SIMSG ISSMGE

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EDITORIAL BOARD

Message to ISSMGE from the Vice President for Africa

Professor Samuel Uche Ejezie

Dear professional colleagues of the geotechnical engineering family. My message is intended to sound like an echo reverberating from a Region where geotechnical engineering problems abound, yet the general world-wide perception remains that the profession is relatively not well-developed here. I have therefore programmed this message to cover the report of activities within the region both in the recent past and the present, as well as highlights of our key thrusts for the future.

On my assumption of office in Alexandria last year, I did pledge to work towards closer cooperation among African Member Societies of ISSMGE from North to South and from East to West (Fig. 1). This is with a view to integrating geotechnical engineering activities around the continent so that solutions to geotechnical engineering problems experienced in many parts of the region may be found within Africa itself. To demonstrate my continued commitment to this pledge, I made it a point of duty to participant in every event being organised by any African Member Society of ISSMGE. In the same vein I strongly encouraged our African members to join me in this crusade since it is for the good of our region. In fact, I have continued to advocate that geotechnical engineering should be practised in Africa without boarders so that we can together find local solutions to our ground engineering problems. The benefits of this cooperation have started manifesting, judging from the wide geographical spread of participants recorded in events organised by member societies in the Region in recent times. To me, the era of using models developed for soils of other climatic zones to solve problems related to the engineering behaviour of African soils is over. We have to work together to develop appropriate modes for soils of Africa.

Activities within the Region

In the distant past, Member Societies of African Region were generally known for relatively low level of activity. Of recent, however, that appears to be changing.

Message to ISSMGE from the Vice President (continued)

Professor Samuel Uche Ejezie

The last international quadrennial conference of ISSMGE in Alexandria, Egypt, apparently re-awakened the hitherto dormant national member societies. To date, at least eleven member societies exist in the Region though at different levels of activity. They include South Africa, Tunisia, Egypt, Nigeria, Ghana, Mozambique, CTGA (Comité Transnational des Géotechniciens d'Afrique), Sudan, Morocco, Libya, Algeria, and Kenya. We are currently making serious efforts to re-energise those of them that are considered to be less active (or inactive).

Figure 1. Map of Africa

Since my assumption of office as Vice-President for Africa about one year ago, some of the member societies have carried out various activities which in some cases were international in scope. In fact, landmark Geotechnical Engineering events by member societies have been very noticeable and this has been particularly more pronounced in the two longitudinal extreme zones of the continent, namely North and South. The mid zone (sub-Sahara) is expected to catch up soon though it has peculiar challenges occasioned by unique socio-economic realities.

The major events/activities in the various member societies since the beginning of this year are summarised subsequently.

A) SOUTH AFRICA

The South African Member Society organised a well-attended International Seminar in Pretoria on 30 July. The President of ISSMGE, the Secretary General, the Immediate Past President of ISSMGE, the Vice-President for Africa, the Immediate Past Vice-President for Africa and the one before him were all there to grace the occasion and actively participate. This was preceded on 29 July by hosting of two meetings. The first one was a meeting of the Scientific Advisory Committee (CAC) of the 15th African Regional Conference coming up 18-21 July, 2011, while the second was a meeting of the African Regional Council. The South African member Society really did us proud by keeping the fire of geotechnical engineering intensely burning.

Other activities of the Society include:

- Leadership role in the Scientific Committee for the 15ARC comprising members from 11 African countries tasked with adjudicating papers.
- Hosting of the prestigious Rankine Lecture on 30 November 2010 (presented by Prof Chris Clayton of Southampton University).
- Confirmation of the 10th Jennings Memorial Lecture for early 2011 to take account of Prof Roger Frank's programme.
- Active participation of members in ISSMGE Technical Committees and other initiatives.

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- Publications:
  - A number of geotechnical related papers and articles have been published in the April Edition of the SAICE Civil Engineering magazine; an edition dedicated to geotechnical engineering;
  - Launching of the new Site Investigation Code of Practice (SiCop) document, a SAICE Geotechnical Division Initiative during August 2010;
  - The reprint of the SAICE Code of Practice on Lateral Support has been successfully done.
- Awards: SAICE Geotechnical Division made the following awards at their AGM on 25 November 2010:
  - SAICE Geotechnical Division Gold Medal, which honours members of SAICE who have made a significant contribution to geotechnical engineering in South Africa. This was awarded to Alan Parrock of ARQ Consulting Engineers;
  - The Jennings Award, made to the author(s) of the best paper relevant to geotechnical engineering by a member of the SAICE Geotechnical Division;
  - The Barry van Wyk Award, presented to the student producing the best final year project report on a geotechnical subject at a South African University. This was awarded to Mr Charles MacRobert for his final year project entitled *Correlations between the DPSH and SPT and their application in South Africa*; and
  - Nomination of Mr Michael Pavlakis (senior geotechnical engineer and owner of Pavlakis and Associates) for SAICE Fellowship.

B) TUNISIA

The Tunisian National Member Society was very active during the period under review.

The climax of their activities was the successful organisation of their 2nd International Geotechnical Engineering Conference which took place 25-27 October 2010 in Hammermet, Tunisia (Figure 2). Available statistics shows that papers were contributed by more than 100 participants from 25 different countries. The ISSMGE President and the Vice-President for Africa were there live. Appointed Board member, Prof. Roger Frank was also there; and so were other keynote speakers.

The occasion afforded the Vice-President and the President the opportunity to hold a sensitisation meeting with interested participants on the new TC 107 – "Laterites and Lateritic Soils". The conference was particularly special to me in three ways. In the first place it was the only major international Geotechnical Engineering conference in the whole of Africa throughout this year, 2010. Secondly it was my first outing to the region of Africa North of the Sahara since my assumption of office as ISSMGE V-P for Africa one year ago. And thirdly, it was an event which, though organised under the auspices of a Research Team in only one national member society, has attracted participants from more than 22 countries spread across the globe – from America to Europe, to Asia and down to Australia and New Zealand. It was really a big achievement!

Very recent Event:
The Tunisian member society, along with other French-speaking North African countries, organised the Maghrebian Conference which took place in mid-December 2010.

C) MOZZAMBIQUE

The main activity of the Mozambique national member society was centred on preparations for the 15th African Regional Conference coming up 18-21 July 2011. The Local Organising Committee actively participated in the CAC meeting of 29 July 2010 in Pretoria, South Africa.
At the moment, arrangements for the Conference have reached advanced stages. The screening of Abstracts has since been completed and the full length papers are being reviewed. The keynote speakers have been identified and contacts concluded. The 2nd Bulletin is expected to be released anytime from now.

Message to ISSMGE from the Vice President (continued)
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Figure 2. Participants at the 2nd Geotechnical Engineering Conference Hammermet, Tunisia with ISSMGE President, Prof Jean-Louis Briaud and Vice President for Africa, Prof Samuel U. Ejezie

In addition to the 15ARC related activities the society also engaged in other activities aimed at professional development of the members. The details are presented in the table below.

DATE	TITTLE	AUTHOR	INSTITUATION
8th March, 2010	New challenges in the design and construction of landfill dams	Pedro S. Sêco e Pinto	ISSMGE - LNEC
8th April, 2010	Seminary of geosynthetics (joint organization of SMG and Naue Gmbh & co.kg)	J. Klompmaker, B. Lenze, C. de Bruyn	NAUE
3rd May, 2010	Open pit slope design in a greenfield environment	Phil Clark	PSM - Australia
9th June, 2010	Cases of errors while executing geotechnical works at the level of molded walls, jet Grouting and solution types	Ricardo Nicolas	RODIO - Portugal
15th October, 2010	Foundation and support layers for railway works, conception, construction and rehabilitation	Eduardo Fortunato	LNEC - Portugal

Message to ISSMGE from the Vice President (continued)
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D) NIGERIA

The Nigerian Member Society recently held its AGM and ushered in a new crop of leaders in accordance with the harmonised byelaws of the Nigerian Society of Engineers. The exercise was aimed at re-energising the society to face the challenges ahead. The new officers include:
Prof. Samuel U. Ejezie – Chairman
Engr. Fidelis Ejikeme – Vice Chairman
Engr. Scott B. Akpila – Secretary/Programme Coordinator
Engr. Sebastine Ozoamalu – treasurer
Engr. Olaposi Fatukun – Financial Secretary
Engr. Dr. Joseph I. Folayan – Immediate Past Chairman/Ex-Officio
Engr. Enoch George – Ex-Officio

Activities:
The new leadership of the Nigerian Geotechnical Association has aggressively embarked on revival of professional development activities for members and employees of corporate bodies.

To kick-start this, intensive skill-level learning event, in the form of "Geotechnical Engineering training" was organised for a batch of Civil Engineers in the employment of Shell Petroleum Development Company Ltd. This took place from 22 November to 04 December 2010, with participants drawn from Nigeria and Gabon (Figure 3).

Future Events:
The society is poised to host the 2012 edition of the African Young Geotechnical Engineers Conference. Plans are gradually being worked out and details will be announced once concluded.

Figure 3. Ongoing program of training geotechnical engineering

E) GHANA

The President of Ghana Geotechnical Society, Prof S. K. Ampadu, was recently appointed Chairman of TC 107 "Laterites and Lateritic Soils". The society has pledged full support for this and to co-operate with Prof Ampadu to ensure the success of the New TC. Furthermore, Dr Gidigasu of Ghana, a renowned authority on Laterites, has been nominated to deliver a keynote lecture on lateritic soils during the forthcoming 15ARC in Maputo, Mozambique, 18-21 July 2011.

Message to ISSMGE from the Vice President (continued)
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ISSMGE International Seminar in Accra-Ghana:

Earlier in 2009, the Ghana Geotechnical Society (GGS) under the patronage of the ISSMGE organized a well-attended international seminar from 2nd-4th February 2009 at the Engineers Centre in Accra. The seminar was attended by 66 participants including three participants from Nigeria (Figure 4). The participants were drawn from private consulting firms, public infrastructure companies, academia, and construction firms. Locally, the seminar was under the patronage of the Kwame Nkrumah University of Science and Technology, the Ghana Institution of Engineers and the Ministry of Transportation of Ghana. The theme was "Ground Improvement for Accelerated Development" reflecting Ghana's recent move towards rapid infrastructure development as a strategy for poverty reduction and economic development.

Figure 4. Participants at the ISSMGE International Seminar in Accra, Ghana, 2nd-4th February 2009

The seminar sought to expose Ghanaian engineers to new trends in ground improvement technologies, to provide opportunity for Consultants, Contractors and developers who have applied new technologies in ground improvement to share their experience and finally to help promote professional geotechnical engineering practice in Ghana.

The resource persons were supplied by both ISSMGE and GGS. ISSMGE provided four resource persons consisting of the Immediate Past President, Prof Pêdro Seco e Pinto of the University of Coimbra in Portugal, the Immediate Past Vice President for Africa, Prof. Mounir Bouassida of the National Engineering School of Tunis and two members of TC17: Prof George Heerten of Germany and Mr. Serge Varaksin, Deputy General Manager of Menard Group, France and Chairman of TC 17. These were complemented by three Ghanaian speakers made up of Prof S. I. K. Ampadu of the Civil Engineering Department of Kwame Nkrumah University of Science and Technology and President of GGS, Dr M. D. Gidigasu a renowned expert on lateritic soils and Togbui Kporku III a Director of Conterra Ltd, a private Geotechnical Consulting firm.

The seminar consisted of two days of lectures and one day for a field trip. The lectures covered soil improvement techniques with and without additives, the improvement of soft soils, the principles and use of geosynthetics for soil improvement and the characteristics and improvement of lateritic soils. The third and final day of the seminar was devoted to a field visit to the Keta Sea Defence Project at a fishing town some 150 km east of Accra. During the field trip, Togbui Kporku III took the participants through the details of the project which he said consisted primarily of the building of sea defense structures to stabilize the shores of the town.

Among the three seminar participants from Nigeria was Prof. Samuel Ejezie who is the current Vice President for Africa. The programme included a general assembly of GGS during which Professors Seco e Pinto and Samuel Ejezie encouraged the Ghana Society to improve upon its membership and programmes and assured the Society of the support of ISSMGE. The seminar was particularly significant in that it was the first high profile programme for the Ghana Geotechnical society in recent times and it also clearly showed the potential for the Ghana Society to grow.

Message to ISSMGE from the Vice President (continued)
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F) CTGA

The Society held a one-week colloquium in February 2010 in Yamoussoukro, (Ivory Coast) which was well-attended by participants from Franco-phone countries in Sub-Saharan Africa. On the whole, more than 50 members were in attendance. The theme of the colloquium was "Foundations of infrastructures in Sub-Saharan Africa – Design and Case Histories".

In April 2010, the CTGA launched a series of Geotechnical Engineering Training Courses in Yaoundé, Cameroon.

A key forthcoming event planned by the Society is a Technical Seminar to be held in Burundi, in March, 2011.

At present, plans are on-going to encourage countries capable of standing alone to form their own national member societies.

G) EGYPT

Since the end of the 17th International Conference of ISSMGE in Alexandria, the Egyptian Geotechnical Society has been involved in different activities most of which promote the positive impact of geotechnical engineering in the society. During the period, the most significant activities of the Egyptian Geotechnical Society (EGS) are as follows:

1. Carried out studies in collaboration with the Governorates of Matrouh and Aswan on mitigation methods of flash floods.
2. Cooperated with the "Military Technical Academy" from the scientific and organizational aspects for the "Fifth Engineering Conference of the Military Technical Academy, which held from 25th to 27th May 2010.
3. Established the organizational basics for a National Geotechnical Conference that is to take place in late 2011 at Tanta University.
4. Entered into co-operation with the "Supreme Council of Antiquities" in projects of restoration of monuments and stability of several archaeological sites all over Egypt.
5. Participated in a study in cooperation with the Egyptian Academy for Scientific Research & Technology (ASRT) entitled: "Rainwater Harvesting as an Alternative Water Supply in the Future and as an effective means of flood prevention".
6. Established a Geotechnical and Geo-environmental Research Centre at the University of Tanta, Egypt.
7. Also, helped the Geotechnical Engineering Research Lab at the University of Tanta to recently secure a research fund for upgrading and accreditation based on **ISO 17025.**

Key Thrusts for the Future

With the reorganization of ISSMGE embarked upon by the present Board led by Professor Jean-Louis Briaud largely completed, the time has come for African Region to properly key-in to this progressive framework. Doing so will enable us to catch up with the rest of the continents of the world in Geotechnical Engineering practice.

Key thrusts of our regional agenda have been mapped out, circulated among member societies, freely discussed among members across the Region, and adopted in principle. Highlights are summarised subsequently.

Message to ISSMGE from the Vice President (continued)
Professor Samuel Uche Ejezie

1. Promotion of Increased Collaboration among Member Societies as well as their Leaders.

The collaboration will usher in an era of increased cross-boarder geotechnical engineering activities. The idea is to promote an atmosphere of good neighborliness and mutually beneficial professional relationships so that geotechnical engineering events organized by member societies will attract participation from sister societies from all over African Region. This collaboration model is operational in other regions.

2. Formation of Technical Committees Domiciled in African Region.

Discussions have been on-going for sometime now regarding the issue of domiciling Technical Committees in Africa. The time for actualising this proposal is now. Two committees were initially contemplated - one on "Lateritic Soils or Problem Soils of Africa" and the other on "Softwares in Geotechnical Engineering". The latest development is that the Technical Oversight Committee (TOC), charged with the responsibility of setting up TCs and coordinating their activities, has decided to form the Technical Committee on "Laterites and Lateritic Soils". This is hosted by Ghana with Prof. S.I.K. Ampadu as Chairman. In the case of Softwares in Geotechnical Engineering, the TOC decided to incorporate it into the existing Technical Committee on Geoengineering Education. In so doing, our own Prof. Mounir Bouassida of Tunisia was appointed Vice-Chairman.

I wish to use this medium to invite members from African Region to submit expressions of interest to join the new Technical Committee on Lateritic Soils. We owe it as a duty to make this TC succeed. The Chairman cannot do it alone! We need to cooperate with him, pull intellectual resources together and champion the cause of this first-ever Africa-hosted Technical Committee.

3. Formation of Membership Expansion Committee.

The purpose of this Committee is to drive/promote membership expansion in African Region – New member societies, corporate members, etc. At present, African representation on the ISSMGE Council remains the lowest among all the regions. There is a need therefore to aggressively pursue a program aimed at increasing the number of member societies in Africa. A laudable idea such as this is better implemented through Committee(s) set up for that purpose. Some countries who do not yet have national societies have indicated interest in forming theirs. They need encouragement and help and this Committee is expected to facilitate the process. Furthermore, the new Corporate Membership programme of ISSMGE needs to be promoted and made more popular in the Region. This again falls under the purview of this Committee.

4. Formation of Regional Technical Coordination Committee.

Regional events, such as IYGEC, Regional Conferences, and TC activities are better promoted, organized and overseen by a dedicated coordinating Committee. This body has been set up in African Region to more efficiently coordinate scientific and technical activities to the greater benefit of our general membership.

Concluding Remarks

The above account of the state of geotechnical engineering profession in Africa reveals that the Region has made appreciable progress in recent times. Catching up with the developed regions is our ultimate goal. Nevertheless, that is not expected to happen overnight. The reason is easy to adduce. The world of Geotechnical Engineering is very dynamic. The so-called advanced regions in the profession are still advancing even at a much faster rate than the so-called less-advanced regions, the list of which is topped by our dear Africa. So, parity though highly desirable, may take quite sometime to be realised if ever. Our ambition though is to get on board the "Geotechnical Engineering Train" and move with the rest of the world. We do not necessarily have to be at the driver's seat. From all indications we are already on board! And that is good news indeed.

Message to ISSMGE from the Vice President (continued)
Professor Samuel Uche Ejezie

Finally, I wish to conclude this opportunity to extend a special invitation to the entire global Geotechnical Engineering Family to attend the next big event in Africa – the 15th African Regional Conference on Soil Mechanics and Geotechnical Engineering, which will take place in the beautiful city of Maputo, Mozambique from 18th to 21st July 2011. It is an experience one cannot afford to miss. Come and enjoy African hospitality demonstrated to the fullest without boarders. Come and behold new frontiers and breakthroughs in Geotechnical Engineering practice. You will surely be happy you attended.

On behalf of the ISSMGE members in African Region, I wish you all a very happy new year, 2011.

Report from a Member Society
The Ghana Geotechnical Society

S. I. K. Ampadu, President of Ghana Geotechnical Society

Introduction

The Ghana Geotechnical Society (GGS) has been in existence for at least three decades. In the seventies and eighties, it was very active and had a fruitful collaboration with the Canadian Geotechnical Society. However in the nineties it went through a doldrum. Over the past several years it has received a new lease of life and activity. It currently serves as the specialty group of Geotechnical Engineering of the Ghana Institution of Engineers (GhIE) with twenty-one regular active members. The past few years have witnessed considerable improvement in the activities of the society. During this period the Society has reviewed its constitution and bye-laws and held two successful annual general meetings and elected its leadership. This report gives a summary of some of the main activities the society has organized over the past two years.

ISSMGE International Seminar in Accra

In February 2009, the Ghana Geotechnical Society with the support of ISSMGE successfully hosted an international seminar on *ground improvement* in Accra, the regional capital of Ghana. It attracted sixty six (66) participants including three from Nigeria. The participants came from academia and from industry. ISSMGE provided four resource persons consisting of the Past President, Prof Pêdro Seco e Pinto of the University of Coimbra in Portugal, the Past Vice President for Africa, Prof. Mounir Bouassida of the National Engineering School of Tunis and two members of TC17: Prof George Heerten of Germany and Mr. Serge Varaksin, Deputy General Manager of Menard Group, France and Chairman of TC 17. These were complemented by three Ghanaian speakers made up of Prof S.I.K. Ampadu of the Civil Engineering Department of Kwame Nkrumah University of Science and Technology and President of GGS, Dr M.D. Gidigasu a renowned expert on lateritic soils, and Togbui Kporku III a Director of Conterra Ltd, a private Geotechnical Consulting firm in Accra. The seminar was concluded with a field trip to the sea defense works in Keta on the southern eastern sea coast of Ghana.

Figure 1. Participants at the Sea Defense structure on the South Eastern Sea Coast of Ghana

2010 Annual General Meeting

On 30th of June 2010, the Society held its annual general meeting. The meeting was attended by 14 members. The meeting discussed various issues and the followings were elected as officers for the next two years:

1. President – Prof S.I.K. Ampadu
2. Secretary – Mr. Joseph K. Oddei

Report from The Ghana Geotechnical Society (continued)

3. Treasurer – Mr. Kweku Mensah Solomon
4. Member – Mr. Gordon Van-Tay
5. Member – Mr. J.F. Pinkrah
6. Southern Rep – Mr. Emmanuel Odai
7. Northern Rep – Mr. Mike Konadu

Hosting of TC-107
The Ghana Society is hosting TC-107 the new ISSMGE Technical Committee on laterite and lateritic soils. Prof. S.I.K. Ampadu is the Chairman of the Technical Committee and Dr. Mrs. Celestina Allotey is the society's representative on the committee.

Earthquake Workshop
Even though southern Ghana is known to be seismically active most domestic buildings in Ghana are not engineered and not seismically designed. For the structures that are engineered, there appear also to be a lack of consensus on the seismic design code and the existing ground motion characterization. To address these shortcomings a number of measures are being undertaken including seeking for international partners to address these anomalies. A multi disciplinary workshop was organized in Accra on November 11th 2010 to assess the status of earthquake preparedness in Ghana. The Ghana Geotechnical Society in association with a number of organizations took part in the workshop. The society members contributed by making presentations on the *state of earthquake ground motion characterization in Ghana, and soil characterization and their effects on buildings during earthquakes.*

Figure 2. Participant contributing at Earthquake workshop on 11th November 2010

Other News
The President of the Ghana Geotechnical Society, Prof. S.I.K. Ampadu, has been appointed Provost of the College of Engineering of the Kwame Nkrumah University of Science and Technology. Prof. Ampadu conducted both his MSc and PhD studies in the late eighties and early nineties in Geotechnical Engineering at the University of Tokyo in Japan. His PhD studies focused on the behavior of kaolin clay in torsional simple shear for which he conducted pioneering studies into very small strain measurements in clayey material in the laboratory.

Ghana Makes History
On 15th December history was made in Ghana. Ghana for the first time became an oil producing country and started pumping oil in commercial quantities from its oil field 65 km offshore in the Atlantic Ocean.

Future of ISSMGE : Celebration of the 75th ISSMGE Anniversary

Dr. Imen Said (imen_said@yahoo.fr)
EBM of ISSMGE Bulletin

During the Sixth International Congress on Environmental Geotechnics (6ICEG) which was held in New Delhi, India from 8th to 12th November 2010, ISSMGE celebrated its 75th anniversary. During the ceremony, the former president of ISSMGE Professor Pedro Seco e Pinto opened the ceremony, Professor Jean Louis Briaud, our present president, talked about the present of ISSMGE, another former president of ISSMGE Professor Kenji Ishihara talked about the past of ISSMGE and a young member, Dr Imen Said from Tunisia (North Africa) talked about the future of ISSMGE. Dr Imen SAID is a member of SYMPG, the North Africa coordinator of ISSMGE bulletin and an active member of Tunisian Society for Soil mechanics. It is a nice opportunity given to a young member to participate to such a great event. The Tunisian Society for Soil Mechanics (ATMS) has also provided financial support to the young member to attend such an important ceremony.

ISSMGE takes its origins at the 1936 International Conference held in Cambridge-Massachusetts. Comparing 2010 with 1935 would indicate how far the ISSMGE has progressed! eg countries actively involved, member numbers, communication tools, knowledge base and how shared. In another 75 years, the ISSMGE will no doubt be very different from what it is now: More members, countries actively involved etc... What we have now provides a solid foundation for the future.

The main future objective of ISSMGE is to become a leader and a major actor in the Geotechnical world environment. The ISSMGE future strategy is based on many axis such as be an active and effective society in geotechnical areas, promote the Young members role and activity in the society, work strongly with developing countries to improve and reinforce their contribution in the Geotechnical Research and industrial fields.

The existence of **SYMPG** as an index of youth participation in the management of the student and young members' affairs is a very good news for the future of ISSMGE. SYMPG which is the Student and Young Members Presidential Group is composed of 18 young members (< 35 years old) coming from the six main regions in the world (Africa, Asia, Australasia, Europe, North America and South America). The aim of this group is to contribute, to promote and to the progress of our international society. The idea behind the creation of such a group is to give a chance to students and young members to invoice their opinion and innovative ideas to improve the future of ISSMGE and make it more attractive. During the ceremony, the young member talked about the future of ISSMGE regarding some particular axis such as: membership and extension of ISSMGE, communication, Technical committees, conferences and forums, geotechnical research and engineering work and developing countries.

MEMBERSHIP AND EXTENSION OF ISSMGE

In the future, geotechnical engineering knowledge will be developed and promoted in all countries by building ISSMGE branches in social networks; number of members, number of countries, and number of societies will increase. Besides, Student and younger member membership in ISSMGE will grow, allow better communication between members, highlight opportunities and will encourage learning and technical knowledge sharing. Thus, young members knowledge (future of ISSMGE) will be developed. Encouragement of young members will also ensure growth of the ISSMGE in the midterm future.

COMMUNICATION

Communication will be improved between ISSMGE members especially in countries not well represented in our society. Besides, geotechnical specialists all over the word will receive correspondence and information from the ISSMGE (such as the ISSMGE Bulletin, emails from the President etc), and become active ISSMGE members. Moreover, mailing lists of all members/Young members will be easily used and multimedia communication methods will be developed along (Blog, Google and Yahoo group, Facebook, Twitter..).

Future of ISSMGE : 75th ISSMGE Anniversary (continued)

In the same context, ISSMGE Website will be improved; that means that it will be easy to use, including complete contents and activity and will be properly described. It will also include RSS news subscription, members' blogs and forums. Thus, ISSMGE members will be able to access to geotechnical knowledge resources of successful universities to improve the level of the global geotechnical knowledge, and declare their demands directly to the society as well as the society can.

Furthermore, it is hoped in the next future that all young members around the world find same facilities to send their message (especial investigation results, geotechnical pictures, educational videos) to the other members simply and inquire their geotechnical questions easily via geotechnical forum.

TECHNICAL COMMITTEES

Technical committees will continue to involve and be created or updated to reflect the changing nature and new challenges that will be faced by geotechnical engineers by including specific guidelines and requirements. Besides, technical committees action items will be developed and manage technical conferences more than before. They also will be better represented in the ISSMGE bulletin, regional events or board meeting.

WORKSHOPS AND FORUMS

Forums will launch appropriate spaces in ISSMGE website or network societies about geotechnical questions. Besides, workshops on geotechnical teaching methodology will be created. Moreover, ISSMGE will increase collaboration with industry and institutes of higher learning (e.g. organize seminars, lectures, speaker program, internships, co-ops, R&D projects, organizational member committee). Regarding activities of young members, regional YGECs will be more promoted.

GEOTECHNICAL RESEARCH AND ENGINEERING WORK

First, database of current and potential research projects and publications will be developed in the future as well as accreditation body to certify geotechnical engineers worldwide. Database of geotechnical soil profiles across the globe will also be developed. Second, motivation mechanisms (e.g. publishing the best communication seminars, prizes for best researchers, best presentations) will be created. Then, technical visits to great geotechnical projects will be organized. Besides, focus on fundamentals will be increased with understanding of real-world project progression.

Photo 1: Celebration of the 75th ISSMGE anniversary (November 8th, New Delhi during 6ICEG)
From left to right (Prof Jean Louis BRIAUD, Prof Kenji ISHIHARA, Dr Imen SAID)

Future of ISSMGE : 75th ISSMGE Anniversary (continued)

ISSMGE AND DEVELOPPING COUNTRIES

ISSMGE will be promoted in all developing countries and less active national societies especially in **African region** and **middle east countries**. Conferences will be encouraged (sponsoring) in developing countries as well as countries that cannot participate in ISSMGE activities; they will be identified and then helped. In this way, financial support for students to attend conferences/events will be provided. Finally, geotechnical research works will be supported in developing countries as well as geotechnical engineering knowledge by building ISSMGE branches in social networks.

To fulfill all this work, all regions and members societies have to work together for a better future of ISSMGE.

Photo 2: Celebration of the 75th ISSMGE anniversary (L to R: Prof Pedro SECO E PINTO, Prof M.R. MADHAV)

Photo 3: Celebration of the 75th ISSMGE anniversary (Presentation by Dr Imen SAID)

Case History

2010 Darfield (New Zealand) Earthquake: Impacts of liquefaction and lateral spreading

Misko Cubrinovski, University of Canterbury, Christchurch, New Zealand
Rolando Orense, University of Auckland, Auckland, New Zealand

Introduction

On 4 September 2010, a magnitude M_w 7.1 earthquake struck the Canterbury region on the South Island of New Zealand. The epicentre of the earthquake was located in the Darfield area about 40 km west of the city of Christchurch. Extensive damage was inflicted to lifelines and residential houses due to widespread liquefaction and lateral spreading in areas close to major streams, rivers and wetlands throughout the city of Christchurch and the town of Kaiapoi. Unreinforced masonry buildings also suffered extensive damage throughout the region. Despite the severe damage to infrastructure and residential houses, fortunately, no deaths occurred and only two serious injuries were reported in this earthquake. From an engineering viewpoint, one may argue that the most significant aspects of the 2010 Darfield Earthquake were geotechnical in nature, with liquefaction and lateral spreading being the principal culprits for the inflicted damage. Following the earthquake, an intensive geotechnical reconnaissance was conducted to capture evidence and perishable data from this event. The team included the following members: Misko Cubrinovski (University of Canterbury, NZ, Team Leader), Russell Green (Virginia Tech, USA, GEER Team Leader), Mitsu Okamura (Ehime University, Japan, JGS Team Leader), John Allen (TRI Environmental, Inc, TX, USA), Scott Ashford (Oregon State University, USA), Elisabeth Bowman (University of Canterbury, NZ), Brendon Bradley (University of Canterbury, NZ), Brady Cox (University of Arkansas, USA), Tara Hutchinson (University of California, San Diego, USA), Edward Kavazanjian (Arizona State University, USA), Takashi Kiyota (IIS, University of Tokyo, Japan), Rolando Orense (University of Auckland, NZ), Michael Pender (University of Auckland, NZ), Hirofumi Toyota (Nagaoka University of Technology, Japan) and Liam Wotherspoon (University of Auckland, NZ). This article summarizes some observations and preliminary findings from this early reconnaissance work.

The 2010 Darfield (Canterbury) Earthquake

The earthquake occurred at 4.35 am local time, on 4 September 2010. It was caused by a rupture of a previously unrecognized strike-slip fault, now well-known as the Greendale fault. The earthquake resulted in a surface rupture approximately 29 km long in the east-west direction (Figure 1). The length of the fault rupture at depth is estimated to be on the order of about 40 km. Aerial photos of the surface rupture expression taken from a helicopter flyover on 10 September is shown in Figure 2. It is interesting to note that the faulting resulted in a narrow rupture zone at the surface despite hundreds of metres of thick gravel deposits at the ground surface.

Figure 1. Aerial image of Christchurch area indicating the surface fault rupture and the epicentre of the Darfield earthquake. The city of Christchurch is located east of the Greendale Fault, while the town of Kaiapoi is north of Christchurch. (Image courtesy of Mark Quigley; Google Inc. 2010)

Figure 2. Surface fault rupture on farm land. The right lateral offset was approximately 4 m at the tree line (top of the photo)

Case History
2010 Darfield (New Zealand) Earthquake (continued)

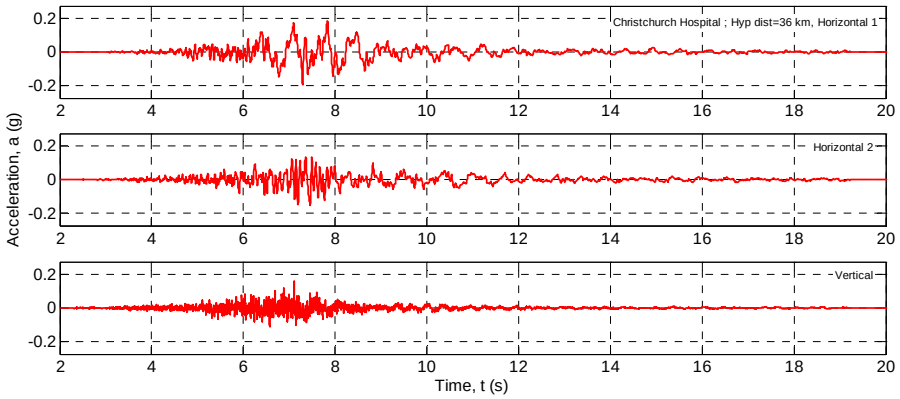

Figure 3. Acceleration records of the 2010 Darfield Earthquake at the Christchurch Hospital

The ground motion produced by the main shock of the Darfield earthquake was recorded at nearly 40 strong motion stations within the epicentral region. In the city of Christchurch and the town of Kaiapoi, peak horizontal ground accelerations on the order of 0.15-0.35 g were recorded indicating moderate-to-strong ground shaking in the urban areas. Acceleration time histories recorded at the Christchurch Hospital are shown in Figure 3. The response spectra of the recorded ground motions showed high spectral accelerations at 2-3 seconds vibration periods reflecting the effects of deep gravelly deposits that underlie the shallow surface soils in the Canterbury plains.

Regional geomorphology

The city of Christchurch has a population of about 350,000 (the second largest city in New Zealand) and an urban area that covers approximately 450 km^2. It is sparsely developed with approximately 150,000 dwellings (predominantly single-storey houses with a smaller number of two-storey houses) spread across a large area with many parks, natural reserves and recreation grounds. The Central Business District (CBD) is more densely developed with multi-storey buildings and a relatively large number of historic buildings. The epicentre of the 2010 Darfield Earthquake was located approximately 40 km west of the Christchurch CBD (Figure 1).

Christchurch is located on Holocene deposits of the Canterbury Plains, except for its southern edge, which is located on the slopes of the Port Hills of Banks Peninsula. The river floodplain and the loess sediments of the Port Hills are the dominant geomorphic features of the Christchurch urban area.

The Canterbury Plains are complex fans deposited by eastward-flowing rivers from the Southern Alps to the Pegasus Bay coast. The fan surfaces cover an area 50-km wide by 160-km long. At Christchurch, surface postglacial sediments have a thickness between 15 and 40 m and overlie 300-400 m thick inter-layered gravelly formations (Brown and Webber, 1992). The surface sediments are either fluvial gravels, sands and silts (Springston formation, with a maximum thickness of 20 m to the west of Christchurch) or estuarine, lagoon, beach, and coastal swamp deposits of sand, silt, clay and peat (Christchurch formation, with a maximum thickness of 40 m at New Brighton coast, east of CBD). The soil deposits at relatively shallow depths of up to 15-20 m vary significantly within short distances, both horizontally and vertically.

As described by Brown and Webber (1992), the original site of Christchurch was *"mainly swamp lying behind beach dune sand, estuaries and lagoons, and gravel, sand and silt of river channel and flood deposits of the coastal Waimakariri River flood plain. Since European settlement in the 1850s, extensive drainage and infilling of swamps has been undertaken."*

Case History
2010 Darfield (New Zealand) Earthquake (continued)

Canterbury has an abundant water supply through open-channels (rivers, streams) and very rich aquifers. The dominant features of present day Christchurch are the Avon and Heathcote rivers that originate from springs in western Christchurch, meander through the city, and feed the estuary at the southeast end of the city. The ground water table is deepest at the west end of the city (at about 5 m depth), gradually increases towards east, and approaches the ground surface near the coastline. The water table is within 1.0-1.5 m of the ground surface for most of the city east of the CBD.

Effects of liquefaction

The earthquake caused widespread liquefaction in the suburbs of Christchurch along the Avon River, particularly to the east and north-east of the CBD. Widespread liquefaction also occurred in Halswell, at the southwest end of the city. Pockets of limited or partial liquefaction were observed in other parts of Christchurch, though these were much fewer to the west of CBD. Figure 4 shows areas of observed liquefaction in the urban area of Christchurch based on surface manifestation of liquefaction visible in aerial photographs and initial observations from ground surveying.

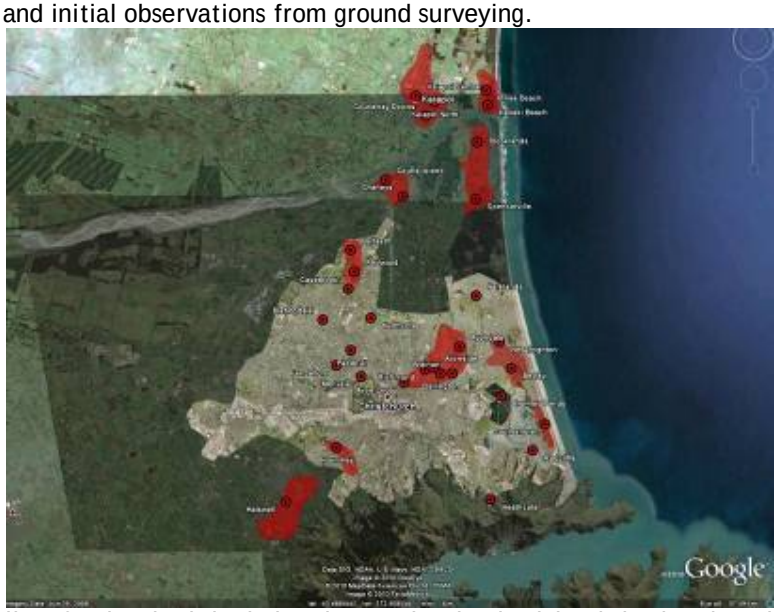

Figure 4. Areas of liquefaction (red shaded regions and red points) in Christchurch and Kaiapoi caused by the 2010 Darfield Earthquake

The areas most severely affected by liquefaction and lateral spreading were close to waterways (rivers, streams, swamps). Figure 5 shows an aerial photo of the Porritt Park, in Wainoni, Christchurch, taken from a helicopter flyover on 10 September. The park is enclosed by the Avon River and a diverted stream around its perimeter. Large sand boils with significant volume of sand ejecta covered substantial areas of the park. Parallel cracks spaced regularly along drainage lines were indicative of slumping and spreading towards the north and south branches of the stream. A couple of hockey fields located in the park were severely damaged by the liquefaction, resulting in a very uneven, bumpy surface of the fields.

Typical manifestation of liquefaction in the backyard of a residential property is shown in Figure 6. Sand boil ejecta covered most of the lawn and was about 20 cm thick in places. There was evidence of massive liquefaction and large surface distortion in the neighbouring streets. The potable water and sewer systems were out of service at the time of the inspections. Despite significant amounts of liquefaction ejecta and broken utilities throughout the neighbourhood, the house shown in the pictures suffered relatively minor damage in terms of differential settlement and cracking.

Case History

2010 Darfield (New Zealand) Earthquake (continued)

In the Darfield earthquake, widespread liquefaction occurred north of the Kaiapoi River affecting a large number of residential houses in the town of Kaiapoi (population ~10,000; area ~5 km^2). The houses in this area are typically single or two-storey brick/stone block masonry or timber structures on spread footings. Kaiapoi is situated about 17 km north of Christchurch, near the north-eastern end of the Canterbury Plains (Figure 1). At Kaiapoi, recent Holocene sediments, approximately 100 m thick, overlie 300-400 m of late Pleistocene sands and gravels, which in turn rest on rock and a greywacke basement rock. Present day Kaiapoi is divided into North Kaiapoi and South Kaiapoi by the Kaiapoi River. The Waimakariri River and its abandoned channels significantly influenced liquefaction susceptibility of Kaiapoi. Several old meander loops of pre-1868 Waimakariri River have deposited loose silty sands both north and south of the present Kaiapoi River. In this area, the ground water table is generally shallow within 1-2 m of the ground surface.

Figure 5. Evidence of extensive liquefaction (large sand boils) in Porritt Park, Christchurch. Using the vehicles (bottom of photo) or the hockey field (top of photo) for scale gives a good indication of the significant volume of sand ejecta.

Figure 6. Evidence of extensive liquefaction (large sand boils) in residential areas of Avonside. Notice the chair embedded in 20 cm thick sand ejecta in the backyard of the property.

Case History
2010 Darfield (New Zealand) Earthquake (continued)

In the worst hit area, the silty sand ejecta was about 400 mm thick (Figure 7). Some residents reported geysers appearing in the backyard following the earthquake, often forming a small pond near the house that remained for several days after the event. The severe liquefaction often led to large settlement of houses, including differential settlement that resulted in structural and foundation damage. The large ground distortion, cracks and fissures in the ground also caused significant damage to buried lifelines. This area of Kaiapoi also liquefied during the 1901 Cheviot earthquake (Berrill et al., 1994).

(a) ~40 cm thick layer of silt-sand-water mixture covering a residential property affected by very severe liquefaction; (b) same-angle view, but after the clean up of sand ejecta

(c) View from the street (before clean up); (d) liquefied silt-sand-water mixture covering a rug inside the house and the ground outside the house (seen through a window from inside the house)

Figure 7. Manifestation of very severe liquefaction in residential area of North Kaiapoi

Impacts of lateral spreading

In the areas close to waterways, the liquefaction was accompanied by a lateral spreading which resulted in permanent lateral ground displacements from several tens of centimetres to several metres. The spreading progressed inland as far as 200-300 m from the waterway, often significantly affecting residential properties and houses. Typical manifestation of lateral spreading and its impacts on houses is shown in Figure 8.

Residential houses in this area were severely affected both by liquefaction and lateral spreading. A large number of houses settled, tilted and suffered structural/foundation damage. Large size sand ejecta, spread across the area between the stopbank (levee) and street, are seen in Figure 8. The huge piles of cleaned up sand indicated as position S clearly illustrate the massive liquefaction that occurred in the area. The liquefaction was accompanied by a significant lateral spreading towards the Kaiapoi River that affected a number of houses along the street.

Case History
2010 Darfield (New Zealand) Earthquake (continued)

(a) Aerial view of North Kaiapoi (from a helicopter flyover on 10 September)

(b) Lateral spreading crack running through a residential property; (c) Lateral spread and slumping of the north stopbank of the Kaiapoi River; note the huge piles of cleaned up sand obstructing the view of the houses

Figure 8. Liquefaction and lateral spreading in North Kaiapoi

In South Kaiapoi, the most dominant ground failure feature was the liquefaction and massive lateral spreading that affected the eastern branch of Courtenay Drive. The area affected by lateral spreading, shown in Figure 9, was approximately 1-km long in the north-south direction and extended between 200 m and 300 m inland from the Courtenay Stream and Courtenay Lake. The lake was artificially created during the construction of the northern end of Courtenay Dr. Borrow material was removed from the area where the lake is presently located and used as hydraulic fill (about 1 m thick) for the northern branch of Courtenay Dr.

The area where massive lateral spreading occurred coincides with the old Waimakariri River channel from 1865. On the eastern side of South Kaiapoi, the old channel passes underneath the present day Courtenay Dr area shown as position 1 in Figure 9, where severe damage to residential properties occurred due to lateral spreading.

Case History

2010 Darfield (New Zealand) Earthquake (continued)

Lateral spreading resulted in large permanent lateral displacements on the order of 1.0-3.5 m with large ground cracks of about 0.5-1.5 m wide running through residential properties/houses. In this area, single storey and two storey houses suffered very severe damage due to large lateral ground movements including substantial tilt, loss of foundation support, tension cracks in foundations and slabs (Figure 10). It was significant that despite the extreme lateral movement of the immediate foundation soils and the foundations themselves, all houses showed large ductile deformation capacity and continued to carry gravity loads, despite literally being ripped in half in some cases. Detailed inspections revealed that in some parts of the affected area the lateral movement continued to increase well after the main event (Figure 11). Two consecutive measurements of the width of a large ground crack carried out on 11 and 15 September showed an increase in the width of 20 cm over this period (from 1.4 m to 1.6 m). The neighbouring residents also reported new cracks appearing in their house over the same time period. It is believed that this continued deformation was the result of a combination of creep due to static shear stresses, significantly softened soils and effects of aftershocks on a structure marginally stable under gravity loads.

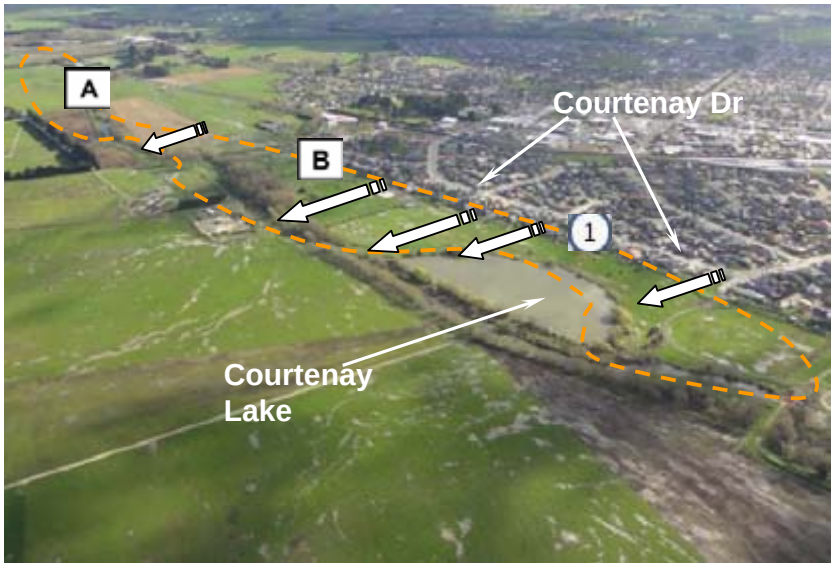

Figure 9. Massive lateral spreading at South Kaiapoi; sand ejecta and area affected by lateral spreading around Courtenay Lake

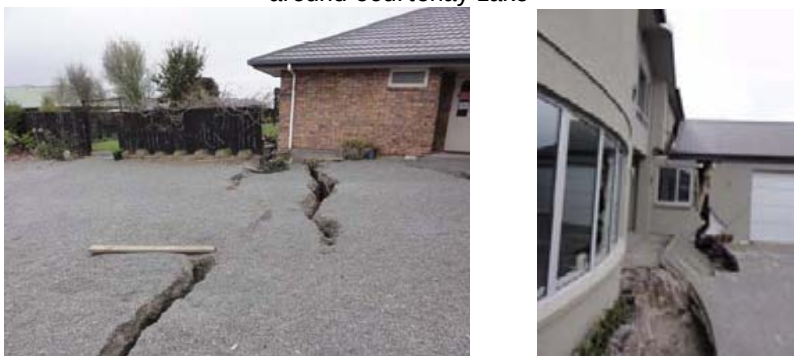

Figure 10. Severe damage to residential houses/properties due to lateral spreading in South Kaiapoi; (a) Lateral spreading crack running through residential property; (b) Severe damage to timber dwelling on slab foundation affected by lateral spreading displacements of about 1.5 m across the footprint of the house. In areas severely affected by lateral spreading, damage to spread footings and foundation slabs was common, and often significant.

Case History
2010 Darfield (New Zealand) Earthquake (continued)

Figure 11. Severe damage to residential houses/properties due to lateral spreading in South Kaiapoi; (a) Excessive tilt and uplift of foundations due to lateral spreading; (b) The width of this crack increased from 1.4m to 1.6m in the period between 11 and 15 September (7-11 days after the mainshock).

Characteristics of liquefied soils

The ejecta from sand boils in areas affected by liquefaction were generally very similar and had several distinctive features. They were non-plastic fine sands and silty sands with an easily recognizable grey/blue colour.

Grain-size distribution curves of ejecta samples taken from areas of Christchurch and Kaiapoi (courtesy of Prof. Michael Pender; Cubrinovski et al., 2010a;) and previous detailed laboratory studies on the Christchurch soils (Cubrinovski et al., 2010b) clearly put these soils in the group of soils highly-susceptible to liquefaction. This feature together with the high saturation, very intense groundwater regime, relatively recent and loose state of deposition contributed to the extensive liquefaction and lateral spreading during the 2010 Darfield earthquake.

After the earthquake, Swedish Weight Sounding (SWS) tests were performed at numerous locations affected by liquefaction and lateral spreading. So far, about 150 SWS tests have been conducted in the areas of Christchurch and Kaiapoi. SWS is a simple manually operated penetration test under a dead-load of 100 kg in which the number of half-rotations required for a 25 cm penetration of a rod (screw point) is recorded (JIS, 1995). One of the advantages of the SWS test which was heavily utilized in this investigation is the ability to perform the test within a confined space in backyards of residential properties. Typical results of SWS tests conducted at two locations in Dallington and Avonside, expressed in terms of the number of half-rotations per metre, N_{SW}, are shown in Figure 12.

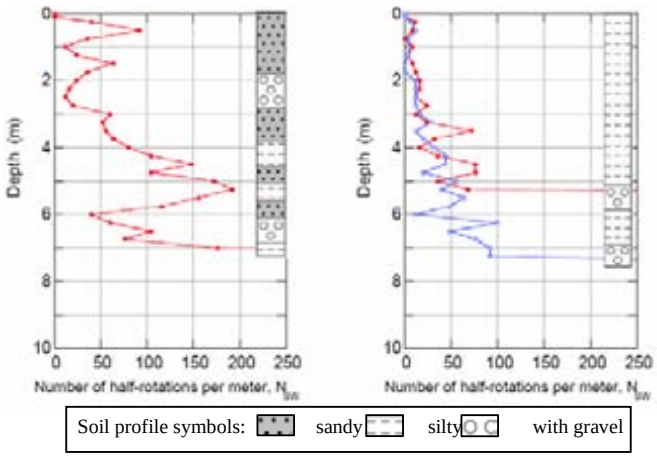

Figure 12. Post-event penetration resistance in Dallington and Avonside measured in SWS tests

Case History
2010 Darfield (New Zealand) Earthquake (continued)

Re-liquefaction caused by a M_W 5.0 aftershock

On 19 October 2010, a M_W 5.0 aftershock struck the region, with an epicentre about 10 km southwest of the CBD. The aftershock caused re-liquefaction in the area of Hoon Hay, a suburb located at an epicentral distance of about 8 km. Figure 13 shows large amount of sand ejecta on a residential property and in a park due to the re-liquefaction during this aftershock. Many residents in the area reported that houses suffered additional damage during the aftershock including widening of the cracks in walls and foundations due to lateral movement of foundation soils. This area of Hoon Hay heavily liquefied during the mainshock of the Darfield earthquake.

Figure 13. Sand ejecta at the perimeter of house foundations and in a park in Hoon Hay due to re-liquefaction during a M_W 5 aftershock; the aftershock occurred 45 days after the mainshock.

Summary remarks

The magnitude M_W 7.1 Darfield earthquake caused widespread liquefaction and lateral spreading in areas close to rivers and wetlands throughout Christchurch and Kaiapoi. Relatively loose sandy soils with 0-30 % non-plastic silts heavily liquefied causing damage to residential houses and lifeline systems. Particularly severe damage was inflicted to houses affected by lateral spreading. Significant volume of sand ejecta, ground distortion, settlement, slumping and large lateral ground movement were evident in the areas affected by liquefaction and lateral spreading. In the liquefied areas, a large number of residential houses suffered global and differential settlements, and some structural/foundation damage. In areas severely affected by lateral spreading, large ground cracks about 0.5-1.5m wide run through residential properties/houses causing very severe structural and foundation damage, and nearly collapse in some cases. Preliminary estimates indicate an economic loss associated with the earthquake of about 5 billion NZ dollars. At least half of this cost is directly related to ground damage and its impacts on residential areas and lifeline systems. Despite the severe damage to infrastructure and residential houses, fortunately, no deaths occurred and only two serious injuries were reported in this earthquake. The city of Christchurch is now embarking on a large reconstruction project in which ground remediation, foundation engineering and restoration of lifelines will be the principal activities in rebuilding the city.

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Case History
2010 Darfield (New Zealand) Earthquake (continued)

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APPENDIX

Witness Report of a Geotechnical Engineer

Lis Bowman

Friday 3rd September 2010 marked the end of the third term for the university year and Saturday would be the beginning of the mid semester break. A number of colleagues, Misko Cubrinovski included, had set out in the preceding days for an international earthquake conference to be held in Macedonia. That evening, in my house in Dallington, situated to the eastern side of the city and near the River Avon, I prepared a list of things I would need to deal with over the two week break, before heading to bed and a dreamless sleep. However, as one man once put it: "life is what happens to you while you're busy making other plans"…

I was fortunate or unfortunate enough to be awoken at 4.25am by the 4th September 2010 7.1 magnitude earthquake, as an insistent rocking of the bed ("What the....?"), followed by a series of violent jolts ("Oh!"). The thought of leaping up to stand in a doorway crossed my mind; however, I discovered it was all I could do to simply hold on (noting hopefully as I did, that any potential roof beams would fall to the left or right of where I lay, should it come to that). The noise from the earthquake was deafening and seemed to be made up of the sounds of falling furniture, smashing glass and something more low pitched. After a jerky crescendo, the rocking died away to a gentle sway and finally subsided. I tried the light switch (dead, as expected really), then checked the clock (4.30am: light in 2 hours). By the moonlight, the house appeared to be intact at least, if now, as I was soon to realise, at a slight lean. I made my way downstairs to find a torch, clambering over broken and fallen objects as I did so.

I opened the front door and went outside, slap – straight into a puddle of… soil?? Up to my ankles! I shone the torch around, to find large mounds of liquefied soil and water covering the driveway and gardens. "Wow! This is liquefaction! These are sand boils!" My bemused neighbours soon appeared and wondered if the water mains had broken and forced the soil up. The sounds of rushing water underground still came from 10cm fissures that had opened up between and, in some places, through the houses. In some excitement I found myself explaining to them that this is what could happen in an earthquake – at least when the soil was loose silty sand and the water table was high. This was straight out of a textbook. For a moment, I couldn't believe my luck – to actually witness liquefaction as it pretty much had occurred was surely a geotechnical engineer's dream? Poor Misko, I thought. He will be spitting.

One neighbour had not yet appeared, and was found to be trapped in her house – with all her doors stuck shut. We passed a torch to her through an open window and somebody eventually forced one of the doors. We wondered about how the earthquake had affected others elsewhere, although the general feeling locally seemed to be one of astonishment rather than fear. It was not until listening to the radio that we found that, at least in terms of fatalities, Canterbury had been incredibly lucky and Dallington was actually one of the worst affected areas in terms of damage.

Case History
2010 Darfield (New Zealand) Earthquake (continued)

Over the next several days, cut-off as we initially were by largely impassable roads, the neighbourhood organised itself to clean up the "silt" as it was universally dubbed (the soil was actually fine sand with approximately 10-20% silt – and it would readily reliquefy upon disturbance with a shovel) and to then protect houses from rising floods as the burst water mains were repaired in other parts of the city, causing the mains pressure to increase locally. Electricity was briefly restored for several hours during Saturday, only to be lost again until Tuesday evening. Running water, lost since the earthquake, was restored on Wednesday evening, although it still needed to be boiled for drinking. Some neighbours, with severe house damage or young families, moved out as soon as they were able. Those that remained checked on each other daily to ensure everyone had what they needed – water, torches, portable radios, cooking and heating supplies. Those who did not were invited for dinner, taken for showers to other parts of the city or accommodated elsewhere by those who did. The community spirit truly was remarkable. Meanwhile, from 6.30am that morning and over the next 4 days I took a series of trips on foot and by mountain bike to record the effects in the local area. For these early trips, three elements stood out: liquefied soil and water everywhere; fissures, buckled roads and pavements, particularly towards the river; and fallen masonry, mainly from brick chimneys. Some of the photos are given here.

Photo 1: First light - liquefaction street scape in the neighbourhood

Photo 2: First light - a view of my driveway with liquefied soil and water

Photo 3: First light: typical chimney debris of a house in adjacent street

Technical News

Use of Coal Fly Ash in Full Depth Reclamation of Asphalt Pavements

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ABSTRACT

This study demonstrates the use of Class F coal fly ash in combination with lime or lime kiln dust (LKD) in the full depth reclamation (FDR) of failing asphalt pavements. Test sections of two structurally deficient asphalt pavements (about 4 miles in length) were reclaimed using Class F fly ash in combination with lime and lime kiln dust. In addition, control sections were constructed using cement, cement with emulsion, LKD with emulsion, and simple recompaction (mill and fill). Monitoring results of Falling Weight Deflectometer tests conducted up to 2½ years after reclamation show that the cement, fly ash+LKD, and fly ash+lime sections exhibit resilient modulus values comparable to soil cement.

INTRODUCTION

The societal emphasis on beneficial recycling of byproducts in highway and construction related applications in place of unproductive landfill disposal has resulted in increased research interest and information dissemination by the FHWA (1997). According to FHWA, coal combustion byproducts can be used in asphalt concrete, Portland cement concrete, granular base, highway embankment or structural fill, stabilized base, and flowable fill applications. The use of low-carbon fly ash in concrete pavements has received significant attention in literature (Timms and Grieb (1956), Agdun-Nur (1961), Halstead (1986)) and since the 1960s the use of low-carbon fly ash in rigid (concrete) pavement slabs has increased dramatically. However, high-carbon fly ash is not suitable for concrete applications. Finding beneficial uses for these large quantities of high-carbon fly ashes is critical.

In the United States many of the almost two million miles of asphalt roadways are severely distressed and in need of repair or replacement. Over the last few decades, increasing traffic demands combined with decreasing funding for repairs, environmental concerns and an emphasis on safe, efficient, transportation systems have stimulated research and field demonstration projects to explore methods to reuse and recycle pavement materials (ARRA (2001), Rosenmerkel (2007)).

In response to this need, the Department of Civil and Environmental Engineering and Geodetic Science at The Ohio State University (OSU) partnered with the two fastest growing counties in the USA State of Ohio (Delaware and Warren) to construct and monitor two county roads in which sections of failing asphalt pavements were reclaimed and recycled. Class F fly ash generated from Ohio coal was used in the reclamation process.

At both locations, the full depth of the asphalt wearing surface plus the base, subbase and a predetermined amount of the underlying existing subgrade soil were uniformly pulverized, blended with chemical additives (Class F fly ash in combination with lime or lime kiln dust), and compacted to construct a new stabilized base course. An asphalt overlay was then placed over the newly reclaimed and stabilized base. The pavement (subgrade conditions, asphalt overlay thickness, etc.) and traffic characteristics for the different test sections at the two pavement sites were similar.

The test sections constructed included two fly ash admixture treatments: fly ash + lime, and fly ash + lime kiln dust (LKD). In addition, four types of control sections were implemented. The control section treatments were: cement, cement + emulsion, lime kiln dust + emulsion, and no chemical stabilizers (mill and fill).

Technical News

Use of Coal Fly Ash in Pavements (continued)

The Class F fly ash, a coal combustion by-product USEPA (2007), provides the silica and alumina needed for cementitious reaction with lime to increase the strength, stiffness, and durability of the stabilized base layer. In addition fly ash acts as a mineral filler to fill the voids in the granular pulverized pavement mix, reducing the permeability of the FDR stabilized base layer.

OBJECTIVE AND GOAL

The overall objective of this work is to demonstrate the effective use of Class F fly ash in combination with lime or lime kiln dust in the full depth reclamation (FDR) of asphalt pavements. The goal of the proposed program is to establish field-verified relationships for the service performance, structural and environmental behavior of FDR pavements constructed using lime-activated fly ash.

The two highway pavements were constructed and instrumented in 2006, and monitored for at least 2½ years after construction was completed. This project demonstrated that when fly ash, in combination with lime or lime kiln dust, is properly incorporated into FDR reconstruction of a flexible pavement, its use can be environmentally attractive while offering increased structural and service performance.

DELAWARE COUNTY PAVEMENT

Delaware County (located 20 miles north of Columbus, Ohio, USA) is the fastest growing county in Ohio. In collaboration with the Delaware County Engineer's Office, a four mile long segment of Section Line Road was selected for FDR reconstruction in 2006. Fig. 1 shows the failing pavement.

Roadway width was 20 feet with minimal shoulders. The asphalt surface thickness ranging from 5.25 to 14 inches (average of 10.28 inches). The original pavement was underlain by a base course ranging from 1 to 11 inches (average of 5.18 inches) thick. Nine sections were constructed using the following six mixes:

- 4-percent lime with 6-percent fly ash, 8-inch stabilization depth (0.7 mile)
- 5-percent lime kiln dust with 5-percent fly ash, 8-inch stabilization depth (0.6 mile)
- 3-percent lime kiln dust with 1.4 gallons per square yard emulsion, 8-inch stabilization depth (0.7 mile)
- 5-percent cement, 12-inch stabilization depth (0.8 mile)
- 2-percent cement with 1.6 gallons per square yard emulsion, 8-inch stabilization depth (0.3 mile)
- 5-inch mill and fill (two 0.1-mile sections at the north and south ends of the project, and a 0.7-mile as well as 0.1-mile sections near the middle of the project).

Figure1. Failing Delaware County Pavement

Figure 2. Blending fly ash with pulverized base

Technical News

Use of Coal Fly Ash in Pavements (continued)

The FDR rehabilitation of Section Line Road began in August, 2006. Strawser Paving first milled and removed 5 inches of the existing pavement. Base Construction then pre-pulverized the remaining pavement materials to the appropriate depth as listed above.

The pulverized pavement materials were then treated with the design admixtures (Fig. 2). Water was added to the mix and it was compacted immediately (see Fig. 3). Pavement resurfacing with 5 inches of hot mix asphalt (see Fig. 4) followed a specified curing interval. All work was completed by mid-October.

Figure 3. Compaction of FDR base

Figure 4. Resurfacing with hot mix asphalt

WARREN COUNTY PAVEMENT

Warren County, near Cincinnati, is the second fastest growing county in the state. The Long Spurling Road located in the northeastern part of the county was chosen by the Warren County Engineer's Office for FDR construction. The failing pavement was 0.4 miles in length, 20 to 21 feet in width with minimal shoulders with a 2-inch asphalt layer on top of 4 to 6 inches of chipsealed pavement. Two sections were constructed:

- 4-percent lime with 6-percent fly ash, 12-inch stabilization depth (0.32 mile)
- 5-inch mill and fill (0.08 mile)

The FDR rehabilitation of the Long Spurling Road was begun in July, 2006. Strawser Paving milled and removed 4 inches of the existing pavement asphalt surface. Base Construction pre-pulverized the remaining pavement materials to a depth of 12 inches. Lime and fly ash were added to the pulverized pavement materials to a depth of 12 inches. Water was added to the mix and it was compacted immediately. Resurfacing the pavement with 4 inches of hot mix asphalt (see Fig. 4) was completed by mid-September.

PAVEMENT INSTRUMENTATION AND MONITORING

During construction, the pavement sections at both sites were instrumented with structural and environmental monitoring devices including strain gauges at bottom of asphalt layer for all test sections, pressure cells, pore pressure devices, LVDTs for measuring vertical deflections of pavement, and lysimeters to monitor leachate quality. Data collection from the above monitoring devices was carried out on a quarterly basis.

Falling Weight Deflectometer (FWD) tests to measure pavement load deflection behaviour and calculate the insitu resilient modulus of pavement base were performed by the Ohio Department of Transportation.

MONITORING RESULTS

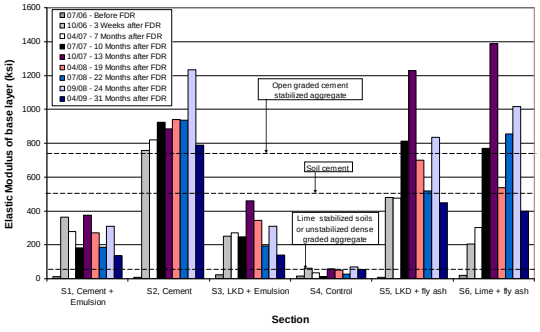
FWD testing began before pavement rehabilitation and continued for 2½ years after paving at both the pavement sites.

Technical News

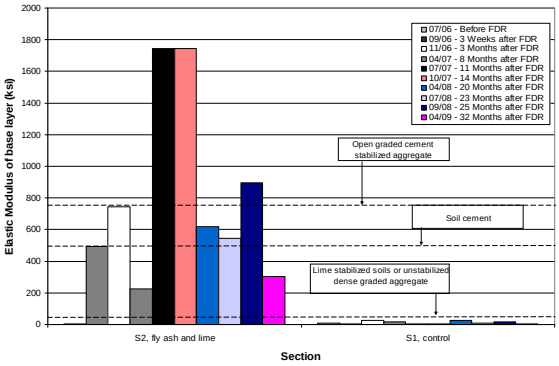
Use of Coal Fly Ash in Pavements (continued)

The FWD test data were processed using the MODCOMP software package (Irwin, 1994), to determine the elastic moduli of the base layers. MODCOMP uses the FWD deflection profile along with theory of elasticity and an iterative process to fit elastic moduli to the layers of the flexible pavement. The required inputs to the program are the FWD data (including deflections, sensor spacing, etc.), layer thicknesses (determined from borings), and Poisson's ratio of the layers.

Figures 5 and 6 summarize the FDR base layer resilient modulus values back-calculated using FWD field data for the two pavement sites. It can be seen that pavement sections stabilized with fly ash showed large increases in stiffness compared to pre-reclamation stiffnesses. Fig. 5 for Delaware County pavement shows a comparison of six different test sections. It can be observed that the control (mill and fill) section indicated little or no increase in resilient modulus values as would be expected. The cement+emulsion and LKD+emulsion mixes were effective but their performance was much lower than the cement, LKD+fly ash, and lime+fly ash mixes. The cement+emulsion and LKD+emulsion resilient modulus values were much lower than those typically obtained for soil cement. The cement, LKD+fly ash, and lime+fly ash sections exhibited one to two year curing resilient modulus values comparable to open graded cement stabilized aggregates The cement treatment resulted in a significant increase in resilient modulus within 3 weeks of construction and beyond this curing time the stiffness increase was slow except for the 24 month value. On the other hand, the LKD+fly ash and lime+fly ash test sections indicated slower shorter-term increase in stiffness but at the end of 24 months of performance, the LKD+fly ash and lime+fly ash sections had performed similarly to the cement test section.



1ksi = 6,895 kPa
(Note - Resilient modulus values for lime stabilized soils, soil cement, and open graded cement stabilized aggregate are typical values from FHWA (2004))
Figure 5. Delaware County resilient modulus



1ksi = 6,895 kPa
(Note - Resilient modulus values for lime stabilized soils, soil cement, and open graded cement stabilized aggregate are typical values from FHWA (2004))
Figure 6. Warren County resilient modulus

Similar trends were observed for the Warren county pavement test sections, as shown in Fig. 6. The control (mill and fill) section indicated little or no increase in resilient modulus values. The LKD+fly ash test section stiffness at about one year of service was very high (exceeded 1,600 ksi). By the second year the resilient modulus value had dropped but was still above 800 ksi.
Monitoring results of the FWD tests conducted up to 2½ years after reclamation show that the cement, fly ash+LKD, and fly ash+lime sections exhibited resilient modulus values comparable to soil cement. The cement treatment resulted in a significant increase in resilient modulus within three weeks of the end of construction but beyond this curing time the stiffness increase was slow. Tests on the fly ash+LKD and fly ash+lime test sections indicated slower short-term increase in stiffness, but the two fly ash stabilized sections 2½ years after construction exhibited average resilient modulus values of about 300 ksi to 450 ksi.

Technical News

Use of Coal Fly Ash in Pavements (continued)

CONCLUSIONS

In this research program, two test pavements were constructed and monitored to determine how Class F fly ash combined with lime or lime kiln dust (LKD) could be used in Full Depth Reclamation (FDR) of asphalt pavements. The control test sections included cement, cement and emulsion, lime kiln dust and emulsion, and mill and fill mixes. Service performance and structural behavior were determined with the use of sensors embedded in the road and Falling Weight Deflectometer (FWD) tests. Monitoring results of the FWD tests showed that the sections utilizing fly ash (in combination with lime or LKD) performed similarly to the cement test section, while the emulsion sections were not as effective. The results of FWD tests conducted 2 ½ years post-reclamation show that the cement, fly ash+LKD, and fly ash+lime sections exhibited resilient modulus values comparable to soil cement. The cement treatment resulted in a significant increase in resilient modulus within three weeks of the end of construction but beyond this curing time the stiffness increase was slow. Tests on the fly ash+LKD and fly ash+lime test sections indicated slower short-term increase in stiffness, but the fly ash stabilized sections exhibited average resilient modulus values of about 300 ksi to 450 ksi at 2 ½ years after reclamation. Additional testing data will be available as ongoing pavement performance and environmental conditions are monitored at the two pavement sites.

ACKNOWLEDGEMENTS

This research was funded by the Ohio Coal Development Office of the Ohio Air Quality Development Authority (CDO-D05-8/9). Co-sponsors include Delaware and Warren County Engineer's Offices, Base Construction, Carmeuse NA, Mintek Resources, Fly Ash Direct, Headwater Resources, EDP Consultants, Asphalt Materials, Duke Energy, American Electric Power, Ohio Department of Transportation, American Coal Ash Association, Midwest Coal Ash Association, and Asphalt Recycling and Reclaiming Association.

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News

20th European Young Geotechnical Engineers Conference

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From May 30 to June 1, 2010, the Brno University of Technology, Faculty of Civil Engineering, hosted the 20th European Young Geotechnical Conference co-organized by the Czech and Slovak Committee for Soil Mechanics and Foundation Engineering. Brno University of Technology (Fig. 1) is the second largest and second oldest technical university in the Czech Republic. Its history goes back to 1849; the Faculty of Civil Engineering is 110 years old and has been significantly refurbished in recent years. Accommodation of hotel quality was arranged for participants in twin-bedded rooms at the Hotel Palacký.

The conference was attended by 48 geotechnical engineers of age up to 35 from 28 European countries nominated by their respective National Societies for Soil Mechanics and Geotechnical Engineering (Fig. 2).

Total number of 49 papers were presented by the delegates: Albania – 2 papers, Austria – 2 papers, Belgium – 3 papers, Croatia – 1 paper, Czech and Slovak Republic – 4 papers, Denmark – 2 papers, Finland – 1 paper, France – 2 papers, FYR Macedonia – 1 paper, Germany – 2 papers, Greece – 2 papers, Hungary – 1 paper, Italy – 2 papers, Ireland – 2 papers, Netherlands – 2 papers, Norway – 2 papers, Poland – 2 papers, Portugal – 1 paper, Romania – 2 papers, Russia – 2 papers, Serbia – 1 paper, Slovenia – 1 paper, Spain – 2 papers, Sweden – 1 paper, Switzerland – 1 paper, Turkey – 2 papers, Ukraine – 1 paper, and United Kingdom – 2 papers. The papers were published in the conference proceedings "GEOTECHNICAL ENGINEERING 20, View of Young European Geotechnical Engineers, Brno 2010" with ISBN 978-80-7204-686-7. The front page of the conference proceedings is shown in Fig. 3. Abstracts and a conference report are available at http://geotech.fce.vutbr.cz.

The Conference started on Sunday 30th May 2010 with evening Brno sightseeing and with common dinner for all EYGEC delegates in the historical centre of the town. During Monday 31st May 2010 and Tuesday 1st June 2010, 48 lectures of 10 minutes (including 2 minutes of discussion) were presented by the EYGEC participants (Fig. 4). Presentations of the conference delegates were classified into three main sessions:

1. Ground Investigation
2. Geomechanics
3. Geotechnics
   3.1 Foundation Engineering, 3.2 Earth Structures,
   3.3 Underground Structures, 3.4 Environmental Geotechnics

According to the guidelines the sessions were "chaired by friendly, professional engineers" – John Atkinson (Emeritus Professor of Soil Mechanics, City University London), Jean-Louis Briaud (President of ISSMGE, Texas A&M University, USA) and Ivan Vaníček (Vice President ISSMGE for Europe, Czech Technical University in Prague, Czech Republic); see Figs. 5 and 6.

Besides delegate´s presentations, four keynote lectures were delivered. John Atkinson delivered his lecture on "How to do research". Jean-Louis Briaud talked about "ISSMGE, research, and education". Jiří Műhl (Technical Director of Foundation Engineering Inc., Prague, Czech Republic) and Jan Šperger (Foundation Engineering Inc., Prague, Czech Republic) presented "Modern foundation technologies". Finally, Miloš Polenka (GEOtest Brno, Inc., Czech Republic) delivered his lecture on "The removal of rocky environment and groundwater contamination – GEOtest Brno case studies".

The days of hard work were accompanied by more relaxing evening programmes: the sightseeing, dinner with live dulcimer music and closing technical excursion – construction of city road tunnels in Brno.

It was very useful to meet other young people working in geotechnical engineering and to have an opportunity to interact with them. There was a mix of participants from industry and academia, importantly, and many useful contacts were certainly made.

News

20th European YGEC (continued)

Young Geotechnical Engineers Conferences have developed from an idea by Professor Atkinson back in the 1980s. The conferences has a long history now and many good friendly relations and new geotechnical research cooperation have been initiated.

Figure 1. General view on the complex of buildings of the Faculty of Civil Engineering BUT, Brno

Figure 2. Group photo in front of building of the Faculty of Civil Engineering

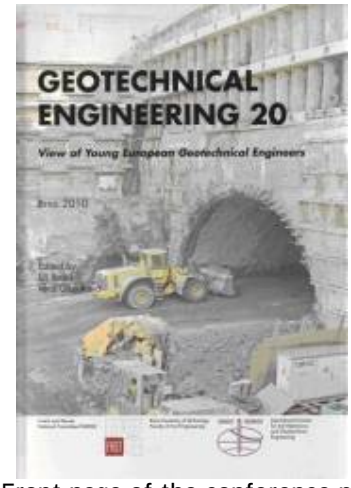


Figure 3. Front page of the conference proceedings

Figure 4. General view of the lecture hall

Figure 5. Prof. Ivan Vaníček and Prof. John Atkinson

Figure 6. Prof. John Atkinson and Prof. Jean-Louis Briaud

News

14th Danube-European Conference on Geotechnical Engineering

From research to design in European practice
June 2nd-4th 2010, Bratislava, Slovakia

After thirty-three years the Danube-European Conference on Geotechnical Engineering had came back to Bratislava, the capital city of Slovak Republic. The 14th conference took place on June 2nd-4th 2010 in the premises of the Faculty of Civil Engineering of University of Technology, under the auspices of the International Society for Soil Mechanics and Geotechnical Engineering. The main topic of the conference was "From Research to Design in European Practice".

The topic was discussed in one keynote lecture session (Chairman Prof. J. Hulla from Slovakia) and seven sessions:

- Session 1: Ground characterization and new development in soil mechanics, (chairman Prof. I. Manoliu from Romania, discussion leader Dr. B. Schuppener from Germany),
- Session 2: Case studies using Eurocode 7, (chairman Prof. R. Szepeshazi from Hungary, discussion leader Prof. N. Vogt from Germany),
- Session 3: Specific problems for environmental consideration, (chairman Dr. A. Petrovšek from Slovenia, discussion leader Prof. K.J. Witt from Germany),
- Session 4: Design methods for geotechnical structures, (chairman Prof. M. Fross from Austria, discussion leader Dr. B. Simpson from England),
- Session 5: Monitoring and supervision of geotechnical considerations, (chairman Prof. A.B. Ponomaryov from Russia, discussion leader Dr. M. Vaníček from Czech Republic),
- Session 6: Numerical and physical models in geotechnical design, (chairman Prof. Z. Lechowicz from Poland, discussion leader Prof. L. Martak from Austria), and
- Session 7: Interactive design and other problems in geotechnical practice, (chairman Prof. M. Nussbaumer from Germany, discussion leader Ing. J. Frankovská from Slovakia).

Despite to the world wide economical crises and thanks to prestigious reputation of the conference the conference, was again attended by many world leaders of the geotechnical engineering: Prof. J.L. Briaud from USA (President of ISSMGE), Prof. P. Pinto from Portugal (former President of ISSMGE), Prof. I. Vaníček from Czech Republic (Vice President of ISSMGE for Europe), Prof. R. Frank from France (former Vice President of ISSMGE for Europe), Prof. H. Brandl from Austria and many others.

The conference was attended by 245 participants from 38 countries of the world. Their papers were published in the proceedings of the main lectures and abstracts. The full papers were published in an electronic form on CD. The proceedings contain 175 papers of which 68 were presented orally in one of the conference sessions. The program of the sessions was organized in such a way that each session started with four lectures by invited guests who were respected professionals of their field, and then six lectures by selected authors followed. Those papers that were not presented orally were presented in the poster session. In total 35 posters were presented in the poster session.

Besides the professional program also social programs were prepared. In the first evening, a welcome party was organized in the concert hall and lobby of the Slovak National Radio. In the second evening the participants were invited for social evening in to a newly open restaurant located on the Danube river bank.

News

14th Danube-European Conference (continued)

During the conference also meeting of the ISSMGE National Groups from the Danube River Region took place under the leadership of Prof. I. Vaníček. The main program of the meeting was official nomination of Austria as the host country of the next 15th Danube-European Conference on Geotechnical Engineering. The Austrian representative accepted the nomination.

The end of the Danube conference is traditionally dedicated to the technical excursions. The 14th conference succeeded this tradition. Two excursions were prepared for the participants. The first excursion visited construction sites with ongoing geotechnical constructions in the streets of the city, Bratislava. The second excursion went outside of Bratislava, to the nearby Čunovo and Gabčíkovo Dam, the largest dam on the Danube River.

According to the feed-back reactions from participants and ISSMGE representative, the conference was successful. The organizing committee (Prof. P Turček – chairman, Ing. J. Frankovská, Prof. J. Hulla and Dr. M. Ondrášik, all from Department of Geotechnics of Faculty of Civil Engineering of University of Technology in Bratislava) expresses their sincere thanks to all persons and sponsors who helped organize the conference.

Opening ceremony

Lecture by ISSMGE President Prof. Briaud

News

14th Danube-European Conference (continued)

Poster session

Discussion

Coffee break

News

3rd Korea-Japan Geotechnical Engineering Workshop

Current Geotechnical Issues in Eastern Asia

The 3rd Korea –Japan Geotechnical Engineering Workshop was held in Ansan, Korea from September 9th to 10th, 2010. It was organized jointly by Korean Geotechnical Society (KGS) and Japanese Geotechnical Society (JGS).

Under the success of previous workshops (the 1st Workshop in Seoul in 1990 and the 2nd Workshop in Tokyo in 2008), the 3rd Korea-Japan Geotechnical Engineering Workshop was held in Ansan, Korea, together with KGS Fall Convention, with the main theme of "Current Geotechnical Issues in Eastern Asia". A total of 21 papers were attracted from KGS and JGS and the paper presentation was made in four sessions: Site Investigation and Soft Ground, Soil Behavior and Dynamic Response, Underground Structures and Ground Response, and Geo-Environmental Engineering on the first day. A technical site tour was conducted on the second day by visiting the GangChon Bo, Yeoju, one of the sites for "Four River Restoration Project" which is a government priority enterprise for the purpose of preventing floods, securing water resources, and encouraging re-creation of land in Korea.

The next workshop is already planned to be held in Kobe, Japan, in July 2011 and both societies wish to continue strengthening the collaborations and friendship between members of the two societies through workshops.

News

International Conference on Geotechnical Engineering - 2010

The Pakistan Geotechnical Engineering Society (PGES) in collaboration with National Engineering Services Pakistan (NESPAK), University of Engineering & Technology (UET) Lahore and Associated Consulting Engineers (ACE) held its 1st International Conference on Geotechnical Engineering on November 5-6, 2010 at Lahore, Pakistan. Engr. Rukhsana Zuberi, Chairperson of Pakistan Engineering Council, was the Chief Guest at ICGE-2010. Dr. Tahir M. Hayat was the chairman of ICGE-2010 organizing committee. ICGE-2010 provided a forum for sharing of knowledge between the professionals who came from government departments, consulting engineers, academic institutions, contractors, and equipment suppliers both internationally and domestically. Interactive discussions led by prominent 'Invited Speakers', addressed the core issues challenging the field of Geotechnical Engineering today and the research required to face these challenges. The conference attracted around sixty abstracts from fourteen (14) different countries and thirty two complete manuscripts. One of the highlights of the conference was three invited lecturers by the renowned international geotechnical professionals, viz. Prof. Johann Golser (GEOCONSULT ZT GmbH/GEOCONSULT Consulting Engineers), Austria, Dr. Peter J. Mason (Int'l Dams and Hydropower) and Prof. Dr. Ikuo Towhata (University of Tokyo, Japan). Prof. Golser discussed 'Risk Management in Geotechnical Engineering', in his lecture. Similarly, 'Quantitative Risk Assessment in Dam Safety Practice", was delivered by Dr. Mason. Prof. Dr. Towhata delivered a talk on 'Effects of Weathering on Strength and Deformation Characteristics of Soft Rocks'. The conference received an overwhelming response and was a huge success.

An exhibition to display the recent developments in geotechnical engineering was also arranged in the vicinity of conference venue. Various contractors, consultants and manufacturers were invited to display their expertise, equipment, etc. It was appreciated by all delegates and participants and generated a lot of interest in the concerned professionals.

A post-conference tour took place on November 6 2010. During this tour the historical Lahore Fort was visited. The foreign delegates showed keen interest in the famous masterpiece of Mughal architecture. Pictures taken during the conference are presented below.

News

International Conference – 2010 (continued)

News

International Conference of Geotechnical Engineering 2010

Dr. Imen Said (imen_said@yahoo.fr)
EBM of ISSMGE Bulletin

ICGE'10 was held at Hammamet (Tunisia) from 25th to 27th October 2010 at Le Royal Hammamet Hotel. Eighty participants attended the conference from 22 countries. The chairman of ICGE'10 was Prof. Mounir Bouassida and the chairman of the organizing Committee was Dr. Imen SAID.

Five keynote lectures, presented by Professors JL Briaud (USA), R. Frank (France), B. Indraratna (Australia), Z. Lafhaj (France) and M. Karray (Canada), were presented at the opening of five sessions relevant to the major themes of ICGE'10 namely: soil behavior, deep foundations and underground constructions, environmental geotechnics, soil improvement, slope stability and management of seismic risk.

At the opening ceremony, Prof. M. Bouassida briefly introduced the composition and activities of the Geotechnical Engineering Team organizer of ICGE'10 in its second edition of the serial "Innovative Geotechnical Engineering". Professor C. Bouden, Dean of the National Engineering School of Tunis, well outlined the prominent sign of an exciting international event especially honoured by the presence of Professors J.L. Briaud, President of ISSMGE and Prof. S. Ejezie, the Vice President for Africa of ISSMGE and well acknowledged experts in various themes in geotechnical engineering.

ICGE'10 was the opportunity to open the discussion about laterites and lateritic soils that is the label of TC 107 chaired by Africa as novel technical committee of ISSMGE. A panel discussion chaired by Professors Briaud, Ejezie and Bouassida helped the attendees to learn more on the role of TCs, how to be a member and what type of activities to be launched from a TC member. Two participants from Niger and Tunisia proclaimed volunteers to activate knowledge an expertise in lateritic soil theme as members of TC 107.

The GERT invited the committee of Tunisian Society (ATMS) of Soil Mechanics and Professors Briaud, Ejezie and Frank members of ISSMGE board during a dinner debate to exchange their thoughts about more efficient development of GE in Africa region.

The proceeding of ICGE'10, a volume of 810 pages with ISBN code, was printed in 200 copies. It includes a total of 62 papers authored from 28 countries. As a souvenir a group photograph was taken. The exchange of ideas and discussions between all participants of ICGE'10 is a positive sign for the recent wake up of Africa in Geotechnical Engineering.

Group photograph of conference participants

News

20th Annual Professor Chin Lecture

The 20th Annual Professor Chin Fung Kee Memorial Lecture in Malaysia was delivered recently by Professor Pedro Seco e Pinto on 23rd October 2010 in Petaling Jaya on the outskirts of Kuala Lumpur, the capital city. Prof. Pinto, who is the immediate Past President of the International Society for Soil Mechanics and Geotechnical Engineering, spoke on a wide-ranging subject entitled: "Dam Engineering: State of the Art and Practice, Observed Behaviour and Future Challenges". The Lecture was well received and will be of great benefit to engineers in Malaysia, especially to those who are involved in dam engineering.

The Prof. Chin Memorial Lecture is held annually in honour of Tan Sri Prof. Chin Fung Kee who was a Vice-President for Asia in the International Society for Soil Mechanics and Foundation Engineering from 1981 to 1985. He was a man of outstanding qualities who distinguished himself in terms of his engineering achievements and contributions to society. In a long career lasting over 40 years, he was well known as a brilliant research worker, a university teacher and a practicing engineer, who was renowned not only in Malaysia but also in the international arena. He was an outstanding engineer in geotechnical, structural and hydraulic engineering.

He contributed immensely and selflessly to the engineering profession and to society at large. Above all, his lasting legacy, which continues to this day, is that he inspired a whole generation of engineers to engineering excellence, which is crucial to the progress and advancement of our profession.

The Annual Prof. Chin Lecture Series has become a significant vehicle for the advancement of engineering knowledge and expertise in Malaysia. It is jointly organized each year by the Institution of Engineers Malaysia and the Engineering Alumni Association of the University of Malaya.

News

International Workshop on Numerical Analysis for Geomechanics

Opening ceremony for establishing the Numerical Manifold Method (NMM) Research Centre and the 8th annual QianJiahua Lecture were held on 14th October 2010 at the Hohai University, China. Professor Pinto who is the past president of the International Society for Soil Mechanics and Geotechnical Engineering (ISSMGE) gave the QianJiahua lecture in the ceremony for which the title was "New Trends in Design Methods of Pile Foundations". This Research Centre is the first established Numerical Manifold Method centre in the world. Professor Shi Genghua developed the Numerical Manifold Method between 1990 and 1992, and this method has become a very important method in the USA Engineering after 20 years improvement. Numerical manifold Method is a new numerical method established on the basis of finite cover of manifold. By using continuous and discontinuous finite cover system, the numerical manifold method includes the continuous and discontinuous media as a whole and solves the calculating methods of finite element method, discontinuous deforming analysis and analytical method uniformly. This numerical method has been widely used in mining industry, soil engineering, geological engineering and hydraulic engineering and so on. The established NMM Research Centre can greatly help the development of Numerical Manifold Method and also provide a good academic communication phenomenon to researchers in this field. In this event, lots of world famous professors were invited to give the talk, such as Professor Shi Genghua from Technical Consultant of Halliburton Petroleum Company, USA; Scientist Jonny Rutqvist from Lawrence Berkeley National Laboratory, USA; Professor Liu Kofei from Taiwan University, Taiwan, China.

Professor Qian Jiahuan (1923-1995) is one of the greatest pioneers of soil mechanics and geotechnical engineering in China, the founder and former head of geotechnical engineering program at Hohai University. He earned his Master degree of Civil Engineering at the University of Illinois in US in 1949 and worked in Hohai University from 1952. He made a great number of remarkable accomplishments with regards to rheology of soft soils, dynamic consolidation, and residual deformation of dams after earthquake, and numerical analyses for geotechnical engineering.

After Professor Qian passed away in 1995, annual academic activities which are known as QianJiahuan Lecture were started in 1999 in memory of his outstanding works. Until now, this lecture has been held 8 times, many of world famous professors have been invited to give a talk, such as Professor John Burland who is a fellow of both the Royal Academy of Engineering and the Royal Society; Professor Hideki Ohta who is a past president of Japanese Geotechnical Society, Tokyo Institute of Technology, Japan; Professor Kenji Ishihara who is a past president of the then-called International Society for Soil Mechanics and Foundation Engineering (ISSMFE). Photographs below show scenes during the workshop.

News

International Workshop on Numerical Analysis (continued)

News

Kammennoostrovsky (Stone Island) Theatre Reconstruction Project Awarded Gold Medal

Prof. Vladimir Ulitsky, Dr. Alexey Shahkin, and Dr. Michael Lisyuk
NPO "Georeconstruction"
Saint Petersburg, Russia

On 17-20 November, Leipziger Messe Exhibition Hall hosted its biennial Denkmal event — European Trade Fair for Conservation, Restoration and Old Building Renovation under the patronage of UNESCO. Out of 440 exhibited projects a gold medal was awarded to Kammennoostrovsky Theatre Reconstruction, currently being completed in St. Petersburg, whereby the theatre is upgraded to serve as the Second House of Tovstonogov Academic Drama Theatre.

The theatre was constructed as a wooden structure by Architect Shustov in 1828 and renovated by architect Kavos in 1843. Modern reconstruction of the theatre commenced three years ago.
The Theatre Overhaul Project implied provision of works sequence unique in international practice — whereby a new fully functional underground area had to be provided under the authentic historic timber superstructure, accompanied by its simultaneous restoration. The project featured the first implementation of the famous "top-down" construction method in its particular restoration modification: structural restoration of historic elements proceeded upwards, whereas the new underground areas were excavated downwards.

The chief designer for the project was Georeconstruction Institute, Corporate Member of ISSMGE (Director General — A.G.Shashkin, Scientific Advisor — Professor V.M.Ulitsky). The restoration design as such was delivered by Spetsprojektrestavratsiya Institute; Theatre Set Workshops Company (TDM) served as the designer of Stage Management Technologies. The General Contractor was "City Colours" Restoration Company, and the Subcontractor for the underground sections — Geoizol. The client was the St. Petersburg Directorate for the Preservation of Historic Monuments. Scientific and methodological supervision, as well as monitoring of design and restoration works, were provided by State Committee for Inspection and Historic Monument Preservation (KGIOP), headed by Director V.A. Dementieva and Deputy Director I.L. Grishin.

The chief designer was given a seemingly insuperable task: how it would be possible to house new stage management equipment, set storage areas, state-of-the-art noise-free air conditioning rooms serving the main auditorium, wardrobes, foyers, and cafes for the attending public in a building which had been constructed as a summer-time (unheated) structure. Neither adjoining new structures nor adding to the superstructure was permitted, as any such alterations would have distorted the historic appearance of the building. It was there that the contemporary geotechnical engineering was close at hand: all new addenda and enhancements required by a modern state-of-the-art theatre could be located underground, immediately underneath the historic theatre superstructure.

Old foundations were first underpinned with piles, following which walings were provided along existing masonry foundations for the piles to be able to assume loads from historic structures at minus 2 m a reinforced concrete slab was then placed upon the piles connecting them as with a stiff disc. Following construction of a cofferdam along the underground area perimeter and upon connecting it with the slab, excavation commenced, and the entire building was suspended on thin piles which were tied together into spatial structures as excavation was advancing. At the level of 6.5 m the bottom slab was cast, serving as the pile cap. After this the walls and the columns of the underground floor were constructed, and the piles now unnecessary in the underground area were cut off. In this way a new spatial scope appeared, four times exceeding the existing historic theatre square area. The settlement of the historic superstructure was never in excess of 24 mm and displayed remarkable uniformity, while the settlement of a closely located Baron Kleimichel's Memorial Mansion reached max. 7 mm over the entire construction period (being as of today the best result in St. Petersburg). This geotechnical design was made by the professionals of Geotechnical Design Department at Georeconstruction and the contractor Geoizol.

News

Kammennoostrovsky Theatre Project (continued)

Stage management equipment was placed on a steel frame developed by one of the Georeconstruction's Design Departments, which was able to fit the new structure between the existing timber walls and struts.

The professionals from Spetsprojektrestavratsiya Institute developed restoration design which enabled conversion of a summer theatre house into a heated all-season facility; a unique element-by-element restoration of the timber superstructure was carried out mainly by City Colours.

The project of furnishing the theatre with new stage management technologies, designed and implemented by Theatre Set Workshops Company (TDM), will cater to imagination of a most demanding theatre director: the stage is equipped with nine lifting platforms; it is also possible to configure the orchestra pit to various requirements - be it for a chamber or a symphonic orchestra; the stalls floor can be adjusted at changing angles.

Nowadays there is a battle of opinions as to whether reconstruction of historic sites is possible at all, or whether we should confine ourselves at all times to mere restoration. Kammennoostrovsky Theatre Overhaul is a serious project suggestive of the former argument being true: not only is reconstruction possible but also it is necessary to preserve monuments for posterity. No compromises disfiguring the historic outlook should be bargained for, as everything new can go underground.

Figure 1. General view of the theatre during reconstruction

Figure 2. Construction of the underground part of the theatre

News

Kammennoostrovsky Theatre Project (continued)

Figure 3. Suspension of the building on Titan piles to provide construction of the rigid disc slab

Figure 4. Underground construction outside the theatre footprint

Figure 5. Underpinning piles support the whole structure

News

Indian Geotechnical Conference (IGC-2010), GEO*trendz*

Dr. Deepankar Choudhury (dc@civil.iitb.ac.in)
EBM of ISSMGE Bulletin, Jt. Organising Secretary of IGC-2010
Department of Civil Engineering, IIT Bombay, Powai, Mumbai – 400076, India.

This year's annual conference of Indian Geotechnical Society (IGS), namely, Indian Geotechnical Conference (IGC – 2010), GEO*trendz* was held at Indian Institute of Technology (IIT) Bombay, Mumbai, India from December 16th to 18th, 2010. It was organized jointly by the Indian Geotechnical Society (IGS) Mumbai Chapter and the Indian Institute of Technology (IIT) Bombay, Mumbai, India.

Since starting of IGC, it was the Golden Anniversary of the Indian Geotechnical Conference at Mumbai. In every 10 years interval, viz. 1970, 1980, 1990, 2000 and now in 2010, Mumbai got the opportunity to host this mega annual conference of IGS. During the inaugural program of IGC-2010, the patron of the conference and Director of IIT Bombay, Prof. D. V. Khakhar spoke about the need of geotechnical engineering research for infrastructural growth in India. Chief guest of the inaugural program was Padmavibhushan Dr. Anil Kakodkar, who spoke about the urgency of research and applications in geotechnical engineering by considering the soil-structure interactions. During IGC-2010, change of command from Shri M. Bidasaria to Prof. K. S. Rao as new president of Indian Geotechnical Society (IGS) took place with newly elected executive committee of IGS. The 32nd Annual Lecture of IGS was delivered by Dr. V. M. Sharma during IGC-2010. Total 38 exhibitors and 27 sponsors participated in IGC-2010. Total about 475 delegates attended IGC-2010.

In IGC-2010, a total 278 contributory papers were published in two volumes of the conference proceedings (Volumes I and II) out of above 400 accepted abstracts after rigorous review process. A total 18 Keynote, Special and Theme papers were published in Volume III of the conference proceedings. All these invited lectures covered the wide spectrum of Geotechnical Engineering covering all the themes of the conference. The invited speakers during the plenary sessions of IGC-2010 were Prof. Buddhima Indraratna from Australia, Prof. Shamsher Prakash from USA, Prof. S. Gopal Madabhushi from UK, Prof. R. C. Joshi from Canada, Shri Mahavir Bidasaria from India, Prof. M. R. Madhav from India, Prof. Anand J. Puppala from USA, Dr. Michael Lisyuk from Russia, Prof. Martin Achmus from Germany, Prof. Robert Y. Liang from USA, Dr. V. R. Raju from Singapore, Prof. B. R. Srinivasa Murthy from India, Prof. Tarek Abdoun from USA, Prof. Liming Zhang from Hong Kong, Dr. D. N. Naresh from India, Shri M. Kumar from India, Prof. G. L. Sivakumar Babu from India. Out of 278 published technical contributory papers, a total 210 papers were presented orally during various parallel sessions of IGC-2010. A special session for Young Geotechnical Engineers was organized and participated by various research scholars, upcoming practicing engineers in geotechnical profession.

Photo 1: Release of Conference Proceedings during Inaugural Program of IGC-2010


Photo 2: Audience of a typical session during IGC-2010

News

IGC-2010, GEO*trendz* (continued)

Photo 3: Session Chair introduces the Keynote Speaker during a Plenary Session of IGC-2010

Photo 4: Invited Speakers with session Chair and Co-Chair during a Plenary session of IGC-2010

Photo 5: Invited Speakers with session Chair and Co-Chair during a Plenary session of IGC-2010

Photo 6: Stalls of Exhibitors at IGC-2010

Photo 7: Sand Animation of Karl Terzaghi, made during Cultural Program of IGC-2010

Photo 8: Valedictory function of IGC-2010

News on New Journal
Géotechnique Letters
published by Institution of Civil Engineers, UK

Letters provides a vehicle for the rapid international dissemination of the latest and most innovative geotechnical research and practice. As an online only journal, it is aimed at publishing short papers within six weeks of submission, intending to foster the quick exchange of the latest advances and most current ideas without the delays imposed by printed journals, but still maintaining rigorous peer-reviewing standards.

The scope of the journal includes the same broad range of geotechnical engineering as G**é**otechnique, while the shorter format and express publication will suit the presentation of novel or emerging ideas and designs, current case studies on the results arising from recently completed research or work in progress that may be of immediate interest to the wider geotechnical community.

Although the papers are limited to 2000 words, they should be able to stand alone, be of high quality and scientifically correct, be placed clearly in the context of the latest research of engineering practice and contain sufficient information to allow readers to review critically the conclusions reached. More information is available at www.geotechniqueletters.com

News for Future Event
ICGI 2012, Wollongong, Australia

The Centre for Geomechanics and Railway Engineering, University of Wollongong, Australia and the Australian Geomechanics Society (AGS) under the auspices of ISSMGE will be hosting the INTERNATIONAL CONFERENCE ON GROUND IMPROVEMENT AND GROUND CONTROL: TRANSPORT INFRASTRUCTURE DEVELOPMENT AND NATURAL HAZARDS MITIGATION. The Conference is also supported by the International Geosynthetics Society (IGS).

The Conference will be held at the Innovation Campus of University of Wollongong, Australia, during October 30 - November 2, 2012. It will be aimed at promoting the latest ground improvement concepts and applications predominantly in the fields of transportation and natural hazards management. Following the earlier successful conference in Singapore, this Conference will act as a platform for disseminating the most recent research developments and field advances to the geotechnical community around the globe. It is expected to be the biggest Ground Improvement conference to be held in this region.

We cordially invite all to attend the conference in Wollongong in 2012.

Prof.Buddhima Indraratna
Chairman of ICGI 2012
Professor of Civil Engineering
Head, School of Civil, Mining and Environmental Engineering
Director, Centre for Geomechanics and Railway Engineering
University of Wollongong,
Wollongong City, NSW 2522
Australia
Tel: (61 2) 4221 3046
Fax: (61 2) 4221 3238

The Conference will consider papers in, but not limited to, the following themes:

- Soft Soil Consolidation
- Sand and Gravel Piles, Stone Columns and Rigid Inclusions
- Geosynthetics Reinforcement
- Compaction and Vibroflotation
- Grouting and Chemical Stabilization
- Electro-kinetic, Electro-osmotic, Bio-engineering, Thermal and Explosion-basedTechniques
- Methods of Preventing Soil Erosion, Scour and Internal Piping
- Ground Control in Underground and Surface Mine Excavations
- Methods of Stabilisation of Landslides and Mass Movement
- Surface and Sub-surface Drainage
- Stabilisation of Fractured and Jointed Rockmass

Please visit the following conference website for more details:
http://www.icgiwollongong.com

News for Future Event

ICGI 2012, Wollongong, Australia (continued)

Rail Track improvement using Geosynthetics

Port Reclamation using Vertical Drains

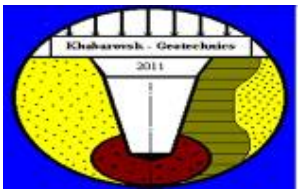
Location map of UOW

Innovation Campus of University of Wollongong

News for Future Event

4th International Geotechnical Symposium on *GEOTECHNICAL ENGINEERING FOR DISASTER PREVENTION and REDUCTION*

INTRODUCTION



The Russian Academy of Architecture and Construction Sciences is going to organize this international occasion together with the TC203 of ISSMGE on **Earthquake Geotechnical Engineering and Associated Problems**, ATC 3 of Asia on Geotechnology for Natural Hazards, the Commission on Earthquake Engineering and Mitigating Industrial and Natural Disasters (CoMIND) of Intergovernmental Council for Cooperation in Construction Activity in the CIS, the Russian Society for Soil Mechanics Geotechnics and Foundation Engineering, the Kazakhstan Geotechnical Society and Far Eastern State Transport University.

Themes

The Symposium themes are geo-monitoring; modeling and prognosis of natural and emergency situations; preventive geotechnical measures for disaster reduction.

1. Geomonitoring, monitoring the geodynamic process, prognoses of natural phenomena:
2. Geotechnical measures for natural disaster reduction of:
3. Geotechnical engineering in special environments:
4. Geoecology of extreme situations:

Important Dates

Deadline for abstracts (under 300 words in English): **31 January, 2011.**
Preliminary registration: **on or before 31 January, 2011.**
Abstract notification: **on or before 1 February, 2011.**
Deadline for papers (up to 6 pages): **15 May, 2011.**
Distribution of Bulletin №2**: 31 December, 2010.**
Notification on acceptance of papers: **15 May, 2011.**
Registration of participants (preferential): **on or before 15 May, 2011.**
Final date of reception of paper after author's revision: **15 May, 2011.**
Dates of symposium: **26-28 July, 2011.**

Organizing Committee

Chairman: V.I. Shport – Governor of Khabarovsk Territory, Khabarovsk, Russia
Deputy Chairman: V.E. Mishin – Minister of Construction of Khabarovsk Territory, Khabarovsk, Russia
General Secretary: Prof. S.A.Kudryavtsev (Far Eastern State Transport University, FESTU, Khabarovsk, Russia)
Committee members: Mr. A.N.Sokolov (Mayor of Khabarovsk), , Russia, Prof. B.E.Dinkin (Rector of FESTU), Prof. T.Kokusho (formerly Chairman of TC-4, Chuo University, Tokyo), Prof. S.Yasuda (formerly ChairmanATC-3, Tokyo Denki University), Prof. P.A.Abbasov (Director of DALNIIS, Vladivostok, Dr. M.A.Klyachko (Chairman of the CIS Commission on CoMIND, St. Petersburg, Prof. V.P.Petrukhin (Director of NIIOSP, Moscow) Dr. Kh.Z.Bakenov (Vice President of the Kazakhstan Geotechnical Society), and Prof, A.Zh.Zhusupbekov (Asian VP of ISSMGE, President of Kazakhstan Geotechnical Society, L.N.Gumilyov Eurasian National University, Astana, Kazakhstan).

Exhibition

The exhibition of the scientific and technical achievements, literature and advertising - prospectuses will be organized during the Symposium. Because the available space for exhibition is limited, early request are kindly appreciated.

Official Language

English or Russian

Technical Tours

Technical tours are planned to Lake Baikal or Kamchatka (Russia) after a Symposium. Detailed information will be given in the Bulletin №2

Contact Person and Website

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Tel. / fax: +7-4212-407540; mob. tel. +7-924-2082829; E-mail: its@festu.khv.ru and web:**www.igsh4.ru**

Message from Bulletin Editor

Prof. Ikuo Towhata (towhata@geot.t.u-tokyo.ac.jp)
Chief Editor of ISSMGE Bulletin
University of Tokyo, Japan

On behalf of the editing team of the ISSMGE Bulletin, I would express my sincere thanks to readers who have been contributing to the publication of the magazine by submitting articles and sending opinions. Bulletin is a property of the entire ISSMGE family and is open to everybody who wants to submit articles in line with the mission of the society.

In particular, Bulletin wants contributions from readers who want to write about interesting projects, remarkable research outputs, technological developments, and future conferences/symposia.

Because the Bulletin is not a peer-reviewed academic journal, you do not have to be very nervous about detailed writing. You can submit your draft in any format of a WORD file. However, it is important to make the article attractive and understandable to readers in general. Therefore, the writing skill has to be different from those for academic journals or design codes. Use of nice photographs and illustrations are strongly recommended. Too much discussion on theories should be avoided.

In case you are interested in submitting articles, please make contact with me at towhata@geot.t.u-tokyo.ac.jp

Best regards.

New Technical Committees (TC) of ISSMGE for 2010 – 2013

During the board meeting at 17th ICSMGE, Egypt in 2009 the nomination for various office bearers for all Technical Committees (TC) of ISSMGE was circulated among all Member societies. After receiving a huge response, during the board meeting at Moscow in June 2010, the formation of new Technical Committees for 2010 to 2013 was frozen by ISSMGE President Prof. Jean-Louis Briaud. New Technical Committees are classified in three broad categories, which are namely, TC 101 to TC 107 on Fundamentals, TC 201 to TC 216 on Applications and TC 301 to TC 306 on Impact on Society. List of various TC's with the names of Chairs, Vice Chiars, Secretary and Members are listed in the ascending order of the new numbers of TC's.

TC 101 – Laboratory Stress Strain Strength Testing of Geomaterials:
Chair: H. di Benedetto, France;
Vice Chair: S. Shibuya, Japan;
Secretary: J. Koseki Japan;
Members: David Airey, Australia; J. Boháč, Czech & Slovak Republics; Thomas Brandon, USA; D.Zh Bukenbayeva, Kazakhstan; Choong-Ki Chung, Korea; Philip Chung, Hong Kong; Christophe Dano, France; Tácio Mauro Pereira de Campos, Brazil; Evert den Haan, Netherlands; Rune Dyvik, Norway; Jose Estaire, Spain; A. Gasparre, UK; Vassiliki Georgiannou, Greece; Erdin Ibraim, UK; Fardin Jafarzadeh, Iran; Richard Jardine, UK; Dong-Soo Kim, Korea; V. Kostkanová, Czech & Slovak Republics; R. Kuwano, Japan; Lyesse Laloui, Switzerland; Luis Lemos, Portugal; Hoe Ling, USA; M. Lipinsky, Poland; Antonio Lloret, Spain; Graça Lopes, Portugal; Satoshi Nishimura, Japan; Victor Rinaldi, Argentina; J.T. Shahu, India; A. Szymański, Poland; D. Verastegui, Belgium; Yangping Yao, China; Jian-Hua Yin, Hong Kong.

TC 102 – Ground Property Characterization from In-Situ Tests
Chair: Paul Mayne, USA;
Vice Chair: Antonio Viana da Fonseca, Portugal;
Secretary: Roberto Quental Coutinho, Brazil;
Members: N.T. Alibekova, Kazakhstan; Radhi Al-Zubaidy, Iraq; Marcos Arroyo, Spain; George Athanassopoulos, Greece; Herminia Cano, Spain; Choong-Ki Chung, Korea; Ali Fakher, Iran; Vasile Farcas, Romania; Sebastiano Foti, Italy; Rui Freitas, Portugal; Dimitris Gazelas, Greece; An-Bin Huang, SEAGS; Emoke Imre, Hungary; M. Karthikeyan, Singapore; I.V. Kashirsky, Russia; Woojin Lee, Korea; Barry Lehane, Australia; Mike Long, Ireland; Tom Lunne, Norway; Andras Mahler, Hungary; Mamoru Mimura, Japan; Z. Młynarek, Poland; Jacques Monnet, France; Ernst Niederleithinger, Germany; Edgar Oderbrecht, Brazil; Joek Peuchen, Netherlands; John Powell, UK; Mario Quinta Ferreira, Portugal; G.V. Ramana, India; Philippe Reiffsteck, France; Daniel Rom, USA; Fernando Schnaid, Brazil; Jørgen S. Steenfelt, Denmark; H. Tanaka, Japan; G. Venkatachalam, India; Yu Wang, Hong Kong; Darren Ward, UK; Quentin Yue, Hong Kong.

TC 103 – Numerical Methods in Geomechanics
Chair: K.T. Chau, Hong Kong;
Vice Chair: Richard Wan, Canada;
Secretary: Jidong Zhao, Hong Kong;
Members: Lars Andresen, Norway; Dipanjan Basu, USA; Georgios Belokas, Greece; Daniel Borin, UK; Johnny Cheuk, Hong Kong; Cosmin Chiorean, Romania; Marcin Cudny, Poland; Marcio Muniz de Faria, Brazil; V.P. Dyba, Russia; Yasser El-Mossallamy, Egypt; Keyvan Fotoohi, USA; Antonio Gens, Spain; Jürgen Grabe, Germany; Michael Hicks, Netherlands; Minna Karstunen, UK; Poul Lade, USA; S.W. Lee, Hong Kong; R.E. Lukpanov, Kazakhstan; Kenichi Maeda, Japan; João Maranha, Portugal; David Mašín, Czech & Slovak Republics; Philippe Mestat, France; Radoslaw Michalowski, USA; Pablo Mira, Spain; Akira Murakami, Japan; François Nicot, France; Toshihiro Noda, Japan; Fusao Oka, Japan; Achilleas Papadimitriou, Greece; Alexander Puzrin, Switzerland; K. Rajagopal, India; Sebastiano Rampello, Italy; Mohamed Shahin, Australia; Oliver Stelzer, Germany; Lidija Zdravkovic, UK; Ting Zhang, Australia.

New TCs of ISSMGE (continued)

TC 104 – Physical Modelling in Geotechnics
Chair: Christophe Gaudin, Australia;
Vice Chair: Andy Take, Canada;
Secretary: David White, Australia;
Members: Raid Al-Omari, Iraq; Adam Bezuijen, Netherlands; K.S. Bizhanov, Kazakhstan; Zhengyin Cai, China; Bernardo Caicedo, Colombia; Johnny Cheuk, Hong Kong; Paulo Coelho, Portugal; Vicente Cuellar, Spain; Jelke Dijkstra, Netherlands; Edmundo Rogerio Esquivel, Brazil; Jacques Garnier, France; Abbas Ghalandarzadeh, Iran; Ole Hededal, Denmark; Yujing Hou, China; Peter Hudacsek, Hungary; SW Jacobsz, South Africa; Dong-Soo Kim, Korea; Diethard König, Germany; P. Koudelka, Czech & Slovak Republics; Osamu Kusakabe, Japan; B. Kutter, USA; Jan Laue, Switzerland; C.F. Leung, Singapore; Jeffrey Lo, Hong Kong; Xiafeng Ma, China; Andrew McNamara, UK; Ryan Philips, Canada; João Portugal, Portugal; Frank Rackwitz, Germany; Fernando Saboya Albuquerque Junior, Brazil; Sarah Springman, Switzerland; J. Takemura, Japan; Luc Thorel, France; Tetsuo Tobita, Japan; Haike van Lottum, Netherlands; V.V. Vinogradov, Russia; B.V.S. Viswanadham, India; Dan Wilson, USA; A.A. Zaytsev, Russia.

TC 105 – Geo-Mechanics from Micro to Macro
Chair: Malcolm Bolton, UK;
Members**:** Francesca Casini, Switzerland; Robert Charlier, Belgium; Gye Chun Cho, Korea; Jelke Dijkstra, Netherlands; Antonio Gens, Spain; Ivo Herle, Czech & Slovak Republics; Achim Hettler, Germany; M. Hyodo, Japan; Mingjing Jiang, China; Dariusz Łydżba, Poland; Glenn McDowell, UK; Ali Asghar Mir Ghasemi, Iran; D. Muir Wood, UK; Y. Nakata, Japan; Mark O'Neill, UK; C Santamarina, USA; Tom Schanz, Germany; Peter Scharle, Hungary; B.Zh. Unaibaev, Kazakhstan; J.-C. Verbrugge, Belgium; Y.H. Wang, Hong Kong; Jidong Zhao, Hong Kong.

TC 106 – Unsaturated Soils
Chair: Eduardo Alonso, Spain;
Vice Chair: Pierre Delage, France;
Secretary: Gerald Miller, USA;
Members: Michael Bardanis, Greece; Donald Cameron, Australia; Rafaela Cardoso, Portugal; Roberto Centeno, Venezuela; Geoff Chao, USA; Robert Charlier, Belgium; Yu Jun Cui, France; D.G. Fredlund, Canada; K. Garbulewski, Poland; Antonio Gens, Spain; Ghassem Habibagahi, Iran; Atsushi Iizuka, Japan; Emoke Imre, Hungary; Cristina Jommi, Italy; Suhail Idriss Khattab, Iraq; Seung-Rae Lee, Korea; Fernando Antonio Medeiros Marinho, Brazil; David Mašín, Czech & Slovak Republics; Farimah Masrouri, France; Oscar Mooijman, Netherlands; Edward Murray, UK; Emanuel Maranha das Neves, Portugal; E.E. Orasaly, Kazakhstan; Seong-Wan Park, Korea; R Rajardo, SEAGS; Tom Schanz, Germany; Daichao Sheng, Australia; Sarah Springman, Switzerland; S Sreedeep, India; H.W. Sun, Hong Kong; David Toll, UK; Hirofumi Toyota, Japan; Peter van Impe, Belgium; Orencio Monje Vilar, Brazil; Changfu Wei, China; Simon Wheeler, UK; Liantong Zhan, China.

TC 107 – Laterites and Lateritic Soils
Chair: S. I. K. Ampadu, Ghana;
Members: Celestina Allotey, Ghana; Luciano Decourt, Brazil; Marcos Massao Futai, Brazil; Souley Harouna, CTGA; An-Bin Huang, SEAGS; Kany Kabeya, South Africa; Philippe Reiffsteck, France.

New TCs of ISSMGE (continued)

TC 201 – Geotechnical Aspects of Dykes and Levees, Shore Protection and Land Reclamation
Chair: M.A. Van (Netherlands);
Secretary: Cor Zwanenburg (Netherlands);
Members: Martin Achmus (Germany); Enrique Asanza (Spain); R.K. Basilov (Kazakhstan); Hang-Seok Choi (Korea); Jian Chu (Singapore); Suraj de Silva (Hong Kong); Leen De Vos (Belgium); Robert Hutchison (UK); M. Karthikeyan (Singapore); Arjen Kort (Norway); Hanlong Liu (China); Patricia Lopez Acosta (Mexico); Kenichi Maeda (Japan); Patrick Menge (Belgium); Laszlo Nagy (Hungary); A.H. Nooy van der Kolff (Netherlands); Martin Pohl (Germany); Bengt Rydell (Sweden); M.K. Sharp (USA); Philip Smith (UK); J.A. Teeuw (Netherlands); Yuan Wang (China); Yoichi Watabe (Japan); Seven Yau (Hong Kong).

TC 202 – Transportation Geotechnics
Chair: Antonio Gomes Correia (Portugal);
Secretary: Nobuyuki Yoshida (Japan);
Members: Jean-Claude Auriol (France); Donald Cameron (Australia); Jorge Augusto Pereira Ceratti (Brasil); Andre Costa (Portugal); B. Dethy (Belgium); Tuncer Edil (USA); Eduardo Fortunato (Portugal); J.L. Garcia de la Oliva (Spain); Stephanie Glendinning (UK); Yves Guerpillon (France); Buddhima Indraratna (Australia); Tatsuya Ishikawa (Japan); Woon-Hyung Kim (Korea); Edina Koch (Hungary); Pauli Kolisoja (Finland); Carlo Lai (Italy); Daman Lee (Hong Kong); Inessa V. Leytland (Russia); Andreas Loizos (Greece); Jean-Pierre Magnan (France); Katsumi Muramoto (Japan); Soheil Nazarian (USA); Jennifer Nicks (USA); Nick O'Riordan (UK); Philip Page-Green (South Africa); Seong-Wan Park (Korea); William Powrie (UK); Leszek Rafalski (Poland); Marc Raithel (Germany); Mohamed Shahin (Australia); Janos Szendefy (Hungary); B.B. Teltaev (Kazakhstan); Vikas Thakur (Norway); Erol Tutumluer (USA); J.-C. Verbrugge (Belgium); Mike Winter (UK).

TC 203 – Earthquake Geotechnical Engineering and Associated Problems
Chair: K. Pitilakis (Greece);
Vice Chair: Ross Boulanger (USA);
Secretary: Anastasios Anastasiadis (Greece);
Members**:** M.U. Ashimbaev (Kazakhstan); George Athanassopoulos (Greece); Zbignew Bednarczyk (Poland); George Bouckovalas (Greece); Jan Willem Roelof Brouwer (Netherlands); Deepankar Choudhury (India); Paulo Coelho (Portugal); Misko Cubrinovski (New Zealand); J.L. de Justo Alpanes (Spain); Heriberto Echezuria (Venezuela); Ahmed Elgamal (USA); Liam Finn (Canada); George Gazetas (Greece); Bidjan Ghahreman (USA); Barnali Ghosh (UK); Rui Carrilho Gomes (Portugal); Izzat Idriss (USA); Kenji Ishihara (Japan); Jorgen Johansen (Norway); Amir Kaynia (Norway); Takaji Kokusho (Japan); Stavroula Kontoe (UK); A. Murali Krishna (India); Nicolas Lambert (Belgium); Jan Laue (Switzerland); Mitsu Okamura (Japan); Roberto Paolucci (Italy); Achilleas Papadimitriou (Greece); Jack Pappin (Hong Kong); Du Hee Park (Korea); Alain Pecker (France); Michael Pender (New Zealand); Elen Rathje (USA); Richard Ray (Hungary); Mohamed A. Sakr (Egypt); Pedro Seco e Pinto (Portugal); Jean-Francois Semblat (France); Farzin Shahrokhi (Norway); Byung Woong Song (Korea); Waldemar Świdziński (Poland); Ikuo Towhata (Japan); David Turi (Hungary); Alexander Uzdin (Russia); Ryosuke Uzuoka (Japan); Xavier Vera-Grunauer (Ecuador); Christos Vrettos (Germany); Lanmin Wang (China); V. Whenham (Belgium); Jun Yang (Hong Kong); Susumu Yasuda (Japan); Jian-Min Zhang (China).

New TCs of ISSMGE (continued)

TC 204 – Underground Construction in Soft Ground
Chair: Richard Kastner (France);
Vice Chair: Adam Bezuijen (Netherlands);
Secretary: Jamie Standing (UK);
Members**:** Hugo Acosta-Martinez (Colombia); Hirokazu Akagi (Japan); L. Areias (Belgium); Wout Broere (Netherlands); Tarcísio Barreto Celestino (Brazil); André Pacheco de Assis (Brazil); Fabrice Emeriault (France); Petros Fortsakis (Greece)*; Alain Guilloux (France); Achim Hettler (Germany) DGGT; Tibor Horvath (Hungary); Eric Hudson-Smith (Australia); Mandy Korff (Netherlands); In-Mo Lee (Korea); Robert Mair (UK); David Mašín (Czech & Slovak Republics); Josef Mecsi (Hungary); C. Menkiti (UK); Arsenio Negro, Jr (Brazil); N.S. Nikiforova (Russia); Tim O'Rourke (USA); Richard Pang (Hong Kong); V.P. Petrukhin (Russia); Hubert Quick (Germany)*; Jacques Robert (France); Manuel Romana (Spain); Cesar Sagaseta (Spain); Stavroula Schina (Greece); V.M. Sharma (India); K.G. Sharma (India); Nick Shirlaw (Canada); A. Siemińska-Lewandowska (Poland); Mitsutaka Sugimoto (Japan); Graham Taylor (UK); Markus Thewes (Germany); V.M. Thumann (Netherlands); M.T. Ukshebaev (Kazakhstan); Mahmood Vafaeian (Iran); Ilkka Vähäaho (Finland); Panagiotis Vettas (Greece); Giulia Viggiani (Italy); Norbert Vogt (Germany); A.R. Walker (Singapore); Weidong Wang (China); D.Z. Wen (Singapore); Chung-Sik Yoo (Korea); Gang Zheng (China).

TC 205 – Limit State Design in Geotechnical Engineering
Chair: Brian Simpson (UK);
Secretary: C. Smith (UK);
Members**:** Tony M. Allen (USA); L. Bałachowski (Poland); Andrew Bond (UK); Sam Clarke (UK); Peter Day (South Africa); Roger Frank (France); Takashi Hara (Japan); Y. Honjo (Japan); Hongwei Huang (China); P. Koudelka (Czech & Slovak Republics); Anders Kullingsjö (Sweden); Tim Länsivaara (Finland); Kerstin Lesny (Germany); Iacint Manoliu (Romania); Trevor Orr (Ireland); K.K. Phoon (Singapore); Agustin Popa (Romania); W.K. Pun (Hong Kong); Rodrigo Salgado (USA); Bernd Schuppener (Germany); Antonio Soriano (Spain); Jørgen S. Steenfelt (Denmark); Balazs Vasarhelyi (Hungary); A.S. Zhakulin (Kazakhstan); Limin Zhang (Hong Kong).

TC 206 – Interactive Geotechnical Design
Chair: K. Been (Canada);
Members**:** Dominique Allagnat (France); Dennis Becker (Canada); Pal Gyorgy (Hungary); Albert Ho (Hong Kong); Noel Huybrechts (Belgium); E.B. Koreneva (Russia); Mandy Korff (Netherlands); A.A. Kusainov (Kazakhstan); Christian Moormann (Germany); Alain Pecker (France); Jean-Michel Rescoussier (France) G. Scarpetti (Italy); Antonio Soriano (Spain); Gavin Toh (Hong Kong); Gauthier van Alboom (Belgium); Gang Wang (Hong Kong).

TC 207 – Soil-Structure Interaction and Retaining Walls
Chair: V. Ulitsky (Russia);
Secretary: Michael Lisyuk (Russia);
Members**:** Omar al-Farouk Salem al-Damluji (Iraq); Lars Andresen (Norway); Kari Avellan (Finland); V. Balakumar (India); Werner Bilfinger (Brazil); Omer Bilgin (USA); Jan Couck (Belgium); Yasser El-Mossallamy (Egypt); Marc Favre (France); Rich Finno (USA); Chris Haberfield (Australia); H. Hazarika (Japan); G. Horodecki (Poland); Catherine Jacquard (France); Rolf Katzenbach (Germany); Amir Kaynia (Norway); Takashi Kiyota (Japan); Mandy Korff (Netherlands); J. Kos (Czech & Slovak Republics); Fang Liu (China) G. Madhavi Latha (India); Balazs Moczar (Hungary); Javier Moreno (Spain); Paul Morrison (UK); Victor CW Ong (Singapore); Pantelis Pantelidis (Greece); Nikifor Petrovic (Croatia); Florian Roman (Romania); N.K. Samadhiya (India); Igor Sokolić (Croatia); Hugh St. John (UK); G.A. Sultanov (Kazakhstan); James Sze (Hong Kong); Z.G. Ter-Martirosyan (Russia); William Van Impe (Belgium); Lars Vollmert (Germany); A.R. Walker (Singapore).

New TCs of ISSMGE (continued)

TC 208 – Stability of Natural Slopes
Chair: J. Fannin (Canada);
Members: João Barradas (Portugal); Mohammad Hassn Baziar (Iran); Georgios Belokas (Greece); Celine Bourdeau (France); Luiz A. Bressani (Brazil); Y.C. Chan (Hong Kong); Robert Charlier (Belgium); Denis Demers (Canada); A.M. Demin (Russia); Shuqiang Gui (China); V.A. Homjov (Kazakhstan); Telmo Jeremias (Portugal); Willy Alvarenga Lacerda (Brazil); Seung-Rae Lee (Korea); Stuart Mills (Hong Kong); Farrokh Nadim (Norway); Manuel Pastor (Spain); Mihail Popescu (USA); G. Ramasamy (India); K.S. Rao (India); Jean-Michel Rescoussier (France); Daniel Salcedo (Venezuela); Tom Schanz (Germany); Attila Takacs (Hungary); Pavlos Tyrologou (Greece); Dariusz Wanatowski (UK); H.N. Wong (Hong Kong); Noriyuki Yasufuku (Japan).

TC 209 – Offshore Geotechnics
Chair: P. Jeanjean (USA);
Vice Chair: Mark Randolph (Australia);
Members**:** K.H. Andersen (Norway); Andrew Barwise (UK); Sylvie Bretelle (France); P Brunning (Singapore); T. Brzozowski (Poland); German Burbano (Spain); Yun Wook Choo (Korea); Ander Chow (Hong Kong); Kenneth Gavin (Ireland); R. Gilbert (USA); V.B. Glagovski (Russia); Jürgen Grabe (Germany); Ole Hededal (Denmark); Dirk Luger (Netherlands); K. Mukherjee (Singapore); Jose Parra (Venezuela); Alain Puech (France); Andrea Richwien (Germany); B.F.J. van Dijk (Netherlands); P Watson (Australia); A.G. Yetginer (UK); Jianhong Zhang (China); A.A. Zhusupbekov (Kazakhstan).

TC 210 – Dams & Embankments
Chair: Zeping Xu (China);
Members**:** Usama Farhan A-Karim (Iraq); I.I. Bekbassarov (Kazakhstan); M. Bidasaria (India); A Charles (UK) Killian de Fries (Venezuela); George Dounias (Greece); Jean Jacques Fry (France); Dimitris Gazelas (Greece); Gilson de Farias Neves Gitirana Junior (Brazil); Koen Haleterman (Belgium); Kaare Hoeg (Norway); Jörg Klompmaker (Germany); Jean Launay (France); Jose M. Martinez Santamaria (Spain); Laszlo Nagy (Hungary); Emanuel Maranha das Neves (Portugal); Bernhard Odenwald (Germany); Miguel Pando (USA); Lurdes Pimenta (Portugal); Daniel Pradel (USA); Alberto S. F. J. Sayão (Brazil); Dong-Hoon Shin (Korea); Antonio Soriano (Spain); Abbas Soroush (Iran); J.-F. Vanden Berghe (Belgium); Gang Wang (Hong Kong); Jui-Pen Wang (Hong Kong); Yoshikazu Yamaguchi (Japan); Yuzhen Yu (China).

TC 211 – Ground Improvement
Chair: S. Varaksin (France);
Members: Abir Al-Tabbaa (UK); Gustavo Armijo (Spain); T.N. Baytasov (Kazakhstan); D.T. Bergado (SEAGS); A. Boominathan (India); Zsolt Borocky (Hungary); Sylvie Bretelle (France); Gye Chun Cho (Korea); Jian Chu (Singapore); Nilo C. Consoli (Brazil); Marcio de Souza Soares de Almeida (Brazil); J.W. Dijkstra (Netherlands); R. Essler (UK); Babak Hamidi (Australia); Buddhima Indraratna (Australia); Yeon-Soo Jang (Korea); Ian Jefferson (UK); Johannes Kirstein (Germany); Masaki Kitazume (Japan); Leena Korkiala-Tanttu (Finland); Alain Le Kouby (France); Hanlong Liu (China); Ionnis Markou (Greece); Yoshihisa Miyata (Japan); M. Nozu (Japan); TA Ooi (SEAGS); Alexandre Pinto (Portugal); Isabel Pinto (Portugal); Athanassios Platis (Greece); Anand Puppala (USA); Andrea Richwien (Germany); Mohamed A. Sakr (Egypt); H. Schweiger (Austria); Jianyong Shi (China); Pedro Sola (Spain); Janos Szendefy (Hungary); Peter Thompson (Hong Kong); L.M. Timofeeva (Russia); M. Topolnicki (Poland); Almer E.C. van der Stoel (Netherlands); D. Verastegui (Belgium); J.-C. Verbrugge (Belgium); Kenny Yee (SEAGS); Jian-Hua Yin (Hong Kong).

New TCs of ISSMGE (continued)

TC 212 – Deep Foundations
Chair: Rolf Katzenbach (Germany);
Vice Chair: Sang Seom Jeong (Korea);
Secretary: Deepankar Choudhury (India);
Members: Willem Bierman (Netherlands); Michael Brown (UK); Nicol Chang (South Africa); Der-Wen Chang (SEAGS); Tim Chapman (UK); Fiona Chow (Australia); Emilios Comodromos (Greece); Luis del Canizo (Spain); Arpad Deli (Hungary); Kazem Fakharian (Iran); V.T. Ganpule (India); Kenneth Gavin (Ireland); A.L. Gotman (Russia); K. Gwizdała (Poland); K. Horikoshi (Japan); Maosong Huang (China); Roland Jörger (Germany); Amir Kaynia (Norway); Makoto Kimura (Japan); J. Kos (Czech & Slovak Republics); Daman Lee (Hong Kong); Jouko Lehtonen (Finland); Andras Mahler (Hungary); Gerardo Marrote (Spain); Jarbas Milititsky (Brazil); Christian Moormann (Germany); Tony O'Brien (UK); Victor CW Ong (Singapore); V. Paramonov (Russia); A.B. Ponomaryov (Russia); Alain Puech (France); Nicoleta Radulescu (Romania); Rodrigo Salgado (USA); Jaime Santos (Portugal); Teresa Simões (Portugal); Byung Woong Song (Korea); A.F. van Tol (Netherlands); Weidong Wang (China); Limin Zhang (Hong Kong); A.A. Zhusupbekov (Kazakhstan).

TC 213 – Scour and Erosion
Chair: M. Heibaum (Germany);
Vice Chair: Fuping Gao (China);
Secretary: Cathy Avila;
Members: George Annandale (USA); Enrique Asanza (Spain); P.K. Basudhar (India); Jai Bhagwan (India); Eric Bollaert (Switzerland); Daniele Cazzuffi (Italy); Christophe Chevalier (France); Fernando Delgado (Spain); G.J.C.M. Hoffmans (Netherlands); Beatrice Hunt (USA); Janos Jozsa (Hungary); Bruce Melville (New Zealand); Nicola Moraci (Italy); V.N. Popov (Kazakhstan); Laszlo Rakoczi (Hungary); Mario Ruel (Canada); Shinji Sassa (Japan); Hideo Sekiguchi (Japan); M. Shimamura (Japan); B. Mutlu Sumer (Denmark); Jui-Pen Wang (Hong Kong); Katja Werth (Germany); Richard Whitehouse (UK); Karl Josef Witt (Germany); Mike Wright (Hong Kong).

TC 214 – Foundation Engineering for Difficult Soft Soil Conditions
Chair: J. L. Rangel (Mexico);
Members: Gustavo Armijo (Spain); Gebreselassie Berhane (Germany); Fleur de Cock (Belgium); Maosong Huang (China); Seyed Mohammad Reza Imam (Iran); Buddhima Indraratna (Australia); Yoshiaki Kikuchi (Japan); Z. Lechowicz (Poland); Jean Pierre Magnan (France); R.A. Mangushev (Russia); Fritz Nowacki (Norway); Marcus Peigas Pacheco (Brazil); Jean-Michel Rescoussier (France); Andrea Richwien (Germany); A.M. Sonin (Kazakhstan); Ryan Yan (Hong Kong).

TC 215 – Environmental Geotechnics
Chair: Mario Manassero (Italy);
Vice Chair: Malek Bouazza (Australia);
Secretary: Andrea Dominijanni (Italy);
Members: D.N. Arnepalli (India); Kazem Badv (Iran); Craig Benson (USA); John Black (USA); Maria Eugenia Gimenez Boscov (Brazil); Yunmin Chen (China); Hang-Seok Choi (Korea); Roger Clark (UK); Dimitris Coumoulos (Greece); John Cowland (Hong Kong); Manoj Datta (India); Gemmina Di Emidio (Belgium); Antonio Gens (Spain); Jean-Pierre Gourc (France); Georg Heerten (Germany); Liming Hu (China); S. Jeffries (UK); T Katsumi (Japan); Edward Kavazanjian (USA); Woon-Hyung Kim (Korea); E. Koda (Poland); H. Komine (Japan); A.B. Konusbaev A.B. (Kazakhstan); Maria Lurdes Lopes (Portugal); V.G. Ofrikhter (Russia); Marina Pantazidou (Greece); Fernando Pardo Santayana (Spain); Krishna Reddy (USA); Antonio Roque (Portugal); Kerry Rowe (Canada); Charles Shackelford (USA); Luis Sopena (Spain); Bertrand Soyez (France); Attila Szabo (Hungary); Marc Van Den Broeck (Belgium); Peter van Impe (Belgium); Albert Yeung (Hong Kong).

New TCs of ISSMGE (continued)

TC 216 – Frost Geotechnics
Chair: A. Instanes (Norway);
Members**:** Anne-Lise Berggren (Norway); Teddy Fen-Chong (France); Henry Gustavsson (Finland); T. Ishizaki (Japan); Young Uk Kim (Korea); S. Knutsson (Sweden); Jean Marie Konrad (Canada); T. Kozłowski (Poland); S.A. Kudryavtsev (Russia); Takashi Ono (Japan); Seppo Saarelainen (Finland); Mattias Vogler (Germany); A. Zh. Zhusupbekov (Kazakhstan).

TC 301 – Preservation of Historic Sites
Chair: C. Viggiani (Italy);
Vice Chair: Y. Iwasaki (Japan);
Members: Namir Al-Sa'oudi (Iraq); Laszlo Aradi (Hungary); Charles Augarde (UK); Kari Avellan (Finland); Jens Brendstrup (Denmark); John Burland (UK); Dimitris Egglezos (Greece); Moustafa K. El Ghamrawy (Egypt); Nicoleta Ilies (Romania); Jean Launay (France); Michael Lisyuk (Russia); Masoud Makarchian (Iran); Mamoru Mimura (Japan); Efrain Ovando Shelley (Mexico); Dick Parry (UK); Jose M Rodriguez Ortiz (Spain); C. Tanimoto (Japan); Christos Tsatsanifos (Greece); V. Ulitsky (Russia); T.O. Zhunusov (Kazakhstan).

TC 302 – Forensic Geotechnical Engineering
Chair: V.V.S. Rao (India);
Secretary: G.L. Sivakumar Babu (India);
Members: Tony Barry (UK); Malek Bouazza (Australia); W. Cichy (Poland); Enrique Dapena (Spain); Peter Day (South Africa); Luiz Guilherme F. Soares de Mello (Brazil); Suraj de Silva (Hong Kong); A.V. Filatov (Kazakhstan); Jan Hellings (UK); David Hight (UK); R Hwang Kazuya Itoh (Japan); Y. Iwasaki (Japan); Dirk Luger (Netherlands); Josef Mecsi (Hungary); Edmund Medley (USA); Axel Ng (Hong Kong); K.K. Phoon (Singapore); Jacques Robert (France)**.**

TC 303 – Coastal and River Disaster Mitigation and Rehabilitation
Chair: S. Iai (Japan);
Secretary: R. Scott Steedman (UK);
Members**:** D.T. Bergado (SEAGS); Jian Chu (Singapore); Don de Groot (USA); M. de Puy (USA); I.N. Dussembaev (Kazakhstan); Volker Eitner (Germany); S.R. Gandhi (India); Georg Heerten (Germany); Koji Ichii (Japan); Buddhima Indraratna (Australia); Mei-Ling Lin (SEAGS); Hanlong Liu (China); Laszlo Nagy (Hungary); K.K. Phoon (Singapore); Patrick Sauvaget (France); Shunichi Sawada (Japan); Raymond B. Seed (USA); Ikuo Towhata (Japan); Dariusz Wanatowski (UK); Spr Wardani (Indonesia).

TC 304 – Engineering Practice of Risk Assessment and Management
Chair: K. K. Phoon (Singapore);
Vice Chair: Gordon Fenton (Canada);
Secretary: JY Ching (SEAGS);
Members**:** Y. Ashkey (Kazakhstan); Gregory Baecher (USA); Hansgeorg Balthaus (Germany); Robert Berkelaar (Netherlands); Laura Caldeira (Portugal); Paul Cools (Netherlands); P. Ganne (Belgium); Anthony TC Goh (Singapore); Vaughn Griffiths (USA); Ken Ho (Hong Kong); Hongwei Huang (China); Mark Jaksa (Australia); Leena Korkiala-Tanttu (Finland); Kishor Kumar (India); Dianqing Li (China); B.K. Low (Singapore); Dagang Lu (China); Farrokh Nadim (Norway); Laszlo Nagy (Hungary); Shin-ichi Nishimura (Japan); Ali Noorzad (Iran); Lars Olsson (Sweden); Nick Sartain (UK); Bernd Schuppener (Germany); Timo Schweckendiek (Netherlands); V.I. Sheinin (Russia); Kenichi Soga (UK); Abdul-Hamid Soubra (France); M. Suzuki (Japan); Pavlos Tyrologou (Greece); Martin van Staveren (Netherlands); Yu Wang (Hong Kong); Limin Zhang (Hong Kong).

New TCs of ISSMGE (continued)

TC 305 – Geotechnical Infrastructure for Megacities and New Capitals
Chair: Arsenio Negro Jr. (Brazil);
Secretary: Makoto Namba (Brazil);
Members: Hirokazu Akagi (Japan); Isabel Moitinho de Almeida (Portugal); Dipanjan Basu (USA); Jim Cook (UK); E. Dembicki (Poland); Ammar Dhouib (France); Colin Eddie (UK); Manuel Matos Fernandes (Portugal); Argimiro Alvarez Ferreira (Brazil); P. Ganne (Belgium); Pal Gyorgy (Hungary); T. Hashimoto (Japan); V.A. Ilyichev (Russia); Moises Juarez Camarena (Mexico); Ashish Juneja (India); K. Komiya (Japan); Pinnaduwa Kulatilake (USA); Eric Leca (France); Edgar Mendez Sanchez (Mexico); Alan Powderham (UK); Habib Shahnazari (Iran); A. Zh. Zhusupbekov (Kazakhstan).

TC 306 – Geo-engineering Education
Chair: M. Jaksa (Australia);
Vice Chair: M. Bouassida (Tunisia);
Secretary: Bryan McCabe (Ireland);
Members: John Atkinson (UK); Roger Frank (France); Waldemar Coelho Hachich (Brazil); Alberto Ledesma (Spain); Iacint Manoliu (Romania); Farimah Masrouri (France); Jim Mitchell (USA); David Nash (UK); Hideki Ohta (Japan); Marina Pantazidou (Greece); Declan Phillips (Ireland); Håkan Stille (Sweden); Vlasta Szavitz-Nossan (Croatia); George Tham (Hong Kong); Jun Yang (Hong Kong).

Event Diary

ISSMGE SPONSORED EVENTS

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

2011

5th International Conference on Geotechnical Earthquake Engineering (5-ICEGE)
Date: 10 - 13 January 2011
Location: Santiago de Chile, Chile
Language: English
Organizer: CGS, ISSMGE TC4
• Contact person: Secretariat 5ICEGE
• Address: Toledo Nº 1991, Postal Code 7500000
Providencia, Santiago
Chile
• Phone: 56-2-2746714
• Fax: 56-2-2742789
• E-mail: secretariat@5icege.cl
Website: www.5icege.cl/

7th International Symposium on Geotechnical Aspects of Underground Construction in Soft Ground
Date: 16 - 18 May 2011
Location: Roma, Italy
Language: English
Organizer: TC28 and AGI
• Contact person: Dr. Ing. Claudio Soccodato
• Address: Associazione Geotecnica Italiana, viale dell'Università 11
00185 Roma
RM
Italy
• Phone: 39064465569
• Fax: 390644361035
• E-mail: info@tc28-roma.org
Website: www.tc28-roma.org

The 3rd International Conference on Geotechnical Engineering for Disaster Mitigation and Rehabilitation 2011 (GEDMAR 2011) Combined with The 5th International Conference on Geotechnical and Highway Engineering
Date: 18 - 20 May 2011
Language: English
Organizer: JWG-DMR, Diponegoro University
• Contact person: Ir.H. Wuryanto MSc, Dr. Bagus Hario Setiadji
• Address: Indonesian Road Development Association (IRDA) of Central Java, Jl. Puri Anjasmoro Blok I.1 No 12
50144 Semarang
Central Java
Indonesia
• Phone: 62-24-7622790
• Fax: 62-24 7622785
• E-mail: hpjijateng@yahoo.co.id; geoconfina@yahoo.com
Website: reliability.geoengineer.org/GEDMAR2011/

XIV Asian Regional Conference on Soil Mechanics and Geotechnical Engineering
Date: 23 - 27 May 2011
Location: Hong Kong Poly University , Hong Kong, China, China
Language: English
Organizer: HKGES and CSE of HK Poly U
• Contact person: Miss Laurel Lau
• Address: Dept of Civil & Struc Eng, Hong Kong Polytechnic University, Hong Kong
Hong Kong
China
• Phone: 852 2766 6017
• Fax: 852 2334 6389
• E-mail: 14arc.2011@polyu.edu.hk
Website: www.cse.polyu.edu.hk/14arc

3rd International Symposium on Geotechnical Safety and Risk (ISGSR2011)
Date: 2 - 3 June 2011
Location: Oskar-von-Miller-Forum, Munich, Germany
Language: English
Organizer: Zentrum Geotechnik, TU München
. Contact person: Dipl.-Ing. Gerhard Bräu
. Address: Arcisstraße 21
80290 Munich
Germany
. Phone: 49(0)89-289-27139
. Fax: 49(0)89-289-22441
. E-mail: G.Braeu@bv.tum.de
Website: www.isgsr2011.de

XV African Regional Conference on Soil Mechanics and Geotechnical Engineering - "Resources and Infrastructure Geotechnics in Africa: Putting theory into practice".
Date: 18 - 21 July 2011
Location: Maputo, Mozambique
Organizer: Soc. Moçambicana de Geotecnia
• Contact person: Prof. Carlos QUADROS, President of SMG, Dr Saturnino CHEMBEZE, Sec. Gen SMG
• Address: Mozambican Geotechnical Society, Av. 25 de Setembro nº 2526
Maputo
Mozambique
• Phone: 258 21322185
• Fax: 258 21322186
• E-mail: info@15arcsmge-maputo2011.com
Website: www.15arcsmge-maputo2011.com

Fifth International Symposium on Deformation Characteristics of Geomaterials (IS-Seoul 2011)
Date: 31 August - 3 September 2011
Location: Sheraton Grande Walkerhill , Seoul, Korea
Language: English
Organizer: ISSMGE(TC-29) and KGS
• Contact person: Prof. Dong-Soo Kim
• Address: Dept. of Civil & Environmental Eng., KAIST
305-701 Daejeon
Korea
• Phone: 82-42-350-5659
• Fax: 82-42-350-7200
• E-mail: is-seoul@kaist.ac.kr
Website: www.isseoul2011.org

Event Diary (continued)

XV European Conference on Soil Mechanics and Geotechnical Engineering "Geotechnics of Hard Soils - Weak Rocks"
Date: 12 - 15 September 2011
Location: Megaron Athens Int Conf Cntr , Athens, Greece
Language: English/French
Organizer: HSSMGE
• Contact person: Secretariat XV ECSMGE – Athens 2011
• Address: PO Box 26013
10022 Athens
Greece
• Phone: 30 210 6915926
• Fax: +30 210 6928137
• E-mail: athens2011ecsmge@hssmge.gr
Website: www. athens2011ecsmge.org

XIV Panamerican Conference on Soil Mechanics and Geotechnical Engineering (October) & V PanAmerican Conference on Learning and Teaching of Geotechnical Engineering, & 64th Canadian Geotechnical Conference
Date: 2 - 6 October 2011
Location: Sheraton Hotel Toronto, Ontario, Canada
Organizer: CGS

2012

12th Baltic sea Geotechnical Conference
• Date: 31 May - 2 June 2012
• Location: Rostock, Germany
• Language: English
• Organizer: German Geotechnical Society (DGGT) and the University of Rostock
• Contact person: Prof. Dr.-Ing. Fokke Saathoff
• Address of DGGT : Gutenbergstr 43 45128 Essen, Germany
• Phone: +49 201 78 27 23
• Fax: +49 201 78 27 43
• E-mail: On scientific issues, service@dggt.de,
Deutsche Gesellschaft für Geotechnik e.V.
On organizational issues, 12bsgc@interplan.de,
INTERPLAN AG
Website: http://www.12bsgc.de/
Abstract submission by 15 December 2010

11th Australia - New Zealand Conference on Geomechanics
• Date: 15-18 July 2012
• Location: Melbourne, Australia
• Theme: Ground in a Changing World
• Language: English
• Contact person: Ms Nicole Amato
• Address: 113 Harrington Street, Hobart, Tasmania 7000
• Phone: 03 6234 7844
• Fax: 03 6234 5958
• E-mail: nicole@leishman-associates.com.au
•Website: http://www.anz2012.com.au/
• Abstract submission started in November 2010

International Conference on Ground Improvement and Ground Control: Transport Infrastructure Development and Natural Hazards Mitigation
Date: 30 October - 2 November 2012
Location: University of Wollongong, Wollongong, New South Wales, Australia
Language: English
• Organizer: The Centre for Geomechanics and Railway Engineering, University of Wollongong, Australia, and the Australian Geomechanics Society (AGS)
. Contact person: Dr. Jayan Vinod
. Address: Centre for Geomechanics and Railway Engineering, Faculty of Engineering, University of Wollongong, 2522 Wollongong, New South Wales, Australia.
. Phone: 61 02 4221 4089
. Fax: 61 02 4221 3238
. E-mail: icgi_2012@uow.edu.au
. Website: www.icgiwollongong.com
. Deadline for Abstract submission: 1 July 2011

NON-ISSMGE SPONSORED EVENTS

2011

Geo-Frontiers 2011
Date: 13 - 16 March 2011
Location: Sheraton Dallas Hotel , Dallas, Texas, United States
Language: English
Organizer: Geo-Institute
Secretary: • Contact person: Kristy Osman, Secretary General/Event Manager
• Phone: 1 651 225 6959
• E-mail: klosman@ifai.com
Website: www.geofrontiers11.com/index.cfm

5th Canadian Conference on Geotechnique and Natural Hazards
Date: 15 - 17 May 2011
Organizer: Canadian Geotechnical Society
Website: www.geohazards5.ca/index.php?lang=en

Ottawa 2011 GAC-MAC-SEG-SGA
Date: 25 - 27 May 2011
Location: University of Ottawa, Ottawa, Ontario, Canada
Language: English
Organizer: Geological Assoc. of Canada
. Contact person: Simon Hanmer
. Address: 601 Booth Street
K1A 0E8 Ottawa
Ontario
Canada
. Phone: 1-613-992-4704 ; 1-613-992-4704
. E-mail: simon.hanmer@nrcan.gc.ca
Website: www.gacmacottawa2011.ca/welcome.html

4th International Geotechnical Symposium on Geotechnical Enginering for Disaster Prevention & Reduction
Date: 26 - 28 July 2011
Location: Fourth International Symposium , Khabarovsk, Russia
Language: English or Russian
Organizer: Far Eastern Transport Univ
• Contact person: Professor S.A.Kudryavtsev
• Address: Street Serishev, 47, Far Eastern State Transport University (FESTU), 680021 Khabarovsk, Russia.
• Phone: 74212407540
• E-mail: its@festu.khv.ru
Website: www.igsh4.ru
• Deadline for abstract submission: 31 January, 2011

Event Diary (continued)

International Conference on Advances in Geotechnical Engineering (ICAGE 2011)
Date: 7 - 9 November 2011
Location: Burswood Entertainment Complex, Perth, Western Australia, Australia
Language: English
Organizer: Curtin University
. Contact person: EEC W Pty Ltd, Australia
. Phone: 61-8-9389 1488
. Fax: 61-8-9389 1499
. E-mail: info@eecw.com.au
Website: www.icage2011.com.au

5th Asia-Pacific Conference on Unsaturated Soils
Date: 14 - 16 November 2011
Location: Pattaya , Pattaya, Thailand
Language: English
Organizer: Thai Geotechnical Society, KU
• Contact person: Apiniti Jotisankasa
• Address: Department of Civil Engineering, Kasetsart University, 10900 Jatujak, Bangkok, Thailand.
• Phone: 66819043060
• Fax: 6625792265
• E-mail: fengatj@ku.ac.th
Website: www.unsat.eng.ku.ac.th

2012

4th International Conference on Grouting and Deep Mixing
Date: 15 - 18 February 2012
Location: Marriott New Orleans , New Orleans, LA, United States
Language: English
Organizer: ICOG and DFI
• Contact person: Theresa Rappaport

• Address: DFI; 326 Lafayette Avenue
07506 Hawthorne, NJ, USA
• Phone: 9734234030
• Fax: 9734234031
• E-mail: trappaport@dfi.org
Website: www.grout2012.org

NGM 2012. 16th Nordic Geotechnical Meeting
Date: 9 - 12 May 2012
Location: Tivoli Congress Center, Copenhagen, Denmark
Language: English
Organizer: Danish Geotechnical Society
. Contact person: Morten Jorgensen
. Address: Sortemosevej 2
DK-3450 Allerod
Copenhagen
Denmark
. Phone: +45 4810 4207 ; +45 4810 4207
. Fax: +45 4810 4300
. E-mail: moj@niras.dk
Website: www.ngm2012.dk

11th International Symposium on Landslides (2-8 June)
Date: 2 - 8 June 2012
Location: Banff Springs Hotel, Banff, Alberta, Canada
Language: English
Organizer: Canadian Geotechnical Society
. Contact person: Corey Froese
. E-mail: Corey.Froese@ercb.ca
Website: www.ISL-NASL2012.ca

FOR FURTHER DETAILS, PLEASE REFER TO THE ISSMGE WEBSITE
http://addon.webforum.com/issmge/index.asp

Editorial Remarks

The editorial board is pleased to send the ISSMGE members ISSMGE Bulletin Vol.4, Issue 4 in December 2010. The Editorial Board, specifically Prof. Ikuo Towhata, Chief Editor of ISSMGE Bulletin and Dr. Deepankar Choudhury, Managing Editor of this issue of ISSMGE Bulletin would like to thank all the members that contributed with articles for this issue. Any comments to improve the Bulletin are also welcome. You can also submit articles to this bulletin. Please contact a member of editorial board or Vice-President for the region, or directly send e-mail to Prof. Ikuo Towhata, Chief Editor of ISSMGE Bulletin (towhata@geot.t.u-tokyo.ac.jp).

Editorial Board of the Bulletin wishes a very Happy and Prosperous New Year 2011 to all the Members of ISSMGE.

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