

The 9th International Conference on Scour and Erosion

Daily Program

November 5, 2018

Opening Ceremony

Time: 09:30-10:00

Venue: 101AB, 1F

Keynote Presentation 1

Time: 10:00-11:00

Venue: 101AB, 1F

Chairs: Keh-Chia Yeh

10:00-11:00 **Sediment Load and Scour of Intermittent Rivers in Central Taiwan**
Jau-Yau Lu and C.-C. Su

11:00-11:30 Refreshments (Lobby, 1F)

Technical Session 1-Scour and Erosion Testing and Experiment

Time: 11:30-12:30

Venue: 101AB, 1F

Chairs: Yii-Wen Pan, Jean-Louis Briaud

11:30-12:30	O1-1	<p>Measurement of Hydrodynamic Forces on Gravel Particles in the Erosion Function Apparatus <i>Iman Shafii*, Zihan Zhang and <u>Jean Louis Briaud</u></i></p>
	O1-2	<p>Erosion Rate Equations for Coarse-Grained Materials Using Small Flume Testing <i><u>Ghada Ellithy*</u>, Johannes L. Wibowo and Maureen K. Corcoran</i></p>
	O1-3	<p>A Study on the Influence of River Flow Characteristic on the Levee Breach Speed Using Hydraulic Experiment <i><u>Sooyoung Kim</u> and Kwang Seok Yoon*</i></p>
	O1-4	<p>Flow Pattern Evolution in the Downstream Scour Hole of a Submerged Weir <i><u>Lu Wang</u>, Bruce Melville* and Colin Whittaker</i></p>

Technical Session 2- Geotechnical Issues Related to Scour and Erosion / Hillslope Conservation and Debris Flow

Time: 11:30-12:30

Venue: 101C, 1F

Chairs: Chih-Ping Lin, Shinji Sassa

- | | | |
|-------------|------|--|
| 11:30-12:30 | O2-1 | <p>Wave-Induced Liquefaction and the Stability of Offshore Monopile
<i><u>Junji Miyamoto</u>*</i>, Shinji Sassa and Kazuhiro Tsurugasaki</p> |
| | O2-2 | <p>Effects of Relative Density of Sand on Seepage Failure Phenomena in Front of Sheet Piles in Two Dimensions
<i>Tsutomu Tanaka*</i>, <u>Naoto Maeta</u>, Shigeru Nagai, Koji Kasamatsu, Natsuki Ueno, Rio Fujii and Kazuya Inoue</p> |
| | O2-3 | <p>Seepage Failure of Semi-Infinite 2d Soil Within a Cofferdam –Theoretical Critical Hydraulic Head Differences Under Various Conditions–
<i>Tsutomu Tanaka*</i>, Naoto Maeta and Takashi Miki</p> |
| | O2-4 | <p>Effects of Volcanic Ash Deposition on Surface Erosion and Runoff in Sakurajima, Japan
<i>Hiroshi Kisa*</i> and Naoki Fujimura</p> |

Technical Session 3- Sediment Transport: Grain Scale and Continuum Scale

Time: 11:30-12:30

Venue: 101D, 1F

Chairs: Yeboah Gyasi-Agyei

- | | | |
|-------------|------|--|
| 11:30-12:30 | O3-1 | <p>Stress Change in Seabed Induced by Sea Wave on Wave Flume Experiment in 1g Field
<i>Tatsuya Matsuda</i>, Kinya Miura*, Keita Anai, Yayoi Sawada and Rintaro Takayanagi</p> |
| | O3-2 | <p>Method to Evaluate Longitudinal Sediment Sorting Processes
<i>Daisuke Harada*</i>, Shinji Egashira and Atsuhiko Yorozuya</p> |
| | O3-3 | <p>Boundary Layer Flow Within the Impingement Zone Between a Propeller Jet and Plane Bed
<i>Yee Meng Chiew*</i> and Maoxing Wei</p> |
| | O3-4 | <p>Experimental Study on Sediment Movement of Continuous Curved Channel in Upper Reaches of the Yellow River
<i>Xiaohan He*</i>, Ping-yi Wang and Xiao-ling Li</p> |

12:30-14:00

Lunch (Banquet Hall, 3F)

Technical Session 4- Scour and Erosion Testing and Experiment

Time: 14:00-15:30

Venue: 101AB, 1F

Chairs: Takahiro Itoh

- 14:00-15:30 O4-1 **Erodibility of Gravelly Soils**
Jamie López-Soto and Bryant Robbins*
- O4-2 **Experimental Study on Erodibility of Cement/Steelmaking-Slag Treated Soils by Means of Small Jet Erodrometer**
Yoichi Watabe and Shinji Sassa*
- O4-3 **A Modified Hole-Erosion-Test on High Plastic Clay with Different Soil Structures**
*Manuel Hark**
- O4-4 **Experimental Investigation of the Critical Tractive Force of Glass Beads Under Upward Seepage Flow**
Kazunori Fujisawa, Kosuke Sugino and Akira Murakami*
- O4-5 **On Porous Media Flow with Non-Steady Boundary Conditions**
Mohammad Aminpour, M. Greene, Sergio Galindo Torres, Alexander Scheuermann and Ling Li*
- O4-6 **Experimental Measurements of River Bed Scour at Manting Reach Caused by Ganlanba Hydropower Station in Lancangjiang River**
*Ming Chen**

Technical Session 5- Advanced Numerical Modelling of Scour and Erosion

Time: 14:00-15:30

Venue: 101C, 1F

Chairs: Dong-Sin Shih, Edwin Wang

- 14:00-15:30 O5-1 **Study of Constitutive Models for Sandy Soils Considering Influence of Internal Erosion**
Gang Wang and Takahashi Akihiro*
- O5-2 **Numerical Modelling of Scour near the South Abutment of the Padma River Bridge in Bangladesh**
Edwin Wang, Jose Vasquez, Dave MacLean, Md. S. Islam and Md. Kamruzzaman*
- O5-3 **Coupled Particle-Fluid Numerical Simulation Model for Internal Erosion of Granular Soils with a Broad Particle Size Distribution**
Yutaka Fukumoto and Satoru Ohtsuka*
- O5-4 **Impact of Stress Path on Fine Particles Role in Internally Unstable Soils**
*Mehrdad Ahmadi, Amirhassan Mehdizadeh, Vahid Khalili and Mahdi Miri Disfani**

- O5-5 **Development of a Numerical Wave Flume for the Study of Scour Protection Around Offshore Monopile Foundations Under Waves and Currents**
*Carlos Emilio Arboleda Chavez**, Minghao Wu, Peter Troch and Vasiliki Stratigaki
- O5-6 **Modelling and Experimental Assessments of Fluvial Scouring in Fengshan Creek Basin Taiwan**
*Yuan-Ya Liao, Jing-Ying Huang, Han Su and Dong-Sin Shih**

Technical Session 6- Sediment Transport: Grain Scale and Continuum Scale

Time: 14:00-15:30

Venue: 101D, 1F

Chairs: Xuhui Fu

- 14:00-15:30 O6-1 **Navigation Channel Regulation Technology on New Water-Sediments Conditions in the Three Gorges Reservoir**
*Shengfa Yang**
- O6-2 **The Environment Effect of Bank Erosion in Three Gorges Reservoir Water-Level-Fluctuating Zone**
*Xuhui Fu**, Xiaojie Zhou, Shengfa Yang, Jiang Hu, Wenjie Li, Yi Xiao and Sichen Tong
- O6-3 **Mass transport in a thin layer of power-law mud under surface waves**
*Jie Liu**
- O6-4 **Scour Around a Monopile on a Sloped Beach by a Series of Wave**
*Meilan Qi** and P. Shi
- O6-5 **An Update on ICOLD Bulletin 164 on Internal Erosion**
*Rodney Bridle**
- O6-6 **Evaluating the Sediment Budget in National Forest Region: A Case Study in Laonong Watershed**
*Tse-Yang Teng, Yu-Jia Chiu**, Che-Wei Shen and Zee Ken Christopher Wong

15:30-16:00 Refreshments (Lobby, 1F)

Technical Session 7- Advanced Numerical Modelling of Scour and Erosion

Time: 16:00-17:30

Venue: 101AB, 1F

Chairs: Meilan Qi and Haoyin Shan

- 16:00-17:30 O7-1 **An in Situ Scour Testing Device for Determining Soil Erosion Resistance**
*Haoyin Shan**, Otto Wiblishauser, Kornel Kerényi, Jia-Dzwan Jerry Shen, Timon Meyer, Daniel Pastrich, J. Pagenkopf and N. Tsou

- O7-2 **Laboratory Tests on the Effects of Wave Action on Cohesionless Soil and Incipient Sediment Motion**
*Jeanne Ewers**
- O7-3 **Durability of Lime Treated Soil in Coastal Environment: Methodology for a Laboratory Study**
*Margot De Baecque**, *Christophe Chevalier*, *Mathieu Le Feuvre*, *Sergio Palma-Lopes* and *Philippe Reiffsteck*
- O7-4 **Scaling Impacts on Scour in Distorted Models**
*Lin Zhang**, *Yigang Wang*, *Huiming Huang* and *Xin Nie*
- O7-5 **Flume Tests for Bed Erosion Control by Combination of a Main and a Counter Sabo Dam**
*Takahiro Itoh**, *K. Kaitsuka*, *H. Watabe*, *T. Nagayama*, *T. Miike*, *H. Muramatsu*, *A. Kawai* and *T. Mizuyama*
- O7-6 **Erosion Tests on the Teton Dam Soil**
*Mabel Chedid**, *Iman Shafii* and *Jean-Louis Briaud*

Technical Session 8- Advanced Numerical Modelling of Scour and Erosion

Time: 16:00-17:30

Venue: 101C, 1F

Chairs: Yong Lai and Xiaofeng Liu

- 16:00-17:30 O8-1 **Bridge Scour Simulation with a New 3D Flow and Sediment Transport Model**
Yong G. Lai and *Kuowei Wu**
- O8-2 **Local Scour Modeling Around Hydraulic Structures with Complex Geometries**
*Xiaofeng Liu** and *Yuncheng Xu*
- O8-3 **Monitoring and Simulation of Bridge Pier Scour Depth**
*Fong-Zuo Lee**, *Jihn-Sung Lai*, *Yung-Bin Lin*, *Kuo-Chun Chang*, *Xiaoqin Liu*, *Ching-Fuh Lin* and *Cheng-Chun Chang*
- O8-4 **3D Simulation on Scour Hole Development of Energy Dissipation of Ski-Jump Type at Kongliang Dam**
*Fan Feng**, *Xuhui Fu*, *Shengfa Yang*, *Jiang Hu*, *Sichen Tong*, *Wenjie Li* and *Yi Xiao*
- O8-5 **New Characteristics of Sedimentation of the Three Gorges Reservoir and its Prediction**
*Sichen Tong**, *Xinhua Li*, *Shengfa Yang*, *Jiang Hu*, *Wenjie Li*, *Yi Xiao* and *Xuhui Fu*
- O8-6 **Study on Sediment Erosion and Deposition of the Yaojiahe Reservoir**
*Jilun Miao**

Technical Session 9- Management of Scour/Erosion and Sediment

Time: 16:00-17:30

Venue: 101D, 1F

Chairs: Tzenge-Huey Shih

- | | | |
|-------------|------|---|
| 16:00-17:30 | 09-1 | <p>Development an Operational System for the Forecasting of Bridge Pier Scour Depth
<i>Fong-Zuo Lee*</i>, Jih-Sung Lai, Yung-Bin Lin, Xiaoqin Liu, Kuo-Chun Chang, Sheng-De Wang and Cheng-Chun Chang</p> |
| | 09-2 | <p>AROSA: A New French Guideline for Scour at Bridges Risk-Based Analysis
<i>Edouard Durand*</i>, Denis Davi and Jose-Luis Delgado</p> |
| | 09-3 | <p>Evaluation Method Using Score Table for Identifying Bridge Piers Vulnerable to Scouring in Japan
<i>Tsuyoshi Takayanagi*</i>, Naoto Naito, Ryo Manome and Osamu Nunokawa</p> |
| | 09-4 | <p>Two Mississippi River Diversion Structures Two Different Floodway Scour Rehabilitation Designs
<i>Tzenge-Huey Shih*</i>, Amena Henville and J. Vossen</p> |
| | 09-5 | <p>Research program SSHEAR: Recent Advances on the Understanding and the Control of Scour Phenomena
<i>Christophe Chevalier*</i>, Frederique Larrarte, Franziska Schmidt, Damien Pham-Van-Bang, Edouard Durand, Philippe Gondret, Sidoine de la Roque, Mark Cheetham and Mohsen Hosseingholian</p> |
| | 09-6 | <p>Establishment of the Bridge Closure by the Pier Erosion Simulation
<i>Sheng-Hsueh Yang*</i>, Ren-Kai Jhong, Shao-Tang Wei, Keh-Chia Yeh</p> |

November 6, 2018

Keynote Presentation 2

Time: 09:00-10:00

Venue: 101AB, 1F

Chairs: Tsun-Hua Yang

09:00-10:00

Historical Perspective and Challenges on Sediment Flushing in the Kurobe River, Japan

*Tetsuya Sumi**

Keynote Presentation 3

Time: 10:00-11:00

Venue: 101AB, 1F

Chairs: Tsun-Hua Yang

10:00-11:00

Direct Monitoring of Deep-Sea Turbidity Currents to Quantify Their Interaction with the Seafloor and Impacts on Critical Subsea Infrastructure

*Michael Andrew Clare**

11:00-11:30

Refreshments (Lobby, 1F)

Technical Session 10- Scour and Erosion Around Structures

Time: 11:30-12:30

Venue: 101AB, 1F

Chairs: Shao-Hua Hsu and Cathy Avila

11:30-12:30

O10-1

3-D Numerical Modelling for Local Scour Downstream Weir Structure

*Kwang Seok Yoon and Sooyoung Kim**,

O10-2

3D Numerical Simulations of Local Scouring Around Bridge Piers and CCHE3D Model

*Yafei Jia**

O10-3

Characteristics of Live-Bed Scour at Wide and Long Skewed Bridge Piers

*Yifan Yang**, Bruce Melville and Asaad Shamseldin

O10-4

Advancements in Bridge Scour Assessment with 2D Hydraulic Modeling Using SRH-2D/SMS

*Scott Hoqan**

Technical Session 11- River, Coastal, Estuarine and Marine Scour and Erosion

Time: 11:30-12:30

Venue: 101C, 1F

Chairs: Richard Whitehouse and Nicholas Tavouktsoglou

- | | | |
|-------------|-------|--|
| 11:30-12:30 | O11-1 | <p>Scour and Seabed Changes at Cable Protection Rock Berms – Field Observations
<i><u>Andreas Roulund*</u>, Palle M. Jensen, Kerry V. Marten and Richard J. S. Whitehouse</i></p> |
| | O11-2 | <p>Scour at Cable Protection Rock Berms - Model Test Observations
<i>Andreas Roulund*, Signe M. Larsen, James Sutherland and <u>Richard Whitehouse</u></i></p> |
| | O11-3 | <p>Numerical Modeling of Alternatives to Reduce Channel Shoaling at Lynnhaven Inlet Virginia Beach USA
<i><u>Lihwa Lin*</u> and Zeki Demirbilek</i></p> |
| | O11-4 | <p>The Behavior of Self-Launching Geotextile Bag Aprons – Latest Investigations from the Lower Brahmaputra in Banglades
<i>Angela Thompson, Y. She, <u>Knut Oberhagemann*</u> and A.M. Aminul Haque</i></p> |

Technical Session 12- Rock Scour and Erosion

Time: 11:30-12:30

Venue: 101D, 1F

Chairs: Gijs Hoffmans

- | | | |
|-------------|-------|--|
| 11:30-12:30 | O12-1 | <p>Development and Application of 3D Bedrock Erosion Model for Channel Incision Problems in Chuoshui Creek
<i><u>Yaoxin Zhang*</u>, Yafei Jia, Keh-Chia Yeh and Chung-Ta Liao</i></p> |
| | O12-2 | <p>Recent Changes of Channel Morphology in a Coseismic Uplift Reach of the Taan River in Central Taiwan
<i><u>Ming-Wan Huang*</u>, Chung-Ta Liao, Yii-Wen Pan, Jyh-Jong Liao</i></p> |
| | O12-3 | <p>Rock Riverbed Channel Erosion at the Area of the Jhong-Jheng Bridge in Taiwan
<i><u>Kuo-Wei Li*</u>, Jyh-Jong Liao, Yii-Wen Pan, Keh-Chia Yeh, Chung-Ta Liao</i></p> |

Technical Session 13- Scour and Erosion Around Structures

Time: 14:00-15:30

Venue: 101AB, 1F

Chairs: Thor Ugelvig Petersen

- | | | |
|-------------|-------|---|
| 14:00-15:30 | O13-1 | <p>Bridge Scour Countermeasure Project in Marin County -- It's Got a Little Bit of Everything
<i><u>Catherine Avila*</u></i></p> |
| | O13-2 | <p>Development and Application of Real-Time Scour Monitoring Technique
<i><u>Shao-Hua Hsu*</u>, Yu-Huan Chang, Chong-Yu Sun and Pi-Fang Hung</i></p> |

- O13-3 **Scour at the Eastern Scheldt Storm Surge Barrier: Linking Laboratory Observations to Field Observations**
*Yorick Broekema**, Robert Jan Labeur and Wim Uijttewaal
- O13-4 **Evaluation of Empirical Equations for Scour Downstream Grade-Control Weirs**
*Dawei Guan**, Bruce Melville and Lu Wang
- O13-5 **Turbulence Approach for Predicting Scour at Abutments**
*Gijs Hoffmans** and Frans Buschman

Technical Session 14- River, Coastal, Estuarine and Marine Scour and Erosion

Time: 14:00-15:30

Venue: 101C, 1F

Chairs: Lihwa Lin and Yan Ding

- 14:00-15:30 O14-1 **Probabilistic Modeling of Long-Term Shoreline Changes in Response to Waves and Sea Level Rise**
*Yan Ding**, Sung-Chan Kim, Ashley Frey, Rusty L. Permenter and Richard Styles
- O14-2 **Eco-Friendly Scour Protection Design in Offshore Wind Farms**
*Tim Raaijmakers**
- O14-3 **Develop a Research Coordination Network to Identify Challenges of and Solutions to Permafrost Coastal Erosion and Its Socioecological Impact in the Arctic**
*Honghai Li**, Kevin C. Hodgens and Kelly R. Legault

Technical Session 15- Rock Scour and Erosion

Time: 14:00-15:30

Venue: 101D, 1F

Chairs: Erik Bollaert

- 14:00-15:30 O15-1 **Spillway Erosion Experiences and Modelling Techniques**
*Erik Bollaert** and Eric Lesleighter
- O15-2 **Modeling of Soft Bedrock Channel Evolution with a Coupled Modified Bank Stability and Bedrock Erosion Model**
*Kuowei Wu**, Keh-Chia Yeh and Yong G. Lai
- O15-3 **Determination of the Shape and the Depth of Scour Hole on Rocks**
*Meng-Hsiung Cheng**, Jyh-Jong Liao, Yii-Wen Pan, G.-W. Li and Ming-Wan Huang
- O15-4 **Kinematic Controls on 3D Rock Block Erodibility: A Block Theory Approach**
*Michael George** and Nicholas Sitar

15:30-16:00

Refreshments (Lobby, 1F)

Technical Session 16- Scour and Erosion Around Structures

Time: 16:00-17:30

Venue: 101AB, 1F

Chairs: Wen-Cheng Liu and Chao Huang

- 16:00-17:30 O16-1 **Experimental Study on Scour Around a Pile in Multidirectional (Spreading) Random Waves**
*Alexander Schendel**, Arndt Hildebrandt and Torsten Schlurmann
- O16-2 **Experimental Study of Local Scour Around Submerged Cylinders Supported by a Skirted Mudmat in Steady Current**
*Weidong Yao**, Hongwei An, Scott Draper and Liang Cheng
- O16-3 **Micro-Macro Modelling of Piping and Internal Erosion in River Levee**
*Kenichi Maeda**, Masaya Nishimura and Masato Takatsuji
- O16-4 **Incorporation of Scour Uncertainty to Current AASHTO LRFD Bridge Design Specifications**
*Chao Huang**, Kornel Kerenyi and Jia-Dzwan Shen
- O16-5 **Modelling of Foundation Response to Scour and Scour Protection for Offshore Wind Turbine Structures**
*Russell Mayall**, Byron Byrne, Harvey Burd, Ross McAdam, Phillipa Cassie and Richard Whitehouse

Technical Session 17-River, Coastal, Estuarine and Marine Scour and Erosion

Time: 16:00-17:30

Venue: 101C, 1F

Chairs: Bruce Melville and Tso-Ren Wu

- 16:00-17:30 O17-1 **Erosion Experiments of Pure Kaolinite Samples**
*Dake Chen**, Bruce Melville, Chi Zhang, Huiming Huang and Yigang Wang
- O17-2 **Modeling Suspended Sediment Transport in the Subtropical Subalpine Yuan-Yang Lake, Taiwan**
*Wen-Cheng Liu** and Wen-Ting Chan
- O17-3 **Development of Discontinuous Bi-Viscous Model and the Application to the Mudslide and Local Scour Problems**
*Tso-Ren Wu**, Thi-Hong-Nhi Vuong, Chung-Yue Wang, Chia-Ren Chu, Chun-Wei Lin and Mei-Hui Chuang
- O17-4 **Observation of Transient Porosity Profiles During Erosion Tests**
*Alexander Scheuermann**, Tilman Bittner, Thierry Bore and Mathieu Bajodek

November 7, 2018

Keynote Presentation 4

Time: 09:00-10:00

Venue: 101AB, 1F

Chairs: Chih-Ping Lin

09:00-10:00

The Brahmaputra – Scour and Erosion Processes and Countermeasures
*Knut Oberhagemann**

Keynote Presentation 5

Time: 10:00-11:00

Venue: 101AB, 1F

Chairs: Chih-Ping Lin

10:00-11:00

Rock Structures – Scour Engineering in Offshore Wind
*Andreas Roulund**

11:00-11:30

Refreshments (Lobby, 1F)

Technical Session 18- Scour and Erosion Around Structures

Time: 11:30-12:30

Venue: 101AB, 1F

Chairs: Kenichi Maeda, Jihn-Sung Lai

11:30-12:30

- | | |
|-------|--|
| O18-1 | Reliability Analysis of Local Scour Around Pier
<i>Sang Hwa Jung*, Un Ji and <u>Joongu Kang</u></i> |
| O18-2 | Local Scour Development and Global Sediment Redistribution Around a Jacket-Structure in Combined Waves and Current
<i><u>Mario Welzel*</u>, Torsten Schlurmann and Arndt Hildebrandt</i> |
| O18-3 | Hydraulic Study on Bed Material Movement Under Bed Protection Works and Its Reducing Methods
<i><u>Yuichi Kitamura*</u> and Shingo Takagi</i> |
| O18-4 | Nonwoven Geotextile Scour Protection at Offshore Wind Parks, Application and Life Cycle Assessment
<i><u>Helge Hoyme</u>, Holger Wallbaum and Jun Kono*</i> |

Technical Session 19- River, Coastal, Estuarine and Marine Scour and Erosion

Time: 11:30-12:30

Venue: 101C, 1F

Chairs: Shinji Egashira and Christophe Chevalier

11:30-12:30

- | | |
|-------|---|
| O19-1 | Numerical Simulation of Morphological Bed Changes and Local Scour near Embankment
<i><u>Chung-Ta Liao*</u>, Keh-Chia Yeh, Min-Wan Huang and Yafei Jia</i> |
|-------|---|

- O19-2 **On Bank Erosion in Estuary of Sittaung River in Myanmar**
Tanjir Ahmed, Shinji Egashira, Daisuke Harada, Atsuhiko Yorozya, Youngjoo Kwak, Badri Shrestha, Daisuke Kuribayashi, Hisaya Sawano and Toshio Koike*
- O19-3 **CFD Simulation of Clearwater Scour at Complex Foundations**
Nicholas Tavouktsoglou, John Harris, Richard Whitehouse and R. Simons*
- O19-4 **Stability of Single-Graded Scour Protection Around a Monopile in Current**
Thor Petersen, Anders Vissing Pedersen, Anders Wedel Nielsen, Erik Damgaard Christensen, Jørgen Fredsøe and D. A. Hansen*

Technical Session 20- Internal Erosion

Time: 11:30-12:30

Venue: 101D, 1F

Chairs: Kuang-Tsung Chang and Akihiro Takahashi

- 11:30-12:30 O20-1 **Investigation of the Coarse Sand Barrier Against Backward Erosion Piping**
Esther Rosenbrand, Vera van Beek, Adam Bezuijen, John van Esch, A. Bezuijen, Kristine Vandenkoer, Ulrich Foerster, Andre Koelewijn and Leo Voogt*
- O20-2 **Failure Criterion of Seepage Erosion**
Kuang-Tsung Chang and Yu-Lin Chen*
- O20-3 **Investigating the Erosion Resistance of Cement-Bentonite Barrier Material Using Hole Erosion Test**
Muhammad Walenna, Alexander Royal, Ian Jefferson and Gurmel Ghataora*
- O20-4 **Validation of Geophysical Methods for Internal Erosion Detection on Earth Embankments**
Barthélémy Steck, Christophe Vergniault, Denis Vautrin, Kawtar Sabor, Jean-Robert Courivaud, Guy D'Urso, A. Soueid Ahmed and A. Revil*

12:30-14:00

Lunch (Banquet Hall, 3F)

Technical Session 21- Remote Sensing, Instrumentation and Monitoring

Time: 14:00-15:30

Venue: 101AB, 1F

Chairs: Chih-Chung Chung and Hongwei An

- 14:00-15:30 O21-1 **Real- Time Scour Monitoring System Development for Bridge Pier and Embankment Foundation**
Yung-Bin Lin, Xiaoqin Liu, Kuo-Chun Chang, Jihn-Sung Lai and Fong-Zuo Lee*
- O21-2 **Feasibility Evaluation for Unmanned-Aerial-Vehicle Seeding on Post Landslide Sites in Taiwan**
Kai-Chi Hsu, Guo-Zhang Song, Shin-Hwei Lin and Chi-Hao Chang*

- O21-3 **Exploring the Relationships Between Normalized Difference Vegetation Index and Leaf Area Index in Central Taiwan**
*Chung-Chun Chang**, Guo-Zhang Song and Yen-Chen Chao
- O21-4 **Development of TDR-based Scour Sensing Cables**
Kai Wang, Chih-Ping Lin and Chih-Ping Lin*
- O21-5 **Detecting Sediment Concentration Using Contact Image Sensor**
*Weidong Yao, Hongwei An**, Scott Draper, Liang Cheng, Ming Zhao and Guoqiang Tang

Technical Session 22- Field Observation and Analyses / Scour and Erosion Around Structures

Time: 14:00-15:30

Venue: 101C, 1F

Chairs: Jian-Hao Hong

- 14:00-15:30 O22-1 **Comparison of General Scour and Bend Scour Prediction Methods for Intermittent Rivers in Taiwan**
*Jian-Hao Hong**, Wen-Dar Guo and Chih-Chiang Su
- O22-2 **Scour Monitoring on Bridge Pier—Methodology and Implementations**
*Emma Florens**, *Christophe Chevalier*, Frederique Larrarte, Franziska Schmidt and Edouard Durand
- O22-3 **Field Measurement and Simulation of Short-Term General Scour in Gravel-Bed River**
*Ren-Kai Jhong**, Tung-Chou Hsieh, Keh-Chia Yeh, Wei-Jung Lin and Jin-Shing Chen
- O22-4 **Field Applications of Float-Out Device for Highway Bridge Pier Scour Monitoring**
*Chih-Chung Chung**, Sheng-Hsueh Yang, Han-Chung Yang, Chih-Chiang Su, Chih-Ping Lin and Keh-Chia Yeh
- O22-5 **Long Term Scour Monitoring Around Offshore Jacket Foundations on a Sandy Seabed**
*Leen Baelus**, Annelies Bolle and Viktoria Szengel
- O22-6 **Experimental and Numerical Investigations on the Behavior of Combined Countermeasures in Reducing Bridge Scour**
*Fayun Liang**, *Chen Wang*, Xiong (Bill) Yu and Xin Yang

Technical Session 23- Internal Erosion

Time: 14:00-15:30

Venue: 101D, 1F

Chairs: Amirhassan Mehdizadeh and Mahdi Disfani

- 14:00-15:30 O23-1 **Micro Scale Study of Internal Erosion Using 3D X-Ray Tomography**
*Amirhassan Mehdizadeh, Mahdi Miri Disfani**

- O23-2 **Constriction Size Distribution and Equivalent Opening Size of Granular Filter**
*Feda Seblany**, *Eric Vincens and Christophe Picault*
- O23-3 **Physical Modelling of Backward Erosion Piping in Layered Levee Foundation**
*Ayumi Takizawa**, *Kazuki Horikoshi and Akihiro Takahashi*
- O23-4 **Wave Pressure Propagating Inside Box Culvert Under Sea Surface and Internal Erosion of Backfill Material Due to Wave Pressure**
*Kojiro Suzuki** and *Shinji Sassa*
- O23-5 **Internal Erosion in a Foundation Soil Under a Sand Levee and Its Manifestation on the Levee Surface**
*Mitsu Okaumura**, *Minoru Imamura and N. Jin-nouchi*

15:30-16:00 Refreshments (Lobby, 1F)

Technical Session 24- Natural Hazards Due to Scour and Erosion

Time: 16:00-17:30

Venue: 101AB, 1F

Chairs: Tsutomu Tanaka and Tatsuya Matsuda

- 16:00-17:30 O24-1 **Measured Depth of Cover in a Watercourse Crossing as a Measure of Degradation and/or Scour**
*Gerry Ferris** and *Sarah. Newton*
- O24-2 **Method to Predict Sediment Runoff Resulting from Landslides and Debris Flows**
*Yusuke Yamazaki**, *Shinji Egashira* and *N. Nagumo*
- O24-3 **Practical Hydrotechnical Engineering Guidance for the Planning and Hazard Assessment and Design of Linear Pipeline Facilities at River and Stream Crossings and Followings**
*Andreas Kammereck**
- O24-4 **A Case Study for Evaluation of Landslide Volume and Two-Dimensional Slope Stability Numerical Simulation Subject to Rainfall Infiltration**
*Jyun-Wei Chen**, *Feng-Chi Huang, Hsuan-Pin Wu, Wei-Ze Liou and Chen-Yu Chen*
- O24-5 **Strategies for Grass Establishment to Control Erosion on Roma Flood Levee Batters**
*Yeboah Gyasi-Agyei**, *R. Koech and G. Bebington*
- O24-6 **Strategies of Flood Control and Sediment Reduction for Nanshi River with Guishan Dam Sluicing Operation**
Chia-Ting Kao, *Gene Jiing-Yun You** and *Ho Ting Su*

Technical Session 25- Internal Erosion

Time: 16:00-17:30

Venue: 101C, 1F

Chairs: Mitsu Okaumura and John Rice

- | | | |
|-------------|-------|---|
| 16:00-17:30 | O25-1 | <p>The Effect of Suffusion on Physical Properties and Mechanical Behavior of Granular Soils</p> <p><i><u>Cong Doan Nguyen</u>, Nadia Benahmed*, Pierre Philippe, Edward Andò and Luc Sibille</i></p> |
| | O25-2 | <p>Hydro-Mechanical Model for a Poro-Elastic Media Subjected to Suffusion</p> <p><i><u>Alaa Kodieh*</u>, Rachel Gelet, Ngoc-Son Nguyen, Didier Marot and Ahmad Fino</i></p> |
| | O25-3 | <p>Tracking and Assessment of Backward Erosion Piping Progression into Constricted Seepage Exits</p> <p><i><u>John Rice*</u>, Sige Peng and Ibrahim Ibrahim</i></p> |
| | O25-4 | <p>Experimental Optimisation of Microbially Induced Calcite Precipitation (MICP) for Contact Erosion Control in Earth Dams</p> <p><i><u>Alexandra Clara Saracho*</u> and Stuart Haigh</i></p> |

18:30-21:00

Conference Dinner (Taipei World Trade Center Club)

November 8, 2018

Technical Tour

07:30-18:00

Meet at the TICC Lobby