### 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  **Measurement of Hydrodynamic Forces on Gravel Particles in the Erosion Function Apparatus**  
_Iman Shafii*, Zihan Zhang and Jean Louis Briaud_

O1-2  **Erosion Rate Equations for Coarse-Grained Materials Using Small Flume Testing**  
_Ghada Ellithy*, Johannes L. Wibowo and Maureen K. Corcoran_

O1-3  **A Study on the Influence of River Flow Characteristic on the Levee Breach Speed Using Hydraulic Experiment**  
_Sooyoung Kim and Kwang Seok Yoon*_

O1-4  **Flow Pattern Evolution in the Downstream Scour Hole of a Submerged Weir**  
_Lu Wang, Bruce Melville* and Colin Whittaker_
## 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

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<tr>
<th>Time</th>
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<th>Authors</th>
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</thead>
<tbody>
<tr>
<td>11:30-12:30</td>
<td>O2-1</td>
<td>Wave-Induced Liquefaction and the Stability of Offshore Monopile</td>
<td>Junji Miyamoto*, Shinji Sassa and Kazuhiro Tsurugasaki</td>
</tr>
<tr>
<td></td>
<td>O2-4</td>
<td>Effects of Volcanic Ash Deposition on Surface Erosion and Runoff in Sakurajima, Japan</td>
<td>Hiroshi Kisa* and Naoki Fujimura</td>
</tr>
</tbody>
</table>

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

**Time:** 11:30-12:30  
**Venue:** 101D, 1F  
**Chairs:** Yeboah Gyasi-Agyei

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

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**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 Khailii and Mahdi Miri Disfani*
### Technical Session 6- Sediment Transport: Grain Scale and Continuum Scale

**Time:** 14:00-15:30  
**Venue:** 101D, 1F  
**Chairs:** Xuhui Fu

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

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<tr>
<th>Time</th>
<th>Session</th>
<th>Title</th>
<th>Authors</th>
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</table>
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

O7-6 Erosion Tests on the Teton Dam Soil
Mabel Chedid*, Iman Shafii and Jean-Louis Briaud

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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 O9-1 Development an Operational System for the Forecasting of Bridge Pier Scour Depth
Fong-Zuo Lee*, Jihn-Sung Lai, Yung-Bin Lin, Xiaoqin Liu, Kuo-Chun Chang,
Sheng-De Wang and Cheng-Chun Chang

O9-2 AROSA: A New French Guideline for Scour at Bridges Risk-Based Analysis
Edouard Durand*, Denis Davi and Jose-Luis Delgado

O9-3 Evaluation Method Using Score Table for Identifying Bridge Piers Vulnerable to Scouring in Japan
Tsuyoshi Takayanagi*, Naoto Naito, Ryo Manome and Osamu Nunokawa

O9-4 Two Mississippi River Diversion Structures Two Different Floodway Scour Rehabilitation Designs
Tzenge-Huey Shih*, Amena Henville and J. Vossen

O9-5 Research program SSHEAR: Recent Advances on the Understanding and the Control of Scour Phenomena
Christophe Chevalier*, Frederique Larrarte, Franziska Schmidt, Damien Pham-Van-Bang, Edouard Durand, Philippe Gondret, Sidoine de la Roque, Mark Cheetham and Mohsen Hosseingholian

O9-6 Establishment of the Bridge Closure by the Pier Erosion Simulation
Sheng-Hsueh Yang*, Ren-Kai Jhong, Shao-Tang Wei, Keh-Chia Yeh
### 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*,  
Yafei Jia*  
**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 Hogan*
Technical Session 11- River, Coastal, Estuarine and Marine Scour and Erosion

Time: 11:30-12:30
Venue: 101C, 1F
Chairs: Richard Whitehouse and Nicholas Tavouktoglou

11:30-12:30 O11-1 Scour and Seabed Changes at Cable Protection Rock Berms – Field Observations
Andreas Roulund*, Palle M. Jensen, Kerry V. Marten and Richard J. S. Whitehouse

O11-2 Scour at Cable Protection Rock Berms - Model Test Observations
Andreas Roulund*, Signe M. Larsen, James Sutherland and Richard Whitehouse

O11-3 Numerical Modeling of Alternatives to Reduce Channel Shoaling at Lynnhaven Inlet Virginia Beach USA
Lihwa Lin* and Zeki Demirbilek

O11-4 The Behavior of Self-Launching Geotextile Bag Aprons – Latest Investigations from the Lower Brahmaputra in Bangladesh
Angela Thompson, Y. She, Knut Oberhagemann* and A.M. Aminul Haque

Technical Session 12- Rock Scour and Erosion

Time: 11:30-12:30
Venue: 101D, 1F
Chairs: Gijs Hoffmans

11:30-12:30 O12-1 Development and Application of 3D Bedrock Erosion Model for Channel Incision Problems in Chuoshui Creek
Yaoxin Zhang*, Yafei Jia, Keh-Chia Yeh and Chung-Ta Liao

O12-2 Recent Changes of Channel Morphology in a Coseismic Uplift Reach of the Taan River in Central Taiwan
Ming-Wan Huang*, Chung-Ta Liao, Yii-Wen Pan, Jyh-Jong Liao

O12-3 Rock Riverbed Channel Erosion at the Area of the Jhong-Jheng Bridge in Taiwan
Kuo-Wei Li*, Jyh-Jong Liao, Yii-Wen Pan, Keh-Chia Yeh, Chung-Ta Liao

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 Bridge Scour Countermeasure Project in Marin County -- It's Got a Little Bit of Everything
Catherine Avila*

O13-2 Development and Application of Real-Time Scour Monitoring Technique
Shao-Hua Hsu*, Yu-Huan Chang, Chong-Yu Sun and Pi-Fang Hung
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

| 14:00-15:30 | O14-2 | Eco-Friendly Scour Protection Design in Offshore Wind Farms
*Tim Raaijmakers*

| 14:00-15:30 | 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

| 14:00-15:30 | 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

| 14:00-15:30 | O15-3 | Determination of the Shape and the Depth of Scour Hole on Rocks
*Meng-Hsiung Chen*, Jyh-Jong Liao, Yii-Wen Pan, G.-W. Li and Ming-Wan Huang

| 14:00-15:30 | 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

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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  

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| 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  

<table>
<thead>
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<th>Time</th>
<th>Session</th>
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| 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  

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<thead>
<tr>
<th>Time</th>
<th>Session</th>
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</table>
| 11:30-12:30 | O18-1 Reliability Analysis of Local Scour Around Pier  
*Sang Hwa Jung*, Un Ji and Joongu Kang  
O18-2 Local Scour Development and Global Sediment Redistribution Around a Jacket-Structure in Combined Waves and Current  
*Mario Welzel*, Torsten Schlurmann and Arndt Hildebrandt  
O18-3 Hydraulic Study on Bed Material Movement Under Bed Protection Works and Its Reducing Methods  
*Yuichi Kitamura* and Shingo Takagi  
O18-4 Nonwoven Geotextile Scour Protection at Offshore Wind Parks, Application and Life Cycle Assessment  
*Helge Hoyme*, Holger Wallbaum and Jun Kono* |

#### 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  

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<th>Time</th>
<th>Session</th>
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</table>
| 11:30-12:30 | O19-1 Numerical Simulation of Morphological Bed Changes and Local Scour near Embankment  
*Chung-Ta Liao*, Keh-Chia Yeh, Min-Wan Huang and Yafei Jia |
On Bank Erosion in Estuary of Sittaung River in Myanmar

Tanjir Ahmed, Shinji Egashira*, Daisuke Harada, Atsuhiro Yorozuya, Youngjoo Kwak, Badri Shrestha, Daisuke Kuribayashi, Hisaya Sawano and Toshio Koike

CFD Simulation of Clearwater Scour at Complex Foundations

Nicholas Tavouktsgoglou*, John Harris, Richard Whitehouse and R. Simons

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 Vandenboer, 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


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

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

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<tr>
<td>Chairs: Jian-Hao Hong</td>
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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*

14:00-15:30  O22-2  Scour Monitoring on Bridge Pier–Methodology and Implementations  
*Emma Florens, Christophe Chevalier, Frederique Larrarte, Franziska Schmidt and Edouard Durand*

14:00-15:30  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*

14:00-15:30  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*

14:00-15:30  O22-5  Long Term Scour Monitoring Around Offshore Jacket Foundations on a Sandy Seabed  
*Leen Baelus, Annelies Bolle and Viktoria Szengel*

14:00-15:30  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*

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**Technical Session 23- Internal Erosion**

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<th>Venue: 101D, 1F</th>
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<tr>
<td>Chairs: Amirhassan Mehdizadeh and Mahdi Disfani</td>
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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

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<th>Time</th>
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<th>Title</th>
<th>Authors</th>
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</thead>
<tbody>
<tr>
<td>16:00-17:30</td>
<td>O25-1</td>
<td>The Effect of Suffusion on Physical Properties and Mechanical Behavior of Granular Soils</td>
<td>Cong Doan Nguyen, Nadia Benahmed*, Pierre Philippe, Edward Andò andLuc Sibille</td>
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<td>O25-2</td>
<td>Hydro-Mechanical Model for a Poro-Elastic Media Subjected to Suffusion</td>
<td>Alaa Kodieh*, Rachel Gelet, Ngoc-Son Nguyen, Didier Marot and Ahmad Fino</td>
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<td>O25-3</td>
<td>Tracking and Assessment of Backward Erosion Piping Progression into Constricted Seepage Exits</td>
<td>John Rice*, Sige Peng and Ibrahim Ibrahim</td>
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<td>O25-4</td>
<td>Experimental Optimisation of Microbially Induced Calcite Precipitation (MICP) for Contact Erosion Control in Earth Dams</td>
<td>Alexandra Clara Saracho* and Stuart Haigh</td>
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**18:30-21:00**  
**Conference Dinner (Taipei World Trade Center Club)**

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### November 8, 2018  
**Technical Tour**

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<tr>
<td>07:30-18:00</td>
<td>Meet at the TICC Lobby</td>
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