure along distance from Ger reflect influence of the land use around the Ger and to quantify grazing impact on pasture. This research is expected to play a key rule in sustainable land use. We conducted survey separately for two cases. Case one is 'without influence by adjacent family'. This means other nomads do not live within the range of grazing. That is to say, influence of one Ger is evaluated. Case two is 'influence by adjacent family'. This means other nomads live within the range of grazing. We conducted survey from Ger to Ger.

C7-6

Basal ice flow regime influenced by glacial lake formation in Rhonegletscher, Switzerland.

Daisuke Nishimura, Graduate School of Environmental Science

After the retreat of glacier terminus over a bedrock bump, a glacial lake has formed in front of Rhonegletscher, Switzerland. It is suspected that ice flow regime is now significantly influenced by the lake water. To investigate the impact of lake formation on glacier dynamics, we carried out observations of glacier surface flow speed and glacial ice deformation rate in the terminus of Rhonegletscher in 2008 and 2009 summer seasons. We drilled more than 20 boreholes and deformations of boreholes were repeatedly measured by inclinometer. Ice surface speed was measured by surveying stakes installed nearby the boreholes. Our measurements showed clear decrease in the ice deformation rate near the lake. Ice deformation accounted for 60–80% in the upper part of our study site, whereas it is less than 10% near the lake. This result suggests that the basal ice flow near the lake is enhanced by the lake water.

C7-7

Is atmospheric iron deposition important for primary production? Lessons from Alaskan ice core

Hirotaka Sasaki, Graduate School of Environmental Science

The northern North Pacific Ocean is one of the High Nutrient Low Chlorophyll (HNLC) ocean areas where the primary production is too low for high nutrient. It is suggested that the iron plays a key role in phytoplankton growth in these areas. The Asian dust supplies the iron into the northern North Pacific Ocean region. To estimate the iron flux that deposited from the atmosphere, we measured the iron concentration of the ice core drilled at Mt. Wrangell (4100m asl), Alaska. And we also conducted the iron dissolution experience using the ice core samples to estimate the distribution of the atmospheric iron to the primary production.

C7-8

Effects of increased pCO_2 on phytoplankton community compositions in the NW subarctic Pacific and Bering Sea in summer

Hisashi Endo, Graduate School of Environmental Science

Rising atmospheric CO_2 concentration have led to greater CO_2 uptake by the ocean with a decrease in pH of seawater (i.e. ocean acidification). To elucidate the effects of ocean acidification on natural phytoplankton assemblages, CO_2 manipulated incubation experiments were conducted in the NW subarctic Pacific and Bering Sea in summer of 2008 and 2009, respectively. Phytoplankton pigments samples were analyzed by HPLC with the algorithm CHEMTAX. As a result, an increase in pCO_2 in seawater depressed a specific phytoplankton group at least and the effect differed among the sea areas. Since export flux of organic carbon from the surface to ocean interior (i.e. biological pump) largely depends on the relative abundance of each phytoplankton group. Ocean acidification has a significant impact on the CO_2 absorption ability in situ. I plan to do more detailed field and laboratory studies to examine physiological conditions in relation to CO_2 fixation of phytoplankton.

C7-9

Photosynthetic characteristics of marine aerobic anoxygenic phototrophic bacteria *Roseobacter* and *Erythrobacter* strains

Yuki Sato, Graduate School of Environmental Science

A coastal *Roseobacter* strain of marine aerobic anoxygenic phototrophic bacteria (AAnPB) was isolated and phylogenetically determined. The strain OBYS 0001 was characterized by its physiological and biochemical properties in comparison to the *Erythrobacter* type strain *Erythrobacter longus* NBRC 14126. In vivo fluorescence excitation/absorption spectra between 470 and 600 nm for OBYS 0001 represented higher values than NBRC 14126. Variable fluorescence measurements revealed that the functional absorption cross-section (σPSII) of photosystem II for OBYS 0001 was significantly higher than that for NBRC 14126 under green excitation. These results suggest that Roseobacter can capture green light more efficiently than *Erythrobacter* for photosynthesis. On the other hand, the photochemical quantum efficiencies (Fv/Fm) of photosystem II for OBYS 0001 were consistently lower than those for NBRC 14126. In this study, I succeeded in clarifying the differences in photosynthetic features between the two AAnPB genera *Roseobacter* and *Erythrobacter*.

C7-10

He needs warm-up before copulation!? -an example of a beetle with a long penis-

Yoko Matsumura, Graduate School of Agriculture

A leaf beetle, *Lema coronata*, has extremely long penis which is nearly two times longer than its body length and is kept in abdomen at rest. My previous study revealed that the penis of this species is tightly wrapped by membrane, which facilitate smooth insertion and withdrawal of this long penis in copulation. Formation of this tight relationship between penis and membrane, however, is not completed in newly emerged adults, and it takes up to 72 hours in formation of the functionally wrapped penis. It is predicted morphologically that the wrapped condition is formed by eversions and withdrawals of the membrane and penis without mounting on females. To test this prediction, I plug the tip of genitalia up, which disable eversion of the membrane. Most of the pluged male failed to form the functionally wrapped condition. This result indicates that males need to do warm-up before copulation.

C7-11

Seedling regeneration mechanisms along successional sere in a post-mined peatland

Chika Egawa, Graduate School of Environmental Science

Seedling regeneration is critical to determine vegetation development in severely-disturbed habitats where the former vegetation was completely removed. To clarify determinants of seedling establishment, seeds of three dominant species were sown under four different vegetation in a post-mined peatland. The relationships between vegetation development and the success in seedling establishment were assessed. Seedbank composition was also examined in the four vegetation to clarify how seedbank development proceeds along successional sere. The favorable conditions for seedling establishment were different between species, and the shelter effects of overstory and litter of early-colonized species are essential for establishment of later one. Seedbank development follows the development of standing vegetation, and litter derived from the standing vegetation is a prime determinant of seedbank development by acting as seed trap. The results showed that not only standing vegetation but also litter control the seedling regeneration by driving seedling establishment and seedbank development patterns.

C7-12

Serine protease inhibitors from the cyanobacterium *Anabaena compacta*

Anas Andrea Roxanne Jocsing, Graduate School of Environmental Science

Cyanobacterial secondary metabolites have attracted increasing interests among scientists due to the bioactivity of many compounds present in it. One of the bioactive compounds present is peptides which are highly variable in nature. Peptides act as serine protease inhibitors and could be found in cyanobacteria present in algal blooms in lakes of Japan on specified season. The algal bloom- forming cyanobacterium *Anabaena compacta* (NIES-835) was considered in the study. Optimization studies by yield, lc-ms, and thrombin assay were done to increase the bioactive compounds present. Isolation of serine protease inhibitors from NIES-835 led to identification of spumigins. Extensive spectral analysis of the isolates AA-Ana-32-93-42 and AA-Ana-32-93-25 identified spumigin A and a new spumigin A derivative, with thrombin inhibitory EC_{50} 0.35 ug/mL and 2.80 ug/mL, respectively.

C7-13

Structure and function of river landscape

Masanao Sueyoshi, Graduate School of Agriculture

A decline in freshwater biodiversity is a worldwide phenomenon, and is greater than those of other ecosystems. Human are dependent on freshwater resources, and therefore we should prevent its further degradation. To conserve the ecosystem, it is necessary to reveal essential habitats and their connectivity for each species. The main objective of this study is to clarify structure and function of habitat mosaics for freshwater macrobenthos. In particular, we focus on habitat connectivity under the different flooding regime (ex. snowmelt flood), which may partially or completely disturb habitats for macrobenthos. The macrobenthos may sustain or reduce their population size depending on their mobility and availability of refuge during floods. We will investigate densities of target species at various environments from up to downstream, and before and after spring flood. The study will elucidate the hotspots showing a very little change in population size before and after the flood.

C7-14

A study of the annual sedimentation transported from land to the sea floor using a numerical model

Yasuhiro Hoshiba, Graduate School of Environmental Science

We should study the impacts of human activities such as agriculture on land on the coastal marine system through nutrient and suspended sediment material (SSM) as river input. We focused on the following three factors controling SSM transportations: (1) the total discharge of SSM from the river mouth, (2) the removal speed of SSM from the water column, and (3) the current fields due to a river plume. A 3-D high resolution model was applied to an idealized coastal region around river mouth. The seasonal variations in river discharge amounts make the differences of horizontal distributions of salinity and current velocity. Horizontal distributions of removed SSM from the sea water depend on the seasonal differences. We also examined the relationship between horizontal distributions of current and removal speed of SSMs. We discuss how the three factors contribute the annual sedimentation flux on the sea floor.

C7-15

Population dynamics of marine copepod Tigriopus japonicus driven by weather processes: An analysis using a Baysian state-space model

Keiichi Fukaya, Graduate School of Environmental Science

To understand the effects of human activity on biodiversity, it is essential to develop models for population dynamics in changing environments. *Tigriopus japonicus*, marine benthic copepod inhabiting upper-tidal tide pools, is a model species to clarify relationship between population dynamics and environmental change. This is because environmental conditions of upper-tidal tide pools, such as water volume and salinity, are highly variable due to weather processes such as desiccation in sunny days and water inflow in rainy days. Here, I developed a Bayesian state-space model in which dynamics of population size of *Tigriopus japonicus* and changes in environmental conditions of tide pools were taken into account, and estimated effects of weather processes on their population dynamics. I found that weather processes strongly influence population change via two different mechanisms: direct (physical transport of individuals) and delayed indirect effect (relaxation or intensification of competition caused by change of water volume).

C7-16

Impact of proglacial lake formation on glacier dynamics in Rhonegletscher, Switzerland

Shun Tsutaki, Graduate School of Environmental Science

To investigate the impact of proglacial lake formation on the dynamics, we measured the ice motion of the terminal part of Rhonegletscher, Switzerland, whose lake formed in 2005. Surface flow velocity near the terminus tripled from 2006 to 2007. Ice flow due to shearing was estimated to be negligibly small, thus nearly 100% of horizontal velocity near the terminus was caused by basal sliding. Ice thinning rate was -3.4 m a^{-1} from 2008 to 2009. The longitudinal strain rate was large (0.064 a^{-1}), indicating that much of the glacier thinning was due to ice dynamics. The region where lake level exceeds ice flotation level expanded from 2008 to 2009 as a result of glacier thinning. Accordingly, a huge surface upward motion was observed in 2009. It is clear from the vertical ice motion as well as visual observations that the marginal part of the glacier began to float.

C7-17

Catch fluctuations of Pacific cod *Gadus macrocephalus* in Mutsu Bay, Aomori related to climate regime shifts after 1900s

Keiichi Kobayashi, Graduate School of Fisheries Scienses

The Pacific cod inhabiting waters near northern Japan is known to migrate to spawning grounds such as Mutsu Bay, Aomori. In Mutsu Bay, it is mainly caught by set-net during winter, with catches drastically changing since the past 20th century. This study examined the relationship between the catch of Mutsu Bay's cod and the water temperature in winter, which is linked with climatic indices such as Pacific Decadal Oscillation (PDO). The relationship between the catch, bottom temperature in winter, and climatic indices was analyzed by cross-correlation function. The catches were negatively correlated with the winter water temperature, and positively correlated with PDO, both with a time lag of 4 years. These results suggested that Mutsu Bay's cod catches are affected by the drastic change of winter water temperature, which is related to climate regime shifts linked with positive or negative PDO.

C7-18

Top-down effects of shrew on soil ecosystem

Tomoyuki Namba, Graduate School of Environmental Science

Soricine shrews are supposed to have top-down effects on invertebrate community and functions in soil ecosystem, because of their high requirements for soil invertebrates as food. To examine the ecological roles of shrews in the soil ecosystem, field experiments were conducted. At the result, significant negative effects of shrews were detected on the density of soil macro-invertebrates (mainly earthworms, spiders and isopods). The presence of shrews significantly affected springtails positively. It has brought a significant negative effect on the litter decomposition rate. But nutrient cycling and growth of plant were not affected by shrew. The present study suggests two possible indirect effects of shrews in soil food web. One operates negatively on litter decomposition, decreasing population biomass and/or density of litter eaters (worms and isopods). The other indirectly operates on lower trophic group, decreasing population density of predatory invertebrates (spiders), which releases their prey (large springtails) from strong predation pressure.

C7-19

Functional cytological studies on imprinting and homing related olfactory nerve system in salmon

Hiroshi Bandoh, Graduate School of Environmental Science

It is generally known that salmonid fishes return to their natal river for spawning. In previous researches, it was showed that salmon imprint olfactory memory of natal stream odor during the downstream migration and they utilize this stream-specific odor for discriminating their natal stream. However, the physiological mechanisms of this olfactory memory and homing have not revealed completely. The most interesting unknown mechanism is natal stream odor information processing in central nervous system, especially olfactory bulb and telencephalon.
In this study, to reveal the pathway of home stream odor information we established the functional Magnetic Resonance Imaging (fMRI) method for olfactory central nervous system of sockeye salmon (*Oncorhynchus nerka*). We compared responsive regions to natal stream water with those to non-natal stream water, and showed that each responsive region was different. This result suggested that the odor information of natal stream water was projected to specific region in telencephalon.

C7-20

Small cavity use by cavity-nesting species in forests of the Northern part of Japan

Kanomi Shiina, Graduate School of Environmental Science

Cavity-nesting species use tree cavities as nest sites, roost sites, shelters and/or foraging sites. They constitute nest webs that interact through the creation of, and competition for, nest sites (Martin & Eadie 1999, Martin et al. 2004). In a nest web, association with Cavity-nesting species may be characterized by cavity size and their body size. In the northern part of Japan, although small cavity-nesting species comprise a major component of forest bird communities, former studies have not evaluated the usage of small cavities. In this study, I aimed to consider the community structure of cavity nesters as integrated whole, describing the usage of small cavities, and to examine characteristics of nest sites usage of SCUs using small cavities.

G8 University Summit
Sapporo Sustainability Declaration

札幌サステイナビリティ宣言

G8 University Summit
Sapporo Sustainability Declaration (SSD)

Recognising the expanding role of scientists and universities, the Presidents, Rectors, Chancellors, Vice-Chancellors and representatives (hereinafter referred to as "Presidents") of 27 of the leading educational and research institutions in the G8 member nations held a G8 University Summit from June 29 to July 1, 2008 in Sapporo, Hokkaido, Japan, prior to the G8 Hokkaido Toyako Summit. The United Nations University and seven universities from six major non-G8 member nations were invited to participate. The subject of discussion was the responsibility of universities to contribute toward the attainment of sustainability, and the specific actions they must undertake to fulfil that responsibility.

The Presidents of the attending universities at the G8 University Summit hope that universities all over the world will endorse this declaration and take actions appropriate to their respective countries and regions.

I. Joint Affirmations and Actions for Sustainability.

We, Presidents of the attending universities at the G8 University Summit, jointly affirm our recognition of the following principles concerning the role of universities in global efforts to attain sustainability, which will lead to our actions, as appropriate.

1. The importance of sustainability.

Sustainability at the human, social and global levels is one of the most important ideas of the 21st century. A series of conferences and declarations have served as important milestones on the path toward global sustainability (see Appendix, "Background of the G8 University Summit").

2. Sustainability issues have become urgent political concerns.

Sustainability problems including climate change, previously regarded as primarily a scientific issue, have become urgent political concerns. In addition to urgent social issues such as poverty alleviation and development, climate change has a wide range of interrelated impacts on human, social and global sustainability. The global environmental crisis we face today is unlike any of the problems humanity has surmounted in its history: it is more far-reaching, more complex, and attended by a high degree of uncertainty. Moreover, we have little time left to resolve this crisis.

3. The responsibility of universities.

All universities have an important role in problem-solving to bequeath a sustainable world to future generations. Through their research, universities are expected to provide timely solutions to these problems and to closely coordinate with policy-makers if these solutions are to be promptly and appropriately implemented. It is more important to note, however, that the role played by universities is changing and becoming increasingly critical, since universities, being neutral and objective, are best situated to inform political and social change toward a sustainable society.

Collaboration with a range of stakeholders including civil society and the private sector is also important to ensure such solutions are practically applicable and appropriate to build a sustainable society. Universities must work together in the areas of sustainability research and policy analysis toward this end. At the same time, the academic objectivity of universities is a key strength which should not be sacrificed. The leading research universities of the G8 member nations have a particular role to play by demonstrating leadership in fulfilling these responsibilities.

4. The need to restructure scientific knowledge.

Sustainability is a broad area that embraces a complex diversity of interrelated factors ranging from the natural environment to socioeconomic systems. Global sustainability can be achieved only through a comprehensive approach

that addresses socioeconomic as well as environmental issues.

The G8 summits, the United Nations and other international organizations have launched a number of initiatives addressing various aspects of sustainability, such as a low-carbon society, a resource-circulating society, and a nature-harmonious society. However, the development of a truly comprehensive vision of a sustainable society will require new scientific knowledge, restructured to reverse past tendencies toward stratification and fragmentation in research, and to foster an integrated approach to solving problems by accelerating inter-disciplinary research activities.

5. The need for a network of networks.

To restructure scientific knowledge in this manner, a unifying framework is necessary, facilitating this integrated problem-solving approach among research disciplines. Essential to such a framework is the creation of a “network of networks” (NNs) that links the various discipline-specific research networks already in place, thereby utilizing and augmenting their respective strengths and knowledge bases.

In this network of networks, interdisciplinary cooperation among universities in different regions can be effectively enhanced through initiatives such as student exchange, faculty exchange and joint research projects.

6. The need for "knowledge innovation."

Achieving sustainability requires social change, which is predicated on changing public awareness. Universities and their researchers have a responsibility to articulate and disseminate new sustainability-related scientific knowledge and information, including its attendant uncertainty, to society at large.

Through dialogue between scientists and other stakeholders, including citizens and policy makers, new knowledge can be a catalyst for social innovation and effective policymaking. Conversely, this dialogue can spur further innovations in knowledge that help society progress along the path to sustainability. This interactive "knowledge innovation" dynamic between knowledge and society must be actively promoted if sustainability is to be achieved.

7. The role of higher education for sustainability.

Universities have a critical role to play in educating future generations, disseminating information about sustainability, and particularly by training leaders with the skills to solve regional and local problems from a global and interdisciplinary perspective. Especially crucial is the fostering of human resources to work toward sustainability in the developing nations that bear the brunt of global environmental problems. A network of networks can also provide opportunities for collaborating universities to develop and improvehigher education capacity in their respective nations and regions.

8. The function of the university campus as an experimental model.

Another potential role for universities in the effort to attain sustainability is the use of their campuses as models for a sustainable society, based on interactions with various stakeholders in society through the academic research and education processes.

Universities can provide venues in which to test new sustainability-relevant knowledge in a social context. Activities already being undertaken by participating universities, such as the development of “sustainable” or “green” campuses, and the issuing of action statements in response to climate change, are examples of how to showcase a sustainable society.

By serving as test models for society at large, universities help foster in their students the attitudes and skills necessary to achieve a sustainable society in the future. Thus the sustainable campus can serve as both an experiment in progress and an ideal tool for educating future generations.

Each of the universities participating in the G8 University Summit plays a prominent role in its part of the world. Models developed by these universities, reflecting each region’ s economic, social and cultural conditions, together can provide the components for a global model that incorporates regional diversity.

Ⅱ. Our Commitments.

Based on the points we have jointly affirmed above, we, the Presidents of the universities attending the G8 University Summit, declare the following commitments:

a In recognition of the need for scientific knowledge to inform policies and social change in the 21st century, we will strive to fulfil our developing responsibility to be a driving force for policy, society and academia to evolve together toward global sustainability.
b We pledge to contribute to the implementation of an action program for construction of a network of networks (NNs) capable of addressing the broad and complex range of sustainability issues, through such activities as holding research network conferences and developing consensus on the objectives and content of the NNs.
c In operating the NNs as a platform for science and public policy innovation, we will make it a priority to improve cooperation with universities and research institutes in developing nations through joint research and education programs, and to provide support as needed.
d We will work actively to develop the necessary organizational and operational frameworks and funding for the aforementioned purposes.
e We will work with our surrounding communities to develop social models for sustainability, with our campuses serving as experimental venues.
f We will call upon other universities to adopt and act upon the above commitments.

Ⅲ. Proposal to the G8 Leaders Summit 2008.

As representatives of academic institutions engaged in research and education on sustainability, we, the Presidents of the universities of the G8 member nations in attendance at the G8 University Summit, supported by the Presidents of universities attending from non-G8 member nations and the United Nations University, hereby suggest that the national leaders in attendance at the G8 Hokkaido Toyako Summit take the following actions as part of their response to climate change and other urgent global-scale problems:

a Recognize the efforts undertaken by universities toward global sustainability, and find concrete means to support endeavors to foster knowledge innovation and to assist the creation of a network of networks as a platform for science and public policy innovation.

b Pursue closer partnerships with universities in developing and implementing sustainability-related policies.

c Acquire an accurate understanding of the scientific knowledge relevant to global sustainability issues and its application to an integrated approach to such goals as a low-carbon society, a resource-circulating society, and a nature-harmonious society; disseminate this knowledge to the citizens of each nation; and support problem-solving policies based in science.

d In order to effectively tackle climate change, one of the priority topics of discussion at the G8 Hokkaido Toyako Summit, exercise the leadership necessary to prompt the international community to adopt an effective framework and implement scientifically appropriate countermeasures.

e Recognizing that global issues such as the rapidly worsening food and energy crises are interconnected, and that they will be exacerbated by continued climate change, cooperate with all other nations in the prompt implementation of policies that address these problems comprehensively in accordance with the knowledge gained from scientific research

We, the undersigned Presidents, Rectors, Chancellors, Vice-Chancellors and representatives of universities, do hereby recognize the key role universities must play in efforts to attain global sustainability, affirm the commitments contained herein, and address the proposals for action to the G8 leaders and the international community.

* Stephen J. Toope, President and Vice-Chancellor, The University of British Columbia
* Indira V. Samarasekera, President and Vice-Chancellor, University of Alberta
* Xavier Michel, President, Ecole Polytechnique
* Georges Molinié, President, Université Paris-Sorbonne (Paris IV)
* Bernd Huber, President, LMU Munich
* Burkhard Rauhut, Rector, RWTH Aachen University
* Francesco Profumo, Rector, Politecnico di Torino
* Guido Chelazzi, Vice-Rector, Università degli Studi di Firenze
* Eiji Hatta, President, Doshisha University
* Takehiko Sugiyama, President, Hitotsubashi University
* Hiroshi Saeki, President, Hokkaido University
* Yuichiro Anzai, President, Keio University
* Kazuo Oike, President, Kyoto University
* Tisato Kajiyama, President, Kyushu University
* Shin-ichi Hirano, President, Nagoya University
* Kiyokazu Washida, President, Osaka University
* Kiyofumi Kawaguchi, President, Ritsumeikan University
* Hiroshi Komiyama, President, The University of Tokyo
* Akihisa Inoue, President, Tohoku University
* Kenichi Iga, President, Tokyo Institute of Technology
* Jun-ichi Nishizawa, President, Tokyo Metropolitan University
* Katsuhiko Shirai, President, Waseda University
* Vladimir Kurilov, President, Far Eastern National University
* Mary Ritter, Pro-Rector, Imperial College London
* Peter Guthrie, Director, Centre of Engineering for Sustainable Development, The University of Cambridge
* Gene D. Block, Chancellor, University of California, Los Angeles
* Donald Filer, Director, the Office of International Affairs, Yale University

We, the undersigned Presidents, Rectors, Chancellors, Vice-Chancellors and representatives of universities, do hereby recognize the key role universities must play in efforts to attain global sustainability, affirm the commitments contained herein and support the proposals made by universities from G8 member nations to G8 leaders and the international community.

* Ian Chubb, Vice-Chancellor and President, The Australian National University
* Carlos Clemente Cerri, Professor, Center of Nuclear Energy in Agriculture, University of São Paulo
* Jianhua Lin Executive Vice-President and Provost, Peking University
* Weihe Xie, Vice President, Tsinghua University
* Kripa Shanker, Deputy Director, Indian Institute of Technology
* Kanpur Jang-Moo Lee, President, Seoul National University
* Ihron L Rensburg, Vice-Chancellor and Principal, University of Johannesburg
* Konrad Osterwalder, Rector, United Nations University

札幌サステイナビリティ宣言

Ⅰ. サステイナビリティ実現に向けた共通の認識と行動

我々、G8 大学サミットに出席した全大学の学長は、サステイナビリティ実現に向けた地球規模での取組みにおける大学の役割ととるべき行動に関して、以下の認識を共有した。

1. サステイナビリティの重要性

人間、社会、グローバルレベルでの持続可能性（サステイナビリティ）の考え方は 21 世紀における最も重要な概念の一つである。過去の一連の会議や宣言文は、今後のサステイナビリティに向けての重要な指針となる（参考資料参照）。一方で、今日では科学と政策との距離が著しく縮まってきている。

2. サステイナビリティの問題が政治課題に

かつては科学の問題とされてきた気候変動を含むサステイナビリティにかかわる問題は、今や最大の政治課題となっている。貧困撲滅や開発問題のような喫緊の社会問題に加え、気候変動は、人間、社会、そして地球のサステイナビリティに多岐にわたる影響を及ぼす。今日、我々人類が喫緊の直面する地球環境の問題は、これまで人類の歴史の中で遭遇し乗り越えてきたどの問題よりも、複雑で広範にわたり、大きな不確実性を伴っている。しかも、我々に与えられている時間は多くない。

3. 大学の責任

すべての大学は、次世代に持続可能な地球と社会を残すため、問題解決に重要な役割を担っており、そのために、研究を通じ、時宜にかなった解決策を提示していくことが期待される。また、これら解決策が、適時適切に政策として結実するためには、政策決定者と研究者がより密接に連携することが求められている。しかしながら、より重要なのは、この大学が果たすべき役割そのものが変わりつつある点である。大学は、中立かつ客観的な存在として、持続可能な社会の形成に向けて政治と社会を啓発していくのにもっともふさわしい存在である。

さらに、持続可能な社会を形成に向けたこうした解決策を現実的かつ的確なものとするためには、大学は、市民や企業など幅広いステークホルダーとも協力していくことが重要である。そして、大学はこの目的に向けて、サステイナビリティに関する研究や政策分析の分野で協働していかなければならない。しかし同時に、大学の強みでもある学問的な客観性を犠牲にしてはならない。G8 メンバー国における先端的研究を担う大学には、かかる大学の責任を果たすため、特にリーダーシップを発揮していくことが求められる。

4. 新たな科学的知識の構築

サステイナビリティの領域は広範であり、自然環境や社会経済システムにかかわる多様な問題が複雑に絡み合っている。サステイナビリティの実現には、環境問題の解決という視点だけでなく経済・社会問題も含めた総体的な問題解決のアプローチが必要である。

G8 サミットや国連を始めとする国際機関においても、低炭素社会、循環型社会、自然共生社会の構築などサステイナビリティをとらえた多様なイニシアティブが展開されている。しかしながら、持続可能な社会の形成に向けた総合的なビジョンを形成するためには、過去の細分化された研究分野を再構築した新たな科学的知識が必要であり、また、学際的研究を推し進め、統合的なアプローチによって問題を解決することが求められている。

5. 連携ネットワークの構築

このように新しい科学的知識体系を構築するには、既存の研究学術分野を超えて、総合的に問題を解決することのできる統合的な枠組みが必要である。こうした観点から、これまで特定の課題毎に構成されてきている既存のさまざまな研究ネットワークを、各々の実績・強みを活かした相互補完的な包括的連携ネットワーク（Network of networks; NNs）として統合化していくことが必要と考えられる。

この包括的連携ネットワークを通じて、異なる地域にあるさまざまな大学間での、学生、教職員の交流や共同研究など、さまざまなレベルでの実効性ある学際的協力をすすめることが可能となる。

6. ナレッジイノベーション（Knowledge Innovation）の推進

サステイナビリティの実現には、市民の意識改革を含めた社会改革が伴う。大学とそれに属する研究者は、サステイナビリティに関係する新たな科学的知識と情報を、その不確実性も踏まえつつ正しく明確に発信する責務を有する。

科学者と、市民や政策決定者など他のステークホルダーとの対話を通じて、新たな科学的知識は、社会変革を促し、適切な政策の展開を助長する触媒となりうる。一方で、このような対話により、知識そのものの改革もさらに進み、社会がサステイナビリティの実現に向けて変革していくことを後押しする。このような社会と知識が相互影響し変革していくダイナミックな現象、すなわちナレッジイノベーション（knowledge innovation）を推進していくことが、サステイナビリティの達成には重要である。

7. サステイナビリティのための高等教育の役割

将来世代の教育およびサステイナビリティについての啓発という意味で大学の担う役割は大きい。とくに問題をグローバルに俯瞰的に見つつ、国や地域の特有の問題を解決する能力を持つリーダー育成の必要性は高い。とりわけ、グローバルな問題の影響をより大きく受ける途上国のサステイナビリティを確保するためには途上国の人的資源の開発が不可欠である。大学は、包括的連携ネットワークに参加し相互協力することにより、それぞれの国や地域での高等教育を質的量的に発展させ向上させることができる。

8. 大学が提示する新たなモデル　－　実験の場としてのキャンパス

サステイナビリティの実現において大学が果たし得るもうひとつの役割は、大学の研究教育プロセスを通じて社会のさまざまなステークホルダーとの交流を行い、サステイナブルな社会の新しいモデルとして自らのキャンパスを活用していくことにある。

大学は、自らが持つサステイナビリティに関連する先端知識を社会と一体になって実験する場としてのキャンパスを有している。かかる意味において、いくつかの参加大学が実施している「サステイナブル」キャンパスあるいは「グリーン」キャンパスや、気候変動対策のための行動声明などは、まさにサステイナビリティを目指す社会のモデルとなる。

大学を社会の実験の場にすることは、将来の社会のサステイナビリティを担っていく学生たちに必要なスキルや行動様式を育むという点においても重要である。換言すれば、キャンパスは実験の場であると同時に教育の理想的な教材であり、大学はサステイナブル・キャンパス等の活動を通して次世代の社会づくりに貢献することができる。

G8 大学サミットに集まった参加大学は、いずれも世界各地域の代表的存在である。その大学が地域の経済、社会、文化的事情を踏まえてそれぞれに作り出すモデルの集積は、多様性を包含するグローバルモデルの構築につながる。

Ⅱ．我々の決意（コミットメント）

以上共有された認識を踏まえ、G8 大学サミットに出席した全大学の学長たちは、以下のとおり約束する。

a. 我々は、21 世紀における科学的知識が政策と社会を支えていくことの必要性を十分に認識し、政策と社会とアカデミアがサステイナビリティ実現のために共進していく原動力として、大学の新しい使命を果たしていく。
b. 我々は、複雑かつ広範なサステイナビリティの課題に対応するべく NNs の形成のために、その目的や内容についての共通認識の形成や研究ネットワークによる会議の開催等を含む、行動計画策定の実施を約束する。
c. 我々は、NNs を科学のプラットフォームとして活用しつつ、共同研究と教育プログラムを通じて開発途上国の大学・研究機関と連携を強化し、必要に応じた支援をしていく。
d. 我々は、前述の目的を達成するために必要な組織・体制を整備し、予算を確保する。
e. 我々は、サステイナビリティの実現に向けて、地域とともに、キャンパスを用いて新しい社会モデルを実験する役割を担う。
f. 我々は、上記のコミットメントについて、他の大学に対し、認識を共有し、共に行動することを呼びかける。

Ⅲ．G8 首脳への要請

この機会に、とりわけ気候変動を含む喫緊の地球規模の問題への討議に関し、我々（G8 大学サミットに出席した G8 メンバー国の大学学長）は、G8 首脳に対し、サステイナビリティに関する研究と教育に携わる大学人として、以下のとおり要請する。国連大学および G8 メンバー国以外の大学の出席学長はこれを支持する。

a. サステイナビリティのためのナレッジイノベーションや包括的連携ネットワーク（Network of networks）などに関する大学の取組みに関し理解し、支持すること。
b. サステイナビリティに関連する政策の立案、実施等にあたり、大学とのパートナーシップを深めること。
c. 低炭素社会、循環型社会、自然共生社会の形成に向けた統合的なアプローチを含むサステイナビリティの課題に関し、科学の成果を正しく認識し、適切に国民に周知し、問題解決のために科学的に正当性のある政策を進めること。
d. とりわけ、切迫した課題として洞爺湖サミットで中心的議題となる気候変動対策に関し、国際社会が早急に適切な枠組みを採用し、科学的に適切な対応策を実施するようリーダーシップを発揮すること。
e. 急速に深刻化している食料とエネルギー問題に象徴されるように、グローバルな問題は相互に関連していることを認識し、またそれらの問題は、今後も続く気候変動によって悪化していくことを理解した上で、科学的研究の成果と知識を尊重しつつ、これら課題に総体的に対応する政策を他国との協調体制の下に早急に実現すること。

以上

我々学長は、サステイナビリティ実現に向けて大学が果たすべき重要な役割を認識し、本宣言文に記された大学のコミットメントを確認し、G8 首脳と国際社会に対しとるべき行動を提案し、働きかけることをここに宣言する。

（以下、G8 メンバー国大学学長による署名）
＊ Stephen J. Toope, President and Vice-Chancellor, ブリティッシュコロンビア大学
＊ Indira V. Samarasekera, President and Vice-Chancellor, アルバータ大学
＊ Xavier Michel, President, エコール・ポリテクニーク大学
＊ Georges Molinié, President, パリ第4＝パリソルボンヌ大学
＊ Bernd Huber, President, ミュンヘン大学
＊ Burkhard Rauhut, Rector, アーヘン工科大学
＊ Francesco Profumo, Recto, トリノ工科大学
＊ Guido Chelazzi, Vice-Rector, フィレンツェ大学
＊ Eiji Hatta, President, 同志社大学
＊ Takehiko Sugiyama, President, 一橋大学
＊ Hiroshi Saeki, President, 北海道大学
＊ Yuichiro Anzai, Presiden, 慶應義塾大学
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＊ Hiroshi Komiyama, President, 東京大学
＊ Akihisa Inoue, President, 東北大学
＊ Kenichi Iga, President, 東京工業大学
＊ Jun-ichi Nishizawa, Presiden, 首都大学東京
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＊ Vladimir Kurilov, President, 極東国立総合大学
＊ Mary Ritter, Pro-Rector, インペリアル・カレッジ・ロンドン
＊ Peter Guthrie, Director, Centre of Engineering for Sustainable Development, ケンブリッジ大学
＊ Gene D. Block, Chancellor, カリフォルニア大学 ロサンゼルス校
＊ Donald Filer, Director, the Office of International Affairs, イェール大学

我々学長は、サステイナビリティ実現に向けて大学が果たすべき重要な役割を認識し、本宣言文に記された大学のコミットメントを確認し、G8 メンバー国の大学による G8 首脳と国際社会への提案をここに支持する。
（以下、G8 メンバー国以外の主要国から 6 カ国の 7 大学及び国連大学の学長による署名）
＊ Ian Chubb, Vice-Chancellor and President, オーストラリア国立大学
＊ Carlos Clemente Cerri, Professor, Center of Nuclear Energy in Agriculture, サンパウロ大学
＊ Jianhua Lin, Executive Vice-President and Provost, 北京大学
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Sustainability Weeks 2011

The next year's opening symposium will be held on 24 & 25 October, 2011 at Hokkaido University.

サステナビリティ・ウィーク 2011

次年のオープニングシンポジウムは2011年10月24・25日に開催される予定です。

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