

Minutes for 31th ISSMGE TC304 Meeting (Email meeting)

Date: Nov 5-9, 2018

Time: Meeting closed as of 5:00 pm (Taipei, UTC/GMT +8 hours), Nov 9 2018

1. Approval of the 30th TC304 minutes (6 ISRERM, June 1 2018)

Minutes were approved.

2. TC304 task forces & working groups

TC304 databases (304dB) <http://140.112.12.21/issmge/tc304.htm?=6>

- Multivariate soil/rock property databases (Yu Wang)
 - New multivariate rock database (ROCK/9/4069) (J Ching)
- Liquefaction databases (LiqChina) (Leader: Yanguo Zhou; Members: Xiao-jun Li, Su Chen, Xiao-Ming Yuan, Long-Wei Chen, Lan-Min Wang, Lin Dong, Li-Hua Tang, Shuai Li, Guo-Jun Cai, Jie Zhang, Wen-Ping Gong & Chih-Sheng Ku)
 - A Salon on Liquefaction Case History and Database Application was held during the 10th China National Conference on Soil Dynamics, November 3 2018 in Nanjing, China, which was jointly supported by ISSMGE TC304, ISSMGE TC303 and the Youth Committee of SSC/CGEE.
 - The purpose of this salon is to discuss the recent progresses of earthquake liquefaction case history database in the great China area named “LiqChina” under the frame of 304db project, to accelerate this project and put impact on the community of soil dynamics.
- Usage report for 304dB: It is important to trace the actual usage of the TC304dB. Please list your works below if you have utilized 304dB and acknowledged the TC304 and the database owners in them.

Database	Work title	Acknowledge 304dB and database owners?
CLAY/10/7490 S-CLAY/7/168	Ching, J. and Phoon, K.K. (2018). Constructing site-specific probabilistic transformation model by Bayesian machine learning. ASCE Journal of Engineering Mechanics (in press)	304dB is acknowledged
CLAY/10/7490	Ching, J. and Phoon, K.K. (2018). Constructing site-specific multivariate probability distribution model – incorporation of spatial correlation. ASCE Journal of Engineering Mechanics (in preparation)	304dB is acknowledged
CLAY/10/7490	Ching, J. and Phoon, K.K. (2018). Measuring similarity between site-specific data and records in a geotechnical database. ASCE-ASME Journal of Risk and Uncertainty in Engineering Systems, Part A: Civil Engineering (in review)	304dB is acknowledged
A-CPT/232/2500m ² SC-CPTU/25/78m ²	Ching, J., Phoon, K.K., Stuedlein, A.W., and Jaksa, M. (2018). Can the auto-correlation of soil be characterized by the scale of fluctuation alone? Structural Safety (in review)	304dB is acknowledged
CLAY/10/7490	Sin-Chi Kuok and Ka-Veng Yuen (2018). Clay	Will acknowledge

	properties correlation prediction using broad learning. To be submitted to a special collection for the ASCE-ASME Journal of Risk and Uncertainty in Engineering Systems, Part A: Civil Engineering (under preparation)	
A-CPT/232/2500m2	Wang, Y., Guan, Z., and Zhao, T. (2018). "Sample size determination in geotechnical site investigation considering spatial variation and correlation." Canadian Geotechnical Journal, https://doi.org/10.1139/cgj-2018-0474 .	304dB is acknowledged

- 304dB database server (Yu Wang)
 - A new website with SQL database is under development.

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

3.1 Conferences & workshops

- General Assembly of European Geoscience Union, , April 8-13 2018, Vienna, Austria
 - <https://egu2018.eu/>
 - TC304 session on "Geostatistical and statistical tools to perform the data fusion of large datasets in geo-engineering and environmental studies" (Diego Di Curzio, Annamaria Castrignanò, Aaron Micallef, Sergio Rusi, Giovanna Vessia, Raphael Viscarra Rossel)
 - 12 presentations
- 6th International Symposium on Reliability Engineering and Risk Management (6ISRERM), May 31-June 1 2018, Singapore (chaired by KK) (KK Phoon)
 - Special sessions organized by TC304:
 - Yu Wang and Jianye Ching "Geotechnical risk and reliability" (12 papers)
 - Dianqing Li and Dagang Lv "Meta-model based uncertainty quantification and reliability analysis" (6 papers)
 - Hongwei Huang and Bilal Ayyub "Resilience of geotechnical system and infrastructure" (3 papers)
 - Zijun Cao and He-Qing Mu "Geotechnical databases and data analysis" (8 papers)
 - LM Zhang and Jinhui Li "Landslide risk assessment and management" (6 papers)
 - Short course on "Statistical estimation of soil properties" (KK Phoon & J Ching)
 - Keynote lecture "Bayesian data mining for a generic geotechnical database" (J Ching & KK Phoon)
 - Plenary lecture "Smart sensing on tunnel defects by artificial intelligence" (HW Huang)
 - Forum on "Opportunities and drawbacks of publically available databases" (AW Stuedlein and J Ching)
- 5th Geotechnical Earthquake Engineering and Soil Dynamics Conference, Austin, Texas, USA, 10-13 June 2018 (Chair: Adrian)
 - Two sessions in the conference that dealt specifically with issues related to hazard and risk (Seismic Hazard Assessment I and II), the sessions were chaired by Sebastiano Foti, from the Politecnico di Torino)
 - 1 plenary lecture, 14 related presentations, and 6 posters

- 3rd International Workshop on Resiliency of Urban Tunnels and Pipelines, Hannover, Germany, October 1 2018 (Michael Beer, Hongwei Huang and Bilal Ayyub)
 - Six keynotes
- First TC304 Student Contest in 5th China National symposium on Engineering Risk and Insurance, August 18 2018, Harbin Institute of Technology, China
 - Organizer: Dagang Lv, Hongwei Huang & Jie Zhang
 - <http://140.112.12.21/issmge/tc304.htm?=#10>
 - Winners of TC304 Student Contest Award
 - Shuo Zheng, Qinxuan Deng and Yuxin Zhu “A simple outlier detection method for the multiple dimensional problem” (Wuhan University; advisor: Dianqing Li & Zijun Cao)
 - Winners of TC304 Encouragement Award
 - Jingze Gao, Guoliang Wang, Renming Deng, and Laiming Deng (Harbin Institute of Technology; advisor: Xiaohui Yu)
 - Te Xiao and Jian He (Wuhan University; advisors: Dianqing Li & Zijun Cao)
 - J.J. Hu, J.Z. Hu and T. Cheng (Tongji University; advisor: Hongwei Huang & Dongming Zhang)
 - Two articles have been submitted to ISSMGE Bulletin
 - One article for TC Corner (submitted), and the other for Young Member Arena (submitted).

3.2 Short courses

- “Statistical estimation of soil properties” (KK Phoon & J Ching), 6ISRERM, Singapore
- “Reliability and risk analysis in geotechnical practice” (in Dutch) (Wim Kanning and Timo Schweckendiek) for 20 Dutch practicing engineers, October 7-8 2018, The Netherlands
- “Limit states design” (probabilistic aspects) (Dennis Becker & Gordon Fenton), Sep 23 2018, Geo-Edmonton, Edmonton, Alberta, Canada
- “Use of Bayesian statistical methods in geotechnical engineering” (Jinsong Huang), July 31 2018, Sydney, Australia
- “Probabilistic methods in geotechnical engineering” (D. V. Griffiths), August 6 2018, Sydney, Australia
- “Quantitative risk assessment in geotechnical engineering” (D. V. Griffiths), NZGS. May 28 2018, Wellington, NZ; NZGS. June 5 2018, Christchurch, NZ; CGSE, August 6 2018, UTS Sydney, Australia.
- “Quantitative risk assessment in geotechnical engineering” and RFEM Workshop (D. V. Griffiths), Escuela Ingenieria de Colombia. October 12-13 2018, Bogota, Colombia.
- “Probabilistic methods in geotechnical engineering” and RFEM Workshop (D. V. Griffiths), 1-5 days for a major geotechnical consultancy. December 11-12 2018, Sydney, Australia.

3.3 Awards

- Georisk 2017 Best Paper Award
 - Te Xiao, Dian-Qing Li, Zi-Jun Cao and Xiao-Song Tang, Full probabilistic design of slopes in spatially variable soils using simplified reliability analysis method, Georisk, 2017, 11(1), 146-159.
- Georisk 2017 Most Cited Paper Award
 - Lloret-Cabot, G.A. Fenton, and M.A. Hicks, On the estimation of scale of fluctuation in geostatistics, Georisk, 2014, 8(2), 129-140.
- Canadian Geotechnical Journal "Editor's Choice" award
 - Naghibi, F., and Fenton, G.A., Target geotechnical reliability for redundant foundation systems, Canadian Geotechnical Journal, 2017, 54(7), 945--952,

3.4 Keynotes

- Keynote lecture “Bayesian data mining for a generic geotechnical database” (J Ching & KK Phoon), 6ISRERM, May 31-June 1 2018, Singapore
- Plenary lecture “Smart sensing on tunnel defects by artificial intelligence” (HW Huang), 6ISRERM, May 31-June 1 2018, Singapore
- Keynote lecture “Individual and regional risk assessments of landslides” (Jinsong Huang), Australian Geoscience Council Convention, October 14-18 2018, Adelaide, Australia
- Keynote lecture “Smart Sensing on Infrastructure Safety by WSN” (Hongwei Huang), 5th Joint Workshop on Building / Civil Engineering between Tongji & Tokyo Tech, July 26-27 2018, Tokyo, Japan
- Keynote lecture “Robust Design and Maintenance in Geostructural System” (Hongwei Huang), 3rd International Workshop on Resiliency of Urban Tunnels and Pipelines, October 1 2018, Hannover, Germany
- Keynote lecture “Smart Sensing on Metro Tunnel Safety by WSN” (Hongwei Huang), 2nd International Metrorail Forum Turkey, October 4-5 2018, Istanbul, Turkey
- Keynote on "Risk Assessment and Civil Infrastructure" (DV Griffiths), EXPOingenieria World Congress, Medellin, Colombia.
- Panelist and main workshop speaker on "The Role of Water and Climate Change in Geotechnical Risk" (DV Griffiths), CARE2018 Conference, October 26-28 2018, Hong Kong
- Round table lecture on "Lessons from the past and perspectives for the future of Geotechnical Engineering" (Waldemar Hachich), GEOJOVEM 2018, August 28 2018-September 1 2018, Salvador, Bahia, Brazil.
- Special lecture on "Reliability of soil nailing structures" (Waldemar Hachich), COBRAMSEG 2018, August 28 2018- September 1 2018, Salvador, Bahia, Brazil.
- Special lecture on “Optimising Site Investigations Using a Risk-based Approach” (Mark Jaksa), May 8-9 2018, Australian Geomechanics Society, Tasmanian and Victorian Chapters.

3.5 Books

- The 5th edition of the textbook "Programming the Finite Element Method" by Smith, Griffiths and Margetts, John Wiley & Sons, has recently been published in the Chinese language (2017): <http://product.dangdang.com/25083010.html>

4 Future activities

4.1 Conferences & workshops

- Workshop on Reliability Based Design, Risk Analysis, Limit State Design, Dec 7 2018, Hong Kong (Geotechnical Division of the Hong Kong Institution of Engineers)
 - Invited speakers: KK Phoon & J Ching
- 13th International Conference on Applications of Statistics and Probability in Civil Engineering (ICASP13), May 26-30 2019, Seoul, Korea, 2019 (Chair: Junho Song)
 - <https://www.icasp13.snu.ac.kr/>
 - TC304 special session on “Development and Application of Probabilistic Methods in Geotechnical Engineering” (Yu Wang, Jie Zhang & J Ching)
 - 12 abstracts
 - Full paper due Nov 15 2018
- 16th Asian Regional Conference (16ARC) on Soil Mechanics and Geotechnical Engineering, Oct 14-18 2019, Taipei, Taiwan (Der-Wen Chang)
 - <http://www.16arc.org>

- TC304 session on “Geotechnical risk/reliability and data analysis” (JP Wang & J Ching)
 - 11 abstracts
 - Full paper due: Dec 1 2018
- Short course (KK Phoon & J Ching)
- Keynote (J Ching & KK Phoon)

- International Symposium for Geotechnical Safety & Risk (ISGSR 2019), Dec 11-13 2019, Taipei, Taiwan (Chair: J Ching; Vice Chair: Dianqing; Secretary: Jie Zhang)
 - <http://www.isgsr2019.org/>
 - 179 abstracts have been accepted
 - Full paper due: Jan 15 2019
 - Named lectures
 - Wilson Tang Lecture: Hsein Juang
 - Suzanne Lacasse Lecture: KK Phoon
 - Keynotes
 - John Harrison, Limin Zhang, Trevor Orr, Jinsong Huang, and Yu Wang
 - Short courses
 - Risk Assessment in Geotechnical Engineering (DV Griffiths & Gordon Fenton)
 - Bayesian method and tools for geotechnical practice (Timo Schweckendiek & Yu Wang)
 - Mini-symposiums
 - TC309/304 mini-symposium on Machine Learning and Big Data for Geotechnics (Zhongqiang & Zijun)
 - Mini-symposium on Performance-based Design Codes and Practice honoring Prof. Yusuke Honjo (Takashi Hara and Yu Otake)
 - Special session honoring late Prof. Tien H. Wu (KK Phoon and Hsein Juang)
 - Sessions
 - Advances in geotechnical reliability-based design (Zijun Cao & Dianqing 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 A. Robbins)
 - Effect of spatial variability on seismic performance of soil and rock and associated reliability (Armin W. 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 (JP 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 (KK Phoon & Marco Uzielli)
 - Uncertainty & reliability analysis in rock engineering (Rafael Jimenez)
 - Case histories / applications (Armin Stuedlein & Jianye)
 - Targeting researchers and practitioners who can demonstrate the usefulness/limitation of their methods, or methods proposed by others, using real cases.
 - The session would include speakers presenting case histories for perhaps 2/3 of the session, followed by a panel of the speakers with whom the audience can participate in debate and discussion regarding the challenges and possible solutions for dealing with real cases.
 - Full paper not required, but rather an abstract or extended abstract to be included in the program.
- TC304 Student Contest
- 7th Asian-Pacific Symposium on Structural Reliability and its Applications (APSSRA7), Oct 4-7 2020, Tokyo (Ikumasa Yoshida & Shin-chi Nishimura)
 - Theme: From Reliability to Risk, from Academia to Society
 - Important Dates
 - Nov 2019 Abstract submission due
 - Apr 2020 Full paper submission due
 - Jun 2020 Notification of acceptance
 - Correspondence
 - Symposium Chair: Tsuyoshi Takada, The University of Tokyo, Japan
 - Secretariat: Tatsuya Itoi, The University of Tokyo, Japan
 - email: apssra2020@load.arch.t.u-tokyo.ac.jp
 - TC304 events include Suzanne Lacasse Lecture, TC304 mini-symposium, and Student Contest
- 29th European Safety and Reliability Conference (ESREL 2019), Hannover, Germany, Sep 22-26 2019 (Michael Beer & Enrico Zio)
 - Conference website: <https://esrel2019.org/#/>
 - 19 methodological topics and 23 application areas and sectors.
 - Giovanna & Wojtek Pula will discuss the possibility of having a TC304 Student Contest at this conference
 - Important Dates
 - 31st October, 2018: Abstract submission deadline
 - 30th November, 2018: Notification of acceptance
 - 28th February, 2019: Full paper submission deadline
 - 31st March, 2019: Notification of acceptance
 - 30th April 2019: Final revised paper & registration
- Nordic Geotechnical meeting NGM2020, Helsinki Finland, May 2020
 - BR Leena is planning to have a special session about statistical methods and reliability based design, if they can get enough papers.
 - <https://www.ril.fi/en/events/ngm-2020.html>

4.2 Short courses

- Statistical Estimation of Soil Properties (KK Phoon & J Ching), 16 ARC

- Risk Assessment in Geotechnical Engineering (DV Griffiths & Gordon Fenton), ISGSR2019
- Bayesian method and tools for geotechnical practice (Timo Schweckendiek & Yu Wang), ISGSR2019

4.3 Books/journals/special issues

- 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)
- Georisk Special issue on “Recent Developments of Performance-based Design Codes and Practice” honoring Prof Yusuke Honjo (Takashi Hara and Yu Otake)
- Special issue in Biosystems Engineering on "Computational Tools to Support Soil Management Decisions" (Editors: Vessia G., Falconer R., Zimmermann B. & Tarquis A. M.)
 - Volume 168, Pages 1-142 (April 2018)
 - 11 contributions
- Georisk review paper for Machine Learning is finalized for publication: Machine learning in georisk: from geohazards to structural safety (Kelvin Yuen & He-Qing Mu)
- Georisk Special issue honoring late Prof. Tien H. Wu (KK Phoon and Hsein Juang)
 - 18 abstracts have been received and one full paper has been received thus far.
 - Full paper due 1 Dec 2018
 - The special issue is targeted for Georisk, Vol 13, Issue 4, 2019.
 - A special session in Honour and Memory of Professor Tien H. Wu will be held in ISGSR2019

4.4 Keynotes

- 10th Lumb Lecture, Dec 6 2018, University of Hong Kong (KK Phoon)
- (16 ARC) Keynote by J Ching & KK Phoon
- (ISGSR 2019) Wilson Tang Lecture by Hsein Juang, Suzanne Lacasse Lecture by KK Phoon, keynotes by John Harrison, Limin Zhang, Trevor Orr, Jinsong Huang, and Yu Wang
- Waldemar Hachich was elected by the Brazilian Geotechnical Association (ABMS) to deliver the prestigious Milton Vargas Lecture for 2018 at twelve different venues around the country

5 Other businesses

- TC304 Young Group (Andy Leung, Zijun Cao & Lei Wang)
 - TC304 Student Contest Award
 - Inaugural TC304 Student Contest was held on August 18 2018 in Harbin Institute of Technology, Harbin, China. 14 teams (36 participants) submitted full papers and presented their studies to the award committee (Kok Kwang Phoon, Jianye Ching, and Limin Zhang). Depending on how this contest question was addressed, one TC304 Student Contest Award and three Encouragement Awards were selected and given by the award committee.

- TC 304 Young Group agrees to have a monthly skype meeting to discuss about the activities that the group is engaged. The first meeting was held on 9:00 am on Oct 3 2018 (Hong Kong time). The Young Group discussed about collaborations between TC304 ISSMGE and YMPG for future student contests (format and content of the tests and possible hosted conferences), and development of short 'how to' videos and other online resources for the ISSMGE online platform (Virtual University) to educate students and practicing engineers about use of probabilistic analyses in geotechnical engineering.
 - A list of topics for the short videos is being developed. The goal is to produce the videos with clear learning outcomes and pedagogical sequence. Also, these topics/contents may eventually contribute to the Wikipedia pages for Geotechnical variability for a holistic effort on education.
- Short videos to be developed (15 minutes each). Members are welcome to contact Zijun, Andy, and Lie join such efforts.
 - Short video #1 entitled "Overview and significance of geotechnical uncertainty"
 - Short video #2 entitled "How to characterize site/model uncertainty"
 - Short video #3 entitled "How to estimate characteristic values for design"
 - Short video #4 entitled "How does geotechnical uncertainty impact the system response"
 - Short video #5 entitled "How to perform reliability analyses on a spreadsheet"
 - Short video #6 entitled "Case studies for reliability-based design and risk assessment"
- Sina Javankhoshdel added the 2D Random Limit Equilibrium Method (2D RLEM) as an option to Slide2 2018 software (called Spatial variability analysis) at Rocscience Inc. which was released in March 2018