

## Conference Report

### The 16<sup>th</sup> African Regional Conference on Soil Mechanics and Geotechnical Engineering, Hammamet, Tunisia, 27<sup>th</sup> – 30<sup>th</sup> April 2015

The 16<sup>th</sup> African Regional Conference on Soil Mechanics and Geotechnical Engineering (16<sup>th</sup> ARCSMGE) was successfully held at Hammamet, Tunisia from 27<sup>th</sup> to 30<sup>th</sup> April, 2015. The four day conference was very well organized by The Tunisian Society for Soil Mechanics (ATMS) with the support of ISSMGE. The conference provided a platform for exchange of knowledge and experiences. It also allowed discussion between engineers, professionals, scientists, researchers, equipment or solution providers operating in the field of soil mechanics and geotechnical engineering. The main theme of the conference was *Innovative Geotechnics for Africa* aiming to highlight on African soils in all aspects: identification, characterization, behavior in connection with the design, implementation and monitoring of geotechnical structures.

The conference was very well attended by 430 participants from 43 countries distributed as follows; 25 countries from the lovely African continent, 11 countries from Europe, 2 countries from North America and 5 countries from Asia. The full papers were published in the proceedings with a volume of 641 pages. The proceedings contain 75 papers of which 72 were presented orally during the conference sessions. The full papers were also published in an electronic form on flash disk.

The opening ceremony of the 16<sup>th</sup> ARCSMGE was held under the auspices of Mr Mohamed Salah Arfaoui the Tunisian Minister of Equipment. Mr. Slaheddine Haffoudhi, the president of the Tunisian Society for Soil Mechanics (ATMS), gave a welcome speech. The chairman of the organizing committee of the conference, Mr. Mehrez Khemakhem, gave a speech about the organizational details of the conference. Prof. Mounir Bouassida, the chairman of the scientific committee of the conference presented the scientific program. The platform of the opening ceremony was also attended by both Prof. Hatem Zenzri, the dean of "Ecole Nationale d'Ingénieurs de Tunis" (Université de Tunis El Manar) and Prof. Fatma Baligh (Egypt), the Vice president of ISSMGE for Africa for the term 2013-2017. The opening ceremony was introduced by Dr. Imen Said (The Vice chairman of the organizing committee).

The conference included five Keynote Lectures and eighteen technical sessions. In addition, three workshops were organized. The 18 technical sessions with 72 oral presentations covered the following topics: soil characterization, soil behaviour, shallow and deep foundations, environmental geotechnics, landslides and slope stability, expansive clays, ground improvement, lateritic soils, geosynthetics and soil reinforcement techniques.

Dr E.M. Kana (Cameroon, CTGA) gave the first Keynote Lecture. The lecture was entitled "*Geotechnical engineering practice for roads works in tropical regions of Africa*" focusing on the role of the national civil engineering laboratories in the development of the infrastructure, especially the road networks in Africa. He clarified that those laboratories require support and renovation to be able to continue their role in conducting research, especially in relation to characterization of tropical soils of Africa, building and design dealing with those soils.

Prof. E.E. Alonso (Spain) delivered the second Keynote Lecture entitled "*Landslides in saturated and unsaturated soils*". The relevance of sedimentation and shearing planes in clayey soils was discussed as well as residual strength as a strong indication of the widespread occurrence of progressive failure. The discussions were driven through case histories. The position and geometry of the failure surface was shown to be a consequence of deformation processes. Landslide run-out was illustrated through a theoretical exercise which showed the direct correlation between run-out and brittleness index. Finally, some aspects of the behaviour of partially saturated soils subjected to rain infiltration were discussed. Analysis of a real case highlighted the behaviour of slopes in weathered soil profiles.

The third Keynote Lecture was given by Prof. A.J. Puppala entitled "*Controlled Low Strength Materials (CLSM) with Native Clays for Geotechnical Civil Infrastructure: Design, Challenges, and Sustainability Assessments*". In the lecture, a sustainable engineering solution is presented through providing an effective use of excavated waste high plasticity clay. An attempt was presented to substitute native high plasticity soil for aggregate bedding material in the preparation of controlled low strength material (CLSM) to be used as a bedding material to support large diameter pipelines.

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Prof. R. Katzenbach (Germany) gave the fourth Keynote Lecture entitled “*Development in deep excavation and deep foundation technologies*”. Prof. Katzenbach explained the basics of qualified design and construction of deep excavations and deep foundations and showed the application in engineering practice. Such qualified design should be based on an adequate soil investigation and an independent peer review for the planning, design and the construction stages. It is possible to use hybrid foundation technologies like the Combined Pile-Raft Foundation and in-situ load test of deep foundation elements using pressure cells. For the successful construction of deep foundation systems main regulations and recommendations have to be considered.

The fifth Keynote Lecture was delivered by M.I. Zerhouni (France) entitled “*Standardization in Geotechnics*”. An overview was presented of the organization of normative structures working for geotechnical standardization and synthesis of published or in developing standards.

All keynote lectures were very well received by participants. The keynote lectures were followed by interesting discussions between the lecturers and participants.

The three parallel workshops covered the following topics: Lateritic soils (S.K. Ampadu (Ghana) & E.M. Kana (Cameroon)), Geosynthetics (E. Zannoni (South Africa), N. Touze & H. Bannour (France)) and soil improvement techniques (S. Haffoudhi & K. Zaghouni (Tunisia)).

A large exhibition was organized accompany the conference, gathering professional partners who introduced the conference, and allowed participants to learn about the solutions offered by professionals towards specific challenges for Africa. There were 38 exhibitors including; contractors, consulting firms, service providers, specialized software developers, manufacturers and providers of laboratory testing, in-situ testing, drilling and instrumentation equipment.

During the conference, two optional technical visits were organized. The first visit, attended by 25 participants, was to the cliff of Monastir where solutions were presented for protection against marine erosion, geotechnical stabilization of the cliff and storm water drainage. The second visit, attended also by 25 participants, was to a deep foundation site in Tunis with the construction of an office building consisting of two underground levels of parking and 6 floors.

Also a meeting of African member societies took place. Some ISSMGE board members also attended the meeting that was chaired by Prof. Fatma Baligh (Vice President of ISSMGE for Africa) and Prof. Roger Frank (President of ISSMGE). At the end of the meeting, a vote delivered that the next African Regional Conference will be hosted by South Africa in Cape Town in 2019 and that the fifth Young Geotechnical Engineering Conference will be held in Ghana in 2016.

Cultural and touristic visits were also organized including three main tours mainly to Tunis (Bardo Museum, Medina, Carthage, SidiBou Said), Kairouan & El Jem and Nabeul & Hammamet.

A marvelous cultural dinner was organized at the night of the third day. The dinner was very well attended. The dinner, the musical, the songs, and the show were very well enjoyed by attendees.

The closing ceremony was held at the morning of fourth day and was introduced by Prof. Roger Frank (President of ISSMGE), Prof. Mounir Bouassida (Chairman of Scientific Committee), Mr. Slaheddine Haffoudhi (President of ATMS), Mr. Mehrez Khemakhem (Chairman of Organizing Committee), Dr. Imen Said (Vice Chairman of Organizing Committee). Conclusions and statistics of the conference have been made. Tunisian gifts were offered to persons who contributed to the success of the 16<sup>th</sup> ARCSMGE (keynotes, sponsors, 3 best papers, Members of ISSMGE). It is worth to mention that 14 papers were selected for submission in extended form to Environmental Geotechnics Journal (ICE) and Geotechnical Engineering Journal of SEAGS.

Finally, the fruitful exchange of ideas and discussions between all participants of ARCSMGE 2015 is a positive sign for the recent wake up of Africa in Geotechnical Engineering.

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The conference was followed by a special Symposium (ISP'7) on the occasion of the 60<sup>th</sup> anniversary of Ménard pressuremeter.



Photo 1. Opening Ceremony



Photo 2. Group photo



Photo 3. Plenary session



Photo 4. Speech given by Prof Roger Frank