

# Minutes for 28<sup>th</sup> ISSMGE TC304 Meeting (email meeting)

**Date:** Dec 11-15 2017

**Time:** Meeting closes as of 5:00 pm (Taipei, UTC/GMT +8 hours), Dec 15 2017

## 1. Approval of the 27th TC304 minutes (19th ICSMGE, Sept 20 2017)

Minutes were approved.

## 2. TC304 task forces & working groups

TC304 has begun the database effort “304dB” discussed at the 27th Meeting in Seoul. Details regarding database task force are shown below, including individual task force leaders. Please take a moment and review the 304dB website, at

[http://140.112.12.21/issmge/Database\\_2011.htm](http://140.112.12.21/issmge/Database_2011.htm)

and send your comments and suggestions if any to the Task Force leaders by Dec 20 2017. Following discussion and implementation of comments, we plan on sending the ICSMGE President Ng a press release announcing this development to the International Community. An invitation to join a task force follows below.

- CPT databases
  - Leader: Armin Stuedlein (armin.stuedlein@oregonstate.edu)
  - Database contributors: Mark Jaksa, Armin Stuedlein, Arjan Grashuis, Giovanna Vessia, Shin-ichi Nishimura
- Multivariate soil/rock property databases
  - Leader: Yu Wan (yuwang@cityu.edu.hk)
  - Database contributors: Jieru Chen, Jianye Ching, Marco D’Ignazio & Tim Länsivaara, Guojun Cai
  - Yu commented that the current plan is to develop a searchable interface webpage for the database using SQL, making the database more user friendly.
- Geospatial databases
  - Leader: Michele Calvello
  - Database contributors: Wing Sun
  - Giovanna suggested to include the link to the website of Tuscan Region (Italy), and the link to the Emilia Romagna Region (Italy).
- Liquefaction databases (LiqChina)
  - Leader: Yanguo Zhou
  - Members: Guojun Cai, Longwei Chen, Lin Dong, , Wenping Gong, Chih-Sheng Ku, Shuai Li, Lanming Wang, Xiaoming Yuan

Other task forces & working groups

- Machine Learning:
  - Compile ML reference list, organize special sessions, software developments, etc.
  - Dianqing Li (coordinator), Zijun Cao, He-Qing Mu & Zhongqiang Liu (NGI liaison)
  - Outline of the reference list
    - Part I: Need to know knowledge
    - Part II: Machine learning algorithms
    - Part III: Applications in geotechnical engineering
  - Jinsong commented that it is desirable have a web page to host this, so all members can add references online by providing a user name and password. He-Qing mentioned a project named CivilAI (an online research platform with a reference search engine) is undergoing.
- Wikipedia

- Create Wikipedia pages for "geotechnical variability"
- Andy Leung (coordinator), Jianye Ching, Zhongqiang Liu, Shadi Najjar, Jaehyun Park, Timo Schweckendiek
- A 'draft' page is available on Wiki:  
[https://en.wikipedia.org/wiki/Draft:Geotechnical\\_variability](https://en.wikipedia.org/wiki/Draft:Geotechnical_variability).
- The current plan is to have two inter-linked pages: (1) Geotechnical variability, which is more on the uncertainty and the characterization, and (2) Geotechnical reliability, which is about propagation of the uncertainty to geotechnical response.
  - Geotechnical variability
    - Inherent variability (Andy Leung)
      - Trend
      - Coefficient of variation
      - Scale of fluctuation
    - Measurement error
    - Statistical uncertainty
    - Transformation uncertainty (Jianye)
    - Significance of Geotechnical variability (Andy Leung)
  - Geotechnical reliability
    - Methods for geotechnical reliability analyses
      - FOSM
      - FORM
      - Random field modelling
      - Bayesian methods
      - Event trees, etc.
    - Sampling strategy and Site characterization
    - Slopes and Levees
    - Retaining structures
    - Tunnels
    - Foundations
    - A few words on Model uncertainty
    - Impact on society and risk communication
- KK commented that anyone is free to edit a wiki page. In fact, it is highly encouraged for people to co-edit the page. All materials must be strictly original. Wiki editors will reject the draft if we use texts from other sources, because of copyright reasons. If we wish to refer to substantial materials elsewhere, the correct approach is to hyperlink. For shorter text, we still need to re-phrase and strictly avoid "copy and paste".

### 3. Joint TC205/TC304 discussion group reports/chapters

- Finalized reports are available on <http://140.112.12.21/issmge/tc304.htm>

### 4. Past activities (conferences, short courses, and keynotes)

#### 4.1 Conferences

- 19<sup>th</sup> ICSMGE
  - Suzanne Lacasse Lecture, Sep 19 2017 - Farrokh Nadim delivered an excellent lecture on "Reliability-Based Approach for Robust Geotechnical Design"
  - Joint TC205/304 Workshop, Sep 20 2017 (Chairs: Brian & KK)
  - TC304 discussion session, Sep 20 2017 (Chairs: KK & Jaehyun)

- Hyunki delivered an overview of “Engineering practice of risk assessment and management (TC 304)” as General Reporter.
  - There are 11 papers, but only 9 papers were presented.
  - KK thanked Hyunki, Jaehyun, Gil-Lim, Dongwook, Chanyoung and Hansaem for organizing the joint workshop and the TC304 discussion session.
- 2nd International Workshop on Resilience of Urban Tunnel and Pipeline, July 15 2017, and 2nd International Workshop on Monitoring and Inspection on Metro Tunnel, July 16, 2017, Shanghai, China (HW Huang)
  - 180 attendees
  - 7 keynotes and 2 invited lectures on July 15, including Hsein Juang and KK Phoon
  - 7 keynotes on July 16, including HW Huang
- TC304/TC205/GI-RAM/GEOSNet mini-symposium “Reliability of geotechnical structures” in 12th International Conference on Structural Safety and Reliability (ICOSSAR2017), Aug 6-10 2017, Vienna, Austria (KK Phoon, J Ching & GA Fenton)
  - 3 sessions with 14 papers presented.
  - Next ICOSSAR 2021 will be held in Tongji University, Shanghai, China.
- 15th International Conference of the International Association for Computer Methods and Advances in Geomechanics (15 IACMAG), Oct 19-23 2017, Wuhan, China
  - Sessions on “Computational probabilistic geomechanics” (KK Phoon, DQ Li & M Beer) – 2 sessions with 9 presentations
  - Invited lecture “Homogenization of strength and modulus in spatially variable soils” (KK Phoon & J Ching).
- International Symposium on Life-cycle Engineering and Sustainability of Infrastructure (ISLESI 2017), Nov 8-11 2017, Taipei, Taiwan
  - Keynote “Effect of strain softening on mobilized strength of spatially variable soil” (KK Phoon)
  - Keynote “Construction of site-specific probabilistic transformation model for geotechnical design” (J Ching)

#### **4.2 Short courses**

- Short course (2-days) on “Reliability and risk in geotechnical engineering practice”. Deltares Academy, Oct 23-24 2017, Delft, Netherlands (T. Schweckendiek & W. Kanning).
- Short course on “Understanding geotechnical reliability-based design and its complementary role to partial factors design approach”, Geo-Risk 2017 conference, 4 June 2017, Denver, Colorado, USA (BK Low & KK Phoon).

#### **4.3 Books/journals**

- Georisk has been successfully included in Emerging Sources Citation Index (ESCI) (Limin Zhang)

#### **4.4 Keynotes/invited lectures**

- Suzanne Lacasse lecture “Reliability-Based Approach for Robust Geotechnical Design” (Farrokh Nadim), 19 ICSMGE, Sep 19 2017, Seoul, Korea

- Invited lecture “Homogenization of strength and modulus in spatially variable soils” (KK Phoon & J Ching), 15th International Conference of the International Association for Computer Methods and Advances in Geomechanics (15 IACMAG), Oct 19-23 2017, Wuhan, China
- Keynote “Effect of strain softening on mobilized strength of spatially variable soil” (KK Phoon & Yutao Pan), International Symposium on Life-cycle Engineering and Sustainability of Infrastructure (ISLESI 2017), Nov 8-11 2017, Taipei, Taiwan
- Keynote in ISLESI 2017 “Construction of site-specific probabilistic transformation model for geotechnical design” (J Ching), International Symposium on Life-cycle Engineering and Sustainability of Infrastructure (ISLESI 2017), Nov 8-11 2017, Taipei, Taiwan

#### 4.5 Awards

- Gordon Fenton was awarded the CERRA C. Allin Cornell Award in 2015 in ICASP12, Vancouver
- 2017 Computers & Geotechnics Best Paper Award: Lü Q., Low B.K. 2011. Probabilistic analysis of underground rock excavations using response surface method and SORM. Computers & Geotechnics, 38(8), 1008-1021.
- 2017 Computers & Geotechnics Best Paper Award: Low, B.K., Zhang, J., Tang, W.H. 2011. Efficient system reliability analysis illustrated for a retaining wall and a soil slope. Computers & Geotechnics, 38(2), 196-204.

### 5. Future activities

#### 5.1 Conferences

- Major event in 2018: 6<sup>th</sup> International Symposium on Reliability Engineering and Risk Management (6ISRERM), May 31-June 1 2018, Singapore (chaired by KK)
  - <http://cee.nus.edu.sg/ISRERM/index.html>
  - The theme of this conference is resilience engineering. One objective is to discuss the role of reliability in robustness and resilience.
  - The authors are required to submit their papers in both WORD and PDF format to [isrerm2018@nus.edu.sg](mailto:isrerm2018@nus.edu.sg) and the session organizers by Dec 31 2017.
  - Special sessions organized by TC304:
    - Yu Wang and Jianye Ching “Geotechnical risk and reliability” (13 Abstracts)
    - Dianqing Li and Dagang Lv “Meta-model based uncertainty quantification and reliability analysis” (7 Abstracts)
    - Hongwei Huang & Bilal Ayyub “Resilience of geostructural system and infrastructure” (6 Abstracts)
    - Zijun Cao and He-Qing Mu “Geotechnical databases and data analysis” (12 Abstracts)
    - LM Zhang “Landslide risk assessment and management” (7 Abstracts)
  - TC304 Forum on "Constructing open-to-public geotechnical databases - possible obstacles and solutions" (Armin & Jianye)
  - A special session will be organized for the shortlisted papers for the best student paper award and the student scholarship. More details can be found at the conference website.
  - For those who are interested to submit a full paper although you have missed the abstract deadline, please contact KK Phoon directly ([kkphoon@nus.edu.sg](mailto:kkphoon@nus.edu.sg)).
- The European Geoscience Union - General Assembly 2018 (EGU 2018), April 8-13 2018, Vienna, Austria

- <https://egu2018.eu/home.html>
- Multidisciplinary session titled “Geostatistical and statistical tools to perform the data fusion of large datasets in geo-engineering and environmental studies” (D. Di Curzio, A. Castrignanò, A. Micalef, S. Rusi, G. Vessia, R. Viscarra Rossel) (<http://meetingorganizer.copernicus.org/EGU2018/session/28382>).
- Abstract submission is open up to 10th January 2018 at: [https://egu2018.eu/abstract\\_management/how\\_to\\_submit\\_an\\_abstract.html](https://egu2018.eu/abstract_management/how_to_submit_an_abstract.html)
- 5th China National symposium on Engineering Risk and Insurance, Aug 17-19 2018, Harbin Institute of Technology Harbin, China (Dagang LV & HW Huang)
  - Full paper submission due: April 30 2018
  - Aug 17-19 2018
  - Contact: [gcfybx@163.com](mailto:gcfybx@163.com)
- International Symposium for Geotechnical Safety & Risk (ISGSR 2019), Dec 11-13 2019, Taipei, Taiwan (J Ching)
  - <http://www.isgsr2019.org/>
  - Call for abstract: June 1, 2018
  - Abstract due: Aug 31, 2018
  - Wilson Tang & Suzanne Lacasse Lectures
  - 20+ sessions (15+ organized sessions)
  - Special session honoring Prof. Yusuke Honjo (Guest editors: Makoto Suzuki and Masahiro Shirato)
    - The purpose of this session is to present papers appearing in a Special Issue in Georisk on “Recent Developments of Performance-based Design Codes and Practice” honoring Prof Yusuke Honjo.
- 16th Asian Regional Conference (16ARC) on Soil Mechanics and Geotechnical Engineering, Oct 14-18 2019, Taipei, Taiwan (Der-Wen Chang)
  - <http://www.16arc.org>
  - Abstracts due: May 31 2018
  - TC304 will organize 1-2 special sessions (JP Wang & J Ching)
- The 17th European Conference on Soil Mechanics and Geotechnical Engineering (17 ECSMGE), Sept 1-6 2019, Reykjavik, Iceland
  - <http://www.ecsmge-2019.com/>
  - Abstract due: May 30 2018
  - TC304 may have a Suzanne Lacasse Lecture
- 13<sup>th</sup> International Conference on Applications of Statistics and Probability in Civil Engineering (ICASP13), May 26-30 2019, Seoul, Korea, 2019 (Chair: Junho Song)
  - Website not yet available, to be updated in future
  - TC304 may consider to organize session/mini-symposium
- 7<sup>th</sup> Asian-Pacific Symposium on Structural Reliability and its Applications (APSSRA7), Tokyo, 2020 (Shin-chi) – organization in progress

## 5.2 Short courses

None

## 5.3 Books/journals

- Special Issue in Georisk on “Recent Developments of Performance-based Design Codes and Practice” honoring Prof Yusuke Honjo (Makoto Suzuki and Masahiro Shirato).
  - Members who are interested to contribute papers can email Makoto directly ([makoto.suzuki@p.chibakoudai.jp](mailto:makoto.suzuki@p.chibakoudai.jp))
- Special Collection of the ASCE-ASME Journal of Risk and Uncertainty in Engineering Systems: Part A on “Probabilistic Site Characterization” (KK Phoon)
- Chinese translation of Phoon, K. K. & Retief, J. V. (2016), Reliability of Geotechnical Structures in ISO2394 (CRC Press/Balkema) by D.Q. Li, X.S. Tang, Z.J., Cao to be published in 2018: 李典庆、唐小松、曹子君. 2018. 基于 ISO2394 的岩土工程可靠度设计, China Water & Power Press (中国水利水电出版社).
- Georisk review paper for Machine Learning (Kelvin Yuen & He-Qing Mu)

#### **5.4 Keynotes/invited lectures**

None