# NEWS from Technical Committee TC104 on Physical Modeling in Geotechnics

Chair: Prof. Christophe Gaudin, University of Western Australia
Vice-Chair: Prof. Andy Take, Queen's University, Canada
Secretary: Prof. Dave White, University of Western Australia

Workshop and conferences

- Two special Physical Modelling sessions entitled "Roles and influences of physical modeling on state of the art and practice of geotechnical engineering" and "Roles and influences of physical modeling on state of the art and practice of geotechnical earthquake engineering" were held during GeoCongress 2012. The second session was co-sponsored with the ISSMGE TC203 on Earthquake Geotechnical Engineering.
- The 2nd quadrennial European Symposium on Centrifuge Modeling, Eurofuge 2012 was organized by Deltares in Delft (Netherlands) on 23-24 April 2012.
- The 1st quadrennial Asian Symposium on Centrifuge Modeling, Asiafuge 2012 Asiafuge will be organized by IT Bombay, India on 14-16 November 2012.
- The 8th quadrennial International Conference on Physical Modelling in Geotechnics, ICPMG2014, will be hosted by the Centre for Offshore Foundation Systems at the University of Western Australia, Perth, on 14-17 January 2014.

Communication and dissemination

- The 1st Andrew Schofield Lecture has been awarded to Prof. Malcolm Bolton, Cambridge University, in recognition of his outstanding contribution to the field of physical modeling in geotechnics. The Lecture will be presented for the first time at the 18th ICSMGE in Paris in September 2013.
- The new version of our TC104 website is now available online (http://www.tc104.group.shef.ac.uk/). The website aims at being a portal for all physical modellers to exchange knowledge and information. In its current form, it presents our term of references and the activities to be developed for the current term, provides contact details for the global network of TC104 members, and a list of experimental facilities worldwide.
- A wikipage about Andrew Schofield, following the establishment of the Schofield Lecture, has been created (http://en.wikipedia.org/wiki/Andrew_N._Schofield). More wiki materials are programmed for the next couple of years.
- An update of the 2007 Scaling Law catalogue, describing similitude principle and scaling relationships in geotechnical physical modeling is in preparation and will be presented at the 8th ICPMG held in Perth in January 2014.
- An industry portfolio describing the industrial application of physical modelling in geotechnics is in preparation and will be presented at the 8th ICPMG held in Perth in January 2014. The portfolio aims at showcasing physical modelling to our industry partners and at helping increase their awareness about physical modelling capabilities and benefits.

# NEWS from Technical Committee TC304 on Engineering Practice of Risk Assessment and Management

Chair: K. K. Phoon (Singapore) (kkphoon@nus.edu.sg)
Vice-Chair: Gordon Fenton (Canada) (Gordon.fenton@dal.ca)
Secretary: Jianye Ching (Chinese Taipei) (jyching@gmail.com)
Website: http://140.112.12.21/issmge/tc304.htm
GeoWorld: http://www.mygeoworld.info/pg/groups/948/engineering-practice-of-risk-assessment-and-management-tc304/

To disseminate knowledge and practice within the TC's subject area

Short courses

- "Reliability Analysis and Design in Geotechnical Engineering", 1 June 2011, Munich, Germany (KK Phoon)
- "Risk Assessment in Geotechnical Engineering", 24-25 March 2011, San Diego, USA (DV Griffiths & GA Fenton)
- "Risk Assessment in Geotechnical Engineering", 5-6 May 2011, Chicago, USA (DV Griffiths & GA Fenton)
- "Risk Assessment in Geotechnical Engineering", 26 June 2011, Atlanta, USA (DV Griffiths & GA Fenton)
- "Risk and Reliability of Levees and Dams", 26 June 2011, Atlanta, USA (GB Baecher, RB Gilbert & M McCann)
- "Reliability analysis and design in Geotechnical Engineering", 25 March 2012, Oakland, USA (KK Phoon & J Ching)
- ISSMGE webinar "Risk Assessment in Geotechnical Engineering", 24 Feb 2012 (Z Medina-Cetina & M Uzielli)

Publications

- Geotechnical Special Publications 224, "Geotechnical Risk Assessment and Management", ASCE, Reston, 2011 (CH Juang, KK Phoon, AJ Puppala, RA Green, & GA Fenton)
- Edited book on "Modern Geotechnical Design Codes of Practice - Development, Calibration & Experiences", IOSPress (P Arnold, GA Fenton, M Hicks, T Schweckendiek & B Simpson) (scheduled for publication Dec 2012)
- Geotechnical Special Publication in honour of Professor Fred Kulhawy (M Hussein, KK Phoon & J Withiam) ASCE, Reston (reviews in progress; scheduled for publication 2013)

To establish guidelines and technical recommendations within the TC's subject area

- TC304 Guidelines, Information, and Technical Resources – a compilation of over 300 references organized into 17 topics ranging from "Introductory Material" to "Inverse Analyses and Bayesian Methods"
  Lead contributors: DV Griffiths & GA Fenton
  Website: http://140.112.12.21/issmge/TC304_refs_v4.html
- Translation of glossary of terms on reliability analysis/design & risk management
  *Traditional/simplified Chinese* (completed)
  Lead contributors: J Ching, HW Huang, CH Juang, DQ Li, Y Wang, J Zhang, LM Zhang
  Website: http://140.112.12.21/issmge/2012Glossary_Chinese.pdf
  *Translation to Spanish* (in progress)
  Lead contributors: R Jimenez and Z Medina-Cetina
- Development of a web form for submission of information on useful software tools related to risk/reliability
  Lead contributor: L Olsson
  Website: https://sites.google.com/site/tc304rms/

## TECHNICAL ARTICLE

# Effects of Geotechnical Interest Caused by the Nicoya Peninsula Earthquake, Costa Rica September 5th, 2012

By William Vargas Monge, University of Costa Rica

On September 5th, 8:42 a.m. local time (14:42 GMT), an earthquake of magnitude Mw=7.6 occurred in the subduction zone of the Cocos Plate beneath the Caribbean Plate under the Nicoya Peninsula (shown by an yellow arrow in Fig. 1) of Costa Rica. The epicenter was located at about 160 kilometers west of San Jose, the capital, and at a depth of 18 kilometers, according to LIS, as shown in Fig. 1. Fig. 2 illustrates the distribution of seismic intensity scale. This article briefly reports the findings made during the author's recent site investigation.

An earthquake in the Nicoya Peninsula with a magnitude of 7.5 had been predicted by seismologists of the Observatorio Vulcanologico y Sismologico de Costa Rica (OVSICORI) since the early 1990's (Protti, 1998). The prediction was apparently fulfilled by this event, since it coincided in magnitude and location. However, after the earthquake Protti himself denied it was what he had predicted. Additionally, just days after the event, the seismologists of the OVSICORI issued a public statement announcing that there could be still sufficient stored energy to produce another earthquake of similar magnitude, spurring a scientific public polemic.

The earthquake produced the highest recorded seismic acceleration in the short history of this country, reaching a peak of 1.8 g in the maximum horizontal component at the town of Nosara, near the epicenter (Fig. 3). In spite of the high peak acceleration, important structural damage in the epicentral area all but existed (see Fig. 4 for response spectra), and the earthquake hit mostly non-engineered constructions, sending nearly 1500 people to shelters and leaving some 200 people homeless. Although there were reports of liquefaction in some beaches of the peninsula and along the Pacific coast (Figs. 5, 6, and 7), there was no associated damage since the alluvial deposits occupy a relatively small area and are generally thin.

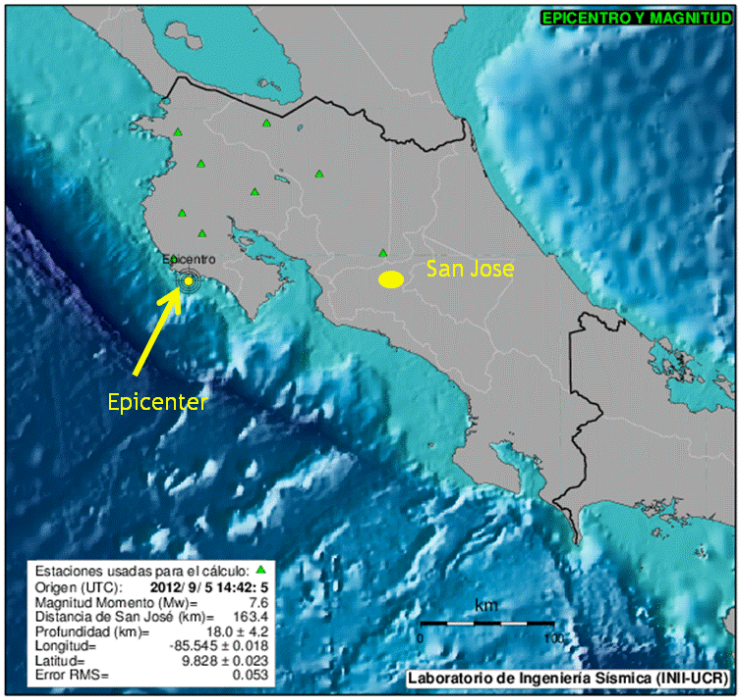


Fig. 1. Location of epicenter. Source: Laboratorio de Ingenieria Sismica, University of Costa Rica.