

# **Agenda for 35<sup>th</sup> ISSMGE TC304 Meeting (ISGSR 2019)**

**Time:** 6pm, Dec 13, 2019

**Venue:** Room E2-222 (Dept. of Construction Engineering)

**Chairman:** Jianye Ching

**Secretary:** Jie Zhang

**Attending members:** Richard Bathurst, Ömer Bilgin, Michele Calvello, Zijun Cao, Xiaoyu Chen, Ivan Depina, Abdul-Kader Elhaj, Yixun Ge, Arjan Grashuis, Rafael Jiménez, Jinzheng Hu, Yue Hu, Jinsong Huang, Hyun-Ki Kim, Mika Knuuti, Andy Y.F. Leung, Dianqing Li, Xin Liu, Zhongqiang Liu, Monica Löfma, B. K. Low, Shadi Najjar, Iason Papaioannou, K. K. Phoon, Wojciech Puła, Timo Schweckendiek, Takayuki Shuku, Abdul-Hamid Soubra, Johan Spross, Armin Stuedlein, Marco Uzielli, Giovanna Vessia, Yu Wang, Ikumasa Yoshida, Qingxia Yue, Dongming Zhang, Lulu Zhang & Tengyuan Zhao.

## **Meeting started at 610pm.**

Attendees introduced themselves. Jianye thanks the members for their contribution to ISGSR2019.

### **1. Approval of the 34th TC304 minutes (ESREL 2019)**

Minutes were approved.

### **2. About ISGSR 2019 (Chairs: J Ching & Dianqing Li)**

- 143 final full papers are included in the proceedings; ~160 presentations.
- Wilson Tang Lecture, Suzanne Lacasse Lecture
- Six keynotes and three ISSMGE Bright Spark lecturers
  - Wilson Tang Lecture: Geological Uncertainty: A Missing Element in Geotechnical Reliability Analysis (Hsein Juang)
  - Suzanne Lacasse Lecture: Managing Risk in Geotechnical Engineering – from Data to Digitalization (KK Phoon)
  - Challenges in Determining Rock Mass Properties for Reliability-Based Design (John Harrison)
  - Quantitative Risk Assessment of Individual Landslides (Jinsong Huang)
  - Dam Safety Risk Analysis and Risk Management Practice at the Bureau of Reclamation: Lessons Learned from over Two Decades of Experience (Karen Knight)
  - Honing Safety and Reliability Aspects in the Evolution of Eurocode 7 (Trevor Orr)
  - Bayesian Perspective on Ground Property Variability for Geotechnical Practice (Yu Wang)
  - Evaluating Metropolitan Hazard Risks under Extreme Rainstorms (Limin Zhang)
  - Bright Spark #1: Values of Monte Carlo Samples for Geotechnical Reliability-Based Design (Zijun Cao)
  - Bright Spark #2: Influence of Spatially Variable Soil Permeability on Backward Erosion Piping (Bryant Robbins)
  - Bright Spark #3: Sparse Modeling in Geotechnical Engineering (Takayuki Shuku)
- Short courses
  - Risk Assessment in Geotechnical Engineering (DV Griffiths)
  - Bayesian method and tools for geotechnical practice (Timo Schweckendiek & Yu Wang)

- Geotechnical reliability-based design examples to improve partial factor design methods (BK Low & KK Phoon)
- Special session honoring late Prof. TH Wu (KK Phoon and Hsein Juang)
  - 12 presentations
  - A Georisk special issue has been published to honor late Prof. TH Wu
- Mini-symposium on performance-based design codes & practice, honouring Prof. Yusuke Honjo (Takashi Hara & Yu Otake)
  - 8 presentations
- Other sessions
  - Advances in geotechnical reliability-based design (Zijun Cao & Dian-Qing Li)
  - Bayesian method for processing geotechnical data (Shadi Najjar)
  - Bayesian updating: Formalizing the observational method (Iason Papaioannou, Johan Spross & Daniel Straub)
  - Dams, levees and flood risk (Wim Kanning & Bryant Robbins)
  - Effect of spatial variability on seismic performance of soil and rock and associated reliability (Armin Stuedlein & Taeho Bong)
  - Engineering risk sensing by monitoring and inspection (Hongwei Huang & Shinichi Akutagawa)
  - Inverse analysis in geotechnical engineering (Shin-ichi Nishimura)
  - Landslide risk assessment and management (Limin Zhang)
  - Modelling spatial variability in geotechnical engineering (Jinsong Huang & D.V. Griffiths)
  - Numerical techniques for integrating the spatial variability of soil and groundwater parameters into designing and environmental management (Giovanna Vessia, Diego Di Curzio & Wojciech Pula)
  - Probabilistic seismic hazard assessment and engineering seismology (J.P. Wang)
  - Probabilistic site characterization (Yu Wang & Zijun Cao)
  - Risk assessment of rainfall-induced geo-hazards (Lulu Zhang & Hong-Xing Chen)
  - Robust geotechnical design in the face of uncertainty (Wenping Gong, Lei Wang & Mengfeng Shen)
  - Statistics for soil & rock properties and applications (Kok-Kwang Phoon & Marco Uzielli)
  - Uncertainty & reliability analysis in rock engineering (Rafael Jimenez)
  - Machine learning for big data: algorithms & applications (Zhongqiang Liu & Zijun Cao)
  - Case histories (Armin Stuedlein & Faraz Tehrani)

### 3. Activities in the past six months (conferences, short courses, awards, and keynotes)

- Are We Overdesigning? – A Survey of International Practice (A joint initiative by the CAPG, the YMPG, TC2015 - Safety and Serviceability and TC304 - Risk)
  - Pile Group (Takayuki Shuku and Waldemar Hachich)
    - Pile Group worked on deterministic/probabilistic design of three pile problems (axially loaded single pile in clay and sand, laterally loaded single pile in clay)
    - Summary reports submitted
  - Retaining Wall Group (Takayuki Shuku, Zijun Cao, Timo Schweckendiek & Marco Redaelli)
    - Retaining Wall Group worked on deterministic/probabilistic design of propped embedded retaining wall in sand and soil nailed retaining wall
    - Summary reports submitted
  - Footing group (Jianfeng Xue)

- Slope group (Redaelli Marco, Waldemar Coelho Hachich, Ali Noorzad, Timo Schweckendiek & Lulu Zhang)
- 29th European Safety and Reliability Conference (ESREL 2019), Hannover, Germany, Sep 22-26 2019 (Chairs: Michael Beer & Enrico Zio)
  - <https://esrel2019.org/#/>
  - TC304 session (Jianye)
    - 9 presentations
  - TC304/TC309 Student Contest (Giovanna Vessia & Wojciech Puła)
    - 8 groups of students presented their works in ESREL 2019
    - 1st Place award: Cong Miao, Luyu Ju & Shuo Zheng (Wuhan University, China)
    - 2nd Place award: Y. Tsuda & M. Kagehira (Okayama University, Japan)
    - Encouragement awards: M.S. Farhadi (Tampere University, Finland) and J. Rainer & H. Szabowicz (Wroclaw U. of Science and Technology, Poland)
  - Keynote: Managing uncertain ground truth using Bayesian machine learning (KK Phoon & J Ching)
- 16th Asian Regional Conference (16ARC) on Soil Mechanics and Geotechnical Engineering, Oct 14-18 2019, Taipei, Taiwan (Chair: Chang-Yu Ou)
  - <http://www.16arc.org>
  - TC304 session on “Geotechnical risk/reliability and data analysis” (JP Wang & J Ching)
    - 7 presentations
  - Keynote: Role of generic soil database in site-specific soil property estimation (J Ching & KK Phoon)

## 4. Future Activities

### 3.1 Conferences & workshops

- 16th International Conference of the International Association for Computer Methods and Advances in Geomechanics (IACMAG 2020), Jul 1-4 2020, Torino, Italy
  - [www.iacmag2020.org](http://www.iacmag2020.org)
  - Important dates
    - Full paper due: December 15, 2019
  - TC304 session (MS8) on “Probabilistic site characterization and data analytics” (Jianye Ching, Yu Wang, and Kok-Kwang Phoon)
    - 8 submissions
- 7th International Symposium on Reliability Engineering and Risk Management (ISRERM 2020), June 5-8 2020, Beijing, China
  - <http://www.isrerm2020.com>
  - Important dates
    - Abstract due date: Oct 20 2019
    - Full paper due: Dec 31 2019
  - Sessions organized by TC304 members
    - 01. Uncertainty Quantification and Analysis for Industry 4.0 (Kok-Kwang Phoon, Michael Beer)
    - 07. Data Analytics for Geotechnical Engineering (Jie Zhang, Wei Guo)
    - 08. Real World Uncertainty Quantification and Data-driven Decision Making (Kok-Kwang Phoon, Zhaohui Chen, Pengfei Wei)

- 13. Advances in Reliability-based Design: Theory and Applications (Zi-Jun Cao, Jian Ji, Wen-Ping Gong)
- The 6th National Symposium on Engineering Risk & Insurance Research (NSERIR6), Aug 7-9 2020, Chongqing University, Chongqing, China (Chairs: Hongwei Huang & Haijia Wen)
  - TC304/TC309 Student Contest (Wenping Gong, Andy Leung, Zijun Cao, Lei Wang & Hai-Qing Yang)
    - Feb 15 2020: Submission of participation form
    - June 30 2020: Submission of full length paper
    - Aug 7-9 15 2020: Student Contest
    - Contact: Prof. Hai-Qing Yang ([yanghaiqing06@163.com](mailto:yanghaiqing06@163.com))
- 7th Asian-Pacific Symposium on Structural Reliability and its Applications (APSSRA2020), Oct 4-7 2020, Tokyo, Japan (Ikumasa Yoshida & Shin-chi Nishimura)
  - <http://risk.arch.t.u-tokyo.ac.jp/APSSRA2020/index.html>
  - Important Dates
    - Dec 15 2019 Abstract submission due
    - Apr 15 2020 Full paper submission due
    - June 15 2020 Notification of acceptance
  - TC304 Suzanne Lacasse Lecture
  - Sessions related to TC304
    - Machine Learning for Civil Engineering (M. Kohiyama, S. Wu, WenGang Zhang, Takayuki Shuku)
    - Current Trend on Statistical Methods for Engineering Analyses (M. Beer, B.U. Park, K.K. Phoon, K. Zuev, M. Faes)
    - Risk Analysis and Management of Geotechnical Problem (Shin-ichi Nishimura, Lulu Zhang)
    - Probabilistic Site Characterization: Planning, Data Analytics and Value of Information (Yu Wang, Hui Wang, Shin-ichi Nishimura)
    - Probabilistic Methods and Reliability-based Design in Geotechnical Engineering (Jinhui Li, Zijun Cao, Yu Otake)
  - TC304/TC309 Student Contest (Andy Leung, Zijun Cao & Lei Wang)
    - Possibly a pre-conference event (APSSRA organizer will decide).
  - Keynote (J Ching)
  - Short course
    - Geotechnical reliability-based design examples to improve partial factor design methods (BK Low & KK Phoon)
    - KK mentioned about the possibility that TC304 Young Group (Andy Leung, Zijun Cao, and Lei Wang) presents the short videos as a short course in APPSRA 2020. Jianye will discuss this possibility with Young Group.
- 18<sup>th</sup> International Probabilistic Workshop (IPW 2020), September 23-25, 2020, University of Minho, Guimaraes, Portugal
  - <https://ipw2020.com/>
  - Important Dates
    - Nov 30 2019 Abstract submission due (probably extended to Dec 31)
    - Feb 29 2020 Full paper submission due
  - Session related to TC304: Reliability in Geotechnical Engineering (Timo Schweckendiek & Bram van den Eijnden)
- Wojciech and Giovanna proposed to host a TC304 workshop in March 2021 at Wrocław University of Technology.

- Collaboration with European Large Geotechnical Institutes Platform (ELGIP) (Liaison: Timo Schweckendiek)
  - ELGIP consists of researchers from major European geotechnical research institutes such as NGI and Deltares.
  - ELGIP expressed interests for collaboration with TC304 through's email.
  - Armin Stuedlein had a preliminary meeting with Joost from ELGIP in ECSMGE 2019, Iceland.
  - Possible ELGIP-TC304 events during the TC304 Workshop in Wrocław University of Technology.
  
- 13th International Conference on Structural Safety & Reliability (ICOSSAR 2021), Jun 21-25 2021, Tongji University, Shanghai, China
  - <http://www.icossar2021.org/>
  - Important dates
    - Abstracts due: May 31 2020
    - Full paper due: Dec 31 2020
  - TC304 Sessions
    - Bayesian analysis of structural and geotechnical models (Iason Papaioannou, Costas Papadimitriou, Daniel Straub, Jie Zhang)
    - Hazard and risk assessment of earthquake-induced landslides (Cong Xu & Qing Lü)
    - Soft Computing Methods for Geotechnical Infrastructures (Wengang Zhang)
    - Machine learning and data analytics in geotechnical site investigation (Yu Wang & Hui Wang)
    - Multi-source and multi-methodological data fusion to improve the reliability of geo-engineering and environmental characterization, urban planning, and geotechnical designing (Di Curzio Diego, Castrignanò Annamaria, Pula Wojciech & Vessia Giovanna)
    - Uncertainty characterization of the geological model and its influences (Wenping Gong & Lei Wang)

## 5. Other businesses

- TC304 Young Group (Andy Leung, Zijun Cao & Lei Wang)
  - Short videos
    - Young Group has set six topics for short videos (about 15 min each) introducing different aspects of geotechnical risk and reliability. Target audience would be practicing engineers and students. Yu Wang and Zijun Cao are working on the recording of webinars to iron out potential technical issues with the recording. Other videos should follow shortly.
    - Marco Uzielli produced a 90-min ISSMGE webinar in 2017 on “Risk and Geotechnical Engineering”: <https://www.issmge.org/education/recorded-webinars/risk-and-geotechnical-engineering>
    - Yu Wang produced a 17-min short course on “How to Estimate Characteristic Values for Design”: <http://virtualuniversity.issmge.org/courses/course-v1:ISSMGE+TC304-101+2019/course/>
    - Short videos in progress/planning
      - SV1: Overview and significance of geotechnical uncertainty (Waldemar Hachich, in preparation)
      - SV2: How to characterize site/model uncertainty (TBA)

- SV3: How to estimate characteristic values for design (Yu Wang, uploaded; examples by Zijun, in preparation)
  - SV4: How does geotechnical uncertainty impact the system response (TBA)
  - SV5: How to perform reliability analyses on a spreadsheet (TBA)
  - SV6: Case studies for reliability-based design and risk assessment (TBA)
- 304dB database (<http://140.112.12.21/issmge/tc304.htm?=6>)
  - New database contributed by Shin-ichi Nishimura
    - JP-CPTU/25/River dike
    - 25 closely spaced CPTU on a river dike along Oda River, Okayama, Japan.
    - Interlayers of backfill sand, alluvial clay, and diluvial sand.
  - New database contributed by Shuyin Feng & Paul Vardanega
    - FG-KSAT/6/1358
    - Permeability of fine-grained soils
    - Generic database from 33 studies
    - Six parameters:  $e$ ,  $k_{sat}$ ,  $LL$ ,  $PL$ ,  $PI$ ,  $G_s$
  - Expansion of 304dB (load tests & municipal data)
- Special Collection of the ASCE-ASME Journal of Risk and Uncertainty in Engineering Systems: Part A on “Bayesian Learning Methods for Geotechnical Data” (Kelvin Yuen, J Ching & KK Phoon)
  - 7 contributions
- Georisk Special issue on “Recent Developments of Performance-based Design Codes and Practice” honoring Prof Yusuke Honjo (Makoto Suzuki & Masahiro Shirato)
  - 7 papers published
- Georisk Special issue honoring late Prof. Tien H. Wu (KK Phoon and Hsein Juang)
  - 15 papers published
- TC304 Special issue in International Journal of Geoengineering Case histories (Andy Leung)
  - 4 contributions

**Meeting adjourned at 715pm**

# 35th TC304 Committee Meeting

NTUST, Dec 13 2019



1. Jianye Ching	2. Yu Wang	3. Timo Schweckendiek	4. Dianqing Li	5. Zijun Cao	6. Jinsong Huang	7. Richard Bathurst	8. K. K. Phoon
9. Ömer Bilgin	10. Andy Y.F. Leung	11. Armin Stuedlein	12. Marco Uzielli	13. Michele Calvello	14. Takayuki Shuku	15. Ivan Depina	16. Hyun-Ki Kim
17. Shadi Najjar	18. Arjan Grashuis	19. Xin Liu	20. Jie Zhang	21. B. K. Low	22. Zhongqiang Liu	23. Rafael Jiménez	24. Iason Papaioannou
25. Yue Hu	26. Yixun Ge	27. Tengyuan Zhao	28. Xiaoyu Chen	29. Lulu Zhang	30. Jinzheng Hu	31. Johan Spross	32. Qingxia Yue
33. Abdul-Hamid Soubra	34. Abdul-Kader Elhaj	35. Dongming Zhang	36. Monica Löfma	37. Ikumasa Yoshida	38. Mika Knuuti		

(Giovanna Vessia & Wojciech Puła left before photo-taking)

