SIMSG ISSMGE

ISSMGE Bulletin

Volume 11, Issue 5
October 2017

International Society for Soil Mechanics and Geotechnical Engineering
If the quality of the distributed file is not satisfactory for you, please access the ISSMGE website and download an electronic version.
www.issmge.org

TABLE OF CONTENTS

Select all items below

1 Message from the New President of ISSMGE
3 Message from the New Editor-in-Chief of ISSMGE Bulletin
4 Research highlights
University of Alberta, Canada
13 Extract of the 100th Issue of HSSMGE Electronic Bulletin
36 TC corner
- TC106 – Doctoral School of Unsaturated Soil Mechanics, EPFL, Lausanne, Switzerland

39 ISSMGE Foundation reports
44 Obituary - Professor George Goble
45 Event Diary
55 Corporate Associates
57 Foundation Donors

EDITORIAL BOARD (NEW)

al-Damluji, Omar (Editor for Asia)
Bouassida, Mounir (Editor for Africa)
Cazzuffi, Daniele(Editor for Europe)
Chang, Der-Wen (Editor for Asia)
Davis, Heather (Editor for Africa)
Gonzalez, Marcelo (Editor for South America)
Jefferis, Stephan (Editor for Europe)
Leung, Anthony Kwan (Editor-in-Chief)
Ng, Charles Wang Wai (Ex-officio)
Rujikiatkamjorn, Cholachat (Editor for Australasia)
Sanchez, Marcelo (Editor for North America)
Siemens, Greg (Editor for North America)
Taylor, Neil (Ex-officio)
Wu, Lucy (Editor for YMPG)

Message from the New President of ISSMGE

Dear colleagues,



It is my great honour to be elected as the 17th President of the ISSMGE. Having served the Board of ISSMGE as an appointed member and the board-level Awards Committee as the chair since 2010, I see aspects of the Society that could be improved. With your help, I intend to effect changes in three areas: **education, innovation and diversity.**

(i) Education

- **Establishing the "ISSMGE university"**: Although we now live in the 21st century, many of our members still do not have access to quality undergraduate education. In some cases, fundamental concepts in soil mechanics are poorly taught. We can help these members by providing free short courses via the massive open online course (MOOC) platform. Such undergraduate-level courses would neatly complement our existing webinar lectures which can be regarded as equivalent to postgraduate courses. The provision of both online courses and webinar lectures would be the mission of the "ISSMGE university".
- **Providing open access to all ISSMGE-related publications, honours lectures, videos, and more**: The free flow of information and knowledge is vital to promoting scientific advancement and the exchange of ideas. Professor Roger Frank, my predecessor, had

Message from the New President of ISSMGE (Con't)

started promoting an open access policy in the ISSMGE. I would like to continue and expand this policy to cover more areas and a wider range of media. Naturally, the open access materials and information would form the "library" of the "ISSMGE university".

- **Reviewing the functionality and performance of technical committees (TCs)**: One of the major missions of the ISSMGE is to advance scientific knowledge in soil mechanics and geotechnical engineering and this would not be possible without our TCs. I envision them contributing to the "ISSMGE university" in a number of ways. The functionality and performance of each TC have a profound influence on the ISSMGE. Under the leadership of the board-level committee, the Technical Oversight Committee (TOC), the functionality and performance of existing TCs will be critically reviewed. Some may be disbanded and new ones may be formed.
- **Raising the profile of geotechnical engineers**: The importance of geotechnical engineers in the world today and tomorrow cannot be understated. Several initiatives to be prioritized by the ISSMGE Board will be implemented to raise the profile of geotechnical engineers and render their multi-faceted role more visible beyond the field itself. These initiatives include posting featured stories of achievements and contributions made by geotechnical engineers on social media and other public channels.

(ii) Innovation

- **Setting up a platform for geotechnical-related startups and spinoffs and introducing machine learning in geotechnical engineering**: The world is moving fast. We must try to advance ourselves as fast as possible. We should encourage our members to think outside the box to innovate and establish geotechnical-related startups and spinoffs. Moreover, we should collaborate with other disciplines to learn and make use of the latest data analytics and perhaps introduce big data research and management in geotechnical engineering. New TCs should be formed to tackle these challenges.
- **Creating an ISSMGE app and a dynamic online forum**: Currently, the communication between the Board and individual members occurs mainly via the secretariat of each member society. This mode of communication can be very ineffective. It is high time that we develop an ISSMGE app to facilitate more effective communication with members in different corners of the world. This would also help bring our society, which was established in the 1930s, to the 21st century.

(iii) Diversity

- **Connecting with forgotten societies and exploring new ones**: Currently we have over 90 member societies, but many of them are relatively inactive or even forgotten such as those in South America and some in Asia and Africa. We must take the initiative to awaken them and reconnect with them. Moreover, we must continue to look for new members by expanding our reach around the world.
- **Boosting Corporate Associates to narrow the gap between academics and practitioners**: There is a significant gap between academics and practitioners in our society. Under the leadership of the board-level committee, the Corporate Associates Presidential Group, various measures will be taken to bridge this gap including the introduction of a contractor forum and a consultant forum in regional and major conferences. In addition, a new policy will be implemented to encourage Corporate Associates to join and play a major role in some of the TCs.
- **Embracing diversity and increasing wider participation**: Under-represented groups (for reasons pertaining to geography, gender, ethnicity, etc.) deserve to be seen too. I would encourage all of you to embrace diversity. I will also be promoting improved representation in key roles on the ISSMGE Board, board-level committees, TCs, and in task forces and other ISSMGE activities including lecturing. Member societies will be asked to give the same attention to diversity.

Message from the New President of ISSMGE (Con't)

- **Reviewing all awards and honours lectures, and creating key lecturing opportunities for young members**: The introduction of many new awards and honours lectures in 2013 has been well received. It is now time for us to review these awards and honours lectures to see if they indeed serve their original intents and purposes. Moreover, our young members are under-represented in major lectures. I would like to introduce Young Members Presidential Group (YMPG) lectures in different regional conferences. Young members are our future and must be given opportunities to learn and grow.

I alone cannot implement all of these initiatives. I would like to borrow a quote from Helen Keller, who was an American author, political activist, and lecturer. She said: "Alone we can do so little; together we can do so much." ("Seuls, nous pouvons faire si peu; ensemble, nous pouvons faire tellement")

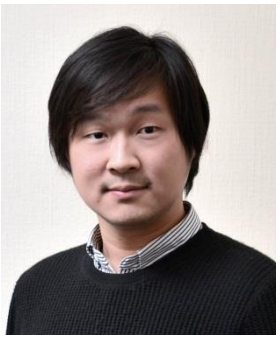
I rely on your help in bringing these initiatives to fruition.

Albert Einstein once said that "The value of a man should be seen in what he gives and not in what he is able to receive." ("La valeur d'un homme devrait être vue dans ce qu'il donne et non dans ce qu'il peut recevoir")

This is something that I truly believe in, and it is with this attitude that I assume my role as the next President of the ISSMGE.

Charles W.W. Ng

Message from the New Editor-in-Chief of ISSMGE Bulletin



After serving the editorial board for the last 3 years, it is my great honour and pleasure to be appointed as the Editor-in-Chief (EiC) of the ISSMGE Bulletin and to be able to serve the ISSMGE. I would like you to join me for an immense vote of thanks to Prof. Charles Ng, who undertook the role of EiC of the Bulletin from Aug 2014 to Aug 2017. Under his leadership, 19 issues have been published over the last 3 years. We are grateful for his great contribution and dedication to the role. Our warmest thanks also go to the retiring members, who served the Editorial Board during the last 3 years, including Drs Antonio Gomez, Andy Take, Alejo Sfriso, Teik Aun Ooi and Marawan Shahien.

Please join me, as well, to thank Drs Marcelo Sanchez, Marcelo Gonzalez and Cholachat Rujikiatkamjorn for their willingness to continue to serve the Board and also welcome new Editorial Board members, Drs Daniele Cazzuffi, Greg Siemens, Stephan Jefferis and Professors Omar al-Damluji, Mounir Bouassida, Der-Wen Chang, Mrs Heather Davis and Dr Lucy Wu. We are still in the process of finalizing the Editorial Board and so the membership list will be updated later.

We aim to publish the ISSMGE Bulletin bi-monthly, which is open-access and can be freely downloaded from the ISSMGE website via: https://www.issmge.org/publications/issmge-bulletin or through the ***ISSMGE App*** on a smartphone.

We hope you enjoy reading the ISSMGE Bulletin! If you have any feedback, please do not hesitate to contact me through either a.leung@dundee.ac.uk or issmge@city.ac.uk.

Anthony Leung
Senior lecturer, University of Dundee

Research highlights

University of Alberta, Canada

The University of Alberta Geotechnical Centre

The University of Alberta Geotechnical Centre is one of the largest and most productive groups of its kind in Canada and comparable in size to other major research-intensive groups in North America. Our faculty members are internationally recognized experts in various sub-disciplines within geotechnical and geoenvironmental engineering. Currently, the Geotechnical Centre consists of eight faculty members, four professor emeriti, and over 90 graduate students, postdoctoral fellows, research associates and technical support staff. The laboratories of the Geotechnical Centre are located in the Markin/CNRL Natural Resources Engineering Facility of the Department of Civil & Environmental Engineering, with over 300,000 square feet of floor area, 78 research laboratories, 26 specialized instructional laboratories, and many high-tech lecture rooms.

Faculty members



Dr. Richard (Rick) J. Chalaturnyk is Professor of Geotechnical Engineering and holds the Foundation CMG Chair in Reservoir Geomechanics as well as the AITF Industry Chair in Reservoir Geomechanics for Unconventional Resources. Dr. Chalaturnyk has created the Reservoir Geomechanics Research Group, working primarily in the area of unconventional resource geomechanics, geological storage of CO2 and has established GeoREF – a Geomechanical Reservoir Experimental Facility at the University of Alberta designed specifically for high temperature/high pressure testing and a facility that includes the first geotechnical beam centrifuge in Western Canada and additive manufacturing (3D printing) capacity for producing reservoir rocks. He was involved in the IEA GHG Weyburn-Midale CO2 Storage and Monitoring Research Project since its inception; a member of the scientific and engineering research committee for the Aquistore project in Saskatchewan and several other CCS initiatives. Dr. Chalaturnyk served as Chair of a Canadian Standards Association Technical Committee that developed CSA Z741-12, a standard for the geological storage of CO2. Dr. Chalaturnyk was also a member of an expert panel for a Council of Canadian Academies study "Harnessing Science and Technology to Understand the Environmental Impacts of Shale Gas Extraction Assessment". He is a member of the SPE, AAPG, ASCE, CGS, EAGE, and APEGA and a Fellow of the Engineering Institute of Canada.



Dr. Dave Chan is Professor of Geotechnical Engineering and Associate Chair of Graduate Studies. His research interests are in the areas of numerical methods for analyzing soil mobility and the development of constitutive models for geomaterials. He is interested in the deformation and flow characteristics of soils and granular materials, which encompass slow movement such as creep, or fast movement such as debris flow and avalanches. He is interested in the development of new finite element and discrete element techniques for modelling large and small soil deformations. His recent research is focused on geohazards in Western China, where he examines and analyzes the initiation of debris flow and landslides in high alpine mountainous environments of 3000 to 5000 m. His work encompasses large debris flows in Tibet and Sichuan Province in China, and cyclic movement of landslides in the Three Gorges Dam reservoir in China. Dr. Chan was awarded a visiting fellowship from the Chinese Academy of Science in 2016.

Research highlights (Con't)

University of Alberta, Canada



Dr. Derek Martin is a Professor of Geotechnical Engineering and Director of the Canadian Rail Research Laboratory (CaRRL) – Canada's premiere laboratory dedicated to rail engineering research affiliated with the American Association of Railways and Transportation Technology Centre Inc. Dr. Martin and his team of experts at the University of Alberta work directly with geotechnical engineers from CN, CP, National Research Council Canada, Transport Canada and Transportation Technology Centre Inc., encouraging the transfer and implementation of technology into industrial practice. His current research includes investigating ground hazards, risk and GIS technologies, repository geomechanics, and geoscience (stress and fracture flow).



Dr. G. Ward Wilson is Professor of Geotechnical and Geoenvironmental Engineering and brings over 30 years of industrial experience to his practice in advanced mine waste management and unsaturated soil mechanics. Dr. Wilson has extensive work experience as a consulting engineer and maintained a strong industrial focus through his research programs. In his capacity as the NSERC/COSIA Industrial Research Chair in Oil Sands Tailings Geotechnique, Dr. Wilson is currently engaged in tailings management research for the oil sands industry. He is involved in mine waste management systems for numerous sites worldwide and has also served as a specialist consultant to several large international mining companies such as the well-known ARD Risk Review recently completed by Rio Tinto. In addition, Dr. Wilson served as the lead author responsible for the chapter on Prevention and Mitigation in the Global Acid Rock Drainage Guide prepared for International Network for Acid Prevention.



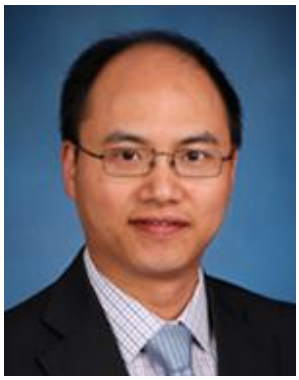
Dr. Alireza Bayat is Associate Professor of Geotechnical Engineering. His research interests include road infrastructure and underground trenchless construction. As Director of the Consortium for Engineered Trenchless Technologies (CETT), his research focuses on the technical and operational challenges associated with horizontal directional drilling (HDD), pilot-tube micro tunneling (PTMT) and underground infrastructure condition assessment. He leads research at the Integrated Road Research Facility, which he helped form with provincial and municipal partners, to investigate the performance of different materials for road embankments and insulation layers in cold-climate regions. Other research projects in road infrastructure include: mechanistic-empirical pavement design, development and characterization of road materials and pavement performance for cold regions, winter road maintenance, and weigh in motion accuracy. Dr. Bayat is also involved in developing several full-scale field instrumentation and monitoring programs to measure soil and pavement responses under a variety of dynamic loads and environmental conditions.

Research highlights (Con't)

University of Alberta, Canada



Dr. Nicholas Beier is Assistant Professor of Geoenvironmental Engineering and Principal Investigator of the Oil Sands Tailings Research Facility (OSTRF). During his PhD program, he was Research Manager for the OSTRF and worked part time as Technical Advisor for Canada's Oil Sands Innovation Alliance (COSIA). He is a collaborator of the NSERC/COSIA Industrial Research Chair in Oil Sands Tailings Geotechnique as well as the NSERC Strategic Partnership Grants for Networks "NSERC Toward Environmentally Responsible Resource Extraction" (NSERC-TERRE-NET) Program. His research interests include the freeze-thaw dynamics of mining wastes, frozen ground engineering, waste management in cold regions, modeling and characterizing the engineering behavior of oil sand tailings, tailings dewatering technology development and simulation modeling for evaluation of mine waste management technologies.



Dr. Lijun Deng is Assistant Professor of Geotechnical Engineering. His research interests lie in dynamic soil-structure interaction, foundation engineering, and ground improvement. His research involves extensive field experiments of full-scale or large-scale loading tests, geotechnical centrifuge modeling, and computer modeling. His current research activities are investigating the field behaviour of screw piles in regular and frozen ground, rocking shallow foundations, and the performance of helical piles by using centrifuge modeling. Dr. Deng is also investigating the effects of cementation on the engineering properties of Edmonton clay.



Dr. Michael Hendry is Assistant Professor of Geotechnical Engineering and Associate Director of the Canadian Rail Research Laboratory (CaRRL) and assists with coordinating CaRRL research activities. His research with the railway industry started in 2005 with Northern Ireland Railways on projects related to slope stability and the cyclic loading of embankments over soft peat foundations. His current research focuses on the strength of soft foundation soils under heavy axle loading, degradation of railway ballast and its effects on the integrity of the track structure, and fundamental soil mechanics of peat and organic soils. He is a strong proponent of field based studies and interested in finding new means to measure soil behaviours in the field.

The University of Alberta Geotechnical Centre is fortunate to have four internationally renowned professors emeriti in our group. Drs. David Cruden, Norbert R. Morgenstern, J. Don Scott and David Sego currently co-supervise several graduate students and provide their expertise to advance innovative research at the University of Alberta.

Research highlights (Con't)

University of Alberta, Canada

Research facilities

Our commitment to research excellence has led to the establishment of several specialized facilities, which are well tailored for the innovative research programs led by the Geotechnical Centre. Our unique research laboratories and research programs include:

- The CFI/I2P2-funded Geotechnical & Geoenvironmental Engineering Cold Regions Research Facility is ideal for research related to cold regions engineering. The infrastructure consists of six cold rooms that can provide temperature environments down to -40°C. This facility provides researchers with the ability to reproduce extreme conditions and study the effect of cold weather on infrastructure;
- The CFI-funded Applied Environmental Geochemistry Research Facility, which is equipped with state-of-the-art technologies to conduct sample testing for the prevention, assessment and remediation of soil, groundwater and surface water contamination. The laboratory equipment provides our researchers with the ability to quantify organic compounds, pesticides, ions and trace metals in soil and groundwater in parts per billion and for certain compounds in parts per trillion;
- The $4.3-million CFI/AET-funded Geomechanical Reservoir Experimental Facility (GeoREF), which enables research on resource recovery in unconventional hydrocarbon reservoirs. GeoREF is configured with systems that can obtain thermal-hydraulic-mechanical and acoustic constitutive properties of reservoir geological materials up to temperatures of 350°C. The high stress, high pressure and high temperature axial testing systems are capable of applying axial forces up to 600 kN and pressures up to 70 MPa;
- The Geomechanical Centrifuge Experimental Facility (GeoCERF), which has recently procured a new 50 g-tonne beam centrifuge facility. This facility houses a 2-m platform radius beam centrifuge, the first of its kind in western Canada, with a maximum acceleration level of 280 rpm (150 g) and maximum payload of 500 kg;
- The Canadian Rail Research Laboratory (CaRRL), which is equipped with two abrasion testing apparatuses to evaluate the abrasion resistance and toughness of aggregate materials used for railways and pavement. CaRRL researchers also use a variety of advanced field sensors and monitoring technologies, including 3D ground penetrating radar, LiDAR (produces 3D models from scanned images), a geographic information system facility to manage field data and an instrumented rail car to measure track deflection;
- The $2.2 million Oil Sands Tailings Research Facility (OSTRF) which is located in Devon, Alberta, and dedicated to cross-disciplinary oil sands tailings research. The OSTRF enables fundamental exploration of new concepts which then can be tested at the pilot scale, ultimately providing the parameters to assist with the design of a field scale pilot and/or field demonstration;
- The Waste Mine Laboratory, which offers an extensive facility for classical geotechnical testing of mine waste materials as well as advanced capacity in unsaturated soil mechanics and slurry characterization;
- The Consortium for Engineered Trenchless Technologies (CETT), which is dedicated to advancing the design and application of trenchless technology in Canada and across the globe. Its research has impacted a variety of industrial sectors, including oil and gas, construction and telecommunications, delivering practical solutions for the industry to manage their trenchless projects with maximum efficiency and knowledge; and
- Computing facilities and software that are of the quality expected at a top-notch university. Moreover, a strategic collaborative agreement has been established with Itasca Consulting Group Inc. for access to their commercial software and the training of researchers. Itasca develops highly specialized software that is uniquely suitable for structure interaction problems under dynamic loading conditions.

Research highlights (Con't)

University of Alberta, Canada

Current Research

1. Geohazards in Western China

The western part of China is a mountainous region with some of the highest peaks in the world. Geohazards are presenting considerable challenges to the construction of railways, highways, hydropower and community development due to rapid economic and infrastructure development and growth in China. These challenges are amplified by heavy annual rainfall in these regions and mega earthquakes such as the 2008 Wenchuan earthquake in Sichuan, which had an intensity of 8.0 on the Richter scale. Some of these challenges include loess landslides in the northwest province of Gansu, landslides triggered by water level fluctuations around the Three Gorges Dam reservoir in Hubei, debris flows in Sichuan, and high alpine mega landslides and debris flow in Tibet. The construction of highways and the high speed railway from Chengdu to Lhasa go through some of the most challenging terrains in the world.

In collaboration with Dr. Peng Cui of the Institute of Mountain Hazards and Environment of the Chinese Academy of Sciences, Dr. Chan is investigating some of the highest and largest debris flows in the world. The project aims to understand the formation mechanism of these large debris flows due to climate changes in high mountain areas of over 3500 to 5000 m especially under extreme climatic conditions with the goal to develop a debris flow prediction model. The research focuses on correlating the effects of climate changes on debris flow formation, establishing a simulation platform, integrating different types of hazards in the analyses, and developing mechanistic and risk models for analyzing large-scale debris flows in high mountain areas. Drones have been used to collect field data and field instruments have been installed to monitor debris flow activities for model validation. The field monitoring includes the use of radars, cameras, sonic sensors and pressure plates to measure the speed, volume, depth and size of debris flow.

Dr. Chan is also involved with another project to study large landslides around the Three Gorges Dam in China. The Three Gorges Dam is one of the largest hydroelectric projects in the world. The construction of the dam has resulted in a reservoir that stretches over 500 km in length from Yichang to Chongqing. This has created a shoreline of over 1000 km and initiated over 3000 landslides. More than 500 landslides are over 10 million cubic meters in size. The purpose of the dam is for flood control and power generation. To control floods, the water level in the reservoir is lowered from its maximum level of 175 m to 145 m during the summer months. For maximum power generation, the water level is raised to 175 m during the winter months. The fluctuations in the water level cause significant changes in the ground water regime that surrounds the reservoir and impose cyclic loading on the slopes around the reservoir. These lead to failure of the slopes as a result of the accumulation of cyclic plastic deformation. Several landslides have already occurred since the completion of the dam in 2003. In collaboration with Dr. Guodong Zhang and Dr. Yong Chen of the China Three Gorges University, Dr. Chan has performed assessments on the stability of several slopes around the banks of the Three Gorges Dam reservoir due to the cyclic loading caused by variations in the reservoir water level. Field tests have been carried out and instruments have been installed to monitor slope movements.

The above projects are just examples of some of the unique geohazard challenges in Western China. However, there is much more work that needs to be done in this part of the world as the number of casualties is high and the magnitude of destruction is overwhelming.

Research highlights (Con't)

University of Alberta, Canada



Photo 1. Clockwise from top: 1. Construction of check dams and diversion channel in Zhouqu debris flow that killed over 1700 people in the southern province of Gansu in China; 2. Debris flow destroyed houses in Peilong Gully in Eastern Tibet; 3. Jingjia Mountain landslide in Sichuan caused by the Wenchuan earthquake in 2008 that killed over 700 people when the town was buried by over 2 million cubic meters of rock and soil. The Chinese flag shows the location of the high school basketball court buried by the landslide; 4. Depositional fan of Yigong debris flow, one of the largest debris flows in Tibet that is over 300 x 106 m^2 in size which formed a barrier dam over 60 m in height that eventually failed and destroyed infrastructure roads, bridges and homes for over 50 km downstream, and caused 30 fatalities with 100 people missing.

2. Railway Geomechanics Research at the University of Alberta Geotechnical Centre

With 48,000 route kilometres of track, Canada has one of the most extensive rail networks in the world. Rail, road, marine, and air transport have become integrated within society and are vitally important to the economy and the quality of life enjoyed by Canadians. Railways have become well positioned to take full advantage of the continental economy and exports that are the key economic drivers in Canada. However, the Canadian railway network is subject to severe extreme climatic conditions (e.g., cold temperatures, strong winds, snow, ice, and seasonal freeze and thaw cycles) as well as climate-induced geohazards, which together create hazards such as frost heave and tunnel icing, reduce the reliability of mechanical components, and increase the rate of track failures. Such conditions, if not properly managed, can impact the safety of employees and the travelling public, as well as the overall efficiency of rail transportation.

Research highlights (Con't)

University of Alberta, Canada

The Canadian Rail Research Laboratory (CaRRL) was established at the University of Alberta Geotechnical Centre in 2012 to be Canada's premier education and research program in railway engineering. CaRRL is also part of the affiliated lab program of the Association of American Railroads' Transportation Technology Center, Inc. (AAR-TTCI). CaRRL is supported by Canadian National Railway, Canadian Pacific Railway, AAR-TTCI, Transport Canada, Alberta InnoTech, National Research Council Canada and the Natural Sciences and Engineering Research Council of Canada.

Dr. Derek Martin serves as Program Director. He is an internationally renowned expert in geotechnical engineering and the holder of the Natural Sciences and Engineering Research Council of Canada's Senior Industrial Research Chair for Railway Geomechanics and the Alberta Innovates - Technology Futures Tier One Industry Chair in Railway Geomechanics. Dr. Michael Hendry is the Associate Director of CaRRL as well as the Principal Investigator of the Railway Ground Hazard Research Program (RGHRP) in partnership with Canadian National Railway, Canadian Pacific Railway, Transport Canada, and Queen's University.

The NSERC Industrial Research Chair in Railway Geomechanics is a central component of CaRRL that drives the fundamental and applied research for the Canadian railway industry. The research projects developed for this Chair program are in the key applied science areas of: (1) ground hazards; (2) subgrade performance; (3) ballast quality and fouling; (4) rail and rolling stock; (5) climate change; and (6) risk management. The research projects utilize new and existing technologies for application to the Canadian railway network. These technologies include three-dimensional ground penetrating radar (GPR), LiDAR, an instrumented rail car for the rolling measurement of track deflection, and a geographic information system (GIS) to link and add value to stand-alone data. The research program was developed with direct consultation from railway engineers across the industry. The initial projects of the program have been targeted to build on current knowledge in railway ground hazards and geomechanics, and develop further expertise in the effects of the Canadian climate on mechanical and structural elements of the railway network.

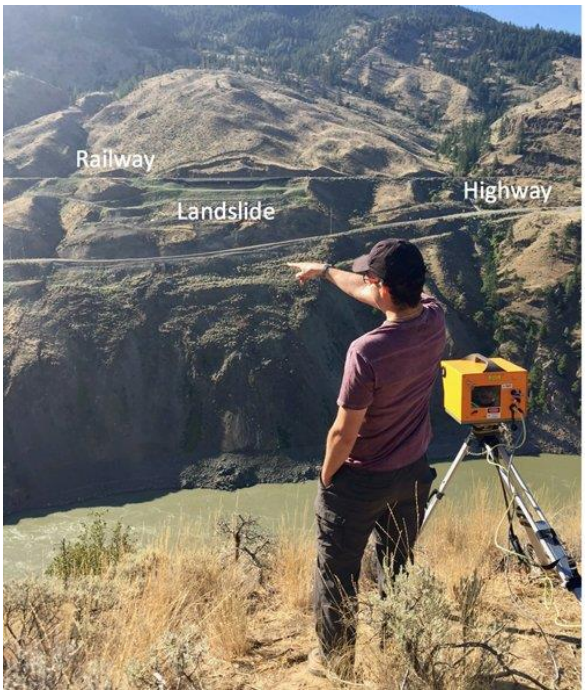


Photo 2. Landslide monitoring for railroad

For more information about the current railway engineering research projects and initiatives at the University of Alberta Geotechnical Centre, including the NSERC IRC in Railway Geomechanics, please visit www.carrl.ca or http://geotechnical.ualberta.ca.

Research highlights (Con't)

University of Alberta, Canada

3. Tailings and Mine Waste Research at the University of Alberta Geotechnical Centre

The Oil Sands Tailings Research Facility (OSTRF) was established in 2003 as a direct response to the global need for improved tailings management. Through extensive interaction and collaboration with other distinguished research groups, the OSTRF provides the novel research required to develop environmentally superior tailings disposal options. With the flexibility to support concurrent interdisciplinary research projects, the facility attracts the brightest minds in the field and trains early-career, technically competent scientists and engineers—the future leaders, consultants and regulators for the oil sands industry. Founded by Dr. David Sego, the OSTRF is pioneering the way to innovative environmentally conscientious solutions for future generations.

Dr. Nicholas Beier is the current Principal Investigator of the OSTRF and leads instrumental initiatives to bring together the academia, industry and government agencies to find environmentally sustainable solutions for oil sands development. One such initiative is the International Oil Sands Tailings Conference (IOSTC), which is held every two years, and provides a forum for mine waste managers, engineers, regulators and researchers to present new ideas and discuss the latest developments in the field. The University of Alberta Geotechnical Centre also co-hosts the internationally acclaimed Tailings and Mine Waste Conference series with Colorado State University and the University of British Columbia. Furthermore, the Geotechnical Centre organizes and leads the instruction of the International Mine Waste and Tailings Dam Design course, which covers the design, construction, operation, monitoring, evaluation and safety of mine waste facilities.



Photo 3. Laboratory testing of fine tails at OSTRF tailings research facility

The newest research initiative in tailings management at the University of Alberta Geotechnical Centre is the NSERC/COSIA Senior Industrial Research Chair (IRC) program in Oil Sands Tailings Geotechnique held by Dr. G. Ward Wilson. The IRC enables the oil sands industry to combine its efforts with those of leading researchers at the University of Alberta to develop novel technologies and methods to manage oil sands tailings in Alberta. The IRC program will advance the fundamental understanding of the scientific community on the behaviour of fluid fine tailings and mature fine tailings by focusing on the following research themes:

Theme 1: Unsaturated soil mechanics for oil sands tailings deposition
Theme 2: Consolidation processes for mature fine tailings
Theme 3: Assessing and improving tailings deposition
Theme 4: Tailings simulation modelling and long-term behaviour of fine tailings

The IRC is supported by Canada's Oil Sand Innovation Alliance (COSIA), Alberta Innovates – Energy and Environment Solution (AI-EES) and the Natural Sciences and Engineering Research Council of Canada. For more information on the current oil sand tailings research projects and initiatives at the University of Alberta Geotechnical Centre, including the NSERC/COSIA IRC program in Oil Sands Tailings Geotechnique, please visit www.ostrf.com or http://geotechnical.ualberta.ca

Research highlights (Con't)

University of Alberta, Canada

4. Reservoir Geomechanics Research at the University of Alberta Geotechnical Centre

The hydrocarbon energy resources of Canada, in particular large and challenging unconventional resources in Alberta, such as oil sands, coalbed methane, bitumen carbonates and tight (shale) oil and gas, have advanced significantly in their potential to supply energy to world markets. The need to protect the environment and reduce greenhouse gas emissions will severely test the ability of Alberta to meet its own power needs and those of Canada, expand export markets and ensure that Alberta obtains maximum value from its resources. Development of these immense and unique resource deposits depends on efficient and economic extraction technologies; the reduction, storage and/or effective use of CO_2; improved land restoration processes; and an improved understanding of the environmental impact of resource development, including on surface and subsurface water. This synergistic research for unconventional resource recovery critically depends on our ability to understand the fundamental thermo-hydro-mechanical behaviour of the reservoir materials, including the bounding formations above and below the reservoir.

In support of these reservoir geomechanical research challenges, integrated experimental research environments, GeoREF, GeoCERF and GeoPRINT, have been established at the University of Alberta. The Geomechanical Reservoir Experimental Facility or the GeoREF, allows students to explore how reservoir geomechanical properties of formations vary under high temperatures (< 300°C) and elevated pressures (up to 70 MPa), but more importantly, how the fluid flow characteristics of these formations are altered due to geomechanical processes. The Geomechanical Centrifuge Experimental Research Facility or the GeoCERF has the first geotechnical beam centrifuge in Western Canada which goes beyond conventional geotechnical physical modeling studies, and is configured to allow the implementation of elevated temperature tests. GeoPRINT, a 3D printing facility that uses sand to print reservoir rock analogues in 3D, is used to explore the role of additive manufacturing (AM) or 3D printing as a technology platform for the next generation of experimental investigations of multi-scale, multi-physics reservoir geomechanical processes. The Foundation CMG Industrial Research Consortia in Reservoir Geomechanics for Unconventional Resources is a central component of our reservoir geomechanical research initiatives. The research projects within the IRC are structured around five major reservoir geomechanical themes: 1) Characterization and constitutive behaviour of unconventional resource formations; 2) Reservoir-scale geomechanical properties; 3) Reservoir geomechanical modelling; 4) Scale reservoir geomechanics; and 5) Reservoir geomechanical optimization.

The GeoREF, GeoCERF and GeoPRINT are supported by Foundation CMG, Brion Energy, Canadian Natural Resources Limited, Suncor Energy, Shell, Nexen CNOOC, BP, AOC, CNPC, Cenovus Energy, ConocoPhillips, Alberta InnoTech, Alberta Innovates Energy and Environmental Solutions, Natural Sciences and Engineering Research Council of Canada, Canada Foundation for Innovation, and Alberta Advanced Education and Technology.



Photo 4. Petroleum geomechanics laboratory facility at the University of Alberta



The News Editor in search of some cool breeze high at the mountain...

HELLENIC SOCIETY FOR SOIL MECHANICS & GEOTECHNICAL ENGINEERING

The News of the HSSMGE

100

One hundred bulletins!!!



August 2005 ÷ March 2017

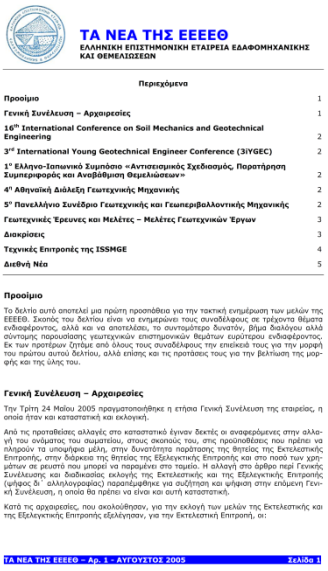
No. 100 – MARCH 2017

SIMSG ISSMGE

ISRM

12 years ago, in August 2005, the first issue of the online bulletin of the HSSMGE with the title "THE NEWS OF THE HSSMGE" was released. We wrote then:

The bulletin constitutes a first attempt for the regular information of the members of the HSSMGE. The purpose of the bulletin is to inform our colleagues on current topics of interest, but also to become, as soon as possible, a discussion forum and a forum for the brief presentation of geotechnical scientific issues of wider interest. In advance we ask from our members for their leniency for the format of this first bulletin, but also their suggestions for the improvement of the format and the contents.



ΤΑ ΝΕΑ ΤΗΣ ΕΕΕΕΘ

ΕΛΛΗΝΙΚΗ ΕΠΙΣΤΗΜΟΝΙΚΗ ΕΤΑΙΡΕΙΑ ΕΔΑΦΟΜΗΧΑΝΙΚΗΣ ΚΑΙ ΘΕΜΕΛΙΩΣΕΩΝ

Περιεχόμενα

Προοίμιο 1
Γενική Συνέλευση – Αρχαιρεσίες 1
16th International Conference on Soil Mechanics and Geotechnical Engineering 2
3rd International Young Geotechnical Engineer Conference (3iYGEC) 2
1ο Ελληνο-Ιαπωνικό Συμπόσιο «Αντισεισμικός Σχεδιασμός, Παρατήρηση Συμπεριφοράς και Αναβάθμιση Θεμελιώσεων» 2
4ο Αθηναϊκή Διάλεξη Γεωτεχνικής Μηχανικής 2
5ο Πανελλήνιο Συνέδριο Γεωτεχνικής και Γεωπεριβαλλοντικής Μηχανικής 2
Γεωτεχνικές Έρευνες και Μελέτες – Μελέτες Γεωτεχνικών Έργων 3
Διακρίσεις 3
Τεχνικές Επιτροπές της ISSMGE 4
Διεθνή Νέα 5

Προοίμιο

Το δελτίο αυτό αποτελεί μια πρώτη προσπάθεια για την τακτική ενημέρωση των μελών της ΕΕΕΕΘ. Σκοπός του δελτίου είναι να ενημερώνει τους συναδέλφους σε τρέχοντα θέματα ενδιαφέροντος, αλλά και να αποτελέσει, το συντομότερο δυνατόν, βήμα διαλόγου αλλά σύντομης παρουσίασης γεωτεχνικών επιστημονικών θεμάτων ευρύτερου ενδιαφέροντος. Εκ των προτέρων ζητάμε από όλους τους συναδέλφους την επείκειά τους για την μορφή του πρώτου αυτού δελτίου, αλλά επίσης και τις προτάσεις τους για την βελτίωση της μορφής και της ύλης του.

Γενική Συνέλευση – Αρχαιρεσίες

Την Τρίτη 24 Μαΐου 2005 πραγματοποιήθηκε η ετήσια Γενική Συνέλευση της εταιρείας, η οποία ήταν και καταστατική και εκλογική.

Από τις προταθείσες αλλαγές στο καταστατικό έγιναν δεκτές οι αναφερόμενες στην αλλαγή του ανώτατου του συμμετέχοντος, στους σκοπούς του, στις προϋποθέσεις που πρέπει να πληρούν τα υποψήφια μέλη, στην δυνατότητα παράτασης της θητείας της Εκτελεστικής Επιτροπής, στην διάρκεια της θητείας της Εξελεγκτικής Επιτροπής και στο ποσό των χρημάτων σε μετρητά που μπορεί να παραμένει στο ταμείο. Η αλλαγή στο άρθρο περί Γενικής Συνέλευσης και διαδικασίας εκλογής της Εκτελεστικής και της Εξελεγκτικής Επιτροπής (μήκος δι ' αλληλογραφίας) παραπέμφθηκε για συζήτηση και ψήφιση στην επόμενη Γενική Συνέλευση, η οποία θα πρέπει να είναι και αυτή καταστατική.

Κατά τις αρχαιρεσίες, που ακολούθησαν, για την εκλογή των μελών της Εκτελεστικής και της Εξελεγκτικής Επιτροπής εξελέγησαν, για την Εκτελεστική Επιτροπή, οι:

The first issue had only 6 pages and contained few news from the Greek and international geotechnical community. The next issue was issued 6 months later, in March 2006, and since then every two or three months, at the beginning, and per month over the past 3 years, gradually increasing the number of pages and the variety of the content.

Since the second issue the format has changed and in April 2007 we changed the format of the cover. Both have remained the same until today.



ΕΛΛΗΝΙΚΗ ΕΠΙΣΤΗΜΟΝΙΚΗ ΕΤΑΙΡΕΙΑ ΕΔΑΦΟΜΗΧΑΝΙΚΗΣ & ΓΕΩΤΕΧΝΙΚΗΣ ΜΗΧΑΝΙΚΗΣ

Τα Νέα 8

της ΕΕΕΕΓΜ

1966 / 1967 – 2007 : 40 χρόνια δραστηριότητας

In all these 100 + issues (+ refers to some issues that were double due to pleathora of interesting material in the specific period) colleagues' participation papers in international conferences were presented, papers from international journals on applications of geotechnical engineering of special interest, tributes to dams, tunnels and on certain major earthquakes, tributes to two of the founding members of the Hellenic Scientific Society of Soil Mechanics and Foundations Nick Ambraseys and Theodosius Tassios, awards to Greek Geotechnical Engineers, updates about upcoming Greek and international geotechnical events, updates on the activities of Greek and international geotechnical societies, presentations of new books with geotechnical interest etc.

We have the impression that both the Greek and the international community, has very positively accepted the bulletin and this gives us the strength to continue our efforts for the best possible geotechnical update of our members and friends.

We are hoping for the support of our colleagues for enriching the contents of the bulletin. We are looking forward to the 200th issue!



ΕΛΛΗΝΙΚΗ ΕΠΙΣΤΗΜΟΝΙΚΗ ΕΤΑΙΡΕΙΑ ΕΔΑΦΟΜΗΧΑΝΙΚΗΣ & ΓΕΩΤΕΧΝΙΚΗΣ ΜΗΧΑΝΙΚΗΣ

Τα Νέα 22 της ΕΕΕΕΓΜ

Θ.Π. Τάσιου

12 Ιουνίου 2009

ΕΛΛΗΝΙΚΗ ΕΠΙΣΤΗΜΟΝΙΚΗ ΕΤΑΙΡΕΙΑ ΕΔΑΦΟΜΗΧΑΝΙΚΗΣ & ΓΕΩΤΕΧΝΙΚΗΣ ΜΗΧΑΝΙΚΗΣ

Τα Νέα 32 της ΕΕΕΕΓΜ

9ο Πανελλήνιο Συνέδριο Γεωτεχνικής και Γεωπεριβαλλοντικής Μηχανικής

29.9.2010 - 1.10.2010

Βόλος



ΕΛΛΗΝΙΚΗ ΕΠΙΣΤΗΜΟΝΙΚΗ ΕΤΑΙΡΕΙΑ ΕΔΑΦΟΜΗΧΑΝΙΚΗΣ & ΓΕΩΤΕΧΝΙΚΗΣ ΜΗΧΑΝΙΚΗΣ

Τα Νέα 37η της ΕΕΕΕΓΜ

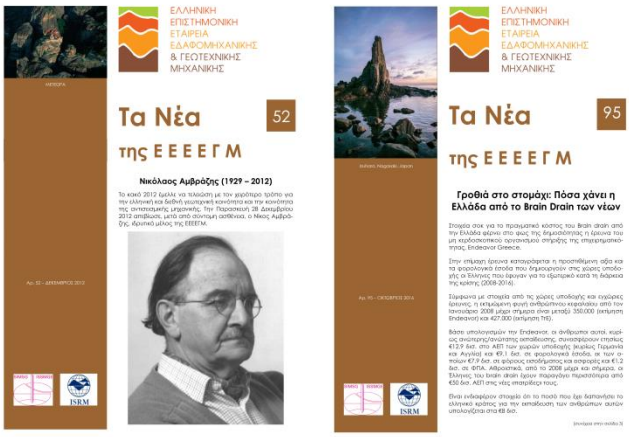
ΠΑΡΑΡΤΗΜΑ

ΣΕΙΣΜΟΙ ΝΕΑΣ ΖΗΛΑΝΔΙΑΣ ΚΑΙ ΙΑΠΩΝΙΑΣ

ΕΛΛΗΝΙΚΗ ΕΠΙΣΤΗΜΟΝΙΚΗ ΕΤΑΙΡΕΙΑ ΕΔΑΦΟΜΗΧΑΝΙΚΗΣ & ΓΕΩΤΕΧΝΙΚΗΣ ΜΗΧΑΝΙΚΗΣ

Τα Νέα 44Β της ΕΕΕΕΓΜ

ΑΦΙΕΡΩΜΑ ΣΤΑ ΦΡΑΓΜΑΤΑ



ΕΛΛΗΝΙΚΗ ΕΠΙΣΤΗΜΟΝΙΚΗ ΕΤΑΙΡΕΙΑ ΕΔΑΦΟΜΗΧΑΝΙΚΗΣ & ΓΕΩΤΕΧΝΙΚΗΣ ΜΗΧΑΝΙΚΗΣ

Τα Νέα 52 της ΕΕΕΕΓΜ

Νικόλαος Αμβράζης (1929 – 2012)

ΕΛΛΗΝΙΚΗ ΕΠΙΣΤΗΜΟΝΙΚΗ ΕΤΑΙΡΕΙΑ ΕΔΑΦΟΜΗΧΑΝΙΚΗΣ & ΓΕΩΤΕΧΝΙΚΗΣ ΜΗΧΑΝΙΚΗΣ

Τα Νέα 95 της ΕΕΕΕΓΜ

Γροθιά στο στομάχι: Πόσα χάνει η Ελλάδα από το Brain Drain των νέων

TABLE OF CONTENTS

One hundred bulletins!!! 1

16th European Conference on Earthquake Engineering 3

Papers 4

- Comparison of settlement calculation methods for the design of a gravity base foundation in deep water 4
- The design of an anchored pile retaining structure to control landslide regression at Lyme Regis, UK 8
- Feasibility study of random fibre reinforced railway ballast using image-based deformation measurements 13
- Applied rock engineering for the investigation and restoration of mine workings, case example – Dudley Limestone mines 17
- Convergence in the Geosciences 21
- Monitoring the Victoria Station upgrade 23

News from the Greek and International Geotechnical Societies 26

- Imperial College Geotechnics PhD Alumni Event 26

Forthcoming Geotechnical Events: 27

- 4th Underground Infrastructure & Deep Foundations Middle East Conference 27

Interesting Geotechnical News 30

- The famous " Azure Window" of Malta collapsed in the sea 30
- Norway may build the world's first tunnel for ships 31
- How To Fix Oroville Dam 32

Earthquakes 34

- A section of the San Andreas fault close to L.A. could be overdue for a major earthquake 34

Geology 36

- How One Brilliant Woman Mapped the Secrets of the Ocean Floor 36
- 3,77 billion years fossils 36
- Anthropogenic stones 37
- Hidden crystals offer clue to a geological riddle 38
- Treasure in the abyss 38

Other Interesting News 40

- From conflict to communities: 75 years of the Bailey Bridge 40
- Italy: Two die as motorway bridge collapses near Ancona 41
- Are Circular Runways the Future for Airports? 41
- Architecture of faith 42

New Books in the Geotechnical Sciences 45

Electronic Bulletins 46



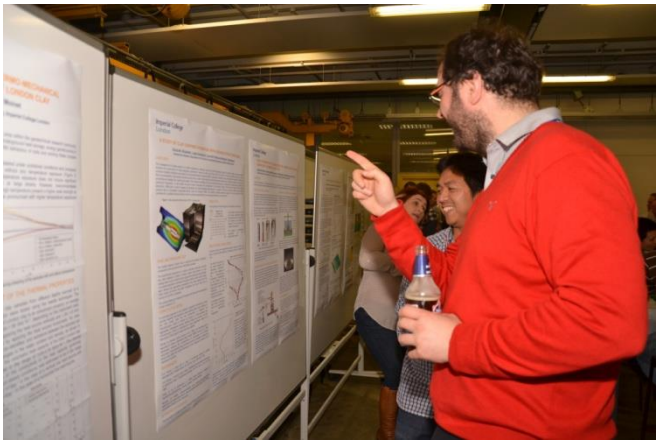
NEWS FROM THE GREEK AND INTERNATIONAL GEOTECHNICAL SOCIE-TIES

Imperial College Geotechnics PhD Alumni Event

Instigated by the current research group of the Geotechnics Section at Imperial College London, the inaugural Geotechnics PhD Alumni gathering took place on March 14th 2017. Around 50 former PhD researchers were welcomed back to the Department of Civil and Environmental Engineering by the current research group and academic and technical staff from Geotechnics. The earliest PhD graduation at the event was 1973!



Supported by a few drinks and some food, memories flooded back, creating laughter and enjoyment of being together again and catching up with what has happened since. For current students it was an excellent opportunity to show off their research posters and talk to previous generations whose names cover numerous theses and research papers.

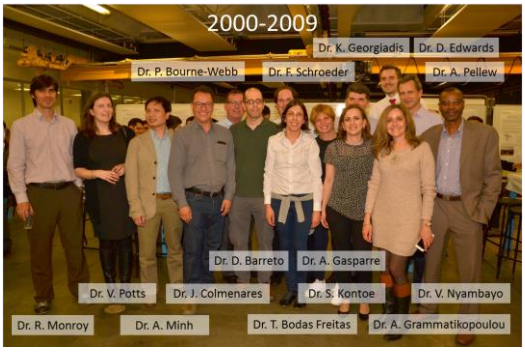


Strong encouragements that we received to make this a regular event was a sure sign of a successful and pleasant evening, which people did not hurry to leave even when drinks ran out! We have every intention of repeating this gathering at some frequency, and will inform our alumni well in advance. We also acknowledge the support we received for this event from the Imperial's Graduate School.











FORTHCOMING GEOTECHNICAL EVENTS

For older entries more information can be found in previous issues of the bulletin and in the listed on websites.

Shallow geothermal energy for buildings and infrastructure, themed issue of Environmental Geotechnics, sam.hall@icepublishing.com.

ICTUS17 The 2017 International Conference on Tunnels and Underground Spaces, 28 August 2017 - 1 September 2017, Seoul, Korea, www.i-asem.org/new_conf/asem17.htm

International Symposium on Coupled Phenomena in Environmental Geotechnics, 6-8 September 2017, Leeds, United Kingdom, http://tinyurl.com/cpeg2017

Brownfield Risk Assessment & Remediation, 13-14 September 2017, London, United Kingdom, https://brownfieldbriefing.com/risk-remediation-2017?ls=lnk

19th International Conference on Soil Mechanics and Geotechnical Engineering, 17 - 22 September 2017, Seoul, Korea, www.icsmge2017.org

AGS GEOTECHNICAL DATA CONFERENCE 2017 Best Practice, Challenges and Future, 20th September 2017, Birmingham, U.K., ags@ags.org.uk

IICTG 2017 Conference "ICT — Past and Future", September 26÷28, 2017, Minneapolis, Minnesota, USA, www.iictg.org/2017-conference

AfriRock 2017, 1st African Regional Rock Mechanics Symposium, 2 – 7 October 2017, Cape Town, South Africa, www.saimm.co.za/saimm-events/upcoming-events/afrirock-2017

Geotechnique Symposium in Print 2017 Tunnelling in the Urban Environment, http://www.icevirtuallibrary.com/pb-assets/Call%20for%20Papers/Geo-Symposium-CFA-AW.pdf

HYDRO 2017 Shaping the Future of Hydropower, 9-11 October 2017, Seville, Spain, hydro2017@hydropower-dams.com

GeoAfrica 2017 3rd African Regional Conference on Geosynthetics, 9 – 13 October 2017, Morocco, http://geoafrica2017.com

3rd Panhellenic Conference on Dams and Reservoirs -Project Management and Development Perspectives, 12-14 October 2017, Athens, www.fragmata2017.gr

4th International Conference on Long-Term Behaviour and Environmentally Friendly Rehabilitation Technologies of Dams, 17-19 October 2017, Tehran, Iran, www.ltbd2017.ir/en

The 15th International Conference of International Association for Computer Methods and Advances in Geomechanics, 19-23 October 2017, Wuhan, Hubei Province, China, www.15iacmag.org

XIII International Conference "Underground Infrastructure of Urban Areas 2017", 24-26 October 2017, Wroclaw, Poland, http://uiua.pwr.edu.pl/?lang=en

SIFRMEG 2017 Shaoxing International Forum on Rock Mechanics and Engineering Geology, October 28-29, 2017, http://forum.hmkj.com.cn/index.php/Index/show/tid/20

11th Conference "Greek Language and Terminology", 9–11 November 2017, Athens, www.eleto.gr/gr/Conference11.html



www.undergrounduae.iqpc.ae

The #1 meeting place for geotechnical experts and underground engineers in the Middle East

Join us this 13 – 14 November in Dubai, UAE, at the 4th Underground Infrastructure & Deep Foundations Middle East Conference and Awards, as we gather the foremost experts, engineers, subject matter experts and solution providers to share best practice, project insight and new technologies. Delivered through a series of case studies, panel discussions and workshops from regional and international professionals, this is the leading event for the underground and deep foundations community in the Middle East.

The UAE remains a prime market opportunity with billion-dollar construction projects on the way. To support new developments like the Dubai metro extension or construction of a sewage system, it is fundamental for the UAE to put in place the best piling and foundation structures and have the most efficient methodologies to create robust underground infrastructure. However, when it comes to constructing alongside existing buildings and infrastructure, project owners, geotechnical contractors and consultants are facing tough challenges, such as waterproofing, insulation, corrosion, and site investigation accuracy issues. The 4th Underground Infrastructure and Deep Foundations Conference will address main geotechnical challenges and illustrate latest solutions to develop the deep foundation and tunnelling innovations.

This year's conference will bring together regional and international professionals from the following departments:

- Ground Engineering
- Design Engineering
- Civil Engineering of Structural Engineering/Infrastructure
- Planning Drainage Sewage
- Infrastructure, Utilities
- Water Networks

For general enquiries:

Tel: 971 4 364 2975
Email:enquiry@iqpc.ae

PARIS 2017 AFTES International Congress "The value is Underground", 13-16 November 2017, Paris, France, www.aftes2017.com

2nd International Conference "Challenges in Geotechnical Engineering" 2017 20-23 November 2017, Kyiv, Ukraine, www.cgeconf.com/en

2nd International Symposium on Asia Urban GeoEngineering, 24-27 November 2017, Changsha, China, hwww.isaug2017.org

ASIA 2018 Seventh International Conference and Exhibition on Water Resources and Renewable Energy Development in Asia, 15 March 2018, Danang, Vietnam, www.hydropower-dams.com/asia-2018-conference.php?c_id=303

World Tunnel Congress 2018 "The Role of Underground Space in Future Sustainable Cities", 20-26 April 2018, Dubai, United Arab Emirates, www.wtc2018.ae

EUROCK 2018 Geomechanics and Geodynamics of Rock Masses, 22-26 May 2018, Saint Petersburg, Russia, www.eurock2018.com/en

16th European Conference on Earthquake Engineering (16thECEE), 18-21 June 2018, Thessaloniki, Greece, www.16ecee.org

CPT'18 4th International Symposium on Cone Penetration Testing, 21-22 June 2018, Delft, Netherlands, www.cpt18.org

NUMGE 2018 9th European Conference on Numerical Methods in Geotechnical Engineering, 25-27 June 2018, Porto, Portugal, www.numge2018.pt

RockDyn-3 - 3rd International Conference on Rock Dynamics and Applications, 25-29 June 2018, Trondheim, Norway, www.rocdyn.org

GeoChine 2018 - 5th GeoChina International Conference Civil Infrastructures Confronting Severe Weathers and Climate Changes: From Failure to Sustainability, July 23-25, , HangZhou, China, http://geochina2018.geoconf.org

UNSAT2018 The 7th International Conference on Unsaturated Soils, 3 - 5 August 2018, Hong Kong, China, www.unsat2018.org

SAHC 2018 11th International Conference on Structural Analysis of Historical Constructions "An interdisciplinary approach", 11-13 September 2018, Cusco, Perú http://sahc2018.com

11th International Conference on Geosynthetics (11ICG), 16 - 20 Sep 2018, Seoul, South Korea, www.11icg-seoul.org

CHALK 2018 Engineering in Chalk 2018, 17-18 September 2018, London, U.K., www.chalk2018.org

ARMS10 - 10th Asian Rock Mechanics Symposium, ISRM Regional Symposium, 29 October - 3 November 2018, Singapore, www.arms10.org

WTC2019 Tunnels and Underground Cities: Engineering and Innovation meet Archaeology, Architecture and Art and ITA - AITES General Assembly and World Tunnel Congress, 3-9 May 2019, Naples, Italy, www.wtc2019.com

7 ICEGE 2019

International Conference on Earthquake Geotechnical Engineering
17 - 20 June 2019, Rome, Italy

Organizer: TC203 and AGI (Italian Geotechnical Society)
Contact person: Susanna Antonielli
Address: AGI - Viale dell' Università 11, 00185, Roma, Italy
Phone: +39 06 4465569
Fax: +39 06 44361035
E-mail: agi@associazionegeotecnica.it

ISDCG 2019

7th International Symposium on Deformation Characteristics of Geomaterials
26 - 28 June 2019, Glasgow, Scotland, UK,

The Technical Committee 101 of the ISSMGE is pleased to announce the organisation of the 7th International Symposium on Deformation Characteristics of Geomaterials (ISDCG) in 2019, in Glasgow, UK. The symposium is co-organised by the University of Strathclyde in Glasgow, the University of Bristol, and the Imperial College in London.

Building on the success of the previous Symposia organised in Sapporo (Japan) in 1994, Torino (Italy) in 1999, Lyon (France) in 2003, Atlanta (US) in 2008, Seoul (Korea) in 2011 and Buenos Aires (Argentina) in 2015, the 7th ISDCG will equally follow both its traditions and active promotion of new technical elements to maintain it as one of the most popular and vibrant events within the geotechnical community. The technical core themes will focus on: (i) advanced laboratory geotechnical testing; (ii) application of advanced laboratory testing in research, site characterisation, and ground modelling; (iii) application of advanced testing to practical geotechnical engineering. In addition to these traditional topics, sub-themes will include cutting-edge techniques and approaches, for example experimental micro-mechanics, non-invasive monitoring systems, nano and micro-sensors, new sensing technologies. A key goal is to engage with the full spectrum of geotechnical specialists, from early career engineers and researchers through to world leading experts.



14th ISRM International Congress
20-27 September 2019, Foz de Iguaçu, Brazil

Contact Person: Prof. Sergio A. B. da Fontoura
E-mail: fontoura@puc-rio.b

The 17th European Conference on Soil Mechanics and Geotechnical Engineering
1st - 6th September 2019, Reykjavik Iceland
www.ecsmge-2019.com

The theme of the conference embraces all aspects of geotechnical engineering. Geotechnical engineering is the foundation of current as well as future societies, which both rely on complex civil engineering infrastructures, and call for mitigation of potential geodangers posing threat to these. Geotechnical means and solutions are required to ensure infrastructure safety and sustainable development. Those means are rooted in past experiences enhanced by research and technology of today.

At great events such as the European Geotechnical Conference we should: Spread our knowledge and experience to our colleagues; Introduce innovations, research and development of techniques and equipment; Report on successful geotechnical constructions and application of geotechnical design methods, as well as, on mitigation and assessment of geohazards and more.

Such events also provide an opportunity to draw the attention of others outside the field of geotechnical engineering to the importance of what we are doing, particularly to those who, directly or indirectly, rely on our services, knowledge and experience. Investment in quality geotechnical work is required for successful and safe design, construction and operation of any infrastructure. Geotechnical engineering is the key to a safe and sustainable infrastructure and of importance for the society, economy and the environment. This must be emphasized and reported upon.

XVI Asian Regional Conference on Soil Mechanics and Geotechnical Engineering
21 - 25 October 2019, Taipei, China

XVI Panamerican Conference on Soil Mechanics and Geotechnical Engineering
18-22 November 2019, Cancun, Quintana Roo, Mexico
http://panamerican2019mexico.com/panamerican

Technical program

1A – Transportation geotechnics.
1B – In situ testing.
1C – Geo-engineering for energy and sustainability.
1D – Numerical modelling in geotechnics.
1E – Foundations & ground improvement.
1F – Unsaturated soils.
1G – Embankments, dams and tailings.
1H – Excavations and tunnels.
1I – Geo-Risks.

Contact Info

Blvd. Kukulkan Km 17, Zona Hotelera,
77500 Cancún, QROO
Tel (+(52) 1 55 5677-3730, +(52) 1 55 5679-3676
Iberostar: 01 800 849 1047
info@panamerican2019mexico.com
chat@panamerican2019mexico.com

Nordic Geotechnical Meeting
27-29 May 2020, Helsinki, Finland

Contact person: Prof. Leena Korkiala-Tanttu
Address: SGY-Finnish Geotechnical Society,
Phone: +358-(0)50 312 4775
Email: leena.korkiala-tanttu@aalto.fi

INTERESTING GEOTECHNICAL NEWS

The famous " Azure Window" of Malta collapsed in the sea



A rocky formation on the island of Gozo, resembling an arch and appeared in countless tourist brochures of Malta, collapsed today at sea.

Geologists have long ago warned about the accelerated erosion of the rocks in the northwestern shore of the Gozo tiny island, and the authorities had banned tourist access over the arch.

The formation, known as the Azure Window (Blue Window) creating an arch over the blue waters, which are a favorite destination for divers, collapsed as the Malta was devastated by a violent storm and gale force winds.

(8 March 2017, http://www.lifo.gr/now/world/136140)

The Azure Window developed through sea and rain erosion of a cliff face over a period of about 500 years. The arch was one of Malta's main tourist landmarks, and it was a popular backdrop in photographs. It was included in a Special Area of Conservation, and in 1998, it was included on Malta's tentative list of UNESCO World Heritage Sites, along with the rest of Dwejra Bay.



The Azure Window in 2006

Between the 1980s and the 2000s, parts of the top slab of the arch collapsed, significantly widening the arch. A large slab of rock on the outer edge of the cavity collapsed in April 2012, further increasing the size of the window. Another rock fall occurred in March 2013. A geological and geotechnical report was prepared four months later, and it determined that the arch was "relatively stable and will continue to remain so for a number of years", although it warned that rock falls will continue and it might be hazardous for people to go close to the arch.

Further rock falls and fissures were reported in subsequent years. Fishermen avoided going near the arch with their boats, and warning signs were put up to discourage people from walking on top. However, many people still went on the arch on a regular basis, and videos were uploaded on YouTube of people cliff diving from the window as rocks were falling down.



View of the Azure Window in 2009

In December 2016, an emergency order was published prohibiting people from going on the arch, with trespassers facing a fine of €1500. However, this law was not enforced, and visitors were still walking on top of the arch days before it collapsed in March 2017.



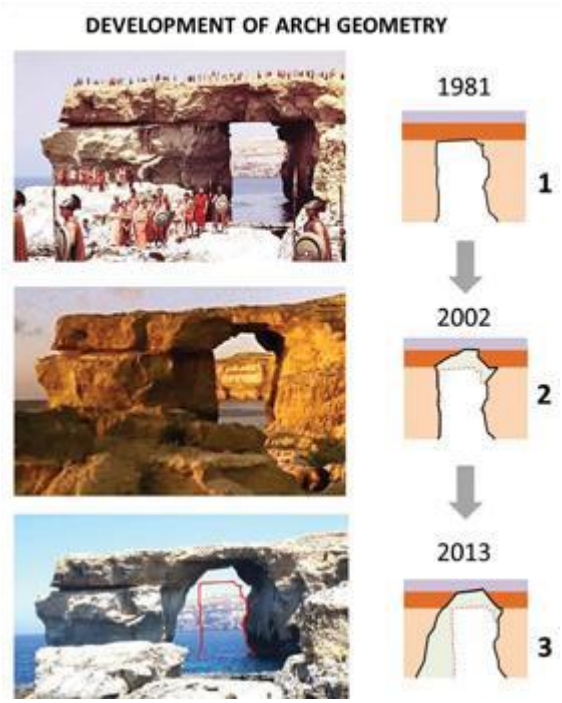
In 2012 after the partial collapse

Collapse

The arch collapsed at around 08:40 UTC (09:40 a.m. local time) on 8 March 2017, after severe storms with gale-force winds. The pillar supporting the arch collapsed, and the entire structure crashed down into the sea, with nothing remaining visible above sea level.

The collapse was reported in both local and international media. Prime Minister Joseph Muscat and Leader of the Opposition Simon Busuttil both tweeted about the collapse of the Azure Window, and it also became the subject of

many Internet memes on Maltese social media. The Environment and Resources Authority called the collapse a major loss to Malta's natural heritage.



Geology

The Azure Window was a natural arch with a height of about 28 m (92 ft) and a span of around 25 m (82 ft). It was located at the tip of a headland known as Dwejra Point. The arch was comprised of two types of Lower Coralline Limestone, known as Member A and Member B. Member A formed the arch's pillar and base, while Member B formed the upper layer including most of the unsupported arch.

The arch was located close to the Inland Sea, a large circular sinkhole reached by a small arch that developed along a joint in the rocks. The Fungus Rock, an islet that was formed when the bridge of a natural arch collapsed leaving a stack, is also found nearby. Another natural arch, the Wied il-Mielaħ Window, is located about 3.7 km (2.3 mi) northeast of Dwejra.

https://en.wikipedia.org/wiki/Azure_Window

Norway may build the world's first tunnel for ships

Stretching over 15 miles, Norway's Lærdal Tunnel has been the longest road tunnel in the world since it was built in the 1990s.

Now, the country is trying to construct the world's first tunnel for ships — which would see between 70 and 120 vessels per day.

As noted by BBC News, the tunnel started gaining public support in the 1980s, and the Norwegian Coastal Administration (NCA) has since embarked on several feasibility studies to see how it could be realized.

Terje Andreassen, the tunnel's project manager, tells Business Insider that the NCA will submit its findings to Norway's Department of Transport in May 2017. The project would need to be fully financed by the Norwegian Parliament, which has already designated approximately $117 million ($1 billion NOK) for the NCA's research.



A rendering of the Stad Ship Tunnel in Norway

If the plans are approved, construction could start as early as 2019, Andreassen says.

The NCA worked with Snøhetta, an Oslo-based architecture firm, to create renderings of what the tunnel would look like. Check them out below.

If Norway's Stad Ship Tunnel gets approved, it would be located on the Stadhavet Sea, an area known for heavy winds and hurricanes.

Stormy weather makes it almost impossible for ships to travel in the area. Vessels often wait for hours or even days before it becomes safe enough to cross, Andreassen says. His team at the NCA is conducting research on the feasibility of building the tunnel.

The Stad Tunnel would allow for safer passage along the sea, Andreassen says. Here's a rendering of what it would look like:



From the north, ships would access the tunnel near the town of Selje. The southern entrance would be through the Molde fjord, where there would also be a new pedestrian bridge.

The NCA estimates that the mile-long tunnel would see between 70 and 120 passenger and freight ships per day. It would measure 148 feet high and 118 feet wide.



Various kinds of vessels would pass through it, including small ferries, which Andreassen says currently can't travel along the Stadhavet Sea when the weather is bad. All ships would navigate the tunnel on their own.

If the ambitious project moves forward, the tunnel's construction team would need to drill and blast through rock to create a channel.



The tunnel would be the first of its kind in the world — but it wouldn't be cheap. The NCA estimates that its construction could cost around 2.3 billion NOK, or approximately $267 million.

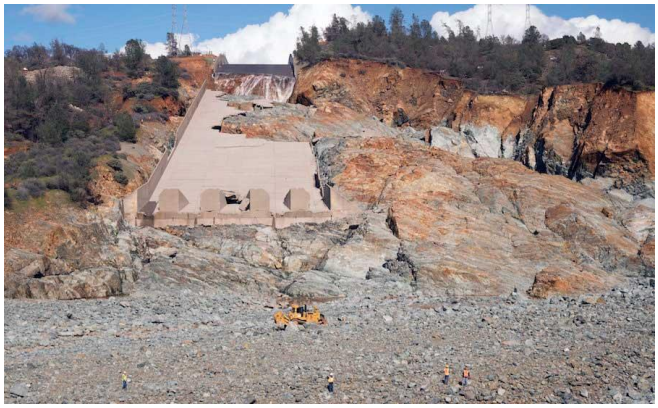
(Leanna Garfield / BUSINESS INSIDER, Mar. 15, 2017, http://www.businessinsider.com/norway-worlds-first-tunnel-for-ships-2017-3/#if-norways-stad-ship-tunnel-gets-approved-it-would-be-located-on-the-stadhavet-sea-an-area-known-for-heavy-winds-and-hurricanes-1)

How To Fix Oroville Dam

California must design a lasting replacement for the destroyed spillway

On Sunday, Feb. 12, California officials ordered the immediate, mandatory evacuation of 188,000 residents from towns below the Oroville Dam. Two days later, when federal and state officials deemed the dam safe, the evacuation order was rescinded, and people were allowed to return to their homes. It isn't often that hundreds of thousands of people in the U.S. have to leave their homes because of worries about a catastrophic structural failure.

As an experienced civil engineer, I would like to make one point very clear: Oroville Dam was never in danger of failing. Because the Oroville Dam crest is 21 ft higher than the emergency spillway crest, the dam will never be overtopped.



After the flow from the main spillway was shut off, construction workers clear the rock debris strewn across the bottom of the Oroville Dam spillway on February 27, 2017.

But the California Dept. of Water Resources must take this opportunity to design a lasting replacement for the destroyed spillway. I'll explain why.

Located on the Feather River about 65 miles north of Sacramento, Calif., Oroville Dam is 770 ft high—the nation's tallest. Unlike Hoover Dam and Glen Canyon Dam, Oroville Dam is a zoned-earthfill structure.

Water can be released from the reservoir (Lake Oroville) behind the dam in four ways: power plant, river outlets, main spillway and emergency, or auxiliary, spillway. Because rock debris is damming up the powerhouse tailrace, the Oroville power plant is out of service. Due to various operational problems, the river outlets cannot be used. This leaves only the main spillway and the emergency spillway to let water out of the lake.

The main spillway is a 3,050-ft-long, concrete-lined chute, which extends from the flood-control outlet structure down to the Feather River. The gated headworks at the outlet structure has eight radial gates to meter water flow into the spillway chute. The main spillway is rated at 150,000 cubic ft per second (cfs).

The final component for releasing floodwaters from Lake Oroville is the emergency, or auxiliary, spillway. This is a concrete, 30-ft-high ungated overflow weir, with a crest length of 1,730 ft. When floodwater passes over this weir, the water tumbles down an unlined slope to the Feather River.

Heavy Rainfall Spikes Lake Levels

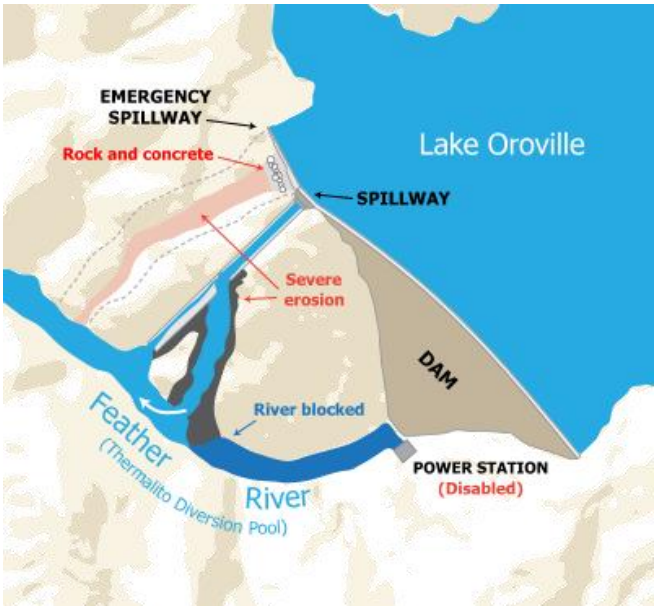
After large storms hit the Feather River tributaries in early February, Lake Oroville's water levels began rising dramatically. Normally, this doesn't happen until the snow melts and the spring rains bring additional water into the reservoir.

These early thunderstorms had a tremendous impact on the reservoir behind Oroville Dam. From Feb. 6 to Feb. 11, high inflows entered Lake Oroville, with four days over 100,000 cfs. On Feb. 8, the reservoir took in a whopping 240,000 acre-feet of water in a 24-hour period. Over the course of six days, from Feb. 6-11, Oroville Lake levels rose 52 ft!

On Feb. 11, the lake rose 3 ft, and water started flowing over the emergency spillway shortly after 8:00 a.m. This was the first time that water had moved over the emergency spillway since 1967, when the Oroville Dam was built. Water continued flowing over the emergency spillway until 8:00 p.m. on Feb. 12.

The California Dept. of Water Resources estimates that about 6,000 to 12,600 cfs of water passed over the emer-

gency spillway on Saturday, Feb. 11, and Sunday, Feb. 12. When compared with the main spillway releasing 100,000 cfs, this is a drop in the proverbial bucket.



A relocated main spillway could be inserted between the existing spillway and the dotted lines in this simplified plan view of the dam and related structures.

As the water made its way down the steep slope to the Feather River, significant erosion took place. Huge canyons were carved out of the hillside, and sections of the boat-ramp access road were destroyed.

The Spillway Problems

Of particular concern was the erosion that took place at the toe of the emergency spillway. After the emergency spillway stopped flowing, engineers could assess the damage that took place on Saturday and Sunday. Holes near the 30-ft-high emergency spillway were readily apparent.

Some people feared that this concrete weir would be undermined and fail, thereby releasing a 30-ft-high wall of water onto the towns below the dam. This is why the authorities called for the immediate and mandatory evacuation.

Since Feb. 12, contracting crews have been working around the clock to place rock and concrete over the affected areas. Workers are placing rock with trucks, loaders and excavators. After the rock is deposited, transit-mix concrete trucks deliver concrete for placement by multiple truck-mounted boom concrete pumps.

In a questionable practice, workers loaded bags with small rocks or sand and flew these bags into place with helicopters. Even though concrete was placed around the rock bags, these bags may not have survived the rushing water.

With several helicopters shuttling back and forth from the loading area to the deposit areas, it looked more like a Hollywood movie set than a serious spillway repair effort!

The problems with the main spillway were brought to light on Feb. 7, when a large hole appeared in the spillway's concrete slab, near the location of an earlier patch job. By Feb. 10, the spillway crater had grown to 500 ft long x 300 ft wide x 45 ft deep.

In the process, the concrete side wall collapsed and was washed away. As the crater got larger, more and more water shot out of the spillway and carved a new canyon, carrying the water down to the Feather River. Depending on the flow volume, most of the water leaves the spillway chute at the location of this large crater; very little water stays in the chute until the lower end.

What caused the failure of the main spillway's concrete slab?

Main Spillway Solutions

On Feb. 14, I sent a letter to the Dept. of Water Resources in which I suggested that the concrete in the main spillway's chute had been destroyed by powerful "cavitation" forces. Cavitation can occur in spillways and tunnels when high-velocity water encounters irregularities in the concrete surface. At these locations, cavitation creates high-pressure shock waves that are capable of destroying solid concrete. Proper aeration of the water flow can minimize the harmful effects of cavitation.

The department should immediately design the main spillway's replacement so that construction can take place this summer, during the low-flow season. The department has placed the rebuilding cost of the main spillway at about $100 million to $200 million.

Besides tough site conditions, the biggest obstacle could be the need to handle the main spillway's water flows during construction. How will the contractor divert 60,000 to 100,000 cfs of high-velocity water around the repair site during construction? Because this will be extremely difficult, construction must be pursued on a 24/7 basis to accomplish all the work in the dry season.

A logical alternative is to design a new main-spillway chute to replace the 50-year-old spillway. Of course, anti-cavitation measures would be incorporated into the new design, along with new energy-dissipation features at the Feather River (possibly a flip bucket and stilling basin).

The new spillway chute would have an alignment almost parallel with the existing spillway, a short distance to the northwest. Most of the construction work could be accomplished even if the existing spillway has to carry water. When the new spillway chute is built, it will be tied into the existing spillway, near the gated headworks, with a training wall at a very shallow angle.

On Feb. 27, the Dept. of Water Resources shut off the flow of water in the main spillway to allow workers to clear rock and concrete debris from the Feather River, allowing for the partial operation of the powerhouse turbines. With no water flowing, people could see how rushing water can utterly destroy a weakened concrete spillway. Roughly half the spillway's length has been reduced to short stretches of concrete, rubble and huge canyons.

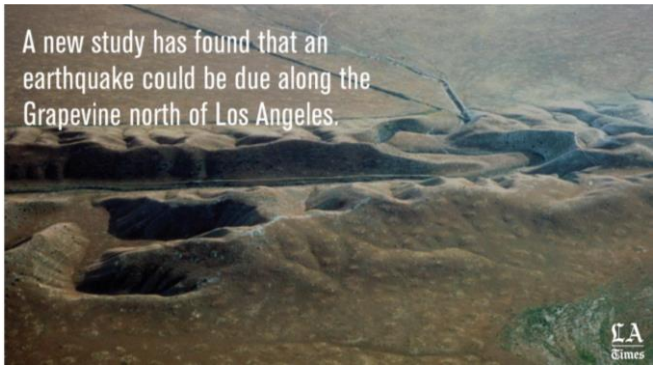
This makes total replacement of the main spillway in a new location even more attractive—and that is the course of action I urge the department to take.

Henry W. Burke, BSCE and MSCE, a former employee of Kiewit Corp., is a civil engineer with extensive knowledge of heavy construction. He is based in Omaha, Nebraska and can be reached at hwburke@cox.net.

(Henry W. Burke / ENGINEERING NEWS-RECORD, March 19, 2017, http://www.enr.com/articles/41664-how-to-fix-oroville-dam)

EARTHQUAKES

A section of the San Andreas fault close to L.A. could be overdue for a major earthquake



Researchers say the land has been pushing at a rate of more than 1 inch a year since 1857. (March 7, 2017)

Southern California could be overdue for a major earthquake along the Grapevine north of Los Angeles, according to a sobering new study by the U.S. Geological Survey.

The research found earthquakes happen there on average every 100 years. The last major temblor occurred 160 years ago, a catastrophic geological event that ruptured an astonishing 185 miles of the San Andreas fault.

The land on either side of the fault has been pushing against the other at a rate of more than 1 inch a year since 1857, the researchers said, accumulating energy that will be suddenly released in a major earthquake, when the land along the fault would move by many feet.

"So you expect that amount of accumulation of energy will be released in the future in a large-magnitude rupture, somewhere along the San Andreas," said the lead author of the study, USGS research geologist Kate Scharer.

A repeat of the 1857 earthquake could damage aqueducts that ferry water into Southern California from the north, disrupt electric transmission lines and tear up Interstate 5, whose Grapevine section runs on top of the San Andreas fault at Tejon Pass.



Scientists observing trenches at this site discovered that earthquakes on this section of the San Andreas fault occurred on average once every 100 years.

Central Los Angeles could experience a couple of minutes of shaking, which could feel like a lifetime compared with the 1994 Northridge earthquake, which shook for roughly 15 seconds.

"This would be more broadly felt across the basin," Scharer said. "It would impact our ability to be a world-class city."

There has been a long drought of major earthquakes on the southern San Andreas fault, which has slowly been accumulating strain as the Pacific plate grinds northward against the North American plate. The seismic stress has been building up without relief since the presidency of Franklin Pierce.

The quake will probably be something few Southern Californians have ever experienced. Of the 10 earthquakes Scharer and her colleagues found in the past 1,200 years, the most common magnitude was about magnitude 7.5.

Such an earthquake would tear up land along the fault's length and displace it by an average of 9 feet.

The site studied by Scharer and her colleagues is next to Frazier Mountain at the top of Tejon Pass, close to the meeting point of Los Angeles, Ventura and Kern counties. Unlike other sections of the southern San Andreas, this region — about a 100-mile section of the fault — had not been studied in detail before, and scientists did not know what earthquakes occurred there before the 19th century.

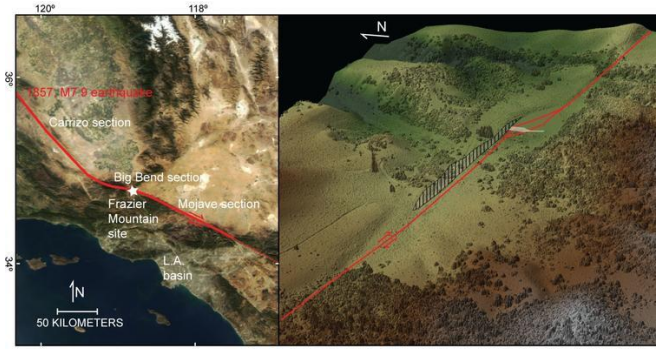


Image showing the location where scientists studied a section of the San Andreas fault, identified by the red line, and found that earthquakes there happened on average once every 100 years. The most common earthquake found was magnitude 7.5. (USGS)

So Scharer and other scientists undertook the most intensive study of its kind in this section of the San Andreas fault, where researchers could hear the roar of traffic from Interstate 5. Trenches were dug deeper than ever before at this location to better understand the history of earthquakes there.

"To get 1,200 years of records, we have to do lots of excavations and go quite deep," Scharer said.

They found 10 major earthquakes over a 1,000-year period. But "it doesn't happen like clockwork," Scharer said. There was once a gap of only 20 years between two major quakes. On the other end, there was a gap of about 200 years between quakes.

So while this part of the San Andreas fault could be overdue for a large earthquake, it's also possible it could be decades longer before the Big One strikes. Of the identified gaps between earthquakes, three took longer than 160 years to strike this part of the San Andreas again.

"Longer gaps have happened in the past, but we know they always do culminate in a large earthquake. There's no getting out of this," Scharer said.

There was one possible silver lining. The most common magnitude they found at this site, 7.5, means that the 7.9 earthquake experienced in 1857 was unusually strong.

In fact, of the newly discovered earthquakes, there was only one other estimated at 7.9 — one that struck around 1550.

The conclusion that 7.9 earthquakes there are relatively rare could be good news, said Caltech seismologist Egill Hauksson, who was not involved in the study.

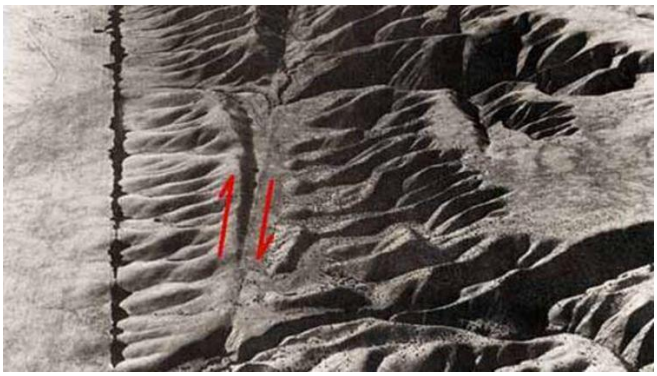


Image showing San Andreas fault (USGS)

"That means it released a lot of energy on the fault," Hauksson said of the 1857 temblor. It also could explain why the southern San Andreas fault has been so quiet since then.

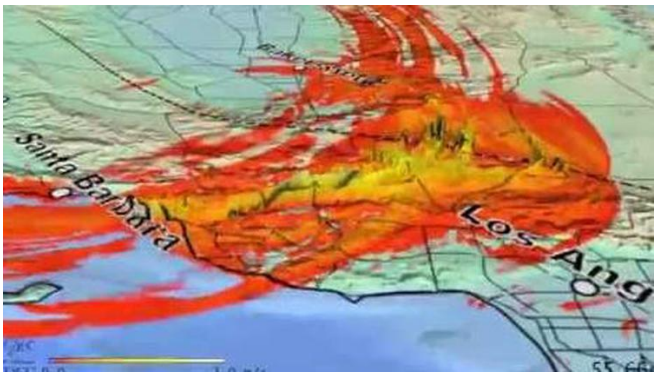
The difference between a 7.5 and a 7.9 earthquake is significant, Scharer said. A 7.5 earthquake produces roughly 15 times less energy than a 7.9. And while a 7.5 earthquake displaces land along the fault by an average of 9 feet, the bigger earthquake moves land by 20 feet.

"A road can handle a couple of feet of displacement," Scharer said, "but when you start to get into a dozen feet, it's a real challenge."

The study was published online in the Journal of Geophysical Research, a publication of the American Geophysical Union.

The 1857 quake was so powerful that the soil liquefied, causing trees as far away as Stockton to sink. Trees were also uprooted west of Fort Tejon. The shaking lasted one to three minutes.

The San Andreas fault is 30 miles from downtown Los Angeles, but big earthquakes on the San Andreas fault are expected to heavily shake the nation's second largest city.



The simulated shaking from a possible magnitude-8 earthquake on the San Andreas fault. (Southern California Earthquake Center)
https://www.youtube.com/watch?v=V2Ow0Yuv5co

A simulation of a possible magnitude 8 unzipping from Monterey County into L.A. County shows heavy shaking waves reverberating across a wide swath of the Los Angeles Basin and nearby valleys, whose soft soils can trap shaking energy like Jell-O.

Because the 1857 quake hit when the population was so small, only two people were killed.

Other parts of the San Andreas fault could also rupture. Further southeast of the Cajon Pass, such as in San Bernardino County, the fault has not moved substantially since an earthquake in 1812, and further southeast toward the Salton Sea, it has been relatively quiet since about 1680 to 1690.

"The springs on the San Andreas system have been wound very, very tight," Thomas Jordan, director of the Southern California Earthquake Center, said at an earthquake conference last year, adding that the southern San Andreas is "locked, loaded and ready to roll."

In 2008, the U.S. Geological Survey simulated a magnitude 7.8 earthquake on the southern San Andreas that would begin at the Salton Sea and spread west toward the San Gabriel Mountains in Los Angeles County. Such a quake could cause more than 1,800 deaths, 50,000 injuries, $200 billion in damage and severe, long-lasting disruptions.

The collapse of five high-rise steel buildings, with 5,000 people inside them, was seen as possible in this USGS scenario, as would be the destruction of 50 concrete buildings; 800 people might be in completely collapsed concrete buildings, and 7,000 more in those that partially collapsed. About 900 brick buildings could be irreparably damaged.

Some cities, like Los Angeles and Santa Monica, have responded by passing laws requiring owners retrofit some of the most vulnerable buildings known to engineers. Santa Monica recently moved forward on a sweeping law that would require evaluations, and if needed, retrofits of wood apartments, brittle concrete buildings and flawed steel towers.

(Rong-Gong Lin, Contact Reporter / Los Angeles Times, March 7, 2017, http://www.latimes.com/local/lanow/la-me-ln-earthquake-san-andreas-grapevine-20170307-story.html)

GEOLOGY

How One Brilliant Woman Mapped the Secrets of the Ocean Floor

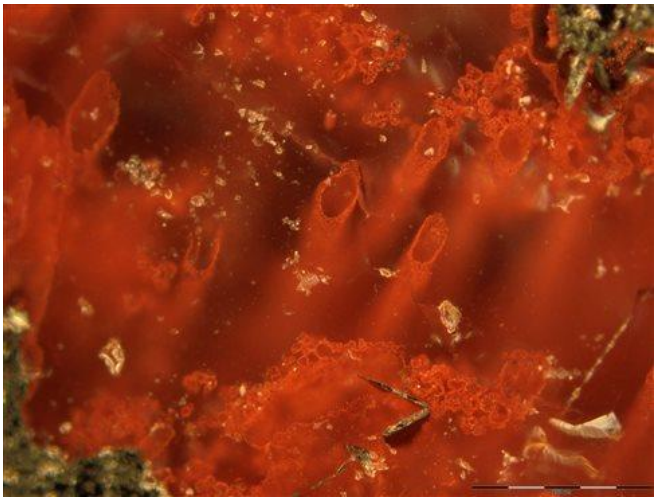
This video tells the story of a female geologist, Marie Tharp, whose groundbreaking work in mapmaking helped bring the theory of continental drift into the mainstream. Her ideas (which a male colleague initially dismissed as "girl talk," 2:34) have helped shape what we know about Earth and its geologic history.

The characters and themes—a persistent woman, scientific truth winning out—make this story feel very contemporary. Plus, it's all accomplished through clever animations of both the characters and the visualizations of the complex ideas they discuss.

http://video.nationalgeographic.com/video/short-film-showcase/how-one-brilliant-woman-mapped-the-secrets-of-the-ocean-floor?utm_source=NatGeocom&utm_medium=Email&utm_content=video_20170306_b&utm_campaign=Content&utm_rd=1084349954

(Lisa Covi, Production Manager / National Geographic)

3,77 billion years fossils
Traces of one of the oldest forms of life



The discovery supports the idea that life arose from hot hydrothermal springs on the seabed

Scientists believe that they have discovered in Quebec of Canada, the oldest fossils of microorganisms found on our planet at least 3.77 billion years old.

These are the traces left by one of the oldest forms of life on Earth.

Tiny footprints like filaments and cylinders, which were formed by bacteria that lived in iron minerals were found enclosed within quartz layers.

These sedimentary rocks in the Noybiagkitoyk area of Northeast Canada, are among the oldest on Earth and probably formed part of a underwater hydrothermic system, rich in iron, which provided the appropriate environment for the earliest forms of life before 3.77 to 4.3 billion years.

Researchers from several countries (UK, USA, Canada, Australia, Norway), headed by Dr. Dominique Papino and Matthew Dodd of the Geosciences Faculty of University College London (UCL), have made the relevant publication in Nature journal.

The discovery supports the idea that life arose from hot hydrothermal springs on the seabed, shortly after the formation of the Earth, "said Matthew Dodd.

"Life on Earth developed at a time when both Earth and Mars had liquid water on their surfaces. Therefore, we expect that we will find evidence for life on Mars before about four billion years ago. If not, then the Earth will constituted a special case".

So far, the earliest known fossils of microorganisms, 3.46 billion years of age, were considered to be those that were found in Western Australia.

Both in Australia and in Canada, the challenge faced by scientists is to ensure that the traces on the rocks actually have organic origins, so are fossils of microorganisms, since the latter have no frame to petrified.

In the case of Quebec, the tiny filaments and cylinders are made of Hematite, a form of oxidation (rust) iron. The researchers looked at and rejected every alternative non-biological explanation for the origin of these traces, for example, that were formed because of changes in temperature and pressure as a result of geological processes.

These ancient traces have the same characteristics as the bacteria, which today are discovered around hydrothermal "chimneys" in the seabed and which also cause oxidation of iron.

(Newsroom LJO, 01 Marr 2017, http://news.in.gr/science-technology/article/?aid=1500131751&ref=newsletter)

Evidence for early life in Earth's oldest hydrothermal vent precipitates

Matthew S. Dodd, Dominic Papineau, Tor Grenne, John F. Slack, Martin Rittner, Franco Pirajno, Jonathan O'Neil & Crispin T. S. Little

Abstract

Although it is not known when or where life on Earth began, some of the earliest habitable environments may have been submarine-hydrothermal vents. Here we describe putative fossilized microorganisms that are at least 3,770 million and possibly 4,280 million years old in ferruginous sedimentary rocks, interpreted as seafloor-hydrothermal vent-related precipitates, from the Nuvvuagittuq belt in Quebec, Canada. These structures occur as micrometre-scale haematite tubes and filaments with morphologies and mineral assemblages similar to those of filamentous microorganisms from modern hydrothermal vent precipitates and analogous microfossils in younger rocks. The Nuvvuagittuq rocks contain isotopically light carbon in carbonate and carbonaceous material, which occurs as graphitic inclusions in diagenetic carbonate rosettes, apatite blades intergrown among carbonate rosettes and magnetite–haematite granules, and is associated with carbonate in direct contact with the putative microfossils. Collectively, these observations are consistent with an oxidized biomass and provide evidence for biological

activity in submarine-hydrothermal environments more than 3,770 million years ago.

Nature **543**, 60–64 (02 March 2017)
doi:10.1038/nature21377

(http://www.nature.com/nature/journal/v543/n7643/full/nature21377.html?foxtrotcallback=true)

Anthropogenic stones
How Lavrion mines enriched Earth with new minerals

From the 5,208 earth minerals which have officially been recognised by the International Mineralogical Association, only 208, i.e. 4% or one in 25, have anthropogenic origin, having been formed thanks to human activities. Most of them were born just over the last 200 years, but there are also ancient cases like those in the ancient mines of Lavrion.

Of the 208 recognized anthropogenic minerals, 29 contain carbon, and some of them have been found in Greece, such as the nealite and the fiedlerite in Lavrio.



Nealite sample from Lavrion. This mineral is an idirect product of human activity (Source: RRUFF)

This results from a new scientific research, which for the first time recorded in a global directory all minerals derived primarily or exclusively thanks to human activity (http://rruff.info/ima).

The origin of these minerals is due to the fact that human activity created the conditions for chemical elements to come into contact with each other and cause geochemical reactions, which otherwise would not have occurred in nature. If, for example, the miners had not excavated the tunnel for a mine (e.g. in Lavrion), crystals of an unknown until then the mineral may not have been formed on the walls of the tunnel.

After the increase of oxygen 2.2 billion years ago, humans have the biggest contribution to variety of minerals on Earth. According to scientists, this finding consists another argument that our planet has now entered a new geological era, the Anthropocene, which comes as a successor to the Holocene epoch (began 11,700 years ago with the melting ice) and in which human footprint is becoming increasingly strident.

Researchers, led by Robert Crewe, Chief geoscientist of the Carnegie Institute of Sciences in Washington and Director of the Deep Carbon Observatory, point out in their publication in American Mineralogist (https://drive.google.com/file/d/0B1bF9zth54L8UHVzQWZWQmdOWXc/view) most man-made minerals have been resulted from mining activities.

Some of these minerals have been found in metallurgy, some have been formed in the pipes of geothermal units, even in shipwrecks, in archaeological excavations or in the storerooms of museums. In all these cases, a natural material contacted with something unknown for that environment (e.g. with seawater or with the wood shelves a warehouse) and, through a chemical reaction, a new mineral was formed. If humans hadn't transfer the original mineral by the ferry or from the archaeological excavation, the new mineral can had never existed in nature.

Although some anthropogenic minerals can also occur through natural processes, many others do not. In the history of our planet, the evolution of minerals never stopped. As time was passing the chemical elements come together in various combinations within the Earth, in certain locations, depths and temperatures, to «give birth» to new minerals.

The so-called Great Oxidative Event, namely the great increase of oxygen in Earth's atmosphere approximately 2.2 billion years ago, had led to the creation of nearly two-thirds of the 5,200 minerals.

After the appearance of humans, their activities have contributed directly or indirectly to the formation of other minerals, most of them after the 18th century, when the industrial revolution started. As Hazen said, "we believe that other minerals continue to be formed today with the same relatively fast pace".

Humans affect the inorganic mineral world, causing the formation of new minerals as an unintentional by-product of various activities, while constantly moving massive amounts of rocks and minerals from one place on Earth to another. Researchers consider it likely that there are hundreds of man-made minerals still unidentified, in old mines, metallourgical facilities, abandoned buildings, etc.

The list of the 5,208 minerals does not include those which humans produce industrially. This concerns thousands of new synthetic materials which have properties of minerals, without something similar in our solar system, and perhaps throughout the universe (semiconductors, laser crystals, magnets, batteries, bricks, cement, steel, titanium, synthetic gems etc.). These materials, according to Hazen, will remain on the geological "file" for the next billion years as a reminder that once upon a time there were humans on Earth.

(Newsroom LJO, with information from the ANA-MNA, 02 Mar. 2017, http://news.in.gr/science-technology/article/?aid=1500131870)

Hidden crystals offer clue to a geological riddle

A South African scientist believes that zircons found on Mauritius may be the remnants of a buried continental fragment



Surrounded by idyllic turquoise sea, Mauritius may hold a hidden secret.

Oceanic crust lives fast and dies young, usually being dragged down a subduction zone after 250m years or so. By contrast, continental crust lives to a ripe old age, with some of the oldest continental crust on Earth – dating to 4bn years – found in Canada and Greenland.

But geologists have long been puzzled as to why there isn't more continental crust bobbing around. Now new research indicates that some of it might be hidden underneath ocean-island volcanoes.

Mauritius is a young volcanic island which emerged around 9m years ago. But it hides a secret. Last year, geologist Lewis Ashwal from the University of Witwatersrand in South Africa, discovered tiny zircon crystals hiding within Mauritian volcanic rocks, and these crystals turned out to be 3bn years old. Zircons are found mainly in granite on continents, and they are super-hardy, surviving immense pressures and temperatures relatively unscathed.

In this case Ashwal thinks that these zircons are the remnants of a continental fragment which was pulled apart around 85m years ago and subsequently buried under volcanic lavas. When the volcanism that created Mauritius began, around 9m years ago, Ashwal reasons that it swept up some of these hardy zircon crystals as the lava punched through the ancient crust sitting on the sea floor. His findings are published in Nature Communications.

Meanwhile, it isn't just ancient continental crust that we have trouble keeping track of. Last month scientists confirmed that Earth had an extra continent surrounding New Zealand (now known as Zealandia) which had been overlooked until now because 94% of it lies beneath the ocean.

(Kate Ravilious / The Guardian, Sunday 5 March 2017, https://www.theguardian.com/science/2017/mar/05/hidden-crystals-offer-clue-geological-riddle-terrawatch)

Treasure in the abyss

The first mine in the sea bottom gets ready for golden business

If the project succeeds, it could lead to a new gold rush: Canadian mining company is preparing to become in 2019 the first extracting gold and other metals from the rich depths of the ocean.

The Canadian Nautilus Minerals has secured an agreement with the Government of Papua New Guinea to exploit deposits of metals in the bottom of the Bismarck Archipelago in the Pacific Ocean, one and a half mile below the surface.



This giant robot will raise the crushed rocks on a ship on the surface

In this region, located near the boundary of tectonis plates, hot water containing dissolved metals is spurting from holes in the bottom. As the water rises and cools, minerals are released and fall.

As representatives of Nautilus stated in LiveScience.com, the deposits at the bottom of the archipelago are 10 times richer in copper, compared with comparable land mines, with the percentage of metal to reach 7%, compared with 0.6% on average on land. The deposits also contain 20 grams of gold per ton, compared with 6 grams on land on average.

The company has already prepared three giant robots to start the work, from which the lighter has the size of an ordinary house and weighs 200 tons: The first robot will scrape and level the seabed to pave the way for the second robot, which will break the rocks with metal teeth that resemble to dinosaur. The third robot, an oversized vacuum cleaner, will sucks the crushed rock along with water with the texture of wet cement. On the surface the water will be filtered even from tiny particles and will be returned to the ocean.

The problem is that this process picks up sediment from the seabed, which spread in water, causing its blurring, with possible side effects to organisms that feed on filters and in general to the oceanic ecosystem.

"There is serious concern that the toxicity because of the disturbance of the seabed can climb the food grid and to reach out to local communities," says Natalie Lowrey of the Australian environmental organisation Deep Mining Seat Campaign, which calls for banning the underwater mines.

For their side, the Nautilus argues that aspiration of shattered stones reduces blurring of water locally.

The underwater Nautilus mine will be located within the territorial waters of Papua New Guinea, and the company had only to get the permission of the Papua New Guinea Government. For mining in international waters the approval of the International Seabed Authority is required, which until now has given more than 25 ore exploration permits.

The Nautilus project, however, is considered crucial. As Natalie Lowrey says, "If the plan goes ahead, it will open the door for this industry."

(Vaggelis Pratikakis / Newsroom LJO, 29 Mar. 2017, http://news.in.gr/science-technology/article/?aid=1500136551)

OTHER INTERESTING NEWS

(dedicated to those who served in Army Corp of Engineers - the Publisher served in the Air Force ...)

From conflict to communities: 75 years of the Bailey Bridge

Former Royal Engineer Alan Pearson, who now works for Mabey, reflects on his time helping communities with the Bailey Bridge's modern-day successors.



A Bailey Bridge spanning a river in Mali

My attachment to the Bailey Bridge started during my career as a Royal Engineer. My belief then and to this day was that there is not a single better piece of engineering.

Invented by Donald Bailey during the Second World War, the bridge could be easily assembled in a wide range of configurations. I was aware of the important role it played in winning World War II, and its simple design meant it was still doing an effective job for the military decades later. But now, as we approach the 75th anniversary of the Bailey, I want to make sure its contribution to civilian life is similarly celebrated.

When I left the Army more than 22 years ago, I started working with Mabey – manufacturer of the lighter, stronger, modern successors to the original Bailey such as the Super Bailey, Mabey Universal, Compact 200 and the Logistic Support Bridge (LSB). The benefits of the Bailey Bridge outside the military setting had always been obvious to me – it can be rapidly built and assembled by hand, keeping costs for governments, local authorities and aid workers down to a minimum. But it wasn't until I started travelling around the world to train diverse communities in how to build these modular steel bridges that I could see the dramatic impact they are having on the lives of real people – from those living in major cities, to indigenous communities in underdeveloped countries.

I've now visited 94 different countries with Mabey, leading teams of local people to build these life-changing bridges. I might be there because natural disasters have brought down existing structures, or perhaps as part of wider country efforts to improve basic infrastructure. Regardless of the circumstances, I've seen communities be completely transformed. Here are the three biggest impacts as I see them:



A Bailey Bridge across the Niari river in Congo

New connections open new revenue streams

As soon as local businessmen realise there's going to be a new bridge, they smell money! When we arrived in Congo in 2015 I heard about a regular ferry taking tourists from one side of the river to another, but in the rainy season this was dangerous, and in high season there was rarely enough water. Our new 130-metre bridge was going to change this and local people couldn't believe it would take us just 35 days to install – they had thought we would be there for months! Businessmen sped up their plans to open new restaurants and petrol stations to serve tourists and passers-by, and a new community was established before our very eyes.

Using local labour boosts communities

The beauty of the Bailey successors is that they are so easy to construct; you really only need one experienced trainer and a willing workforce of local people. Back in 2007, the state of Kashmir was trying to recover from a catastrophic earthquake which killed 50,000 people. As part of aid efforts, the British government supplied around thirty bridges and I headed over to train a team of local engineers and tradesmen to build them. One of the proudest moments of my career was returning years later to hear that this team had gone on to train another 20 people, who had trained another 20 people to build more and more bridges. In the worst circumstances imaginable, they learned new skills and were spreading their knowledge. It's evident that when local people do the work, they take greater ownership of the bridge – and of course they get paid, so more money is ploughed back into the local community.



Bridge building in Namibia

Bridges really do save lives

The biggest impact of a new bridge is, without doubt, ensuring people can get from A to B as safely as possible. It's something we might take for granted in developed countries, but there are still too many people around the world risking their lives to get access to vital amenities. When I arrived in Mali in 1997, local people told me that each year 20-40 people died crossing the Bakoye river. It was shocking to see vehicles which had been washed away, and hear stories about people taking the treacherous journey by canoe or by boat. As soon as local people realised we were building a safe way to cross, they immediately stopped attempting to reach the other side and simply camped out until we were finished. The journey was so dangerous it was worth holding on for.

As the 75th anniversary of the Bailey Bridge draws closer, it gives me great pleasure to highlight how it has enabled faster, safer and more efficient access across a range of challenging locations. It is a true feat of engineering, in both military and civilian settings.

(the engineer, 8th March 2017, https://www.theengineer.co.uk/from-conflict-to-communities-75-years-of-the-bailey-bridge/?cmpid=tenews_3175735)

Italy: Two die as motorway bridge collapses near Ancona

A motorway bridge has collapsed near the north-east Italian city of Ancona, killing two, Italian officials say.



The aftermath of the bridge collapse in Ancona

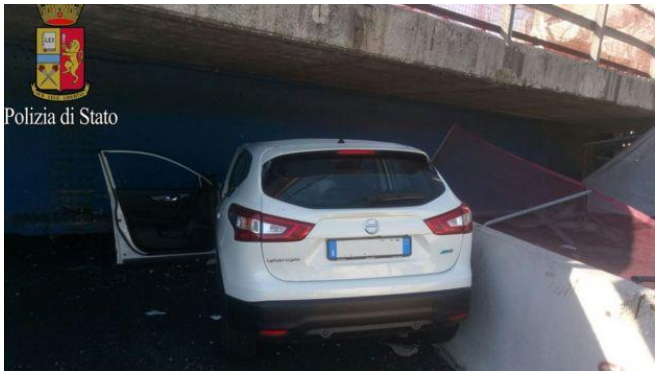
The victims were in a car below the bridge when it fell down onto the A14 road, which runs between Loreto and Ancona South.

The collapse involved a temporary structure which was supporting the bridge, Autostrade, the Italian highways agency said.

Two Romanian workers were also injured, Italian media reported.

The two people who died were a husband and wife, originally from the province of Ascoli Piceno, whose white Nissan Qashqai was crushed as the bridge came down, Ansa news agency reported.

The bridge had been closed to traffic for maintenance work, it said.



The married couple were killed as they drove under the bridge, reports say

Ansa quoted a witness named Francesco as saying the collapse "happened suddenly" and a female driver in front of him braked and stopped just 10m (33ft) from the collapsed bridge.

"We were saved by a miracle," he said.

The affected road is now closed in both directions.

(EIN NEWSDESK, 9 March 2017, http://world.einnews.com/article/370217865/FDxfeirIKonG9ptE?lcf=ZX9dkeSQfK-5FADPuwjBkQ%3D%3D)

Are Circular Runways the Future for Airports?



The idea of a circular runway has recently hit the news but it isn't a new idea. In the January 10, 1960 edition of Arthur Radebaugh's Sunday comic "Closer Than We Think" includes a curious invention that was supposed to literally catapult us into the Jet Age: The circular runway.

From the *Chicago Tribune:*

"The heart of tomorrow's airfield may be a circular catapult-like mechanism for sending planes into the air. It would mean runways much smaller than those now required.

For military purposes, American Engineering Company has already designed a giant wheel that is turned with great force by jet power. Cables from this wheel serve as catapults for fighting aircraft.

The next step would be to use rocket power to catapult planes from a dish-shaped concrete wheel. One spin on such a "circle runway" would produce the same starting speed that now requires a thousand feet or more of conventional runway, and with much less fuel."

The US Navy actually tested a similar circular runway concept in 1965. The big difference between the Navy's tests and the runway envisioned by Radebaugh? The Navy's was much, much larger and didn't have that sci-fi "rocket power unit" to propel the plane.

According to the New York Times, the US Navy pilots who tested this innovative runway found that take-off and landing was "*surprisingly easy*."

Landing is accomplished by approaching the runway in a 15 degree bank — that is, the wing facing the center of the circle is lowered 15 degrees from the horizontal. Once touchdown is accomplished, the runway seems to take care of the rest. The plane finds its natural line on the runway, depending on its speed.

The idea for the circle runway didn't originate in the 1960s. In fact, the circle runway concept dates back to at least the second decade of the 20th century — when air travel itself was still very much in its infancy.

But the idea's infancy can actually be tracked back to late 1910s, an inventor named Mr. H. T. Hanson developed a scheme that was undoubtedly one of the first modern circular runway proposals. He imagined an entire series of circular runways built over the roofs of many buildings, even in cities like New York.

From the June 1919 issue of *Popular Science*: "He would build the platform in the form of a circular, high-banked track — a track that would be constructed of light but strong iron gratings, so that sun and air would still find their way to the streets below."

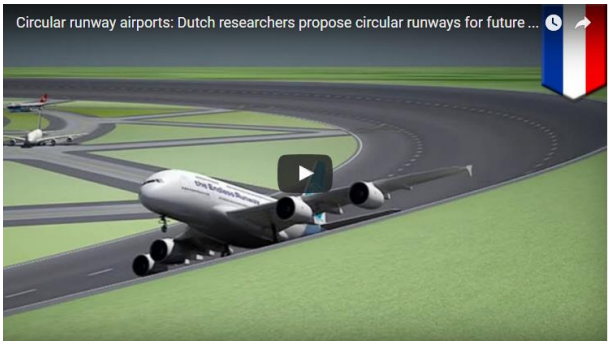
The idea of a circular runway for airports could help revolutionise air travel, shortening flight times, saving fuel costs and promoting airport efficiency.

One man brought this idea into the 21st century a few years ago and has been working with a team at the Netherland Aerospace Centre to make his dream a reality.

Henk Hesselink believes that by creating a 360° runway it will not only conserve space but it will be greener for the environment.

The EU has actually funded this project called, 'The endless runway' (ENDLESS RUNWAY) conceived a revolutionary design for a runway, based on a circular track that runs around the airport. Such a runway would permit planes to take-off in any direction and land from any direction, shortening trajectories, avoiding runway crossings and facilitating landings in any weather.

More specifically, the project team proposed a circular runway that would have a radius of 1.5 to 2.5 km, allowing changes to existing airports more readily. Such a runway would also be 400 m wide, striking a balance between limiting centrifugal forces and safety considerations. Interestingly, several aircraft can operate such a 10 km runway at the same time.



(https://www.youtube.com/watch?v=BaFcDN6Qe1k)

To achieve this, the project evaluated three operational models. The first was designed for low-wind scenarios where any part of the circle can be used in any direction. The second involved a high-wind scenario that was similar to an airport with two parallel runways. While a third model considered changing winds, involving an aircraft sequence that gradually 'moves' with the wind direction.

With these scenarios in mind, the project team found that the concept could shorten take-off and landing tracks overall by 10 % in comparison to straight runways. The model also proves to be better from an operational standpoint as wind direction will not really matter and total land use can be a lot smaller than that of conventional airports. While construction costs will be 10–60 % higher, the concept offers benefits in terms of shorter trajectories, less taxi time and continuous capacity, ideal for increasing air capacity in the world.

ENDLESS RUNWAY has successfully demonstrated the feasibility of the circular runway project, highlighting benefits, future requirements and outlook. With the new Trump administration in the US looking at modernizing their airports will we see circular runways in America before Europe or will maybe the Chinese beat everyone to it…

Fabrizio Poli is Managing Partner of Aircraft Trading Company Tyrus Wings. He is also an accomplished Airline Transport Pilot having flown both private Jets and for the airlines. Fabrizio is also a bestselling author and inspirational speaker & has been featured on Russia Today (RT), TRT World, Social Media Examiner, Bloomberg, Channel 5, Chicago Tribune, Daily Telegraph, City Wealth Magazine, Billionaire.com, Wealth X, Financial Times, El Financiero and many other Media offering insight on the aviation world. Fabrizio is also regularly featured as an Aviation Analyst on RT and TRT World. Fabrizio is also aviation special correspondent for luxury magazine, Most Fabullous Magazine. Fabrizio is also considered one of the world's top 30 experts in using Linkedin for business. You can tune in weekly to Fabrizio's business Podcast Living Outside the Cube available both in video & audio. You can also follow Fabrizio's aviation videos on Tyrus Wings TV. Fabrizio's latest book "Health4Flyers", the first natural-health book for pilots, flights attendants and frequent flyers is now available worldwide.

(Fabrizio Poli, March 16, 2017,
https://www.linkedin.com/pulse/circular-runways-future-airports-fabrizio-poli)

Architecture of faith

Built in different times, places and for different denominations, have been distinguished for their original aesthetic and their construction details

1. Hallgrimskirkja, Iceland

Located in the Centre of Reykjavik and is one of the most famous tourist sites. The Hallgrímskirkja Lutheran Church (which began to be built in 1945 and was completed after decades) is considered a national monument, and is dedicated to the clergyman and poet of the 17th century Hallgrímur Pétursson, from whom it was named. Beyond the monumental expressionistic building of architect Guojon Samuelsson (inspired by volcanoes and glaciers of the Icelandic landscape), striking is the huge organ, inside the temple, with 5,275 lumens, as well as the baptismal font of Bohemian crystal and basalt (lava rock). At the top of the

Church, at a height of 73 m, there is an observatory that offers panoramic views of the city.



2. Fortified church of Viscri, Romania

Seven villages in Transylvania, famous for their fortified churches, have been declared, in their entirety, UNESCO World Heritage. One of these villages is the Viscri, which nowadays is mainly inhabited by Roma and has as a trademark the fortified Gothic church. It is the first building in Viscri, considered to be founded around 1100 by the Hungarian Szeklers, before the Saxons conquerors. This geostrategic detail is important from the architectural point of view, since it resulted in the roof of the church to be built straight and not vaulted.



3. Nativity Basilica, Jerusalem



It is built over the Grotto, the location which has been identified by tradition as the birthplace of Jesus. Besides being a holy place for Christians and Muslims, the Basilica of the Nativity – on the West Bank of Palestine, 10 km south of Jerusalem – is one of the world's Monuments of UNESCO. The Church dates back to the 6th century AD, founded on the original Basilica of 339 (the construction of which started Santa Helena, mother of Constantine the Great) and is the oldest Christian Church that operates to the present day. The current complex also contains the Church of Saint Catherine, along with monasteries and chapels.

4. Borgund Stave Church, Norway

Built between 1180 and 1250 is considered the best-preserved of 28 churches of its kind left in Norway, from the thousands that once existed. These were wooden medieval churches, also known as stave churches, from the Norwegian word "stav", meaning "wooden column". The Borgund Stave Church, designed in basilica style, was constructed by experienced craftsmen, who worked out skillfully around 2,000 pieces of wood without using a single nail. The Church has another architectural innovation, as until then the construction materials were placed directly on the ground, while in Borgund a stone base was made for the first time. Today the site serves primarily as a museum.



5. Notre Dame du Haut, France

During the French Revolution, 40 local families had the opportunity to buy the chapel of Notre Dame du Haut, of the Ronchamp community in eastern France, since they did not want the religious reference point of the area to pass to other hands. After severe setbacks, which almost tore the chapel apart (like the fire of 1913 and the bombing of World War II), the chapel was rebuilt the '50s by Le Corbusier. The pioneer French-Swiss man, using concrete as the main material, created a unique church, which has changed the meaning of religious architecture. The building seems to flow combining curved and straight surfaces, which define the East-West axis and ensure – basic for the Le Corbusier – natural light several hours a day.



6. Church of Mary Magdalene, Jerusalem

Built in 1888 by Czar Alexander III of Russia, in memory of his mother, Empress Maria Alexandrovna. Located on the Mount of Olives, over the Garden of Gethsemane, is dedicated to Mary Magdalene, one of the most important female figures of Christianity, revered as a Saint by Orthodox, Catholics, Protestants but also Lutherans. The church stands out for its unparalleled beauty domes, demonstrating the prevailing trends in the moscow architecture in the 16th and 17th centuries. As for the façade, although it looks like from marble, in fact it is made of sandstone.



7. Saint George Church, Ethiopia



The church belongs to the religious complex of Lalibela in northern Ethiopia, which has been labeled as the "eighth wonder of the world". It is a UNESCO World Heritage and includes eleven monolithic medieval churches. The Church of Agios Georgios (Biete Ghiorgis), one of the most famous, is isolated and connected with other churches with a system of trenches. The evocative religious monument dates back to the 12th-13th century, has the shape of a cross and is made of tuff (volcanic rock).

(Eleftheria Alavanou / KATHIMERINI newspaper, 03.01.2017, http://www.kathimerini.gr/889599/gallery/ta3idia/me-aformh/h-arxitektonikh-ths-pisths)

8. Bosjes Chapel, Bosjesman valley, South Africa

Bosjes Chapel was designed by the South African Coetzee Steyn of the London Steyn's Studio and was completed by the TV3 Architects. Mass will start by the end of March.

One hour away from Cape Town, situated in the Bosjesman valley – filled with olive trees, peach trees and vines –, its sculptural form "follows" the silhouette of the mountains, with the vineyards that are located on the West side of town.



Concrete was used for its construction, with the roof to look like fabric fluttering in the air just before it touches the Earth.

Despite the lightweight image, so as to defy gravity, the structure of the building emits dynamism.

The interior is very thrifty, with many structural elements hidden, in order not to interfere in its Dorian picture. The inspiration for the chapel comes from the missionary stations founded by the Moravian brotherhood in this area in the 19th century. www.romaconventiongroup.it

(Pagona Lapsati / KATHIMERINI newpaper, http://www.kathimerini.gr/901972/article/ta3idia/ta3idiwtika-nea/eis-to-onoma-toy-patros)

HSSMGE EXECUTIVE COMMITTEE (2015 – 2018)

President	:	George GAZETAS, Dr. Civil Engineer, Professor N.T.U.A. president@hssmge.gr, gazetas@ath.forthnet.gr
Vice President A'	:	Panayiotis VETTAS, Civil Engineer, ENGINEERING CONSULTING COMPANY S.A. otmate@otenet.gr
Vice President B'	:	Michael PCHAKIS, Civil Engineer mpax46@otenet.gr
General Secretary	:	Michael BARDANIS, Civil Engineer, EDAFOS ENGINEERING CONSULTANTS S.A. mbardanis@edafos.gr, lab@edafos.gr
Treasurer	:	George Doulis, Civil Engineer, EDAFOMICHANIKI S.A. gdoulis@edafomichaniki.gr
Curator	:	George BELOKAS, Dr. Civil Engineer, Assistant Professor A.U.A.S. gbelokas@teiath.gr, gbelokas@gmail.com
Members	:	Andreas ANAGNOSTOPOULOS, Dr. Civil Engineer, Emeritus Professor N.T.U.A. aanagn@central.ntua.grn
		Valia XENAKI, Dr. Civil Engineer, EDAFOMICHANIKI S.A. vxenaki@edafomichaniki.gr
		Marina PANTAZIDOU, Dr. Civil Engineer, Associate Professor N.T.U.A. mpanta@central.ntua.gr
Substitute Member	:	Konstantinos IOANNIDIS, Civil Engineer, EDAFOMICHANIKI S.A. kioannidis@edafomichaniki.gr
Editor	:	Christos TSATSANIFOS, Dr. Civil Engineer, PANGAEA CONSULTING ENGINEERS LTD editor@hssmge.gr, ctsatsanifos@pangaea.gr

HSSMGE
Geotechnical Section
SCHOOL OF CIVIL ENGINEERING
NATIONAL TECNICAL UNIVERSITY OF ATHENS
Polytechnic City, Zografou
GR-15780 ZOGRAFOU

Tel. 210.7723434
Fax. 210.7723428
Email secretariat@hssmge.gr ,
geotech@central.ntua.gr
Url www.hssmge.org (under construction)

«THE NEWS OF THE HSSMGE» Editor: Christos Tsatsanifos, tel. 210.6929484, fax. 210.6928137, email ctsatsanifos@pangaea.gr, editor@hssmge.gr, info@pangaea.gr

«THE NEWS OF THE HSSMGE» are uploaded to the web-site www.hssmge.gr

TC Corner

TC106 – Doctoral School of Unsaturated Soil Mechanics, EPFL, Lausanne, Swizerland



In the framework of the Marie-Curie Innovative Training Networks project TERRE (www.terre-etn.com), the École Polytechnique Fédérale de Lausanne (EPFL) has hosted a Doctoral School dedicated to unsaturated soil mechanics. The organizers Alessio Ferrari (EPFL) and Alessandro Tarantino (Univeristy of Strathclyde) wish to acknowledge the support of the European Commission via the Marie-Curie Innovative Training Networks (ITN-ETN) project TERRE 'Training Engineers and Researchers to Rethink Geotechnical Engineering for a low carbon future' (H2020-MSCA-ITN-2015-675762) and the TC 106 of ISSMGE.

The Doctoral School was held at the EPFL campus in Lausanne (CH) by the side of the Lake Geneva from 4th April to 7th April 2017. The School aimed to spread knowledge about Unsaturated Soil Mechanics with lectures given by internationally renowned experts. Twelve presentations took place during this four-day school giving the students a broad overview of fundamentals and engineering applications.

The school was attended by 56 participants coming from all over the world (17 different countries were represented).



Photo 1. Group photo of the event

TC Corner (Con't)

TC106 – Doctoral School of Unsaturated Soil Mechanics, EPFL, Lausanne, Swizerland

The participants were welcomed by Prof. Lyesse Laloui (EPFL) together with Profs. Alessandro Tarantino and Alessio Ferrari who introduced the concepts related to the project TERRE. Prof. David Toll (University of Durham) introduced the activities carried out by TC 106 of the ISSMGE.

The first part of the school covered the fundamentals of mechanical and hydraulic behavior of unsaturated soils featuring presentations from A. Tarantino (Basic concepts), A. Ferrari (Mechanical behaviour) and D. Toll (Hydraulic behaviour).

The second part of the school focused on constitutive modelling of unsaturated soils, featuring the following presentations: Effective stress concept for unsaturated soils (Prof. L. Laloui), and two sessions devoted to constitutive models used for unsaturated soils (Prof. D. Gallipoli).

The third part detailed the experimental techniques used in the laboratory to characterise unsaturated soils. This part was presented by Profs. A. Ferrari, G. Russo and E. Romero. At the end of the second day, the participants had the chance to visit to the EPFL Laboratory of Soil Mechanics followed by barbecue.

The fourth part was devoted to engineering applications, such as THM problems, engineered barriers, slope stability, soil-atmosphere interaction in embankments and flood embankments. This part was presented by Profs. L. Sanavia, T. Schanz, M. Pirone, Y.J. Cui and C. Jommi.

The final part was dedicated to a field visit to the Mont Terri Underground Rock Laboratory, located close to St. Ursanne, in the north of Switzerland. The visit detailed all the activities that are performed in such a laboratory, with particular emphasis on radioactive waste disposals.



Photo 2. Field visit to the Mont Terri Underground Rock Laboratory

TC Corner (Con't)

TC106 – Doctoral School of Unsaturated Soil Mechanics, EPFL, Lausanne, Swizerland

The complete list of lecturers is summarized below (in alphabetic order):

- **Yu Jun Cui**, École Nationale des Ponts et Chaussées (France)
- **Alessio Ferrari**, École Polytechnique Fédérale de Lausanne, (Switzerland); Università degli Studi di Palermo (Italy);
- **Domenico Gallipoli**, Université de Pau et des Pays de l'Adour (France);
- **Cristina Jommi**, Technische Universiteit Delft (Netherlands);
- **Lyesse Laloui**, École Polytechnique Fédérale de Lausanne (Switzerland);
- **Marianna Pirone**, Università degli Studi di Napoli Federico II (Italy);
- **Enrique Romero**, Universitat Politècnica de Catalunya (Spain);
- **Giacomo Russo**, Università degli Studi di Cassino (Italy);
- **Lorenzo Sanavia**, Università degli studi di Padova (Italy);
- **Tom Schanz**, Ruhr-Universität Bochum (Germany);
- **Alessandro Tarantino**, University of Strathclyde (United Kingdom);
- **David Toll**, University of Durham (United Kingdom).

For further information please visit the school website terreunsat.epfl.ch.

Oragnising Committee
Alessio Ferrari (EPFL), Alessandro Tarantino (University of Strathclyde)
Gianluca Speranza, Mr. Jacopo Zannin, Ms. Barbara Tinguely (EPFL)

ISSMGE Foundation Reports

The 6th International Young Geotechnical Engineers' Conference (iYGEC6), which took place at National University of Seoul (Global Education Center for Engineers) and The 19th International Conference on Soil Mechanics and Geotechnical Engineering (19th ICSMGE) which took place at COEX, were hosted by Korean Geotechnical Society. The two-day iYGEC6 started with registration of the participants on the 16th of September, 2017 and ended on the 17th with the 19th ICSMGE Welcome Reception at COEX. The iYGEC6, has included two days of technical paper presentations. The conference was organized at a high level. On the first day of the conference, the opening ceremony was held, where Moonkyung Chung, Roger Frank, Sangseom Jeong welcomed the participants. There were two keynote lectures during conference, which were provided by Professors Choong-Ki Chung (Korea) and Za-Chieh Moh (Taiwan).

The 19th International Conference on Soil Mechanics and Geotechnical Engineering (19th ICSMGE) consisted of 6 days (17-22 Sept.), including Welcome Reception, Opening Ceremony, Terzaghi Oration, Bishop, James K. Mitchell, Heritage, Schofield, Blight, Proctor, Ishihara, Gregory Tschebotarioff, Louis Menard, R.K. Rowe, Kerisel, Suzanne Lacasse Lectures, working of Technical Committees, reports, Closing Ceremony and Technical Visits. The theme of the 19th ICSMGE was "Unearth the Future, Connect Beyond" During first two days interesting and fundamental lectures were provided by Professors: David Muir Wood (UK), John Powell (UK), Mark Randolph (Australia), Delwyn G. Fredlund (Canada), Antonio Gomes Correia (Portugal), Jonathan D Bray (USA), Chris Haberfield (Australia), Buddhima Indraratna (Australia), Mario Manassero (Italy), Carlo Viggiani (Italy), and Farrokh Nadim (Norway).

It was interesting and useful to attend the Younger Member Forum (YMPG - Young Member Presidential Group) where challenges and opportunities facing younger members were discussed.

At the Closing Ceremony, the new president (Professor Charles Ng) of the ISSMGE and his new team was introduced, who were elected earlier and the next ICSMGE 2021 host city – Sydney was presented.

Thanks to the ISSMGE and these conferences I got an excellent opportunity to meet and talk to many professors, researchers and engineers from different countries and many other potential research collaborators as well. I would like to thank the ISSMGE in general and ISSMGE Foundation for the opportunity to participate in such high-level conferences and for their award.



Photo 1. During my presentation


Photo 2. Landscape of Seoul at sunset

Sergii Tabachnikov
O.M. Beketov National University of Urban Economy in Kharkiv, Ukraine

ISSMGE Foundation Reports (Con't)

The 19th International Conference on Soil Mechanics and Geotechnical Engineering (ICSMGE), 17-22 September, Seoul, South Korea. The 6th International Young Geotechnical Engineer's conference (iYGEC6), 16 -17 September, Seoul, South Korea.

These two conferences were organized by the International Society of Soil Mechanics and Geotechnical Engineering. The conferences took place in Seoul, South Korea from 16 to 22 September. The conferences covered most of the topics related to soil mechanics and geotechnical engineering through plenary sessions and workshops organized by the different technical committees.

Thanks to the ISSMGE, I had a chance to present my Master's work conducted at Cairo University regarding my research topic during the iYGEC6. I attended most of the sessions and presentation given by my colleagues on the different topics of geotechnical engineering. During the sessions breaks, I had the chance to meet graduate students from different areas of this world, communicate with them, and share my research interest and work. During this conference too, I had the chance to meet the organizers and the chair Prof. Moonkyung Chung. The conference ended on the 17th of September with a closing ceremony and a summary. In addition, two young participants were nominated as the most outstanding presentation and they presented their work at the ICSMGE.

The ICSMGE started on the 17th of September with a welcome reception at 7:00 P.M with more than 1500 participant. The program included two days of plenary sessions given by senior professors from different universities covering different topics in the honour of great geotechnical engineers that made great contribution to our field. The 3rd and 4th day were allocated for workshops and technical sessions organized by the different technical committees covering all aspect of geotechnical engineering.

This conference gave me the opportunity to increase my knowledge in the different fields of geotechnical engineering as a prospective Ph.D. student. It gave me the opportunity to meet leaders of academia and industry in this field. I had the chance to talk to many researchers about potential future work and collaboration in the academia and industry fields.

Finally yet importantly, I would like once again to thank ISSMGE Foundation for funding my trip and offering me the chance to participate in such prestigious conference to meet all these high-caliber researchers in the field of geotechnical engineering.



Photo 1. With Prof. Kerry Rowe

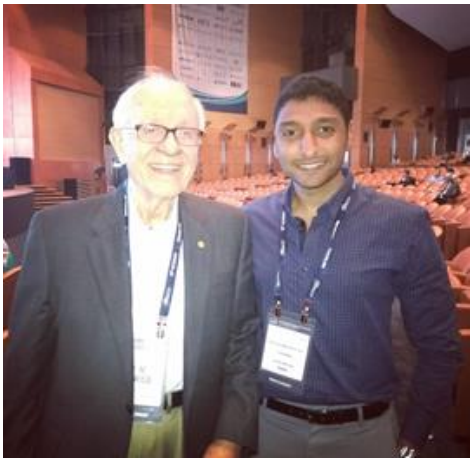


Photo 2. Photo with Prof. Izzat Idriss

Muhammad Mounir Muhammad Elsherbiny
Dar Al-Handasah Consultancy

ISSMGE Foundation Reports (Con't)

The 19th International Conference on Soil Mechanics and Geotechnical Engineering (ICSMGE) was jointly organized by the Korean Geotechnical Society and ISSMGE this year. The Theme of the conference was "Unearth the future, Connect beyond", it is so powerful and innovative. It is about bridging the gaps between past and future between young and senior engineers, and between developing and developed nations among others. Making these connections is the key to greater innovations. The main conference features included iYGEC, ISSMGE Honour Lectures, Plenary Session, Parallel Sessions, Technical visits, and exhibitions. The conference started on the 17th until 22th of September, 2017 with an opening ceremony with more than 1500 participants. The program included two days of plenary sessions given by world-leading professors and professionals in the field of geotechnical engineering. The other days were allocated for workshops and technical sessions organized by the different technical committees covering all aspects of geotechnical engineering, and the fifth day was for field visit in Seoul. The participation in the conference has enabled me to learn from the leaders of the profession. I would like to express my sincere thanks to ISSMGE foundation for providing financial support for participating the 19th ICSMGE conference.

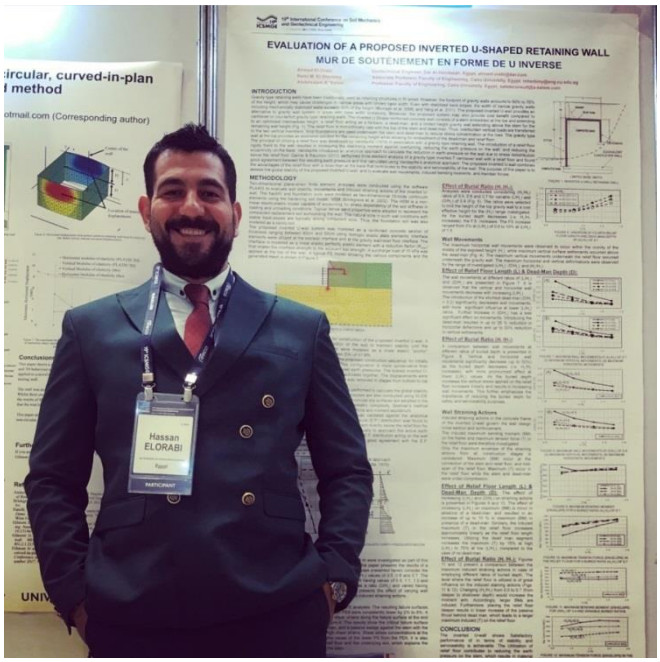


Photo 1. During my poster presentation



Photo 2. Discussion with delegates

Ahmed H. El-Orabi
Dar Al-Handasah Consultancy

ISSMGE Foundation Reports (Con't)

The 19th International Conference on Soil Mechanics and Geotechnical Engineering (ICSMGE) took place in Seoul, Republic of Korea between 17 and 22 September 2017. The ICSMGE offers its participants a very broad spectrum of geotechnical themes to learn from. During the first two days, all the participants watched about 15 plenary lectures from several of the society's technical committees, and the host society. For me these lectures were a first-class display of modern geotechnical engineering knowledge – what our profession can achieve to the best of our knowledge. I particularly recall the remarks from Peter Day (Terzaghi Oration) on the cycle of knowledge development and implementation, which I thought were particularly relevant in the current scenario of our profession, where new journal publications are valued much more than attempts to transfer academic knowledge to practice. I also recall the comments from David Wood on inevitable and inadvertent heterogeneity, and how they can guide our conceptual understanding on the size of test samples, variability of test results and our general concepts of continuum mechanics. Just a few words from this lecture made me think for hours about our methods of testing and modelling soils.

The discussion and workshops of the second half of the conference offered a view of the larger research community involved in the ISSMGE. The discussion sessions were a platform for authors from around the world to present the work they submitted, through their national societies, within the scope of each technical committee. The workshops offered a more objective view of the inner workings and objectives of each committee, as they were more focused on a specific topic that the committee was trying to discuss or publicize. I was particularly interested in the Geo-Education Workshop (TC306). Leading professors from some of the best universities in the world were there discussing educational methods for geotechnical engineering. For me this was a very unique experience, where I could see the other side of the equation – the opinion of professors on their students, how they react to modern/traditional teaching methodologies, and what should stay or what can be removed from the syllabus of basic courses.

I left the conference with a much better understanding of the activities and groups that form the International Society for Soil Mechanics and Geotechnical Engineering and I think some lessons learned during this event will stay with me for years to come.

Tiago Dias

ISSMGE Foundation Reports (Con't)

As a nominee member of the Egyptian Geotechnical Society, I participated to represent this Society during the 6th International Young Geotechnical Engineers' Conference (iYGEC6). I presented an oral presentation of my research to the audiences and exchanging information/comments with other young geotechnical researchers from several countries.

The participation in this important event was a great success for my professional career. It provided me a wide range of experience and developed my skills.

The most interesting feature of the conference were the two great Keynote lectures and the several sections. Moreover, discussing with authors, it increased my knowledge in geotechnical engineering and it will serve me in the future. During these discussions I had the opportunity to create contacts and links with researchers.

Finally I want to thank all the people that helped me to attend this conference, starting from the President of ISSMGE, Prof. Roger Frank, ISSMGE Foundation. To Prof. Gihan Waked, President of Egyptian Geotechnical Society, for the continuous support for the young geotechnical members. A special thanks to my wife for their support and encouragement.



Photo 1. During my presentation



Photo 2. Photos with delegates

Mohamed Sobhey Labeeb
Tanta University, Egypt

Obituary

Professor George Goble



There are some giants in the world of engineering - some more recognized than others. For those of us in the Deep Foundation Engineering World, Dr. Goble was a giant. He had the intellect, knowledge and - most importantly - the drive to change our world. His keen sense of where technology is leading us and how it can be used for a more effective and efficient use of resources helped us all in this industry to improve and renew.

George Gordon Goble was born in 1929 in Boise, Idaho. His family had a farm where he learned to do honest, hard work. This background formed his thinking as to what a good person should and should not do to better themselves and this world. He studied civil/structural engineering at the University of Washington and spent a year on a Fulbright scholarship at the University of Stuttgart (Germany). He became Professor and Chairman of the departments of civil engineering first at Case Western Reserve University (CWRU) and later at the University of Colorado - Boulder. Throughout his professional life he worked as a consultant.



Most importantly for us at GRL and PDI, George recognized early on the potential of the pile testing technology that had been formulated and studied by faculty and students at CWRU. Many different pieces of the puzzle had to be put together: the theory, the sensor selection and packaging, the computer and software development. More difficult yet: it was necessary to convince people that the technology would work and help engineers and contractors make a better product for project owners. The general electronics industry was not interested and so it was up to Dr. Goble to get people and resources together to build and use the Pile Driving Analyzer®. It was his gift to instill the same enthusiasm that he had for these innovations in those that worked with him, as well as those he met and talked to along the way. He was instrumental in both the founding of the companies and in the promotion of the technology. It required a lot of different tactics and hard work. Professor Goble didn't mind climbing the greasy pile driving leads to attach gages and do the field work in polar cold and desert heat. And out of those field experiences came many humorous stories which everyone listening enjoyed.

True to his upbringing, George would never stop working. From the time of our founding and into the early 2000s, he helped direct the companies and stayed close to GRL and PDI while he was teaching and researching at the universities and getting involved in other ventures. GRL/PDI benefitted from him sending us his best students to work with - and more importantly, we benefitted from his advice and support. Without his perseverance in our early years we would not be where we are today.



Sadly, George G. Goble passed away today, Sept. 19, 2017, in Longmont, CO shortly after his 88th birthday. He is survived by his wife Christine Goble, his daughter Tanya, son Gregory and a grandchild. Our thoughts and prayers are with his family. GRL and PDI will thankfully cherish his loving memory and lasting contributions for a long time to come.

Frank Rausche
Ph.D., P.E., D.GE

Pile Dynamics, Inc. GRL engineers, inc.

Event Diary

ISSMGE EVENTS

Please refer to the specific conference website for full details and latest information.

2017

3rd International soil-structure interaction symposium
Date: 18-20 October 2017
Location: Turkish Society for Soil Mechanics and Geotechnical Engineering, Turkey, Izmir
Language: English
Organizer: Turkish Society for Soil Mechanics and Geotechnical Engineering
Contact person: Professor Yeliz Yukselen Aksoy
Address: Dokuz Eylul University Department of Civil Engineering
Email: yeliz.yukselen@deu.edu.tr
Website: http://www.zye2017.org

GEO-EXPO 2017 Scientific and Expert Conference in Sarajevo, Bosnia and Herzegovina
Date: 26-10-2017 - 27-10-2017
Location: Hotel Hollywood, Sarajevo, Bosnia & Herzegovina,
Language: English, Bosnian, Croatian, Serbian
Organiser: Geotechnical Society of Bosnia and Herzegovina (DGT)
Contact person: Sabrina Salkovic
Address: Univerzitetska 2
Phone: +38761451701
Email: geotehnika@geotehnika.ba
Website: http://www.geotehnika.ba

3rd International Conference on Ground Improvement and Ground Control
Date: 27-10-2017 - 29-10-2017
Location: Zhijiang Hotel, Hangzhou, China,
Language: English
Organiser: Zhejiang University of Technology
Contact person: Dr. Li Shi
Address: Chaowang Rd. #18, Xiacheng District
Phone: +86 18768160742
Fax: +86-0571-88320515
Email: shili198763@qq.com
Website: http://www.icgi2017.org/

2nd Pan-American Conference on Unsaturated Soils
Date: 12-15 November 2017
Location: Intercontinental Dallas Hotel, Dallas, TX, United States
Contact person: John S McCartney
Address: University of California San Diego
Phone: +1 (703) 295-6300
Email: mccartney@eng.ucsd.edu; registrations@asce.org
Website: http://www.geoinstitute.org/event/2017-pan-am-unsat/

Event Diary (Con't)

2nd International Conference "Challenges in Geotechnical Engineering" 2017
Date: 20-23 November 2017
Location: Kyiv National University of Construction and Architecture (KNUCA), Ukraine, Kyiv
Contact person: Prof. Igor Boyko
Address: 31,Povitroflotsky Avenue
Phone: +38(097) 717-5170
Fax: +38(044) 245-4124
Email: info@cgeconf.com
Website: http://www.cgeconf.com/en

2nd International Symposium on Asia Urban GeoEngineering
Date: 24-27 November 2017
Location: Hunan University, Changsha, China
Contact person: Dr. Xin Tan
Address: College of Civil Engineering, Hunan University
Phone: +86-731-88821342
Email: urban_geoeng@163.com
Website: http://www.isaug2017.org/

2018

XVI Danube-European Conference on Geotechnical Engineering: Geotechnical Hazards and Risks: Experiences and Practices
Date: Thursday 7 June 2018 - Friday 9 June 2018
Location: Skopje, Macedonia, Former Republic of Yugoslav, Skopje
Language: English and German
Organizer: Macedonian Association for Geotechnics
Contact person: Jovan Br. Papić
Address: blvd.Partizanski odredi No.24
Phone: +389 2 3116 066 ext.157
Fax: +389 2 3 11 88 34
Email: mag@gf.ukim.edu.mk
Website: http://www.decge2018.mk

4th International Symposium on Cone Penetration Testing (CPT'18)
Date: Thursday 21 June 2018 - Friday 22 June 2018
Location: Delft University of Technology (TUD), Delft, Netherlands
Language: English
Organizer: Delft University of Technology (endorsed by TC102)
Contact person: Prof. Michael Hicks, Dr. Federico Pisanò and Ir. Joek Peuchen
Address: Faculty of Civil Engineering and Geosciences, Section of Geo-Engineering, Building 23, Stevinweg 1, 2628 CN Delft, The Netherlands
Phone: +31 70 31 11299
E-mail: info@cpt18.org
Website: http://www.cpt18.org

Event Diary (Con't)

9th International Conference on Physical Modelling in Geotechnics
Date: 17-07-2018 - 20-07-2018
Location: City, University of London, United Kingdom English (UK)
Organiser: City, University of London
Contact person: Dr Andrew McNamara
Address: City, University of London, Northampton Square, London, UK
Phone: 02070408149
Email: a.mcnamara@city.ac.uk; ICPMG2018@city.ac.uk
Website: http://www.ICPMG2018.London

9th European Conference on Numerical Methods in Geotechnical Engineering
Date: 25-27 June 2018
Location: University of Porto. Faculty of Engineering, Portugal
Contact person: Prof. António Silva Cardoso
Address: Department of Civil Engineering
Phone: 22508 1469
Fax: 22508 1446
Email: scardoso@fe.up.pt

5th GeoChina International Conference-Civil Infrastructures Confronting Severe Weathers and Climate Changes: From Failure to Sustainability
Date: 23-25 July 2018
Location: Hangzhou -China
Contact person: Dr. Dar Hao Chen
Address: 13208 Humphrey Dr
Phone: +86 5127056263
Email: GEOCHINA.ADM@GMAIL.COM
Website: http://geochina2018.geoconf.org/

7th International Conference on Unsaturated Soils (UNSAT2018)
Date: Friday 03 August 2018 - Sunday 05 August 2018
Location: The Hong Kong University of Science and Technology (HKUST), Hong Kong, China
Language: English
Organizer: The Hong Kong University of Science and Technology (HKUST)
Contact persons: Prof. Charles W. W. Ng (Chair), Miss Shirley Tse (Administrative Secretary) or Dr Anthony Leung (Technical Secretary)
Address: Geotechnical Centrifuge Facility, The Hong Kong University of Science and Technology, Clear Water Bay, Kowloon, HKSAR, China
Phone: (852) 2358-0216
Fax: (852) 2243-0040
E-mail: unsat2018@ust.hk
Website: http://www.unsat2018.org

Event Diary (Con't)

China – Europe Conference on Geotechnical Engineering
Date: 13-08-2018 - 16-08-2018
Location: Institute of Geotechnical Engineering, BOKU, Vienna, Austria
Language: English
Description
Organiser: Institute of Geotechnical Engineering, University of Natural Resources and Life Sciences Vienna (BOKU) and University of Leeds, UK
Contact person: Secretariat of the Institute of Geotechnical Engineering, BOKU
Address: Feistmantelstrasse 4
Email: geotech@boku.ac.at
Website: https://china-euro-geo.com/

26th European Young Geotechnical Engineers Conference
Date: 11-09-2018 - 14-09-2018
Location: Hotel Klugbauer, Austria
Language: English
Organiser: Dr. Franz Tschuchnigg & Prof. Helmut F. Schweiger
Contact person: Dr. Franz Tschuchnigg
Address: Computational Geotechnics Group, Institute of Soil Mechanics and Foundation Engineering, Graz University of Technology, Rechbauerstrasse 12
Phone: +43(0)316-873/6729
Email: franz.tschuchnigg@tugraz.at
Website: http://soil.tugraz.at/eygec2018

International Symposium on Energy Geotechnics
Date: 26-28 September 2018
Location: Swiss Tech Convention Center, Lausanne, Switzerland
Language: English
Organiser: Swiss Federal Institute of Technology in Lausanne (EPFL)
Contact person: SEG-2018 Organizing Committee
Address: EPFL - ENAC - LMS Station 18
Phone: +41 21 693 23 15
Fax: +41 21 693 41 53
Email: seg2018@epfl.ch
Website: http://seg2018.epfl.ch/

GEOMEAST 2018 International Congress and Exhibition
Date: 24-11-2018 - 28-11-2018
Location: Cairo, Egypt
Organizer: Soil-Structure Interaction Group in Egypt (SSIGE) and Housing & Building National Research Center (HBRC)
Contact person: Dr. Eng. Hany Farouk Shehata
Email: hanyfarouk808@gmail.com,
Website: http://www.geomeast2018.org/

Event Diary (Con't)

2019

7 ICEGE 2019 - International Conference on Earthquake Geotechnical Engineering
Date: Monday 17 June 2019 - Thursday 20 June 2019
Location: Rome, Italy
Language: English
Organizer: TC203 and AGI (Italian Geotechnical Society)
Contact person: Susanna Antonielli
Address: AGI - Viale dell' Università 11, 00185, Roma, Italy
Phone: +39 06 4465569
Fax: +39 06 44361035
E-mail: agi@associazionegeotecnica.it

ISDCG 2019 – 7th International Symposium on Deformation Characteristics of Geomaterials
Date: Wednesday 26 June 2019 - Friday 28 June 2019
Location: Technology and Innovation Centre (TIC) of the University of Strathclyde, Scotland, UK,
Language: English
Organizer: TC101
Website: *in construction*

ECSMGE 2019 – XVII European Conference on Soil Mechanics and Geotechnical Engineering
Date: Sunday 01 September 2019 - Friday 06 September 2019
Location: Harpa Conference Centre Reykjavik, Iceland
Language: English
Organizer: The Icelandic Geotechnical Society
Contact person: Haraldur Sigursteinsson
Address: Vegagerdin, Borgartún 7, IS-109, Reykjavik, Iceland
Phone: +354 522 1236
E-mail: has@road.is
Website: http://www.ecsmge-2019.com

XVII African Regional Conference on Soil Mechanics and Geotechnical Engineering
Date: 07-10 October 2019
Location: Cape Town Convention Centre, South Africa
Language: English
Organiser: SAICE
Contact person: Dr Denis Kalumba
Email: denis.kalumba@uct.ac.za

XVI Asian Regional Conference on Soil Mechanics and Geotechnical Engineering
Date: Monday 21 October 2019 - Friday 25 October 2019
Location: Taipei, China
Contact person: 16th ARC Secretariat
Phone: 886-2-27988329 ext.35
Fax: 886-2-27986225 (fax)
Email: secretariat@16arc.org
Website: http://www.16arc.org

Event Diary (Con't)

XVI Panamerican Conference on Soil Mechanics and Geotechnical Engineering
Date: Monday 18 November 2019 - Friday 22 November 2019
Location: Cancun, Quintana Roo, Mexico
Organizer: SMIG
Phone: +(52) 1 55 5677-3730, +(52) 1 55 5679 3676
E-mail: support@panamerican2019mexico.com
Website: http://panamerican2019mexico.com

2020

Nordic Geotechnical Meeting
Date: 27-29 May 2020
Location: Finlandia Hall, Finland, Helsinki
Contact person: Prof. Leena Korkiala-Tanttu
Address: SGY-Finnish Geotechnical Society,
Phone: +358-(0)50 312 4775
Email: leena.korkiala-tanttu@aalto.fi

6th International Conference on Geotechnical and Geophysical Site Characterization
Dates: 07-09-2020 - 11-09-2020
Location: Budapest Congress Center, Hungary , Budapest English
Organizer: Hungarian Geotechnical Society
Contact person: Tamas Huszak
Address: Muegyetem rkp. 3.
Phone: 0036303239406
Email: huszak@mail.bme.hu
Website: http://www.isc6-budapest.com
Email: info@isc6-budapest.com

NON-ISSMGE SPONSORED EVENTS

2017

4th International Conference on Long-Term Behaviour and Environmentally Friendly Rehabilitation Technologies of Dams
Date: 17-19 October 2017
Location: International Conference Centre, Tehran, Iran
Contact person: Nima Tavakoli
Address: No.1, Shahrsaz St., Kargozar St., Zafar Ave.,Tehran - I.R. Iran
Phone: +98(21)2222 5756
Fax: +98(21)2225 7338
Email: info@ltbd2017.ir
Website: http://www.ltbd2017.ir/en/

Event Diary (Con't)

The 15th International Conference of International Association for Computer Methods and Advances in Geomechanics
Dates: 19- 23 October 2017
Location: Hongshan Hotel, Wuhan, Hubei Province, China
Language: English
Organiser: State Key Laboratory of Geomechanics and Geotechnical Engineering, Institute of Rock and Soil Mechanics, Chinese Academy of Sciences; State Key Laboratory of Hydroscience and Engineering, Tsinghua University; Chinese Society for Rock Mechanics and Engineer
Contact person: Hang Ruan
Address: Institute of Soil and Rock Mechanics, Chinese Academy of Sciences, Xiaohongshan2#, Wuchang District, Wuhan, P. R. China, 430071
Phone: 86-27-87198413
Fax: 86-27-87198413
Email: ruanhang307@gmail.com
Website: http://www.15iacmag.org

DFI 42nd Annual Conference on Deep Foundations
Date: 24-27 October 2017
Location: New Orleans Marriott, United States
Contact person: Theresa Engler
Address: 326 Lafayette Avenue
Phone: 9734234030
Fax: 9734234031
Email: tengler@dfi.org
Website: http://www.deepfoundations2017.org

International Seminar on Roads, Bridges, and Tunnels (ISRBT2017)
Dates: 02-09 November 2017
Location: Aristotle University, Centre for Dissemination of Research Results (Red Building), Thessaloniki, Greece
Language: English
Organiser: School of Civil Engineering, Aristotle University of Thessaloniki
Contact person: Mrs. D. Gatoula
Address: Highway Engineering Laboratory (for the ISRBT2016 Seminar), School of Civil Engineering, Aristotle University of Thessaloniki
Phone: +30 2310 994385
Fax: +30 2310 995789
Email: isrbt@civil.auth.gr
Website: http://isrbt.civil.auth.gr

6th International Forum on Opto-electronic Sensor-based Monitoring in Geo-engineering
Date: 03-11-2017 - 05-11-2017
Location: Nanjing, China,
Language: English and Chinese
Organisers: Nanjing University
Contact person: Hong-Hu Zhu
Address: School of Earth Sci & Eng, Nanjing University
Phone: +8615895996665
Email: zhh@nju.edu.cn; osmg2017@fosmg.com
Website: http://www.fosmg.com

Event Diary (Con't)

Slope Safety Summit
Date: Monday, 11 December 2017
Location: Charles K Kao Auditorium, Science Park, Hong Kong
Language: English
Organizer: Geotechnical Engineering Office, The Government of Hong Kong Special Administrative Region and Geotechnical Division, The Hong Kong Institution of Engineers
Contact Person: Tony Y K Ho
Address: 11/F Civil Engineering and Development Building, 101 Princess Margaret Road, Homantin, Hong Kong
Phone: (852) 2762 5400
Fax: (852) 2714 0275
Email: tonyykho@cedd.gov.hk

2018

International Foundations Congress & Equipment Expo
Dates: 05-03-2018 - 10-03-2018
Location: Hilton Orlando Buena Vista Palace, United States
Organizer: DFI, ADSC, GeoInstitute of ASCE and PDCA
Contact person: Jan Hall
Address: 8445 Freeport Parkway Suite 325
Phone: +1 469-359-6000
Fax: +1 469-359-6007
Email: jhall@adsc-iafd.com
Website: http://www.ifcee2018.com

EUROROCK 2018 Geomechanics and Geodynamics of Rock Masses
Date: 22-05-2018 - 26-05-2018
Location: Saint-Petersburg Mining University, Russia
Language: Russian and English
Organiser: International Society for Rock Mechanics, Saint-Petersburg Mining University, Russian Geomechanics Association
Contact person: Vladimir Noskov
Address: 2, 21st Line
Phone: +7 909 588 31 47
Email: post@eurorock2018.com
Website: http://www.eurock2018.com/index_en.html#

4th GeoShanghai International Conference
Date: May 27-30, 2018
Location: H Ming Hotel Shanghai (http://www.whminghotel.com/default-en.html), China , Shanghai
Organizer: Tongji University, China
Contact person: Ming Xiao
Address: Department of Civil and Environmental Engineering, Pennyslvania State University
Phone: 1-814-865-8056
Email: mxiao@engr.psu.edu
Website: http://geo-shanghai.org

Event Diary (Con't)

micro to MACRO mathematical modelling in soil mechanics
Date: 29 May – 01 June 2018
Location: Reggio Calabria Italy
Organiser: DICEAM, University of Reggio Calabria
Contact person: Giuseppe Mortara
Address: Via Graziella, Feo di Vito
Phone: +39 0965 1692 271
Fax: +39 0965 1692 201
Email: giuseppe.mortara@unirc.it
Website: http://www.microtomacro2018.unirc.it/

DFI-EFFC International Conference on Deep Foundations and Ground Improvement
Dates: 06-06-2018 - 08-06-2018
Location: Sapienza University, Rome, Italy
Organizer: DFI and EFFC
Contact person: Theresa Engler
Address: 326 Lafayette Avenue
Phone: 19734234030
Fax: 19734234031
Email: tengler@dfi.org
Website : http://www.dfi.org/dfieventlp.asp?13310
Email: staff@dfi.org

Geotechnical Earthquake Engineering and Soil Dynamics V
Dates: 10-06-2018 - 13-06-2018
Location: AT&T Executive Education and Conference Center, Austin, United States
Organizer: American Society of Civil Engineers (ASCE) Geo-Institute
Contact person: Ellen M. Rathje, Ph.D., P.E., F.ASCE
Address: 1900 University Ave
Phone: +1 800 548 2723
Email: e.rathje@mail.utexas.edu
Website: http://www.geesdconference.org
Email: registrations@asce.org

11th International Conference on Geosynthetics
Date: 16-21 September 2018
Location: Coex, Seoul, Korea
Contact person: 11ICG Secretariat
Address: Haeoreum B/D (1F), 16 Yeoksam-ro 17-gil, Gangnam-gu
Phone: +82-2-566-6031
Fax: +82-2-566-6087
Email: secretariat@11icg-seoul.org
Website: http://www.11icg-seoul.org/

Event Diary (Con't)

DFI 43rd Annual Conference on Deep Foundations
Dates: 24-10-2018 - 27-10-2018
Location: Hilton Anaheim, United States
Organizer: Deep Foundations Institute
Contact person: Theresa Engler
Address: 326 Lafayette Avenue
Phone: 19734234030
Fax: 19734234031
Email: staff@dfi.org
Website: http://www.dfi.org/dfieventlp.asp?13325

DFI 44th Annual Conference on Deep Foundations
Dates: 15-10-2019 - 18-10-2019
Location: Hilton Chicago, United States
Organizer: Deep Foundations Institute
Contact person: Theresa Engler
Address: 326 Lafayette Avenue
Phone: 19734234030
Fax: 19734234031
Email: tengler@dfi.org
Website: http://www.dfi.org
Email: staff@dfi.org

The 16th World Conference of Associated research Centers for the Urban Underground Space
Theme: "Integrated Underground Solutions for Compact Metropolitan Cities"
Date: Monday, 5 November 2018 – Wednesday, 7 November 2018
Location: Hong Kong Convention and Exhibition Centre, Wan Chai, Hong Kong
Language: English
Organizer: The Hong Kong Institution of Engineers, Hong Kong Geotechnical Society and Associated research Centers for the Urban Underground Space
Contact Person: Mark Wallace
Email: mark.wallace@arup.com
Website: http://www.acuus2018.hk

FOR FURTHER DETAILS, PLEASE REFER TO THE WEBSITE OF THE SPECIFIC CONFERENCE

Corporate Associates

S.N. Apageo S.A.S.
ZA de Gomberville
BP 35 - 78114 MAGNY LES HAMEAUX
FRANCE

Deltares
PO Box 177
2600 AB Delft,
THE NETHERLANDS

Fugro N.V.
PO Box 41
2260 AA Leidschendam
THE NETHERLANDS

Golder Associates Inc
1000, 940-6th Avenue S.W.
Calgary, Alberta
CANADA T2P 3T1

Jan de Nul N.V.
Tragel 60,
B-9308 Hofstade-Aalst
BELGIUM

NAUE GmbH Co KG
Gewerbestrasse 2
32339 Espelkamp-Fiestel
GERMANY

Norwegian Geotechnical Institute
P.O. Box 3930 Ullevaal Stadion
N-0806 OSLO
NORWAY

SOLETANCHE BACHY SA
133 boulevard National, 92500 Rueil-Malmaison,
FRANCE

Tensar International Ltd
Cunningham Court
Shadsworth Business Park
Blackburn, BB1 2QX,
UNITED KINGDOM

Terre Armée
280, avenue Napoléon Bonaparte
92506 Rueil Malmaison Cedex
France

Zetas Zemin Teknolojisi AS
Merkez Mah. Resadiye Cad. No. 69/A
Alemdag, Umraniye
Istanbul, 34794
TURKEY

Siemens Energy
Kaiserleistrasse10
63067 Offenbach
GERMANY

International I.G.M. s.a.r.l.
P.O.Box: 166129 Achrafieh
Beirut
LEBANON

TenCate Geosynthetics
9, rue Marcel Paul
B.P. 40080
95873 Bezons Cedex
FRANCE

RCF Ltd
4C Ologun Agbeje
Victoria Island
Lagos,
Nigeria

Coffey Geotechnics
8/12 Mars Road
Lane Cove West
NSW, 2066
AUSTRALIA

A.P. van den Berg
IJzerweg 4
8445 PK Heerenveen
THE NETHERLANDS

Pagani Geotechnical Equipment
Localita Campogrande 26
29010 Calendasco (PC)
Italy
www.pagani-geotechnical.com

Corporate Associates (Con't)

Huesker Synthetic GmbH
Fabrikstrasse 13-15
48712 Gescher
GERMANY

AECOM Asia Company Ltd
8/F, Tower 2, Grand Central Plaza
138 Shatin Rural Committee Road
Shatin, NT
HONG KONG

Aurecon
Level 8, 850 Collins Street
Docklands Victoria 3008
Melbourne
AUSTRALIA

Ove Arup & Partners Ltd.
13 Fitzroy Street
London W1T 4BQ
UNITED KINGDOM

GHD Pty, Ltd.
57-63 Herbert Street
Artarmon NSW 2064
AUSTRALIA

Terrasol
42/52 Quai de la Rapée - CS7123075583
Paris CEDEX 12
FRANCE

Maccaferri
Via Kennedy 10
40069 Zola Predosa (Bologna)
ITALY

Keller Ground Engineering
Level 1, 4 Burbank Place, Baulkham Hills
NSW 2153
PO Box 7974, Baulkham Hills NSW 1755
Australia

University of Wollongong, Australia
Northfields Ave,
Wollongong
NSW 2522
Australia

Wagstaff Piling
56 Tattersall Road,
Kings Park,
NSW 2148
Australia

Dar Al Handasah Corp
Smart Village,
Cairo-Alexandria Desert Road
Street 26, Building 10
P.O. Box: 129, Giza 12577,
Egypt

KGS Ltd,
22 Chaikovskii St,
Temirtau City,
101403 Republic of Kazakhstan
http://kgs-astana.wixsite.com/society

SMEC Australia PTY ITD
Level 6, 480 St Pauls Tce Fortitude Valley
QLD 4006
www.smec.com

Foundation Donors

The Foundation of the International Society for Soil Mechanics and Geotechnical Engineering (ISSMGE) was created to provide financial help to geo-engineers throughout the world who wish to further their geo-engineering knowledge and enhance their practice through various activities which they could not otherwise afford. These activities include attending conferences, participating in continuing education events, purchasing geotechnical reference books and manuals.

- **Diamond: $50,000 and above**
  - **a.** ISSMGE-2010 http://www.issmge.org/
  - **b.** Prof. Jean-Louis and Mrs. Janet Briaud https://www.briaud.com and http://ceprofs.tamu.edu/briaud/
- **Platinum: $25,000 to $49,999**
- **Gold: $10,000 to $24,999**
  - **a.** International I-G-M http://www.i-igm.net/
  - **b.** Geo-Institute of ASCE http://content.geoinstitute.org/
  - **c.** Japanese Geotechnical Society http://www.jiban.or.jp/
  - **d.** The Chinese Institution of Soil Mechanics and Geotechnical Engineering – CCES www.geochina-cces.cn/en
  - **e.** Korean Geotechnical Society www.kgshome.or.kr
  - **f.** Comité Français de Mécanique des Sols et de Géotechnique www.cfms-sols.org
- **Silver: $1,000 to $9,999**
  - **a.** Prof. John Schmertmann
  - **b.** Deep Foundation Institute www.dfi.org
  - **c.** Yonsei University http://civil.yonsei.ac.kr

Foundation Donors (Con't)

d. CalGeo – The California Geotechnical Engineering Association
www.calgeo.org

e. Prof. Ikuo Towhata
towhata.ikuo.ikuo@gmail.com
http://geotle.t.u-tokyo.ac.jp/

f. Chinese Taipei Geotechnical Society www.tgs.org.tw

g. Prof. Zuyu Chen
http://www.iwhr.com/zswwenglish/index.htm

h. East China Architectural Design and Research Institute ECADI
http://www.ecadi.com/en/

i. TC 211 of ISSMGE for Ground Improvement
www.bbri.be/go/tc211

j. Prof. Askar Zhussupbekov www.enu.kz/en, www.kgs-astana.kz

k. TC302 of ISSMGE for Forensic Geotechnical Engineering
http://www.issmge.org/en/technical-committees/impact-on-society/163-forensic-geotechnical-engineering

l. Prof. Yoshinori Iwasaki yoshi-iw@geor.or.jpwww.geor.or.jp

Yoshi IWASAKI

m. Mr. Clyde N. Baker, Jr.

n. Prof. Hideki Ohta

o. Prof. Eun Chul Shin www.incheo@incheon.ac.kr n.ac.krecshin

Eun Chul Shin

p. Prof. Tadatsugu Tanaka

q. ARGO-E (Geoengineer.org)
http://www.argo-e.com

- **Bronze: up to $999**

a. Prof. Mehmet T. Tümay http://www.coe.lsu.edu/administration_tumay.html
mtumay@eng.lsu.edu

b. Nagadi Consultants (P) Ltd www.nagadi.co.in

c. Professor Anand J. Puppala
University of Texas Arlington
http://www.uta.edu/ce/index.php