

Minutes for 37th ISSMGE TC304 Meeting (Online Zoom meeting)

Date: Aug 24, 2020

Zoom Meeting Time: 4:00PM (Taipei, UTC/GMT +8 hours)

Attendees: Michele Calvello, Zhihai Chen, Jianye Ching, Marcin Chwała, Diego Di Curzio, Jinzheng Hu, Hongwei Huang, Jinsong Huang, Marek Kawa, Mikhail L. Kholmyansky, Hyun-Ki Kim, Andy YF Leung, Zhongqiang Liu, Bak Kong Low, Elham Mahmoudi, Dasaka S. Murty, Farrokh Nadim, Shadi Najjar, Shin-ichi Nishimura, Ali Noorzad, Lars Olsson, Kok-Kwang Phoon, Wojciech Puła, Timo Schweckendiek, Takayuki Shuku, Giovanna Vessia, Lei Wang, Tianpeng Wang, Yu Wang, Ikumasa Yoshida, Dongming Zhang, Jie Zhang, Limin Zhang, Wengang Zhang, Yanguo Zhou

1. Approval of the 36th TC304 minutes (Email meeting)

Minutes are approved.

2. Activities in the past six months (conferences, short courses, awards, keynotes, and special issue)

- Are We Overdesigning? – A Survey of International Practice (A joint initiative by the CAPG, the YMPG, TC205 - Safety and Serviceability and TC304 - Risk)
 - Pile Group (Takayuki Shuku & Waldemar Hachich)
 - 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 & Guo-Hui Gao)
 - Deterministic/probabilistic design of two retaining wall problems (propped embedded retaining wall in sand and soil nailed retaining wall)
 - Summary reports submitted
 - Footing group (Zhiyong Yang, Jianfeng Xue & Jianye Ching)
 - Deterministic/probabilistic design of two footing problems (vertically loaded footings on clay and sand)
 - Summary reports submitted
 - Slope group (Shui-Hua Jiang, Xian Liu & Jianye Ching)
 - Deterministic/probabilistic design of two slope problems (a cohesive slope and a sandy slope)
 - Summary reports submitted
 - Next steps
 - A TC304/ISSMGE publication will be formed based on these reports
 - The publication will be considered to be included in the Annex of the CAPG report
 - The final results will be considered for presentation during one of the international conferences (for example, the International Conference in Sydney in 2021)
 - TC304 will consider publish a journal paper with CAPG on the survey outcomes
- A report for TC304/309/210 Machine Learning Dialogue for Geotechnics 2019 has been published in the most recent ISSMGE Bulletin p. 17-22 (TC Corner).

- The report is available at TC304 website:
http://140.112.12.21/issmge/2020/ISSMGE_BULLETIN_2020_FEB.pdf
- Keynotes, invited speeches, and panelists
 - DV Griffiths delivered Invited Panelist on debate into “Limit Equilibrium vs. Finite Element Slope Stability Analysis” at Geo-Congress, Minneapolis, USA, Feb 2020.
 - Giovanna Vessia delivered keynote lecture "Regionalized variables and geostatistical tools to enable a reliable geo-mechanical site characterization for civil engineering designing and natural hazard mapping" at 32th Conference in Computer Methods in the Design and Analysis of Hydrotechnical Structures, Korbielów, Poland, Feb 2020.
 - BK Low delivered 13 technical talks related to his paper which won the 2019 ASCE Thomas A. Middlebrooks award, at the following cities, all coordinated by ASCE except the three Oct 2019 talks in China:
 - Kuala Lumpur (on 8/8/2019),
 - Sydney (2/10), Melbourne (4/10),
 - Christchurch (7/10), Wellington (8/10), Auckland (10/10),
 - Nanjing China (18/10), Fuzhou China (22/10), Shanghai China (25/10),
 - Bangkok (31/10),
 - Taipei (17/12/2019),
 - Lafayette (3/3/2020),
 - Palo Alto (5/3/2020)
- 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, Jianye Ching & Kok-Kwang Phoon)
 - Measuring similarity between site-specific data and records in a geotechnical database (Jianye Ching & Kok-Kwang Phoon)
 - Bayesian learning-based data analysis of uniaxial compressive strength of rock: relevance feature selection and prediction reliability assessment (He-Qing Mu & Ka-Veng Yuen)
 - Optimization of Site Exploration Programs for Slope Reliability Assessment (Shui-Hua Jiang, Iason Papaioannou, and Daniel Straub)
 - Bayesian Updating of Model Parameters by Iterative Particle Filter with Importance Sampling (Ikumasa Yoshida and Takayuki Shuku)
 - Bayesian supervised learning of site-specific geotechnical spatial variability from sparse measurements (Yue Hu, Yu Wang, Tengyuan Zhao, Kok-Kwang Phoon)
 - Broad Learning System for Nonparametric Modeling of Clay Parameters (Sin-Chi Kuok & Ka-Veng Yuen)
 - Developing region-specific liquefaction assessment criterion for Bachu region, China (Yixun Ge, Jie Zhang, Liuwen Zhu, Wentang Zhen)
- Georisk was indexed in SCI

3. Future Activities

3.1 Conferences & workshops

- 16th International Conference of the International Association for Computer Methods and Advances in Geomechanics (IACMAG 2021), May 5-8 2021, Turin, Italy
 - www.iacmag2020.org
 - Important dates

- Authors of accepted papers are requested to register by Aug 19 2020
 - Conference proceedings will be published by Dec 2020.
 - Early registration deadline postponed to Mar 1 2021.
 - 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), Nov 12-14 2020, Beijing, China
 - <http://www.isrerm2020.com>
 - Important dates
 - Deadline for full paper submission: Aug 15 2020
 - Notification of full paper acceptance: Aug 31 2020
 - Deadline for registration: Nov 1 2020
 - Sessions organized by TC304 members
 - 07. Data Analytics for Geotechnical Engineering (Jie Zhang, Wei Guo) (7 abstracts/ 3 full papers)
 - 08. Real World Uncertainty Quantification and Data-driven Decision Making (Kok-Kwang Phoon, Zhaohui Chen, Pengfei Wei) (14 abstracts/7 full papers)
 - 13. Advances in Reliability-based Design: Theory and Applications (Zi-Jun Cao, Jian Ji, Wen-Ping Gong) (12 abstracts/5 full papers)
- The 6th National Symposium on Engineering Risk & Insurance Research (NSERIR6), postponed to 2021 (exact date to be announced), Chongqing University, Chongqing, China (Chairs: Hongwei Huang & Haijia Wen)
 - TC304/TC309 Student Contest (Wenping Gong, Andy Leung, Zijun Cao, Lei Wang & Hai-Qing Yang)
 - 20 participation groups
 - Submission of full length paper: One month before the conference
 - Contact: Prof. Hai-Qing Yang (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>
 - Announcement for COVID-19
 - APSSRA2020 will be held in a remote symposium style
 - Important Dates
 - Dec 15 2019 Abstract submission due
 - May 15 2020 Full paper submission due
 - June 15 2020 Notification of acceptance
 - Sept 17 2020 Deadline for online registration
 - 5th TC304 Suzanne Lacasse Lecture
 - Risk informed landslide hazard mitigation in mountain highway design (Limin Zhang)
 - Sessions related to TC304
 - Machine Learning for Civil Engineering (M. Kohiyama, S. Wu, WenGang Zhang, Takayuki Shuku) (24 abstracts/19 full papers)
 - Current Trend on Statistical Methods for Engineering Analyses (M. Beer, B.U. Park, K.K. Phoon, K. Zuev, M. Faes) (6 abstracts/4 full papers)
 - Risk Analysis and Management of Geotechnical Problem (Shin-ichi Nishimura, Lulu Zhang) (14 abstracts/10 full papers)

- Probabilistic Site Characterization: Planning, Data Analytics and Value of Information (Yu Wang, Hui Wang, Shin-ichi Nishimura) (5 abstracts/4 full papers)
 - Probabilistic Methods and Reliability-based Design in Geotechnical Engineering (Jinhui Li, Zijun Cao, Yu Otake) (12 abstracts/7 full papers)
 - TC304/TC309 Student Contest (Andy Leung, Zijun Cao, Lei Wang & Takayuki Shuku)
 - April 30 2020: Submission of participation form
 - Sep 4 2020: Submission of extended abstract
 - Oct 4-7 2020: Student Contest (remote contest)
 - Contact: Prof. Takayuki Shuku (shuku@cc.okayama-u.ac.jp)
 - <http://140.112.12.21/issmge/tc304.htm?=10>
 - Keynote speech on “Learning about a Site using Sparse Site-Specific Data - Recent Advancements” (J Ching and KK Phoon)
- 18th International Probabilistic Workshop (IPW 2020), May 12-14 2021, University of Minho, Guimaraes, Portugal
 - <https://ipw2020.com/>
 - Important Dates
 - Jan 15 2020 Abstract submission due
 - May 5 2020 Full paper submission due
 - Jan 31 2021 Early bird registration
 - Session related to TC304: Reliability in Geotechnical Engineering (Timo Schweckendiek & Bram van den Eijnden)
- Machine Learning & Risk Assessment in GeoEngineering (MLRA 2021) - Joint International Symposium of Two Events: 3rd International Symposium on Machine Learning and Big Data in Geosciences (3ISMLG) & TC304 Workshop on Risk Assessment in Geoengineering (TCWW 2021)
 - <http://www.mlra2021.pwr.edu.pl/>
 - Conference Chairs: Wojciech Pula, Isam Shahrour & Giovanna Vessia
 - Location: Wroclaw University of Science and Technology, Wroclaw, Poland
 - Date: 15-17 March 2021
 - Important dates:
 - Abstract deadline: 15 Oct 2020
 - Abstract acceptance: 30 Oct 2020
 - Deadline for full papers: 31 Dec 2020
 - Special session between TC304/TC309 & ELGIP (European Large Geotechnical Institutes Platform)
 - PhD Summer School
 - Student Contest
- 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) (9 abstracts)

- Hazard and risk assessment of earthquake-induced landslides (Cong Xu & Qing Lü) (10 abstracts)
 - Machine learning and data analytics in geotechnical site investigation (Yu Wang & Hui Wang) (12 abstracts)
 - 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) (8 abstracts)
 - Uncertainty characterization of the geological model and its influences (Wenping Gong & Lei Wang) (10 abstracts)
- 20th International Conference on Soil Mechanics and Geotechnical Engineering (ICSMGE 2021), Sep 12-17, Sydney, Australia
 - <https://icsmge2021.org/>
 - Important dates
 - Full paper due: Dec 6 2020
- 4th international conference on information technology in geo-engineering (4ICITG), 24-26 Nov 2021, Singapore.
 - Important dates
 - Special Session Proposal 31 Aug 2020
 - Abstract for Conference / Special Journal Issues 15 Oct 2020
 - Confirmation of Acceptance of Abstract 15 Dec 2020
 - Submission of Full Paper / Extended Abstract 30 Mar 2021
 - TC304 Session
 - Data analytics in geotechnical and geological engineering (Y Wang, WG Zhang, XH Qi & J Ching)

3.2 Special issues

- TC304 Special issue in International Journal of Geoenvironmental Case histories
 - Examples of published papers: <https://www.geocasehistoriesjournal.org/pub>
 - Requires submission of the data from authors (in the form of an excel datasheet) which will be made available online to accompany the paper. The purpose is to facilitate the use of data and enhance impact of the paper.
 - 13 abstracts have been submitted and accepted by end of August 2020, reporting cases from 10 countries:
 - R. Bathurst and T. Allen (Canada)
 - A. Stuedlein et al. (US)
 - J. Flink et al. (Denmark)
 - R. Justiniano and A. Pinto (Portugal)
 - L. Tang et al. (China)
 - T. Shuku and J. Ching (Japan)
 - T. Shibata et al. (Japan)
 - H. Prakash et al. (India)
 - S. Roy et al. (India)
 - R K Bharti et al. (India)
 - A. Cherian (UAE)
 - S. Huang et al. (Australia)
 - D. Di Curzio and G. Vessia (Italy)
 - Timeline
 - Jun 1 – Jul 31 2020 Call for abstracts and abstract review by editors
 - Aug 1 – Oct 31 2020 Paper preparation. Full paper submission by Oct 31

- Nov 1 – Dec 31 2020 Paper review and revision stage
 - Jan 1 – Jan 31 2021 Decision stage. Final decision ready by Jan 31
 - Feb or Mar 2021 Final editing/formatting
- Special issue on “Data analytics in geotechnical and geological engineering” in Georisk (Y Wang, WG Zhang, XH Qi & J Ching)
 - This special issue is related to the 4ICITG TC304 Special Session. All the papers in this special issues need to be presented at this special session. The special issue will cover, but not limited to the following topics:
 - Back analysis of geotechnical structures
 - Big data and database processing
 - Data-driven site investigation and interpolation methods
 - Geostatistics and probabilistic site characterization
 - Quantification of geological uncertainties
 - Reliability-based design considering statistical uncertainty
 - Digital geology and geological modeling
 - Important dates for the Georisk special issue:
 - Abstract due: 15 Oct 2020
 - Acceptance of abstract: 15 Nov 2020
 - Submission to Georisk: 15 Feb 2021
 - Tentative acceptance: 30 June 2021
 - 4ICITG Conference: 24-26 Nov 2021
- Special issue on "Quantitative Georisk Management Accounting For Climate Change" in Geosciences (an open access journal of MDPI) (Marco Uzielli)
 - The call for papers can be found here https://www.mdpi.com/journal/geosciences/special_issues/georisk_management
 - The manuscript submission deadline is March 20, 2021.
 - If you are keen to submit a paper, please contact Marco (muz@georisk.eu).

3.3 Short courses

- DV Griffiths will deliver short courses at the following cities
 - Pittsburgh, PA, USA, for the Pittsburgh G-I Chapter, April 2020 (postponed due to Covid-19)
 - Christchurch, Wellington and Auckland, for the New Zealand Geotechnical Society (NZGS), May/June 2020
 - Perth, Australia, for the Western Australia Chapter of the Australian Geomechanics Society (AGS), August 2020
 - Durham and Glasgow, UK, for the British Geotechnical Association (BGA), October 2020

4. Honors & Awards

- Bak Kong Low received the 2019 ASCE Thomas A. Middlebrooks award on 27 February 2020 at the GeoCongress in Minneapolis, USA, for the paper “Insights from Reliability-Based Design to Complement Load and Resistance Factor Design Approach”, that appeared in the November 2017 issue of Journal of Geotechnical and Geoenvironmental Engineering. He also gave a 1.5 hours presentation (including Q&A) based on his award paper at Purdue University on 3-March-2020, and at Palo Alto on 5-March-2020. The complete list of Thomas A. Middlebrooks Award winners from 1956 to now is shown at https://www.asce.org/templates/award-detail.aspx?id=1489&all_recipients=1.
- DV Griffiths has been elected as a Distinguished Member of the ASCE (Dist.M. ASCE) and will be inducted at the ASCE National Convention in Anaheim, CA in October 2020

5. Other businesses

- Task groups for Reliability Background Document of the Eurocodes
 - To support Timo Schweckendiek in writing “Document on the Reliability Background of the Eurocodes”
 - Seven task groups
 - TG1: Site-specific statistics for soil/rock indices and properties
 - Yu Wang (lead), Dongming Zhang, Lulu Zhang, Jianye Ching, Rafael Jimenez, Paul Vardanega & Adeyemi Aladejare
 - TG2: Site-specific statistics for correlations between soil/rock indices and properties
 - Dongming Zhang (lead), Lulu Zhang, Jianye Ching, Ali Noorzad, Rafael Jimenez & Paul Vardanega
 - TG3: Site-specific statistics for spatial variability (e.g., scales of fluctuation)
 - Armin Stuedlein (lead), Yu Wang, Giovanna Vessia, Wojciech Pula, Diego Di Curzio, Sina Javankhoshdel, Brigid Cami & Shin-ichi Nishimura
 - TG4: Statistics for model factors
 - Tang Chong (lead), Richard Bathurst & Jianye Ching
 - TG5: Statistics for transformation uncertainties
 - Jianye Ching (lead) & Ali Noorzad
 - TG6: Review of ways to determine characteristic values
 - Zijun Cao (lead), Yanguo Zhou, Yu Wang, Mohammad Tabarroki, Ali Noorzad, Timo Schweckendiek, Xiaohui Tan, Johan Spross & Mikhail Kholmyansky
 - TG7: Review of evidences for worst-case scale of fluctuation
 - Giovanna Vessia (lead), Yanguo Zhou, Andy Leung, Wojciech Pula, Diego Di Curzio & Mohammad Tabarroki
- TC304 Young Group (Andy Leung, Zijun Cao & Lei Wang)
 - Short videos
 - Young Group has set seven topics for short videos (about 15 min each) introducing different aspects of geotechnical risk and reliability. Target audience would be practicing engineers and students.
 - Planned short videos (15 min) in progress/planning to be online in June
 - SV1: Overview and significance of geotechnical uncertainty (Waldemar Hachich)
 - SV2: How to characterize site/model uncertainty (Zijun Cao)
 - SV3: How to estimate characteristic values for design (Yu Wang)
 - <http://virtualuniversity.issmge.org/courses/course-v1:ISSMGE+TC304-101+2019/about>
 - Examples by Zijun (in preparation)
 - SV4: How does geotechnical uncertainty impact the system response (TBA)
 - SV5: How to perform reliability analyses on a spreadsheet (Lei Wang)
 - SV6: Insights from geotechnical reliability-based design (BK Low)
 - <http://virtualuniversity.issmge.org/courses/course-v1:ISSMGE+TC304-102+2020/about>
 - SV7: Case studies for reliability-based design and risk assessment (TBA)

- 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>
- 304dB database (<http://140.112.12.21/issmge/tc304.htm?=6>)
 - Expansion of 304dB
 - Regional clay data (Löfman Monica & Leena Korkiala-Tanttu)
 - Upcoming databases: load tests (Tang Chong & KK Phoon) & municipal clay data (Dongming Zhang & Hongwei Huang)
- Johan Spross and Lars Olsson formed a project group on Contracts and Geotechnical Risk within the Swedish branch of ISSMGE. This project group will strive to improve the current ways of managing, within contracts, the geotechnical risks that are caused by unexpected or vaguely defined ground conditions. If you also are interested in matters related to contracts and risk, including e.g. the use of Geotechnical Baseline Reports, please contact Johan and Lars.