HMJRW2025

Hokkaido & Melbourne

Hokkaido-Melbourne Joint Research Workshop

Enabling sustainable and resilient infrastructure and energy future for Australia and Japan

Under the support of ISSMGE-TC202 Transportation Geotechnics & ISSMGE-TC214 Soft Soils

Organizers: Division of Civil Engineering, Hokkaido University
Faculty of Engineering and Information Technology, University of Melbourne

Sponsors: Hokkaido University and University of Melbourne

Supporters: ISSMGE-TC202 (Transportation Geotechnics)
ISSMGE-TC214 (Soft Soils)

17-20 February 2025

Hokkaido University

Sapporo, Japan

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Welcome

Welcome to the Hokkaido-Melbourne Joint Research Workshop "Enabling sustainable and resilient infrastructure and energy future for Australia and Japan". Thank you very much for coming - we extend our warmest regards to you.

The Hokkaido-Melbourne Joint Research Workshop (HMJRW2025) is being planned at the Hokkaido University (HU) located in Sapporo, Japan from 17 to 20 February 2025. The HMJRW2025 is organized by the Division of Civil Engineering, Hokkaido University and the Faculty of Engineering and Information Technology, University of Melbourne, under the strong sponsorship of both universities. The main objective of the HMJRW2025 is to enable the sustainable and resilient transport infrastructure and energy future for Australia and Japan by merging research sources and capability to deliver research that aligns with the institutions' broader vision and international profile. Australia and Japan are both leading significant investment in area of renewable energy including offshore wind, while both nations are pushing for more sustainable and resilient transport infrastructure. This vision is reflected in the HMJRW2025 theme of "Enabling sustainable and resilient infrastructure and energy future for Australia and Japan" in the similar way to UoM's grand challenge of "Supporting Sustainability and Resilience". Besides, the investigators in the HMJRW2025 project consist of world-leading experts in transportation geotechnics, geotechnical engineering for challenging soil conditions, and offshore wind geotechnical engineering. With their dedicated support, the HMJRW2025 will be held in liaison with the International Society for Soil Mechanics and Geotechnical Engineering (ISSMGE) Technical Committee (TC) 202 Transportation Geotechnics and TC214 Foundation Engineering for Difficult Soft Soil Conditions. Accordingly, the HMJRW2025 event would serve as a worldwide platform for academic exploration, experience exchange, and thought inspiration amongst the practitioners engaged in management, design and construction of large-scale civil and transportation infrastructures, researchers, academics and students. In addition, the participants in the HMJRW2025 have strong complementary skills and clear overlap in their research interests and expertise in the above-mentioned research fields. This means that the research collaborations between the two institutions will be able to offer a unique opportunity and framework to transfer and strengthen the embedding of research within the two countries.

Furthermore, in addition to the investigators, PhD and Master course students from both institutions would be participating in the HMJRW through a hybrid conference system on Day 1 & 2. The inclusion of these graduate researchers and the Early Career Researcher (ECR) participants will offer them with valuable exposure, networking opportunities, exchange of research ideas and transfer of technics & knowledge. Given the current challenge in talent recruitment, the workshop will also provide excellent training to these next generation of researchers to broaden their perspectives, and to enhance their interests in this research fields

of Geotechnical Engineering.

We look forward to the excellent presentations, the constructive debates and wonderful opportunity to meet participants in UoM and HU socially. It is our earnest hope that all the participants share an interesting and successful conference and a comfortable and enjoyable stay in Sapporo, and that our short but significant meeting would serve for participants as many as possible, especially both young researchers and students, to ensure Australia and Japan remains the forefront in the Geotechnical Engineering for the sustainable and resilient infrastructure and energy future.

We wish you a fruitful and unforgettable HMJRW2025 workshop.

Prof. Tatsuya Ishikawa

Principal Investigator - Hokkaido University

A/Prof. Shiao Huey Chow

Principal Investigator - University of Melbourne

Workshop Contents

The Hokkaido-Melbourne Joint Research Workshop will bring together leading and emerging experts from geotechnical engineering groups at Hokkaido University (HU) and the University of Melbourne (UoM). A 4-day program is held with participation of all investigators from HU and UoM, with research presentations, poster exhibition, laboratory visit, and ice-breaking welcome event on Day 1, research presentations, poster exhibition, networking events, and graduate researcher presentations on Day 2, and individual research meetings between researchers of both institutions and detailed discussion with researchers using the labs on Day 3 & 4. To align with the complimentary research strengths of the two groups, four subthemes are planned in the workshop as follows:

- Subtheme 1: Sustainable and resilient transport infrastructure
- Subtheme 2: Geotechnical engineering for challenging soil conditions
- Subtheme 3: Advanced soil mechanics and modelling
- Subtheme 4: Offshore wind geotechnical engineering
- Subtheme 5: Sustainable and diverse talent recruitment in geotechnical engineering

Given the strong overlap in research interests in Subtheme 1 to 3, the research workshop will facilitate the important brainstorming sessions and interactions between the two groups, exchange in research ideas and identify key research collaboration and joint grant opportunities. The workshop will also allow better understanding of the respective group's capabilities and research facilities. More importantly, the workshop will provide a forum to discuss Subtheme 4 and 5. Offshore wind (Subtheme 4) is an emerging industry in both Australia and Japan, which presents significant new research opportunities for both groups. Talent recruitment in geotechnical engineering (Subtheme 5), particularly the lack of gender balance, has remained a key issue worldwide. The workshop will discuss strategies to address these issues and develop countermeasures, with the following anticipated outcomes:

- Knowledge share on experimental techniques of soils and recycled geomaterials
- Relationship and network establishment between the two groups in particular in areas of renewable offshore geotechnics and sustainable transport infrastructure
- Identification of overlap in research interests and formulation of pilot projects towards larger grant applications
- Joint PhD supervision
- Identification of joint funding opportunities
- Valuable exposure/network and training of early career and graduate researchers
- Planning of staff & student visits and joint use of experimental & numerical facilities

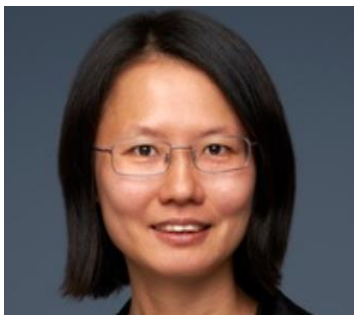
In short, the workshop will enable the participants to merge forces and capability to deliver research that aligns with the institutions' broader vision and international profile. This will offer a unique opportunity to transfer and strengthen the embedding of research within the two institutions (UoM and HU) and countries (Australia and Japan).

Keynote Talks

Keynote Presenters

A/Prof. Shiaohuey Chow

Associate Professor at Geotechnical Engineering in the Department of Infrastructure Engineering
The University of Melbourne, Australia
Email: shiaohuey.chow@unimelb.edu.au



BIOGRAPHY: Shiaohuey Chow is an Associate Professor in Geotechnical Engineering at the University of Melbourne. She is also the Director of the Australian Centre for Offshore Wind Energy, and a member of the Executive Committee for the Melbourne Energy Institute. Her research interests include offshore geotechnical site investigation, anchoring solution in sand, strain rate effects in soils and sample disturbance effects on soft soils. Her works have received several international best paper awards, including the Telford Premium Prize in 2016 and Manby Prize in 2014 from the Institution of Civil Engineers (ICE), UK. Shiaohuey is an Associate Editor for the Géotechnique Letters and International Journal of Physical Modelling in Geotechnics. She is also a member of the ISSMGE TC214 on Foundation Engineering for Difficult Soft Soil Conditions, and Secretary of the Australian Geomechanics Society (Victorian Chapter).

Prof. Mahdi Miri Disfani

Professor at Geotechnical Engineering in the Department of Infrastructure Engineering
The University of Melbourne, Australia
Email: mahdi.miri@unimelb.edu.au

BIOGRAPHY: Mahdi Disfani is Professor of Geotechnical Engineering at The University of Melbourne, leading research on experimental investigation of granular geo-materials. His work in collaboration with industry and supported by federal and state government agencies has led to impact in areas of transportation geotechnics, soil erosion and sustainable geotechnics. Mahdi is currently representing Australia on ISSMGE Technical committees TC 202 (Transportation Geotechnics) and TC 220 (Field Monitoring in Geomechanics) and is leading the Geotechnical Engineering Discipline at The University of Melbourne.

Dr. Sanchari Mondal

Lecturer in Civil and Environmental Engineering
The University of Surrey, United Kingdom
Email: mondal.s@unimelb.edu.au

BIOGRAPHY: Sanchari has been a Lecturer at the University of Surrey since August 2024. She earned her PhD and continued her research endeavours as a Research Fellow at the University of Melbourne until then. Sanchari's research interests range over a diverse domain of macro and mico-scale investigation in geotechnics that has a broader aim of resilient structures and clean energy. She received the Australian Synchrotron Beamtime grant to investigate the influence of particle shape on the strength-dilatancy of sand at a low-stress level in the year 2022. She was also awarded the University of Melbourne Early Career Researcher Grant to study emerging bio-inspired minipiles as offshore foundations in 2023.

Dr. Anamitra Roy

Research Fellow at Geotechnical Engineering in the Department of Infrastructure Engineering
The University of Melbourne, Australia
Email: anamitra.roy@unimelb.edu.au

BIOGRAPHY: Dr. Anamitra Roy is currently a Research Fellow at University of Melbourne, where his research focus is on monotonic and cyclic responses on offshore foundations in granular soils. His research interests also include physical modelling, element testing and on application of constitutive models to study offshore foundations. Anamitra holds an M.Tech degree in Geotechnical Engineering from IIT Kharagpur and a Ph.D degree in geotechnical engineering from University of Western Australia, Perth. He was also awarded the Australia-India Research Travel Fellowship (AIRS) award in 2023 and Unimelb Early Career Research Grant in 2024 for investigating breakage behaviour on carbonate sands.

Prof. Tatsuya Ishikawa

Professor at the Division of Civil Engineering in the Faculty of Engineering
Hokkaido University, Japan
Email: t-ishika@eng.hokudai.ac.jp

BIOGRAPHY: Dr. Tatsuya Ishikawa is a Professor of the Faculty of Engineering at the Hokkaido University, Japan. After graduation from Kyoto University, Japan, he worked at East Japan Railway Company as an engineer for about 15 years, including about 7 years' temporary transfer to Railway Technical Research Institute, Japan. In 2002, he became a faculty member of Hokkaido University. So far, he mainly has studied transportation geotechnics, including disaster prevention and mitigation against heavy rainfall and frost-heave. In the 2022-2026 term, he is the chair of Technical Committee 202 (TC202) on Transportation Geotechnics, International Society for Soil Mechanics and Geotechnical Engineering (ISSMGE), after being the secretary of ISSMGE TC202 during 8 years from 2013 to 2021. In addition, he is the editorial board member of Transportation Geotechnics Journal and the associate editor of Journal of Soils and Foundations.

Prof. Yoichi Watabe

Professor at the Division of Civil Engineering in the Faculty of Engineering
Hokkaido University, Japan
Email: watabe@eng.hokudai.ac.jp

BIOGRAPHY: Dr. Yoichi Watabe is a professor at Hokkaido University, Japan, since October 2016. He had been working at Port and Airport Research Institute for more than 20 years after obtaining Doctor of Engineering from Tokyo Institute of Technology in 1995. He has been invited many technical committees for port and airport construction projects. From 1997 to 1999, he spent 2 years at Québec, Canada as a Post-Doctoral Fellow in Laval University. From 2010 to 2014, he was the secretary of the Japanese Geotechnical Society and contributed to the organization of the 15th Asian Regional Conference of ISSMGE. His main research topics have been consistently on soft clay engineering. He established and chaired an ISSMGE-technical committee: TC217 on “Land Reclamation.” And then, he is chairing ISSMGE TC214 on “Foundation Engineering for Difficult Soft Soil Conditions (Soft Soils).”

Prof. Satoshi Nishimura

Professor at the Division of Civil Engineering in the Faculty of Engineering
Hokkaido University, Japan
Email: nishimura@eng.hokudai.ac.jp

BIOGRAPHY: Satoshi obtained BEng and MEng from University of Tokyo in 2001 and 2002, respectively, and PhD from Imperial College London in 2006. After two years of post-doc at Imperial College, he worked and as research engineer at Port and Airport Research Institute in Japan, involved mainly in development of ground improvement techniques related to waterfront structures and offshore airports. He has been working at Hokkaido University since 2010. His research expertise is in advanced laboratory soil testing, soil freezing and thawing, (organic) soft soils, earth work monitoring and ground improvement. He is a winner of multiple ICE and JGS awards, and currently serves as Secretary of ISSMGE TC101 (stress-strain-strength). He also serves as an advisor to many public works including nuclear power plants, railways, highways, flood defense structures and landfills.

A/Prof. Koichi Isobe

Associate Professor at the Division of Civil Engineering in the Faculty of Engineering
Hokkaido University, Japan
Email: kisobe@eng.hokudai.ac.jp

BIOGRAPHY: After earning my doctorate from Kyoto University in 2007, I spent seven years as an assistant professor at Nagaoka University of Technology in Niigata. During this time (2012–2013), I completed a nine-month short-term research stay at the University of Newcastle in Australia. Since 2014, I have been in my current position. My primary expertise lies in the interaction between foundation structures and the ground, as well as earthquake-resistant reinforcement technology for foundations. Additionally, my experience in geohazard investigations in Niigata and Hokkaido has led me to focus on geohazard prevention research, including landslide risk assessment using AI technology and the evaluation of driftwood generation potential and river bridge disaster risks during heavy rainfall. I am also a member of the TC212 Deep Foundations Committee of the International Society for Soil Mechanics and Geotechnical Engineering.

Practical Information

Climate

From early December, downtown Sapporo transforms into a winter wonderland of pure white snow. Each winter brings with it about five meters of powder snow. The average temperature in mid February is -3.1℃, the highest temperature is 0.1℃, and the lowest temperature is -6.6℃. Snowfall can be expected during the conference dates. But, due to freeze-thawing, some parts of winter roads are slippery. Please take care not to slip on icy roads by reading the following website which introduces how the residents walk on winter roads, their winter clothes and tips on how to prevent slipping on snowy roads. We hope it will be helpful to enjoy your winter stay in Sapporo more:

English website: https://tsurutsuru.jp/english/index_e.html

Workshop Venue

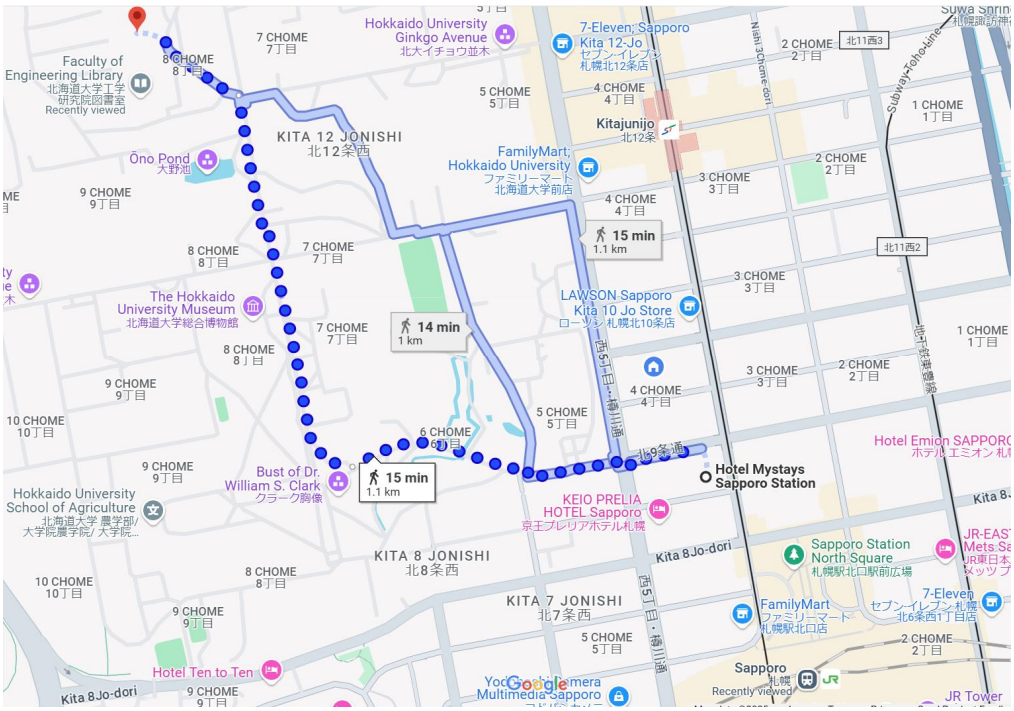
Civil Engineering Research Building, Faculty of Engineering, Hokkaido University is located near Japanese Railway (JR) Sapporo Station.

Kita 13, Nishi 8, Kita-ku, Sapporo, Hokkaido, 060-8628, Japan

Faculty of Engineering, Hokkaido University

English leaflet:

https://www.eng.hokudai.ac.jp/edu/course/civileng/document/CivilEngResBuld_en.pdf



Hotel Mystays Sapporo Station to WS venue

Ice-breaking Welcome Party Venue

Ice-breaking welcome party will be held at “Sapporo Beer Garden” near Japanese Railway (JR) Naebo Station during 18:00-20:00 on February 17, 2025.

Kita 7, Higashi 9-2-10, Higashi-ku, Sapporo, Hokkaido, 065-0007 Japan TEL: 0570-098-346

Sapporo Beer Garden

Electricity, Power Supply

100 volts AC, 50Hz. Non-polarized and ungrounded two-pin plugs are most commonly in use. Depending on your country of origin, you may need an adapter.

WiFi

At the conference venue, the delegates can use WiFi by connecting SSID “eduroam” with your own guest-ID and password.

Public Transportation

From New Chitose Airport to Sapporo

Train:

We strongly recommend catching the 40 minutes JR Rapid Airport Line from the airport to Sapporo Station which runs every 15 minutes.

Fare: Adult 1,150 yen/Child 570 yen

Bus:

An express bus, known as the Chuo Bus/Hokuto Kotsu Bus also departs from New Chitose Airport bound for Sapporo station and takes approximately 70 minutes.

Fare: Adult 1,300 yen/Child 650 yen

From Sapporo Station to Hotel Mystays Sapporo Station

Walk (5 mins):

After arriving at Sapporo Station, it is a short walk to the main gate of the campus. Upon disembarking the train, aim for the west ticket gates and then take the north exit out of the station. Walk down the stairs, cross the pedestrian crossing and veer to the right of the Sunkus Convenience Store. Walk straight, passing the North Pacific Bank on your left, and continue for 2-3 minutes until you reach Hotel Mystays Sapporo Station on your left. This is the North 8, West 4 intersection. Turn left here and walk straight to the hotel entrance.

Kita 8, Nishi 4-15, Kita-ku, Sapporo, Hokkaido, 060-0808 Japan TEL: 011-729-4055

Sapporo City

Sapporo is Japan's 5th largest city with a population of 2.0 million, and the prefectural capital of Hokkaido, northern island of Japan. Despite being a large metropolis, a short trip out to the suburbs reveals abundant natural scenery, where outdoor leisure activities such as hiking, canoeing, camping, and winter sport can be enjoyed. Each of the four seasons bring their own delights, and every year many tourists from both home and abroad visit the region, which is famous for being one of Japan's leading producers of delicious foodstuff. The city also ranks number two among the places Japanese people would like to live.

Campus Guide Map

Want a detailed map of the campus to locate our departments, campus shops, ATMs, eateries, and landmarks?

https://www.global.hokudai.ac.jp/maps/?p=sapporo

Printable version is also available in multiple languages:

https://www.global.hokudai.ac.jp/about/publications/campus-map/

Workshop Program

Day 1 February 17, 2025 (Mon.)

08: 30	**Departure** [Hotel Mystays Sapporo Station]
	HMJRW 2025
09: 00 – 09: 30	**Welcome & Introduction** [Isami Hiroi Memorial Laboratory] *Session Chairs:* *Tatsuya Ishikawa, Hokkaido University, Japan* *Shiaohuey Chow, University of Melbourne, Australia* • Opening Addresses: Tatsuya Ishikawa & Shiaohuey Chow (10 mins) • Overview of HU Faculty of Engineering & Geotechnical Group: Tatsuya Ishikawa (10 mins) • Overview of UoM FEIT & Geotechnical Engineering Group: Mahdi Disfani (10 mins)
09: 30 – 10: 30 **Session 1: Subtheme 1 Sustainable and resilient transport infrastructure** [Isami Hiroi Memorial Laboratory] *Session Chairs: Tatsuya Ishikawa, Hokkaido University, Japan* *Mahdi Disfani, University of Melbourne, Australia*	
09: 30 – 10: 00	**Keynote Speech-1: Waste tyre permeable pavement** Presenter: Mahdi Disfani, University of Melbourne, Australia
10: 00 – 10: 30	**Keynote Speech-2: Resent research topics for transportation infrastructures in cold regions** Presenter: Tatsuya Ishikawa, Hokkaido University, Japan
10: 30 – 11: 00	**Morning tea, Social networking** [Refresh Lounge 4] **& Poster exhibition** [Isami Hiroi Memorial Laboratory]
11: 00 – 12: 30 **Session 2: Subtheme 2 Geotechnical engineering for challenging soil conditions** [Isami Hiroi Memorial Laboratory] *Session Chairs: Shiaohuey Chow, University of Melbourne, Australia* *Yoichi Watabe, Hokkaido University, Japan*	
11: 00 – 11: 30	**Keynote Speech-3: Behaviour of coral gravel soils** Presenter: Yoichi Watabe, Hokkaido University, Japan
11: 30 – 12: 00	**Keynote Speech-4: Characterisation of problematic soils: Penetrometer testing and sample disturbance effects** Presenter: Shiaohuey Chow, University of Melbourne, Australia
12: 00 – 12: 30	**Keynote Speech-5: Particle morphology of calcareous sediments** Presenter: Sanchari Mondal, University of Surrey, United Kingdom
12: 30 – 13: 30	**Lunch, Social networking** [NSSOL Dining] **& Poster exhibition** [Isami Hiroi Memorial Laboratory]
13: 30 – 17: 00 **Laboratories & facilities visit** [Civil Engineering Research Building]	
18: 00 – 20: 00	**Ice-breaking welcome party** [Sapporo Beer Garden]

Day 2 February 18, 2025 (Tue.)

09: 00	**Departure** [Hotel Mystays Sapporo Station]
HMJRW 2025	
09: 30 – 10: 30 **Session 3: Subtheme 3 Advanced soil mechanics and modelling (1)** [Isami Hiroi Memorial Laboratory] *Session Chairs: Mahdi Disfani, University of Melbourne, Australia* *Satoshi Nishimura, Hokkaido University, Japan*	
09: 30 – 10: 00	**Keynote Speech-6: A perspective on frozen soil mechanics** Presenter: Satoshi Nishimura, Hokkaido University, Japan
10: 00 – 10: 30	**Keynote Speech-7: Internal erosion and its impact on soil fabric, a multi-scale investigation** Presenter: Mahdi Disfani, University of Melbourne, Australia
10: 30 – 11: 00	**Morning tea, Social networking** [Refresh Lounge 4] **& Poster exhibition** [Isami Hiroi Memorial Laboratory]
11: 00 – 12: 30 **Session 4: Subtheme 3 Advanced soil mechanics and modelling (2)** [Isami Hiroi Memorial Laboratory] *Session Chairs: Mahdi Disfani, University of Melbourne, Australia* *Satoshi Nishimura, Hokkaido University, Japan*	
11: 00 – 11: 30	**Student Speech-1: Strain rate and temperature dependency of peats subjected to unloading** Presenter: Taishi Kochi, Hokkaido University, Japan
11: 30 – 12: 00	**Keynote Speech-8: Fabric evolution at low-stress levels** Presenter: Sanchari Mondal, University of Surrey, United Kingdom
12: 00 – 12: 30	**Keynote Speech-9: Modelling monotonic and cyclic response in sand** Presenter: Anamitra Roy, University of Melbourne, Australia
12: 30 – 13: 30	**Lunch, Social networking** [NSSOL Dining] **& Poster exhibition** [Isami Hiroi Memorial Laboratory]
13: 30 – 15: 30 **Session 5: Subtheme 4 Offshore wind geotechnical engineering** [Isami Hiroi Memorial Laboratory] *Session Chairs: Koichi Isobe, Hokkaido University, Japan* *Shiaohuey Chow, University of Melbourne, Australia*	
13: 30 – 14: 00	**Keynote Speech-10: Australian Centre for Offshore Wind Energy** Presenter: Shiaohuey Chow, University of Melbourne, Australia
14: 00 – 14: 30	**Keynote Speech-11: Seismic performance of a bridge pier and pile foundation designed based on the damage control concept** Presenter: Koichi Isobe, Hokkaido University, Japan
14: 30 – 15: 00	**Keynote Speech-12: Plate anchors in sand** Presenter: Anamitra Roy, University of Melbourne, Australia
15: 00 – 15: 30	**Student Speech-2: Bearing capacity performance evaluation of normal and spiral piles under two-way cyclic vertical loading** Presenter: Shah Faheem, Hokkaido University, Japan

15: 30 – 16: 00	**Afternoon tea, Social networking** [Refresh Lounge 4] **& Poster exhibition** [Isami Hiroi Memorial Laboratory]
16: 00 – 16: 30 **Session 6: Subtheme 5 Sustainable and diverse talent recruitment** [Isami Hiroi Memorial Laboratory] *Session Chairs: Tatsuya Ishikawa, Hokkaido University, Japan* *Shiaohuey Chow, University of Melbourne, Australia*	
16: 00 – 16: 15	**Keynote Speech-13: Talent recruitment strategy at UoM** Presenter: Shiaohuey Chow, University of Melbourne, Australia
16: 15 – 16: 30	**Keynote Speech-14: Internationalization strategy at HU** Presenter: Tatsuya Ishikawa, Hokkaido University, Japan
16: 30 – 17: 30 **Session 7: Grant scenario in Australia and Japan** [Isami Hiroi Memorial Laboratory] *Session Chairs: Shiaohuey Chow, University of Melbourne, Australia* *Tatsuya Ishikawa, Hokkaido University, Japan*	
17: 30 – 18: 00	**Closing Remarks** [Isami Hiroi Memorial Laboratory] *Session Chairs:* *Tatsuya Ishikawa, Hokkaido University, Japan* *Shiaohuey Chow, University of Melbourne, Australia* • Closing Addresses: All Keynote Speakers (30 mins)

Day 3 & 4 February 19 & 20, 2025 (Wed. & Thu.)

9: 00 – 16: 00	**Individual meetings and discussions**