SIMSG ISSMGE

ISSMGE Bulletin

Volume 4, Issue 3
September 2010

International Society for Soil Mechanics and Geotechnical Engineering

www.issmge.org

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EDITORIAL BOARD

Message to ISSMGE from the Vice President for Europe

Professor Ivan Vaníček

Dear professional colleagues, during the new ISSMGE Board Meeting in Moscow in June of this year I was asked to prepare the first Vice President message to our society members. The reason is that my message should be not only a report about the situation in Europe but also it should be connected with a very sensitive question for most of us – how to improve the image of our profession – geotechnical engineering generally. In agreement with this fact my message is divided into two parts.

A very comprehensive **report about the situation in Europe** was presented by Prof. Roger Frank only 2 years ago (ISSMGE Bulletin, Vol. 2. Issue 2, June 2008). Therefore I will concentrate only on the last year activities and what we are preparing for the future. My advantage is that Roger is still a member of the ISSMGE board as an appointed member so my contact with him is very close and I can share with him some older experiences.

Starting with the young generation, the 20th European Young Geotechnical Engineers Conference was arranged in Brno, Czech Republic, at the end of May and beginning of June in 2010. Thirty one national societies accepted the invitation and supported their delegates. Only two delegates applied for a financial support from ISSMGE. The organizers from the Geotechnical Department of the Technical University Brno arranged this activity in a grand style and all papers were published in the conference materials: "Geotechnical Engineering 20 – view of young European geotechnical engineers" together with the view of ISSMGE representatives (Prof. J.L. Briaud – president, Prof. J. Atkinson, the founder of these activities and Prof. S. Lacasse) who also played the role of discussion leaders. The delegates also positively accepted the presentation of two Czech specialists from the contractor's firms. I am very glad that the tradition of the EYGEC conferences is very attractive as the colleagues from the Netherlands are prepared to arrange the next 21st EYGEC in Delft at the beginning of September 2011 and our colleagues from Sweden offered to arrange the following occasion in 2012.

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More than 20% of attendees from Brno moved directly to Bratislava, Slovak Republic, where the 14th Danube-European Conference on Geotechnical Engineering was arranged. The tradition of this European Regional Conference was founded 46 years ago as one of the opportunities to collect professional engineers from in those days' two parts of Europe. I am very glad that this tradition is now getting a new role as the main theme of the conference: "From research to design in European practice" this new role implies. Prof. H. Brandl played for the entire time a very important integrating role and therefore all involved countries voted for the place of the next DEC in Vienna to celebrate the 50th anniversary of this tradition. Serbia in the name of Prof. Maximovic declared their interest to arrange the following DEC in Belgrade in 2018.

However, the most significant activity in Europe is prepared in Athens, XV European conference SMGE, September 2011. Up to now more than 300 abstracts have been received from Europe and some others from outside of Europe. The Conference Advisory Committee had a meeting in Athens at the beginning of July and realized that the Organizers are devoting great care to this event and therefore we can expect that this activity will be a great success as the previous ones in Madrid and Prague were. The main theme of the conference is: "Geotechnics of Hard Soils – Weak Rocks". The colleagues from UK have the long-run interest in arranging the next one in Edinburgh (2015).

Another European Regional conference organized on a 4-year basis is the Baltic Sea Conference which follows the EC SMGE. The German Geotechnical Society has just published the first Bulletin for this activity proposed to be held in Rostock in June 2012.

Very active in Europe are also European Regional Technical committees. All existing committees declare the interest to continue their work also for the next period, namely ERTC 3 on "Piles foundations", ERTC 7 on "Numerical methods in geotechnical engineering", ERTC 10 on "Evaluation of Eurocode 7", ERTC 12 on "Evaluation of Eurocode 8", and ERTC 16 on "Education and Training in Geotechnical Engineering". All are very active. In the first half of this year ERTC 10 arranged a workshop in Pavia, Italy, and ERTC 7 a symposium in Trondheim, Norway. Practically all of them are also planning to arrange workshops in Athens in close cooperation with the organizers of the XV ECSMGE. As the activities of Technical Committees are playing a specific role in the frame of ISSMGE, we are now proposing to establish additional ERTCs. Up to now there are only 3 very rough proposals for the new ERTC – Ageing of earth structures of transport engineering; Utilization of large volume waste in geotechnical engineering, and finally Utilization of geo-energy. The idealistic view is some sort of a combination of work of TC with the proposed research activities supported from EU. Maybe the coordination of this view with the view of ELGIP platform (European Large Geotechnical Institutes Platform) can bring some positive results.

In Europe there are many other activities, either organized in cooperation with international TC or on the national basis. The most significant one was arranged in Moscow in June 2010 in cooperation with 5 different TCs. This event does not need more specification as you were informed about this conference in the June Issue of ISSMGE Bulletin. Provided that these activities are arranged under the umbrella of ISSMGE, more information can be found on the web pages of our society. Some national conferences are also accepting papers or lectures in one of the world languages. The best way how to become acquainted with the activities in these countries is to join such national conferences. In this case I recommend contacting the relevant national society of ISSMGE.

The questions of the **prestige of Geotechnical Engineering generally and the problems of ISSMGE specifically** are very often discussed in our community. There are different comparisons, however even when compared with different branches of Engineering our profession is evaluated rather in the lower half.

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We have discussed this problem also during the January ISSMGE board call meeting in connection with the cooperation with other sister societies, as the initial aim of the proposed Federation was to present our geo-engineering profession in front of the "policy makers" jointly. The conclusion of our president to this discussion was the recommendation to prepare very short notes which can be used for the improvement of our professional image in future. Therefore please accept the following notes as a starting point to the discussion to this matter.

Arguments which can be used for a better recognition of our profession at the civil engineering level

a) Our profession has a specific position among structural Eurocodes as Eurocode 7 – "Geotechnical design" is not only a material code as codes for concrete, steel, timber, masonry structures, but also a general code, as ground is in the interaction with all other structures and also with the help of EC 7 the action applied from the ground on the other structures can be determined.
b) The risk associated with geotechnical design (either for geotechnical structures or for the above mentioned interaction with ground) is much higher than for other structures – argument – we can test an extremely low part of the ground or a geotechnical structure, let us say one millionth, even when the expected nonhomogeneity is very high. Sometimes the quality checking of a geotechnical structure is indirect; e.g. for earth structures it is via dry density and moisture content.
c) An extremely high risk is also associated with the third dimension – e.g. the failure of many kilometres long dikes and tunnels in the weakest place can cause depreciation of such a structure as a whole.
d) The control of geotechnical structures (from the view of quality, ageing or maintenance) is more complicated as a significant part is under the surface and is not visible.
e) The quality of the design and performance can be approved even after a very long period, especially for activities in the field of Environmental Geotechnics (e.g. for earth structures of environmental engineering as landfills, tailing dams, spoil heaps; for underground repositories or for subsoil remediation, decontamination).

Where these arguments can be used

- during our own activities as national and international conferences – e.g. on the occasion of the 75th anniversary of ISSMGE; at the conferences where all civil engineers are present as well as in civil engineering journals; on the national level as e.g. on the level of Institution of Civil Engineers.
- during the first lectures in our profession to show our students where the position of geotechnical engineering is. Note that each national society can prepare a very short presentation (6-10 slides) about very important practical examples in their country where the role of our profession can be emphasized. These presentations can be put on the web pages of our society and each member can use them for his/her presentation.

Arguments which can be used on a more general level: to draw more attention to our profession for better evaluation in society, for higher support of our research activities of for higher support of our profession on the academic level.

A) Our profession is associated with *higher risks* – see e.g. point ad a).
B) Our profession can help to *improve the quality and safety of old structures* as the interaction with ground is the most sensitive place.
C) Our profession, with respect to the above mentioned point, can help to *protect our cultural heritage,* especially historical buildings from the view of foundation ageing or bedrock deterioration.
D) Our profession is playing an extremely important role during *natural hazards* (as landfills, floods, earthquakes, volcano activities, hurricanes, tsunami etc);

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E) Our profession can help to solve some *energy problems* – with the help of geo-energy utilization;
F) Our profession can significantly *protect our environment* – ground together with ground water especially when solving the problem of waste deposition or problems associated with old ecological burdens.

Where and how these arguments can be used:

i) Together with sister societies (ISRM, IAEG)
- on the academic level – to achieve higher recognition of geo-engineered subjects;
- on the research level – to achieve higher recognition on the level of different grant agencies (on the domestic and international levels) namely in the phase of research projects planning. We also have to try that all our achievements published in different journals, proceedings, books are registered on some official lists (e.g. on the list of Thomson Reuters).

ii) On the level of different information media – first of all via TV, radio, web pages, via all new electronic instruments – where all scientific and practical applications solving difficult problems mentioned under points A-F are discussed or described.

iii) Via invitation of policy makers on any level to join us in our activities (conferences, seminars etc.) where the above mentioned points are discussed and described or via invitation to places where we are proposing to solve some actual problem which interests media and citizens.

Finally I would like to express my belief desire that all of you will start to think about other arguments which can be used and also about the best form of utilization of these arguments. After the discussion on the level of each society the ISSMGE board can prepare the last version for the strategy of the improvement of the prestige of our profession. With high expectations I am waiting for your responses.

The Student and Young Member Presidential Group
By Jennifer Nicks, Ph.D. (Co-Chair, ISSMGE SYMPG)

The Student and Young Member Presidential Group (SYMPG) was created by ISSMGE President Jean-Louis Briaud to get input and ideas from students and younger members (S/YM) across the globe. The group originally consisted of a total of 18 members (3 members from each of the 6 regions) who were nominated by each regional Vice President (and approved by the President in November 2009). The members are either students or younger members (< 35 years old). Since the formation of the group, the group has dropped to 16 members while waiting for 2 new nominations. The current members are (in alphabetical order by surname):

Mahnoosh Biglari (Iran)
Joost Breedeveld (Netherlands)
Lucy Coe (New Zealand)
Silvia García (Mexico)
Erdin Ibraim (UK)
Daniel Jirásko (Czech Republic)
Young-Hoon Jung (Korea)
Baribeop Kabari (Nigeria)
Samuel Laura Huanca (Peru)
Xiojun Li (China)
Marcos Montoro (Argentina)
Edwin Moreno (Colombia)
Jennifer Nicks (USA)
Suzanne Powell (Canada)
Imen Said (Tunisia)
Brendan Scott (Australia)

Jennifer Nicks

The first task of the group was for each member to come up with some ideas on how to make ISSMGE more attractive to S/YM and get them more involved in the organization. From the long list of ideas, we narrowed them down to 4 that we are currently working on within the group. The 4 ideas are:

1) Continue to develop the ISSMGE Website
2) Improve communication between the ISSMGE and S/YM
3) Increase YM involvement in Technical Committees
4) Develop and increase S/YM Membership in ISSMGE

To undertake these ideas, 4 subgroups were created within the SYMPG. The subgroups are tasked with the what/why/how to implement the broad ideas set forth by the SYMPG. The chairs of each subgroup prepared a paragraph to describe these activities and future plans:

Subgroup 1: Continue to develop the ISSMGE Website (Chair: Dr. Xiojun Li)

Subgroup 1 has identified some problems of ISSMGE website from the perspective of student and young members. These problems can be classified into three categories: ease of use, contents and functionality. Subgroup 1 has also proposed some solutions for these problems:

SYMPG (continued)

By Jennifer Nicks, Ph.D. (Co-Chair, ISSMGE SYMPG)

- Introduce more professional resources into website. Also, it will be beneficial to spread ISSMGE unique culture and attract more young people if we can introduce the masters of ISSMGE from the beginning to now. A more vivid introduction of the branches of our association, such as organization structure, research directions, key leader's video introduction, great achievement, milestone event and so on will be equally important.
- Add popular functions, such as RSS news subscription, members' blogs and forums, into ISSMGE website. Visitors of ISSMGE webpage should have an opportunity to get automatically generated news that could be sent by e-mail. Subscribing for the newsletter could be done easily through the web form and through submitting emails.
- Ease of use of website, such as page layout, color design and interactivity, plays an important role in a site's quality. Improvement on these aspects will have positive effects. On the home page up to date news in format of short articles may be included. For example newsletters from the society, scientific articles, invitations for upcoming events etc. However, it would be challenging for webmasters to update a homepage regularly.

Subgroup 1 contacted GeoForum.com co-founder Dr. Rainer Massarsch for possible collaborations in improving the ISSMGE website. Dr. Rainer Massarsch agreed that young geotechnical engineers are interested to learn, to ask questions and to get competent responses. He provided very valuable comments in addition to the ideas presented above. His comments are: (1) Discussions need to be monitored by trustworthy experts. ISSMGE TCs could monitor discussion covering their respective area. Also, to host a successful discussion forum, one needs to develop a sustainable concept. Common problems include fake questions, a lot of spam and web engines trying to highjack e-mail addresses; (2) a lot of information in the form of youtube or other videos which could be organized according to specific topics (earthquakes, liquefaction, landslides, ground improvement etc.) can be added to an area of website; and (3) Geo-commercial companies and their activities can be linked to other area of the website. These companies may have privilege of publishing information about their company.

Subgroup 1 also consulted ISSMGE Secretary General Prof. Neil Taylor on how the ISSMGE website works. Prof. Neil Taylor said they are thinking of ways in which the website can be improved and he said the work of Subgroup 1 is very helpful.

Future plans include keeping a close contact with Prof. Neil Taylor and Dr. Rainer Massarsch, interacting with the Innovation and Development Committee and working out a proposal for the improvement of ISSMGE website.

Subgroup 2: Improve communication between the ISSMGE and S/YM (Chair: Brendan Scott)

Subgroup 2 is focusing on improving communication between the ISSMGE and younger members. Mailing lists of younger members have recently been created and are being populated; however, there is a need to make the society more interactive and attractive for younger members. Multimedia methods of communication that facilitate two-way communication between the ISSMGE and members are being investigated as an avenue for improving communication.

Subgroup 2 is also proposing to conduct a survey of young members (and potential future members) from different parts of the world. The aim of this survey is to determine how (and/or if) current young members of the ISSMGE are receiving information from the ISSMGE; changes or improvements that young members would like to see; what can be done to attract more younger members; and determine what percentage of youth in member societies are active ISSMGE members. A flyer on the ISSMGE will also be created to send to both current and potential future members. The aim of this flyer is to highlight and promote the work of the ISSMGE and attract younger members to join and become more involved.

SYMPG (continued)
By Jennifer Nicks, Ph.D. (Co-Chair, ISSMGE SYMPG)

Subgroup 3: Continue Increase YM involvement in Technical Committees (Chair: Dr. Young-Hoon Jung)

Subgroup 3 of ISSMGE is organized to encourage young members to be involved with the technical committee (TC) of the ISSMGE. Current guidelines define general membership of TCs: four members nominated by the chairperson of TC, four members nominated by the technical oversight committee (TOC), and two members from each member society. Current guidelines do not consider explicitly the involvement in TCs for young members who may have a great potential but do not have some past activity in the technical domain of interest. The members of Subgroup 3 discussed how to increase the TC involvement of young members and recommended that each technical committee must involve six young members who are nominated from each regional ISSMGE. Currently we are discussing details on requirement and role of young TC members with Dr. Suzanne Lacasse, head of the TOC. A proposal will be developed to modify the existing guidelines and submitted for approval by the ISSMGE Board.

Subgroup 4: Develop and increase S/YM Membership in ISSMGE (Chair: Lucy Coe)

Subgroup 4 has been set up to develop and grow a student and young members group for ISSMGE. The main purpose of the new membership is to promote interaction between the ISSMGE and young engineers. As a sub group, with input from our peers, we have started developing objectives for this student and young members group and a strategy for implementing it.

We propose that the student and young members group is developed within each member society and at an international level. We understand that the ISSMGE will need to work closely with member societies to develop this new membership and that the new membership needs to be compatible with ISSMGE requirements.

Recently, we have surveyed member societies to receive feedback on the student and young member groups already present within these groups. Initial findings of the survey indicate that of the respondents, two thirds of societies had a young person's membership, with over 80% having special events targeted at young members including reduced fees, awards and scholarships, special symposiums and sponsored attendance at nation conferences.

The societies that did not yet have an official young membership were open to creating this within their societies. Other suggestions for implementing the student and young membership include reduced fees, promotion of interaction with more experienced engineers and with other geotechnical societies, and advertisement of events, courses etc.

Going forward we will be collating all survey results and further developing a strategy for the student and young member group.

Corresponding Members:

When ISSMGE President Jean-Louis Briaud created the group, he realized that many more students and younger members were interested in contributing to the SYMPG than could be nominated. He then created the Corresponding Members of the SYMPG. This group receives the e-mails of the SYMPG and can contribute by e-mail to either co-chair of the SYMPG (Dr. Briaud or Dr. Nicks), but cannot actively participate in the meetings or vote on initiatives within the SYMPG. To date, there are 25 Corresponding Members.

If you are a student or younger member interested in becoming a Corresponding Member of the SYMPG, please contact Dr. Jennifer Nicks at jennifernicks@gmail.com

Case History

The Geotechnical Aspects of the Haiti Earthquake

Ellen M. Rathje, University of Texas

Introduction

On January 12, 2010 a magnitude Mw 7.0 earthquake struck the Port-au-Prince region of Haiti. The Geotechnical Extreme Events Reconnaissance (GEER) Association mobilized a reconnaissance team, funded by the United States National Science Foundation, to document the geotechnical and geologic aspects of this event. The team members included: Prof. Ellen Rathje (Team leader, University of Texas), Mr. Jeff Bachhuber (Fugro/William Lettis & Associates), Prof. Brady Cox (University of Arkansas), Mr. Jim French (AMEC/Geomatrix), Prof. Russell Green (Virginia Tech), Prof. Scott Olson (University of Illinois), Prof. Glenn Rix (Georgia Tech), Mr. Oscar Suncar (University of Texas), and Mr. Donald Wells (AMEC/Geomatrix). This report is based on the extended GEER reconnaissance report by Rathje et al. (2010), which can be found at:
http://www.geerassociation.org/GEER_Post%20EQ%20Reports/Haiti_2010/Cover_Haiti10.html

Seismological Aspects and Regional Geology

The M_W = 7.0 Haiti earthquake occurred at 4:53 PM local time on January 12, 2010. The USGS reports that the earthquake epicenter was located at 18.457N, 72.533W, approximately 25 km west of the city of Port-au-Prince. The earthquake was initially presumed to have occurred on the Enriquillo-Plantain Garden Fault Zone (EPGFZ), a left-lateral, strike-slip fault that slips approximately 7 mm/yr (Figure 1). Although the EPGFZ is a strike-slip fault, the focal mechanism for this earthquake was identified as left-lateral/oblique. Additionally, the EPGFZ did not rupture at the surface and significant uplift occurred north of the EPGFZ (see Section 4.0, Rathje et al. 2010), such that there is significant uncertainty regarding the causative fault for the earthquake. Large earthquakes have not occurred recently on the EPGFZ, but historical records indicate that Port-au-Prince was destroyed by earthquakes in both 1751 and 1770. These events are believed to have occurred on the EPGFZ.

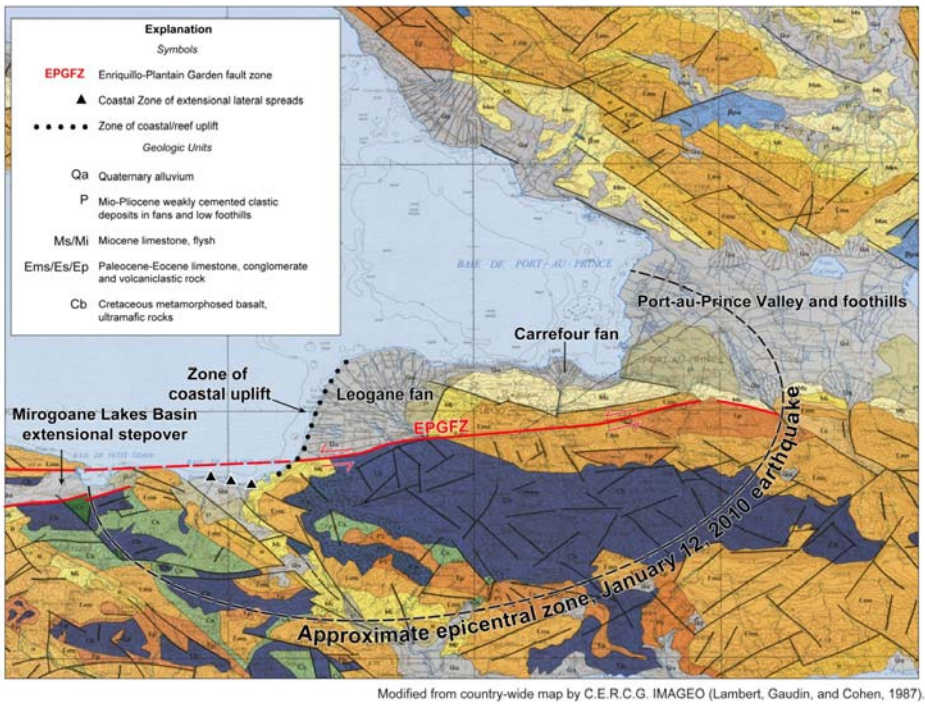

Figure 1. Geologic map and faults in area affected by the Haiti earthquake (original map by Lambert, 1987)

Case History (Continued)

The Geotechnical Aspects of the Haiti Earthquake

The preliminary locations for aftershocks located by the regional seismic data are shown in Figure 2, along with the slip inversion derived by Caltech (http://tectonics.caltech.edu/slip_history/2010_haiti/). The aftershocks extend over a distance of about 50 to 60 km, predominantly westward from the epicenter, and generally scattered along the trace of the EPGFZ. There is a distinct clustering of aftershocks about 30 km west of the epicenter (near Petit Goave), which corresponds with the end of the fault rupture inferred from the slip inversion as well as an extensional stepover in the fault. This extensional stepover is a natural segmentation point for the fault, and together with the other data shown in Figure 2, appears to have arrested the westward progressing fault rupture. Therefore, it appears that the major portion of the mainshock rupture process was only about 30 km long. This is somewhat shorter than would be expected for M 7 earthquake as estimated from empirical relationships (e.g., Hanks and Bakun 2008, Wells and Coppersmith 1994) that predict a rupture length of about 50 km for a M 7 earthquake. However, comparisons of rupture lengths estimated from the earthquake rupture process versus the distribution of aftershocks are not generally reliable or definitive.

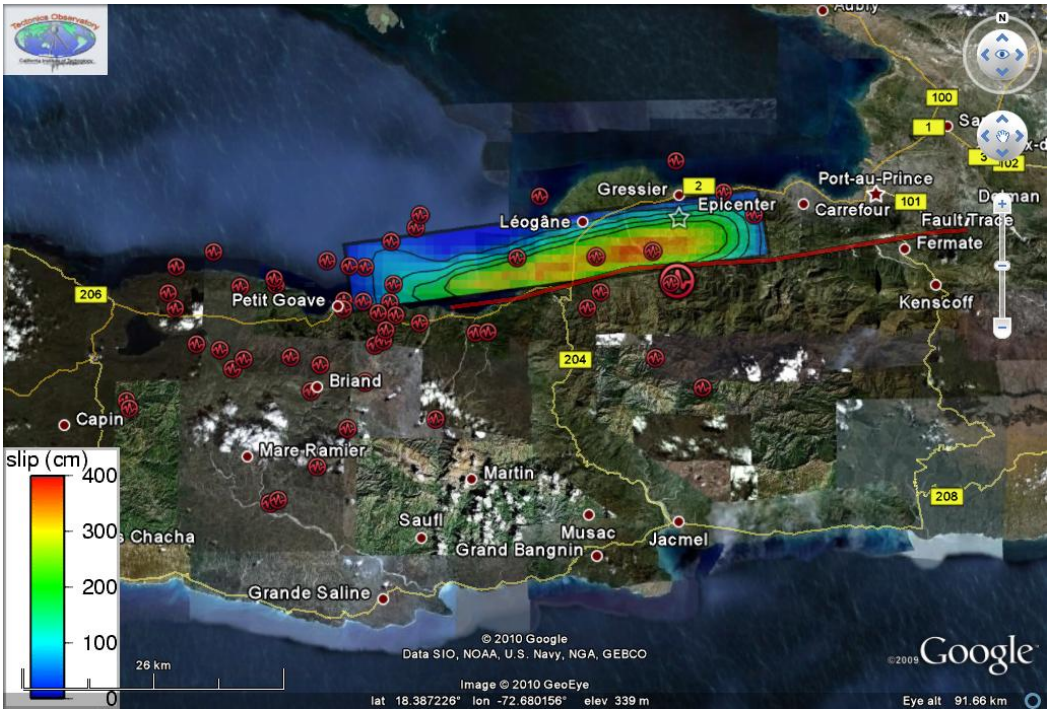

Figure 2 Aftershock distribution for the 2010 Haiti earthquake through 21 January 2010 (from USGS), along with slip inversion by Caltech (http://tectonics.caltech.edu/slip_history/2010_haiti/)

Case History (Continued)

The Geotechnical Aspects of the Haiti Earthquake

The earthquake-affected region is a physiographically diverse area that has undergone a complex geologic history of intrusion, tectonism, erosion, and sedimentation. The topography within the study area is relatively rugged, with steep mountain ranges and hillfronts, deeply incised streams and narrow intermountain stream valleys, and broad coastal delta fans and valleys. Figure 1 is a geologic map of the earthquake epicentral area, based on original mapping by C.E.R.C.G. IMAGEO (Lambert, Gaudin, and Cohen, 1987). The map shows the central mountainous core of the southern peninsula to be locally underlain by metamorphosed Cretaceous basalt/mafic volcanic basement, and Cretaceous-Eocene limestone, conglomerate, and clastic sedimentary rocks. An east-west trending band of Miocene and Mio-Pliocene sedimentary rock (including flysch, siltstone, shale, sandstone) occurs along the coast and southern margin of the Port-au-Prince alluvial valley.

Quaternary deposits in the earthquake-affected region include: (a) Holocene to late Pleistocene fluvial alluvium deposited in the Port-au-Prince valley and interior incised river valleys, (b) alluvial fan and colluvial wedge deposits along the margins of larger valleys, (c) coastal delta fan complexes where larger streams (e.g., Momance and Frorse Rivers) discharge into the sea along the coast, and (d) artificial fill along much of the coastline within the city of Port-au-Prince. The central area of Port-au-Prince which was devasted by the earthquake spans from the relatively level floor of a large alluvial valley, southward onto low hills underlain by Mio-Pliocene deposits. Portions of the city are underlain by thick sequences of Holocene to Pleistocene alluvium in a broad downwarped basin, but zones of high damage extend onto the Mio-Pliocene bedrock. The cities of Leogane and Carrefour (Figure 1) are located on large delta fans, and are underlain by a thick sequence of Holocene to Pleistocene alluvium.

Damage Patterns

Earthquake-induced damage in Port-au-Prince was devastating and widespread. Yet, there were clearly areas of the city where little to no damage occurred, and areas of the city where an overwhelming majority of the buildings were severely damaged or destroyed. This section investigates, on a limited scale, some of the damage patterns around Port-au-Prince relative to geologic and topographic conditions. The damage patterns are based on a comprehensive building damage assessment performed using satellite and aerial imagery by UNOSAT (United Nations Operational Satellite Applications Programme; http://unosat.web.cern.ch/unosat/). The UNOSAT damage assessment in Port-au-Prince was a significant effort whereby over 90,000 buildings were visually surveyed via post-earthquake satellite and aerial imagery in order to group each structure into one of four categories: (1) Destroyed, (2) Severe Damage, (3) Moderate Damage, and (4) No Visible Damage.

Figure 3 is a shaded relief map for a portion of Port-au-Prince derived from a 1-m LIDAR DEM collected by RIT for the Worldbank (http://ipler.cis.rit.edu/projects/haiti). Also shown in this figure are the geologic boundaries from a geo-referenced version of the geologic map shown in Figure 1. Interestingly, the geologic map indicates that the Pliocene deposits extend almost to the coastline within the central part of the city, yet the topographic data indicate that the flat plain (which presumably corresponds to the Quaternary deposits) extends a significant distance inland. Additional geologic field mapping by the GEER team confirmed that this flat plain was underlain by Holocene and Pleistocene alluvium, and these observations were supplemented with shear wave velocity profiles measured by MASW (Cox, personal communication).

An updated geologic map of Port-au-Prince is shown in Figure 4 along with the damage data from the UNOSAT assessment. The geologic units in Figure 4 represent artificial fill (Af), Holocene alluvium (Qham) and Pleistocene fan deposits (Qpf) in the flatter areas, with Pliocene fan (Pf), Mio-Pliocene fanglomerate (Mpb), and Miocene limestone (Lmst) found in the hillsides. The damaged buildings (which represent damage categories 1 through 3) are shown in red, while the undamaged buildings are shown in black.

Case History (Continued)

The Geotechnical Aspects of the Haiti Earthquake

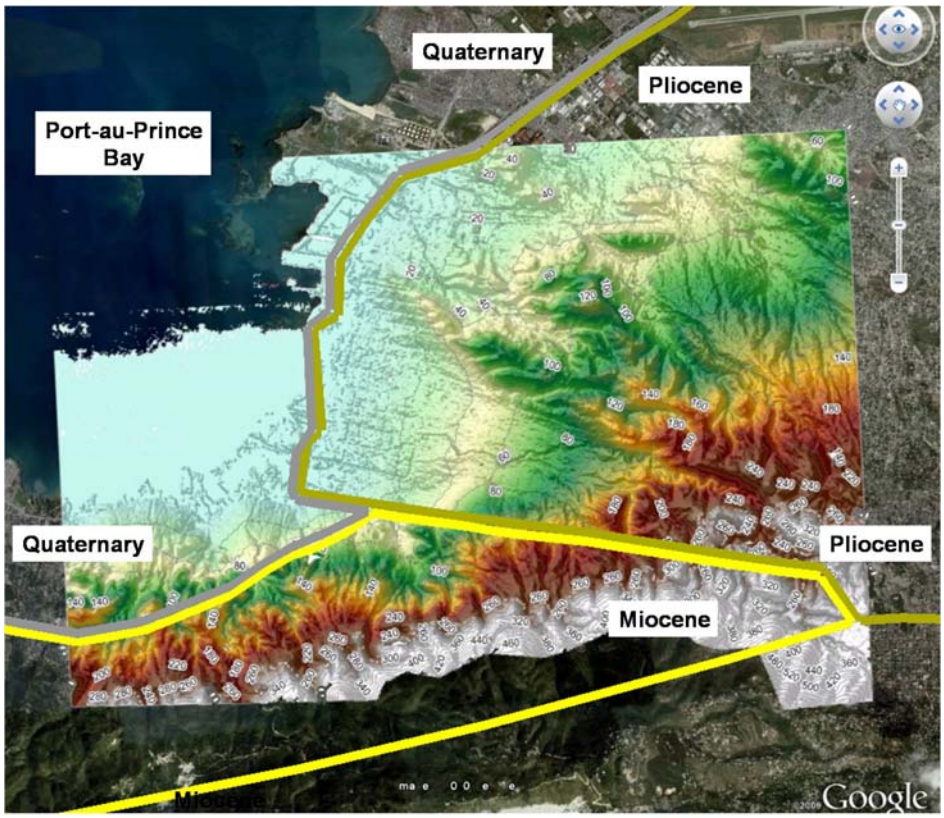

Figure 3 Shaded topographic relief map of the Port-au-Prince area with geologic boundaries from the geologic map shown in Figure 1.

In the flat, Quaternary units that underlie much of downtown Port-au-Prince, it is clear that the damage was more severe in the Holocene alluvium (Qham) than in either the artificial fill (Af) or Pleistocene fan deposits (Qpf). The percentage of buildings damaged (i.e., Damage Intensity) in the Qham deposit was approximately 38%, while the percentage of buildings damaged in the Af and Qpf deposits was approximately 10% to 15%. The concentration of damage in the Qham deposit was influenced by a combination of two factors: site amplification due to lower velocity materials (Vs30 ~ 330 m/s) and a high concentration of poorly reinforced, 2 to 5-story reinforced concrete buildings. While the Af deposits consist of lower velocity materials (Vs30 ~ 250 m/s), the Damage Intensity was smaller because they building stock in this area consisted mostly of single-story, reinforced concrete or corrugated metal structures that were less vulnerable to soft soil amplification. The Damage Intensity in the Qpf deposits was smaller due to the higher velocity materials (Vs30 ~ 485 m/s).

Case History (Continued)

The Geotechnical Aspects of the Haiti Earthquake

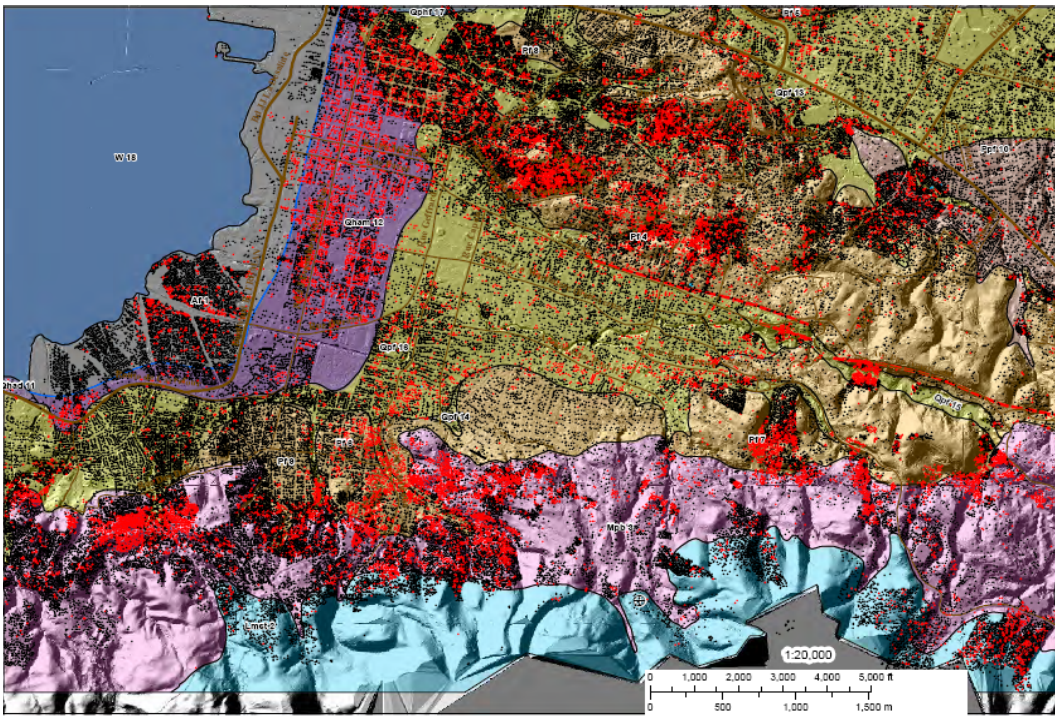

Figure 4 Revised geologic map of Port-au-Prince along with damaged buildings from UNOSAT survey (red=damaged building, black=undamaged building).

Figure 4 also shows localized areas of heavy damage in the hillsides north and south of the main alluvial plain. Damage Intensities in these zones were as large as 40 to 60%. These areas are underlain by the older Pf and Mpb deposits that consist of stiffer materials (Vs30 ~ 500 to 550 m/s). The slopes in Pf deposits range from 5 to 20°, while the slopes in the Mpb deposits range from 10 to 40°. These areas represent zones where it is believed that topographic amplification caused enhanced ground shaking and larger damage intensities.

Port Facilities and Coastal Infrastructure

The main port in Port-au-Prince is located slightly north of downtown (Figure 5) and approximately 20 to 25 km from the fault rupture. The port consists of two separate facilities built in the late 1970's and designated as the North Wharf and South Pier. The entire facility was constructed using dredged, calcareous, hydraulic fill for the staging areas, and both the North Wharf and South Pier were pile-supported.

Pre- and post-earthquake aerial images of the port are shown in Figure 6, and these images clearly show evidence of liquefaction and lateral spreading, failure of the North Wharf, and collapse of portions of the South Pier. This damage inhibited the delivery of relief supplies to areas affected by the earthquake. Light-colored areas on the ground surface in the post-earthquake image in Figure 6 are sand boils/ejecta and can be seen in the eastern half of the container storage yard and behind and between the two warehouses. Locations of large lateral spreading fissures were observed all along the shoreline.

Case History (Continued)

The Geotechnical Aspects of the Haiti Earthquake

Figure 5 Location of main port in Port-au-Prince.

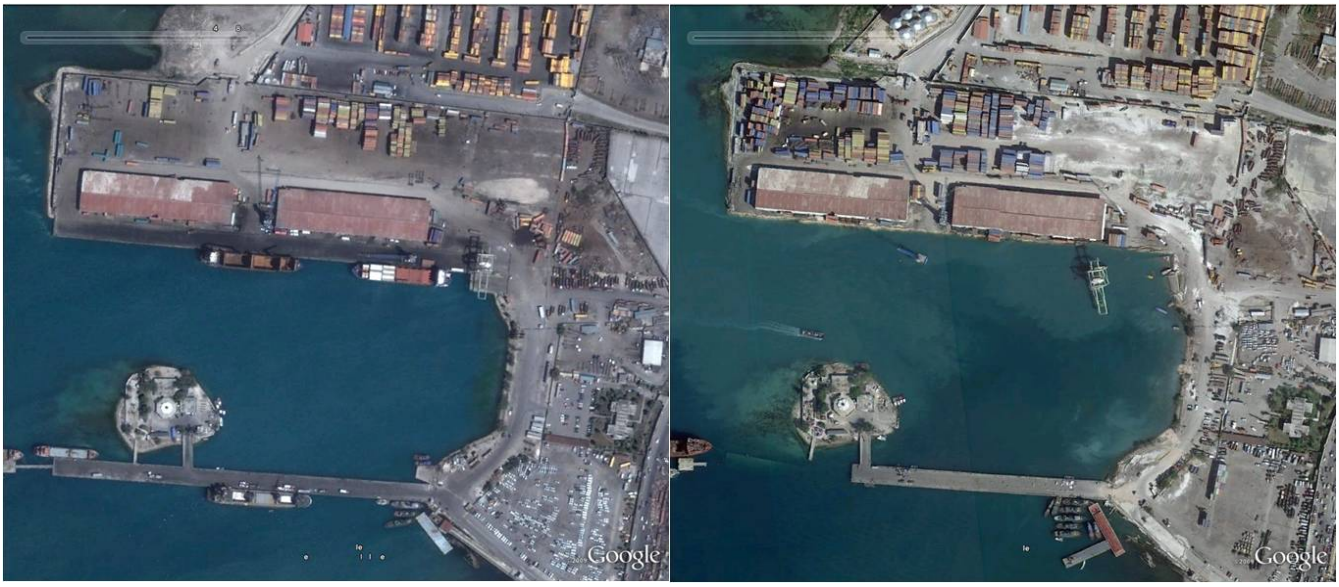

Figure 6 Pre- and post-earthquake satellite/aerial imagery (left and right, respectively) of the port at Port-au-Prince, Haiti (N18.555058°, W72.351144°). Imagery courtesy of Google Earth.

Case History (Continued)

The Geotechnical Aspects of the Haiti Earthquake

The North Wharf consisted of a pile-supported marginal wharf that was approximately 450 m in length and 20 m in width. The water depth is 8 to 10 m. Immediately adjacent to the wharf are two steel-frame warehouses, each approximately 150 m by 40 m. The North Wharf collapsed, most likely due to liquefaction-induced lateral spreading and the associated failure of the piles supporting the wharf. Numerous surface manifestations of liquefaction and lateral spreading were present in the vicinity of the North Wharf (e.g., Figure 7).

The warehouses along the North Wharf suffered severe damage as a result of the lateral spreading and settlement (Figure 8). Lateral spreading cracks running in the East-West direction cut through each warehouse foundation wall (Figure 8). A detailed field survey was performed of the relative elevations and lateral movements of the west warehouse slab. Due to lateral spreading, the south wall (adjacent to the shoreline) moved approximately 0.7 to 1.4 m laterally towards the shoreline. The relative elevations across the interior were variable, with the some areas almost 1 m lower than others. It appeared that the warehouses were founded on strip footings around their perimeters, which settled significantly. Settlements measured at the inland corners of the warehouses indicate 15 cm of settlement relative to the ground surface for the west warehouse and 40 cm of settlement for the east warehouse.

Figure 7 Lateral spread cracking and deformations along the North Wharf of the port.

Case History (Continued)

The Geotechnical Aspects of the Haiti Earthquake

Figure 8 Ejecta and cracking adjacent to warehouses along the North Wharf

The South Pier (Figure 6) is a pile-supported structure that was originally 380 m in length and 18 m in width. A large bridge and a small pedestrian bridge that are approximately perpendicular to the longitudinal axis of the pier connected the pier to an island where the port security office is located. The western end of the pier was also connected to three dolphins by small pedestrian bridges. All of the bridges were also pile-supported structures. The piles supporting the pier are approximately 51-cm square concrete piles on 4.3 to 4.9-m centers and include both vertical and battered piles. The pile bents are 1.5 m deep and 0.9 m wide and the deck is 45 cm thick (Brian Crowder, personal communication). During the earthquake, the western-most 120 m of the South Pier and portions of the pedestrian bridges linking the dolphins collapsed and became submerged. The portion of the pier that is still standing was heavily damaged. US Army divers inspected the piles following the earthquake to determine whether the pier could support loads imposed by trucks carrying relief supplies. They found that approximately 40% of the piles were broken, 45% were moderately damaged, and 15% were slightly damaged. Generally, the batter piles were more heavily damaged than the vertical piles. The damage to the piles supporting the small pedestrian bridge connecting the South Pier to the island could be readily observed (Figure 9).

Case History (Continued)

The Geotechnical Aspects of the Haiti Earthquake

Figure 9 Damage to piles supporting the pedestrian bridge connecting the South Pier to the island

Liquefaction

Numerous liquefaction features near the coastline were identified using aerial imagery, as shown in Figure 10. Potential liquefaction-induced failures were identified up to 38 km from the epicenter and up to 26 km from the fault trace. These data plot well within the boundaries for most distal liquefaction sites proposed by Ambraseys (1988) using worldwide data (Figure 11). This suggests that the natural coastal and alluvial soils near Port-au-Prince Bay are only moderately susceptible to liquefaction, although liquefiable Quaternary sediments were generally noted only within short distances from the coast.

Generally, observed liquefaction-induced failures occurred either in fill soils placed to reclaim land for urban areas (e.g., Port-au-Prince port) or in Holocene-active delta fan lobes in coastal areas near the mouths of streams emptying into Port-au-Prince Bay. The most susceptible deposits and largest lateral spreads occurred within active Holocene delta fan lobes immediately west of the fault rupture where well-defined deltas exist where local streams discharge from a mountain front near the coast. The short distance between the mountain front and coast has not allowed significant sorting and grain size reduction in the delta lobes, such that the sediments consist predominantly layers of coarse to fine, sand and silty sand. Further inland, liquefaction features were limited to the floodplains of lower-gradient, meandering streams occasionally found north and east of Port au Prince. Most of the streams along the southern rim of Port au Prince Bay are high-gradient, braided ephemeral streams that carry coarser sediment loads. Almost no liquefaction features were identified along these streams inland of the coastline. In the city of Port au Prince, most of the streams are rather shallow and ephemeral, and have been channelized and often lined with stones or concrete. As a result, liquefaction was unlikely to occur in these drainage channels.

Case History (Continued)

The Geotechnical Aspects of the Haiti Earthquake

Figure 10 Liquefaction, lateral spreading, and coastal failure sites identified from post-earthquake aerial photography (sites identified as open hexagons)

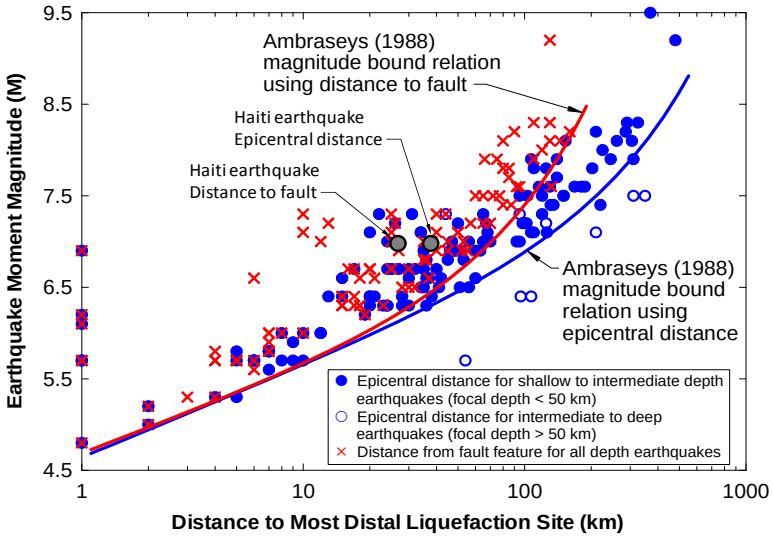

Figure 11. Comparison of most distal liquefaction sites identified in Haiti from aerial photography with worldwide data collected by Ambraseys (1988)

Case History (Continued)

The Geotechnical Aspects of the Haiti Earthquake

During the reconnaissance mission, the GEER team performed more detailed investigations of five potential liquefaction sites, including the Port-au-Prince port (previously discussed) and four coastal sites. One of these significant liquefaction failures occurred near the village of Fouche, close to the western edge of the fault rupture. At this site, approximately 330 m of coastline failed, as illustrated in pre- and post-earthquake imagery in Figure 12. At this site, as much as 100 m of land (perpendicular to the coast) was lost as a result of the failure. The primary manifestations of failure included scarps, cracking, and graben formation in an arcuate path along the coastline (Figure 13), as well as substantial damage to a stone wall running perpendicular to the coast and parallel to a braided stream that emptied into the bay and moderate-sized sand blows along the inland extent of the failure. One sand blow area included gravel clasts of up to about 2.5 cm in maximum dimension. The gravels may have been plucked from the sidewalls of the liquefaction feeder dike/fissure, or could have been entrained in the actual liquefied sediments.

During the reconnaissance efforts, the team conducted one Dynamic Cone Penetrometer (DCPT) test and one SASW line near several sand blows at the eastern end of the failed zone. Figure 14 presents the results of the DCPT and SASW in the failed zone. As illustrated in Figure 14, loose sand was encountered at a depth of about 0.7 m (2.5 ft), underlying a low permeability cap layer consisting of clayey sand and silty clay. The sands became medium-dense to dense at a depth of about 1.6 m (5.5 ft). The SASW shear wave velocity profile shows Vs ~ 120 m/s material in the top 1 to 2 m, underlain by stiffer, non-liquefiable material (Vs ~ 240 m/s).

Based on the arcuate scarp, graben formation, sand blow development, and the results of the in-situ tests, this failure is attributed to liquefaction and lateral spreading of the loose to medium dense sands below a depth of 0.7 m (2.5 ft). Headscarps and slump block scarps were up to 1.5 m high in the central parts of the failure, suggesting that failure extends perhaps 1.5 to 2 m below the original ground surface. Liquefaction likely extended to a depth of 1.6 m and may have occurred at greater depth, but penetration with the DCPT was limited in these denser sands. This failure appears to coincide directly with the presence of the braided stream dumping loose sand into the sea, rather than in the marine sands present along the coast.

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Case History (Continued)

The Geotechnical Aspects of the Haiti Earthquake

Figure 12 Pre- and post-earthquake images of coastline near village of Fouche. Note in the lower, post-earthquake image the significant loss of coast as outlined in blue.

Case History (Continued)

The Geotechnical Aspects of the Haiti Earthquake

Figure 13 Scarp of coastal landslide near village of Fouche.

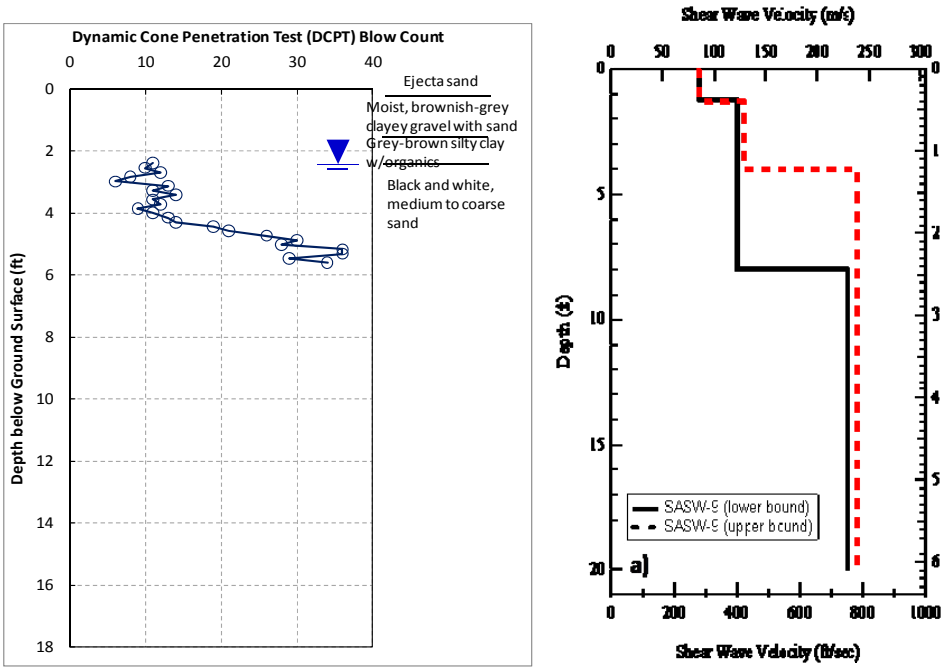

Figure 14 Results of DCPT and SASW testing at coastal failure site near village of Fouche.

Case History

Attabad Landslide- Dam Disaster in Pakistan 2010

Tahir Hayat, Vice President, National Engineering Services Pakistan
Imran Khan, Director General, Geological Survey of Pakistan
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ABSTRACT
On January 4, 2010, in the remote Hunza Valley of Northern Pakistan a massive landslide buried the village of Attabad, destroyed 26 houses and killed 20 people. The landslide dammed Hunza River and formed an extensive lake of 100m depth. Until the end of July 2010, 381 houses were ruined; out of which 141 were directly affected by Attabad landslide, others were submerged due to expansion of the lake. By the end of May 2010 local authorities excavated a spillway to guide the flow of impounding lake over the natural dam. Until August, 2010, the spillway is performing well but internal response of the loosely deposited debris is unknown.

INTRODUCTION

Attabad village is situated in the extremes of Northern Pakistan. It is located at a distance of 760km from Islamabad, the capital of Pakistan.

Karakoram highway connects Islamabad to Gilgit and further passes through Hunza valley up to Khunjrab Pass. The Karakoram Range of Himalayas passes through the Hunza valley in NW-SE direction. High snow-covered mountains with steep cliffs and narrow valleys are topographic characteristics. The difference of elevation between the valleys and the peaks ranges from 2200 m to 2700 m. Hunza and Hispar Rivers control the drainage of the area. A very high mountain of Rakaposhi (7788m) lies to the South-West and the Pasu Glacier lies in North of Attabad landslide area. Hunza valley rises from 1850 m to the peak of Rakaposhi at 7788 m over a distance of 11 km which is the most contrasting relief in the world.

The highest areas of the valley have pyramidal peaks and sharp ridges without plateau features. Weathering due to frost action is the cause of slope failures and mass movements. High peaks covered with snow are common along with rock and scree slopes, and mud flows are present throughout Hunza valley. The moraines have irregular topography. Attabad area have extreme climate in winter in which temperature falls below 0°C; however, spring and summer are pleasant with an average temperature of 30°C. The area receives about 1 m of snow in winter; January is the coldest and snow melting causes mudflows and rock falls during summer.

Case History (continued)

Attabad Landslide- Dam Disaster in Pakistan 2010

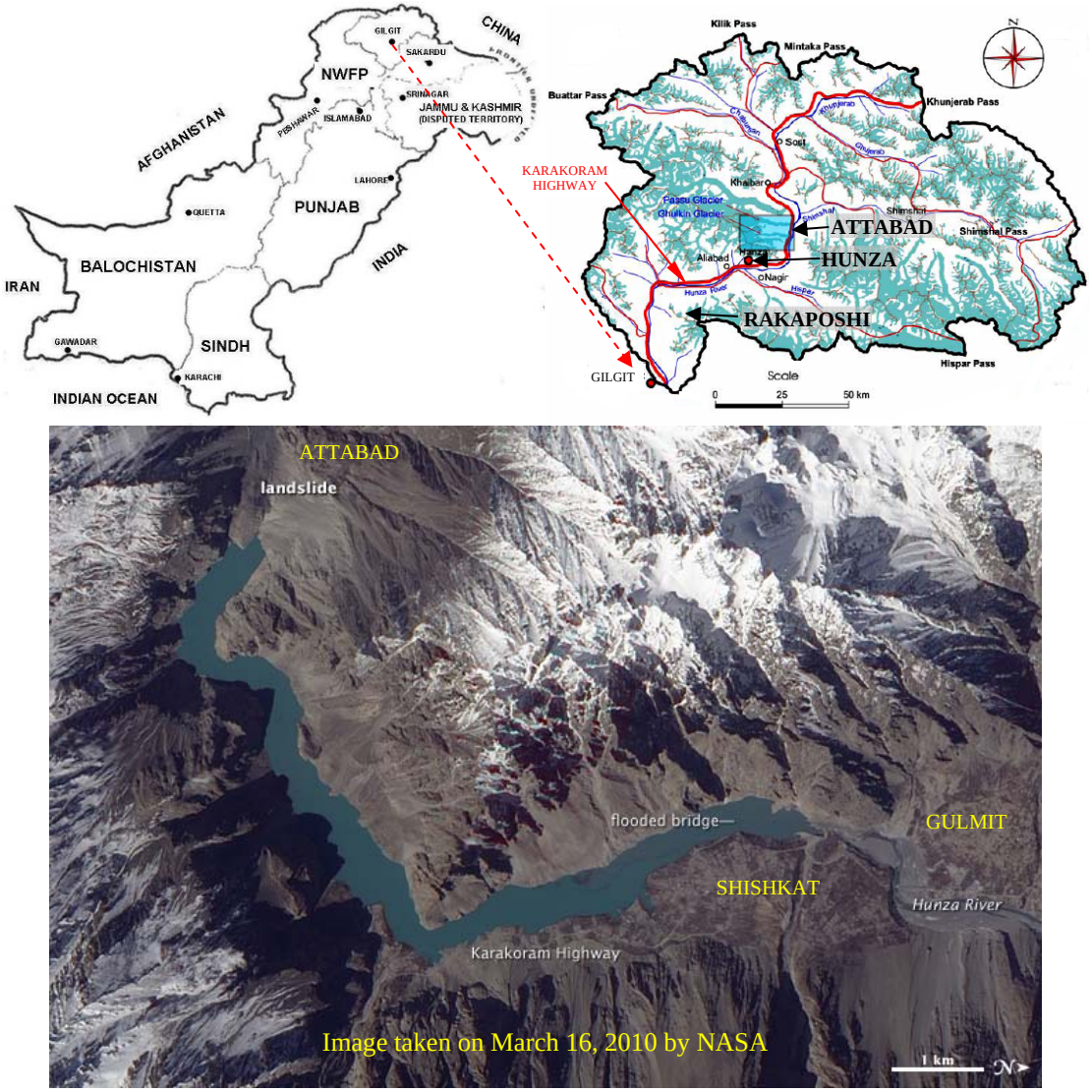


Figure 1 Location plan of Attabad landslide disaster

GEOLOGY & TECTONICS OF THE AREA

The Northern areas are one of the most complex and difficult terrain in the world, exhibiting a great variety of rock types and structures. The exposed rocks range in age from pre-Cambrian to Recent and are composed of igneous and metamorphic rocks of various types. On the basis of regional tectonic set up, the Main Karakoram Thrust (MKT) and Main Mantle Thrust (MMT) are the major tectonic features and these mega-shears may affect the Attabad area during any seismic activity

Case History (continued)

Attabad Landslide- Dam Disaster in Pakistan 2010

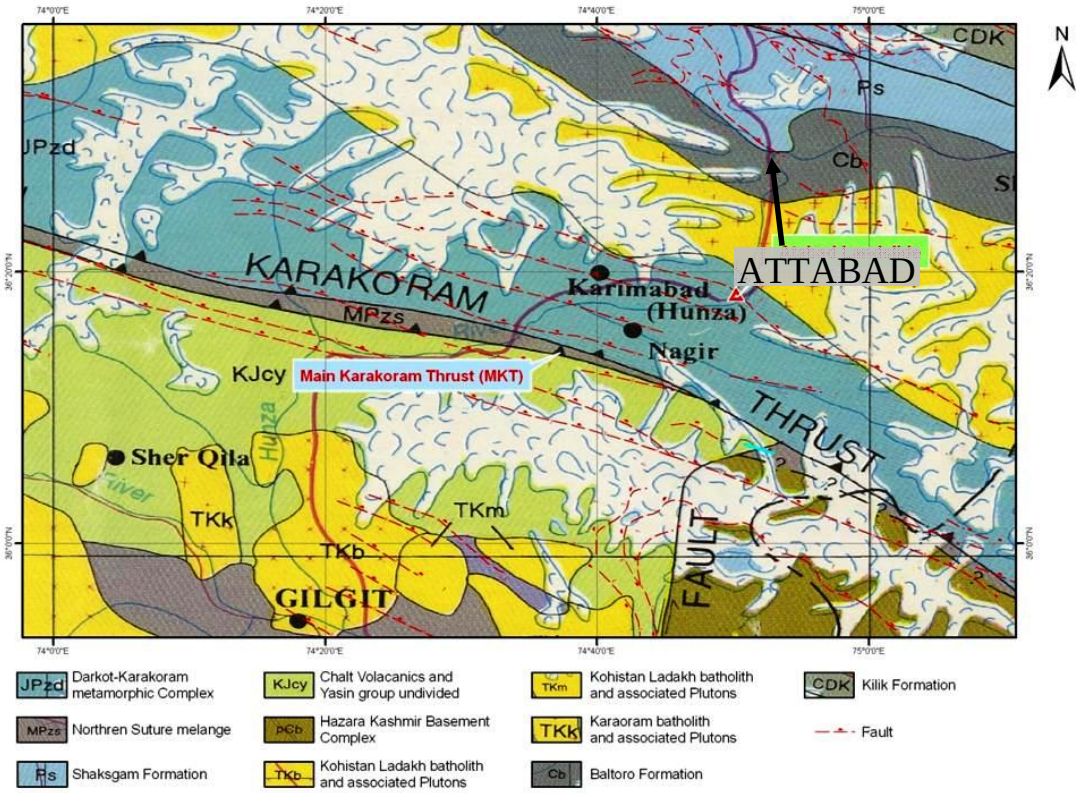


Figure 2 Geological map of Hunza valley and adjoining areas

The destroyed Attabad village was located on valley slope of glacio-fluvial deposits underlain by Gneissic rocks (orthogenesis and Para-gneisses of Baltit Group); Baltit group consists of gneisses, schist, quartzite, dolomite limestone and marble. Glacio fluvial deposits forming the site of Attabad village consist of boulders, cobbles and gravels with some silt and sand as cementing materials. The rocks exposed at crown and toe are highly fractured, sheared, jointed and weathered. A fault on the eastern side of the village is passing through Hunza River trending almost North-South.

PRE-DISASTER PERIOD

Attabad village has been affected by very complex slope instability conditions due to denudation process, effect of seismic activity, high slope angle, river cutting, lithological conditions, snow melt, rains and irrigation for agriculture, and heavy overburden on bed rock in the form of glacio-fluvial deposits. In 2002 Astore earthquake of magnitude 6.3 was recorded as one of the major triggering factor, and cracks appeared at the back-slopes of Attabad. The second major displacement was observed in 2004, when the cracks extended longitudinally and transverse into the cultivated fields and populated areas of Attabad and surface failure features appeared at the toe of the affected area. The 2005 Kashmir earthquake of magnitude 7.6 accelerated the slope movement and networks of cracks destroyed several houses.

Case History (continued)

Attabad Landslide- Dam Disaster in Pakistan 2010

(a) Right bank (b) Left bank

Figure 3 Site of Attabad landslide in pre-disaster period (August 2009)

Geological survey of Pakistan conducted a hazard analysis of the area in August 2009 and reported their viewpoint as follows;

1. Unconsolidated overburden lies on the bed rock in the form of glacio-fluvial deposits ranging in thickness from 3 to 12m. These deposits form the terraces and back-slopes of the affected area. Clay and silt constitute major proportions of the overburden at the back-slope and terraces.
2. A fault is passing through the affected area having a strike NS and crossing the river. A huge landslide has developed across the river (Fig. 3(b)). This landslide is associated with the fault. The movement along this fault has weakened the shearing strength of the rocks and decreased the angle of repose.
3. High slope angle is the major triggering factor of the eastern Attabad. A slope angle at terraces is ranging from 30° to 40°, at the back-slope from 35° to 55° and toe of terraces is nearly vertical (Fig.3 (a)).
4. The bed rock is highly fractured, sheared and jointed due to the tectonic activity in the area. Blocks of rocks started to slide down in the form of wedge failure, while rockfalls and toppling are observed at some places. The mass movement has weakened the base and results in widening and vertical settlements of cracks and expanding the landslide phenomena in the areas.
5. Hydrological conditions of the affected area are further accelerating the slope failures, Water from three sources are infiltering into the cracks and fissures, i.e. rain, snow melt and irrigation. At many places water is directly infiltrating into the cracks and fissures and damaging the mechanical behavior of failure planes, accelerating the underground movement that appears as surface failures.

Based on those studies Attabad was declared as high hazard zone. Local authorities were suggested by Geological Survey of Pakistan to take necessary action for the evacuation of dwellings from vulnerable area. A suggestion was given to monitor the hazardous area during the winter and snow melt season.

Case History (continued)

Attabad Landslide- Dam Disaster in Pakistan 2010

SALIENT FEATURES

On January 4, 2010 a huge mass failed, destroying the village of Attabad and damming the Hunza River. Fig.4 shows the secondary landslide taking place at the site. The blocked length of the river was about 2 kilometers with the width of 500m. The landslide itself blocked 1.3km of Karakoram Highway. Till the end of May 2010, the lake stretched to a length of 22km. The estimated potential storage of the lake, if it impounds up to the maximum height of the dam, is 305 million m^3.

Figure 4 Secondary landslide on January 22, 2010 at Attabad (image courtesy PAMIRTIMES)

The distribution of deposited debris is shown in Fig. 5. A longitudinal profile through the flow path of Hunza River is shown in Fig.6. Deposited mass is mainly composed of non-cohesive rock flour (fine dust, silt, silt gravels and cobbles) at the toe of the failed slope. Large boulders of granodioritic rocks with intrusions of granite, pegmatite and apatite were deposited close to the left bank of Hunza River. The deposit on the downstream side is composed of black clay with high plasticity and organic content.

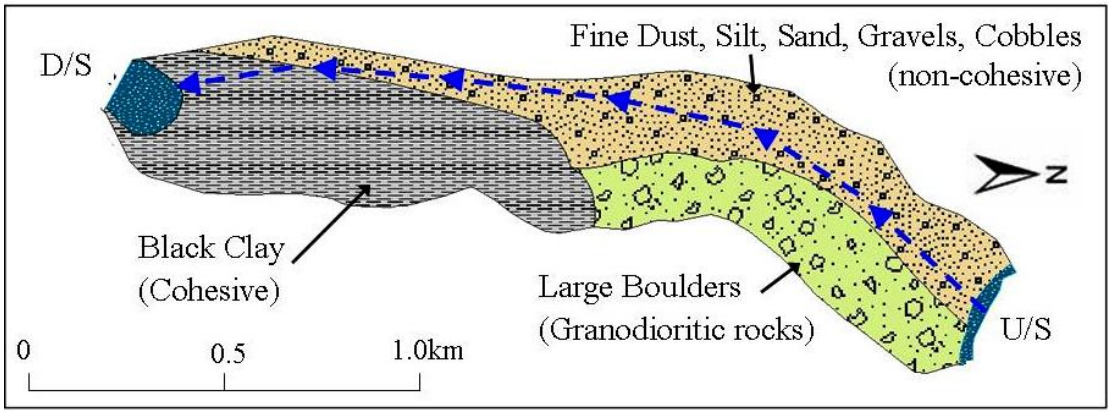


Figure 5 Distribution of debris material

Case History (continued)

Attabad Landslide- Dam Disaster in Pakistan 2010

The longitudinal profile (Fig.6) indicates that the upstream shoulder of the natural dam has mild slope, however downstream slope is quite steep. With such length (2 km) of the dam there are rare chances of piping failure. Fig.7 shows drowned villages of Shishkat and Gulmit along with the stretches of Karakoram Highway.

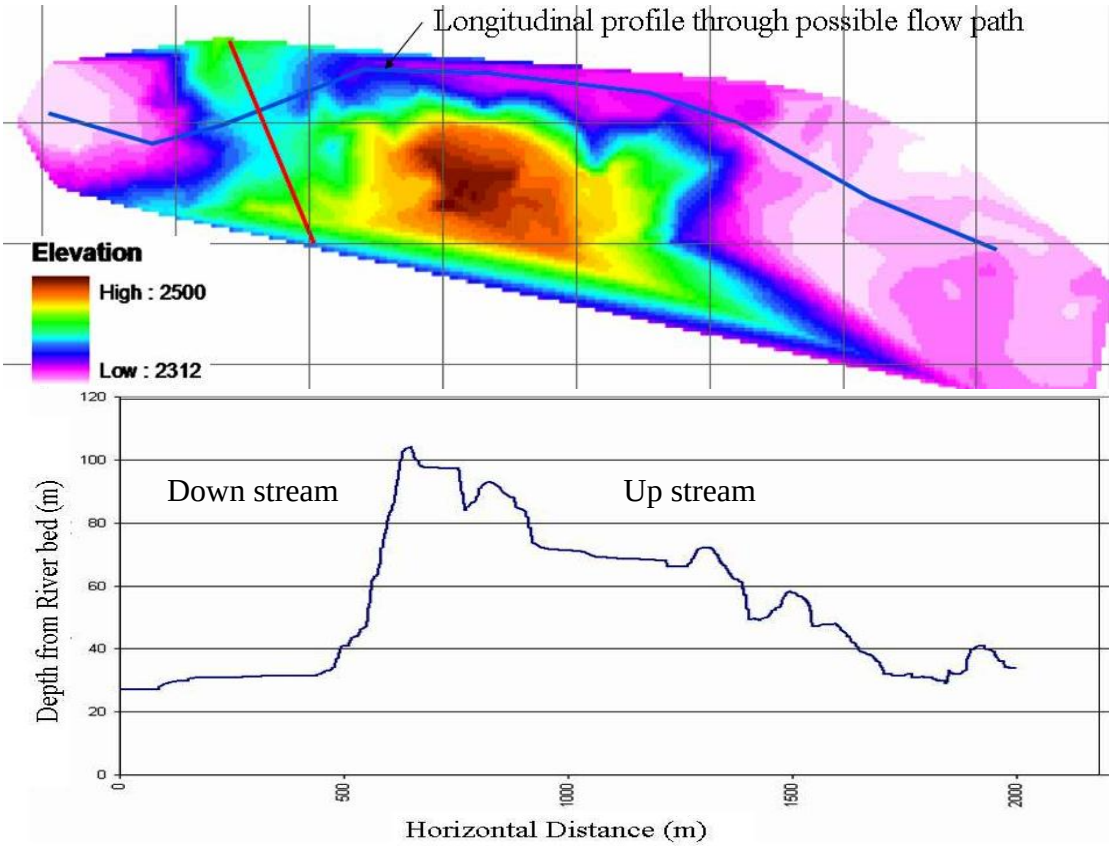


Figure 6 Topography and Longitudinal profile of failed deposited material

TIME HISTORY OF LAKE EXPANSION

NASA monitored the expansion of lake by taking satellite imageries as shown in Fig. 8. It was believed that the lake expansion has direct relation with the increase in temperature which is the cause of snowmelt and increased inflows. Timely evacuation of the inhabitants was carried out from the drowning villages of Shishkat and Gulmit.

Case History (continued)

Attabad Landslide- Dam Disaster in Pakistan 2010

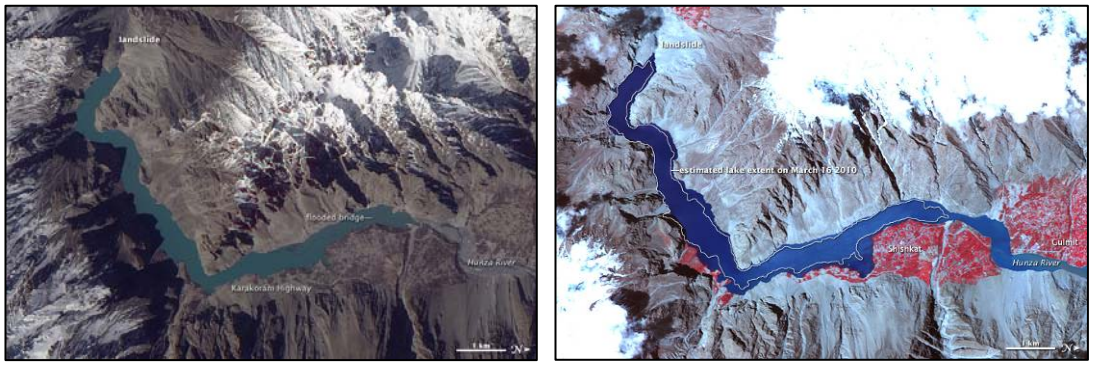
Figure 7 Drowning of villages due to expanding lake (image courtesy PAMIRTIMES)

CONTROLLED DRAINAGE FROM LAKE

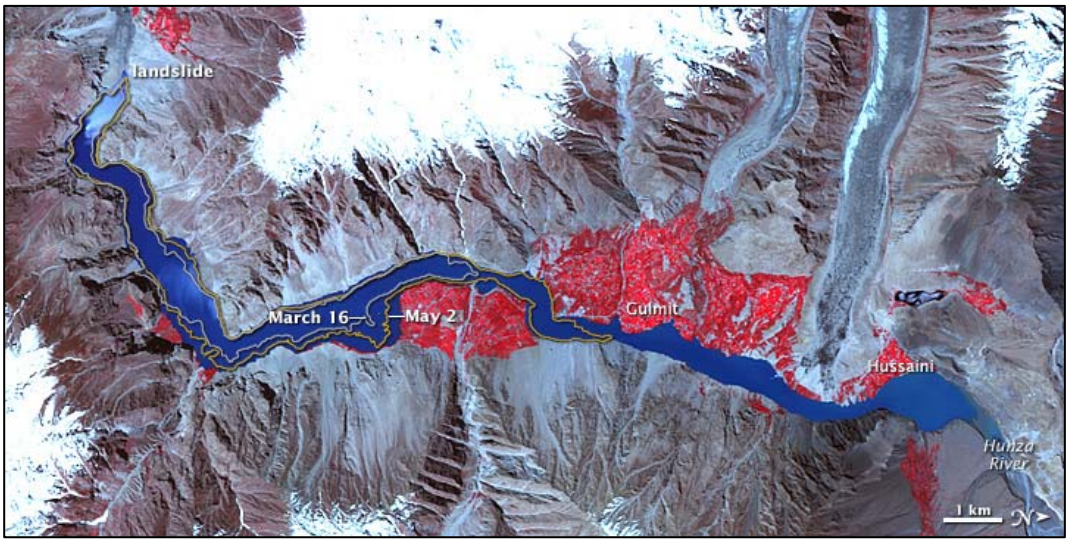
A Dam breach study was conducted by NESPAK (National Consulting Firm). They reported the study in March 2010 to National Disaster Mitigation Authority (NDMA) and proposed the excavation of spillway as a safe way to drain the water. The recommended spillway was 24 m deep and 45 m wide. The excavation works for the spillway were finished in the mid of May. As anticipated the overflow began on May 29, 2010. Time histories of stage over spillway crest and discharge that was measured downstream at the Ganish Bridge (down stream of Attabad) show the performance of the spillway (Fig. 9). The consistency of stage and discharge curves contradicts because the measured discharge also includes the seepage allowance. However, inflow depends on the snowmelt which is directly related to the rising temperature in summer. Data shown in Fig. 10 was reproduced from the daily pager reports given by NDMA. Fig. 10 shows the situations before and after over spilling of the downstream slope. The marks of erosion are quite visible in Fig. 10(b). NASA satellite image shows the overflowing spillway in Fig.11.

Case History (continued)

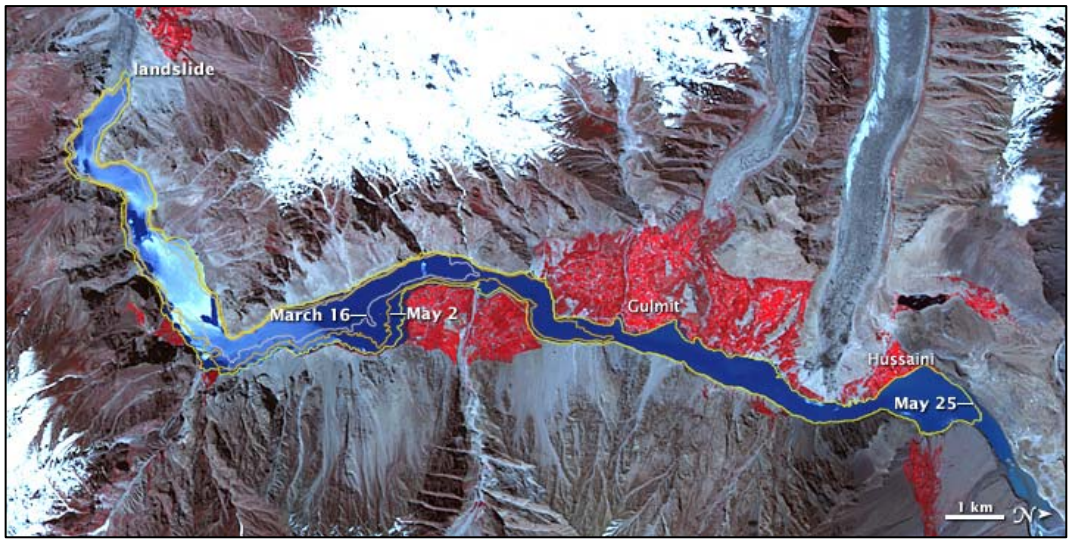
Attabad Landslide- Dam Disaster in Pakistan 2010



(a) March 16, 2010 (b) May 2, 2010



(c) May 25, 2010



(d) June 1, 2010

Figure 8 Images of lake expansion by NASA before it overspills

Case History (continued)

Attabad Landslide- Dam Disaster in Pakistan 2010

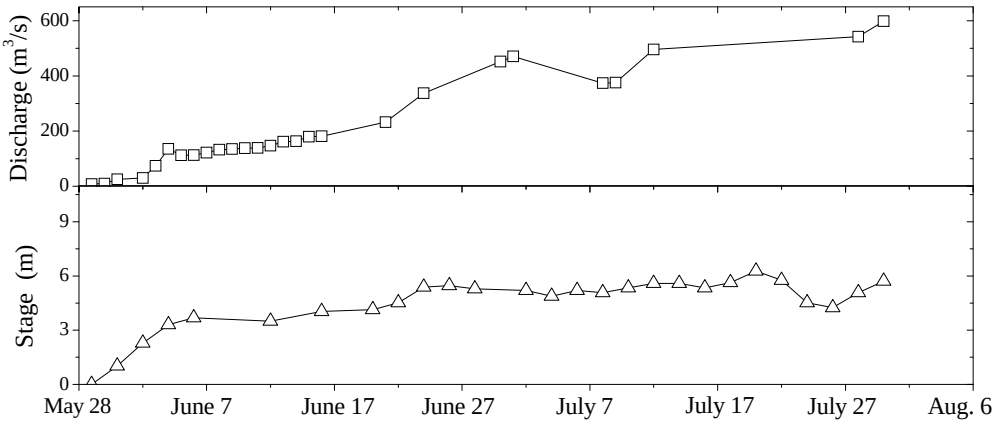


Figure 9 Time histories of discharge measured at Ganish Bridge and stage over spillway crest (drawn after daily pager report supplied by National Disaster Mitigation Authority Pakistan; NDMA)

(a) May 28, 2010 (b) June 17, 2010

Figure 10 Performance of spillway (courtesy by PAMIRTIMES)

Case History (continued)

Attabad Landslide- Dam Disaster in Pakistan 2010

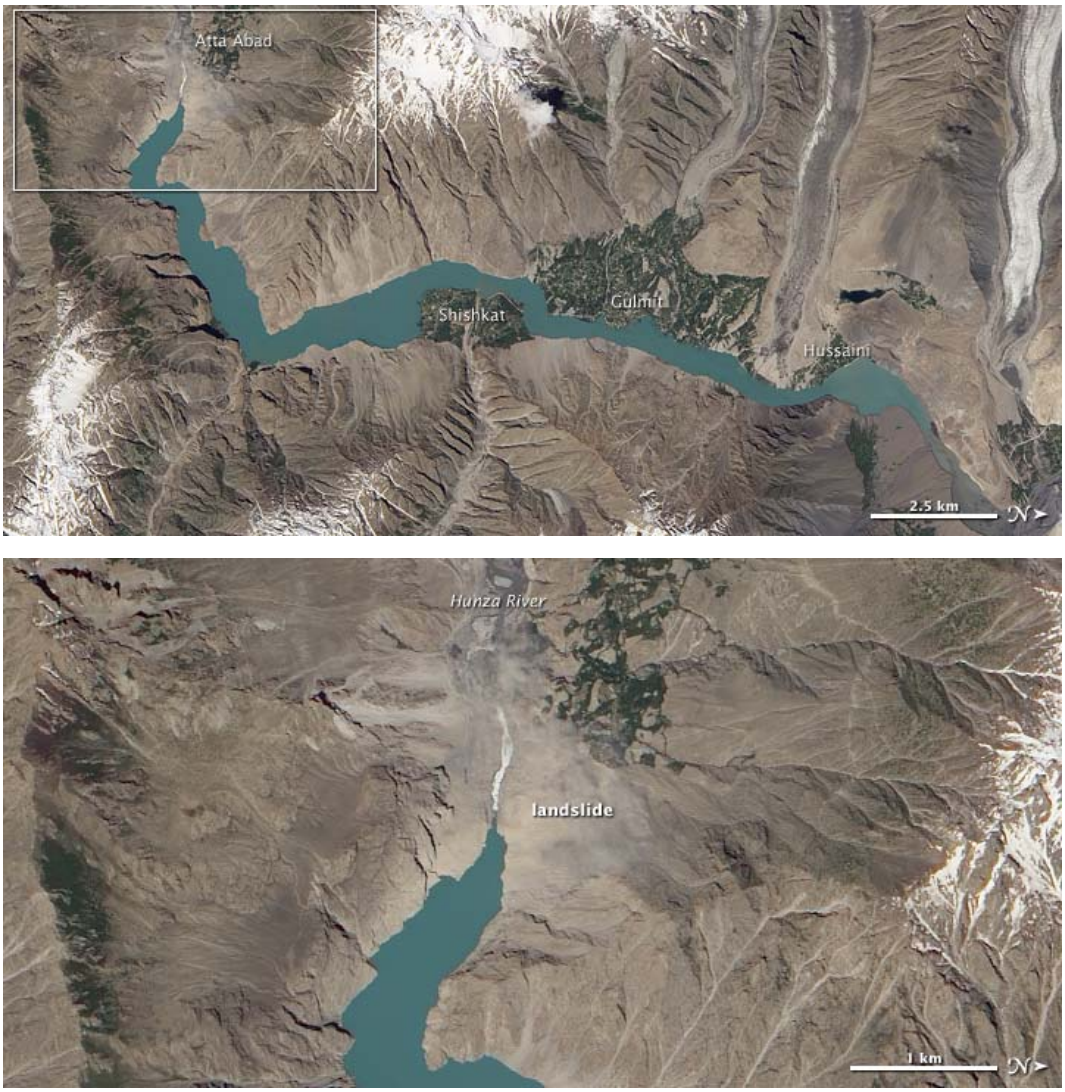


Figure 11 Image of over spilling Attabad landslide dam on July 7, 2010

SOCIAL IMPACTS

The disaster has social impacts on the daily life of community other than the displacement of residence. Karakoram Highway was the only route which connects the towns of Gulmit and Shishkat with Hunza, which has been blocked by landslide and impounded water. Now the mode of transport changed from vehicles to boat (Fig. 12). Directly or indirectly 25,000 peoples were affected by this disaster. The banks of the lake are highly vulnerable and small mass movements are frequent which restricts the boat service through the lake.

Case History (continued)

Attabad Landslide- Dam Disaster in Pakistan 2010

More recently, the situation is being relaxed. Fig. 13 compares two images from NASA that were taken on July 7 and August 23. These images compare the part of upstream edge of the lake. It is therein seen that the inflow has been reduced. In the month of June and July, the temperature was high to produce more inflow due to ice melting. In contrast in August, the temperature dropped, and thus the inflow decreased.

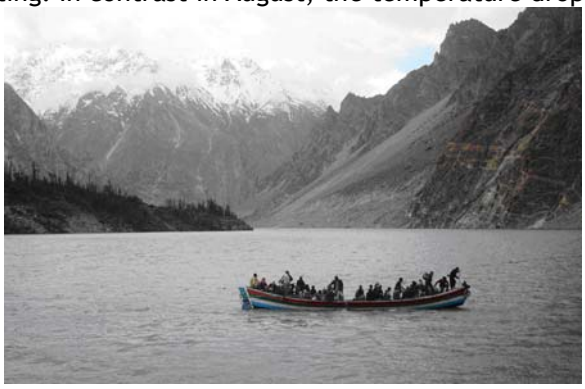


Figure 12 Modal change of transportation after the disaster from land to boat

July 7th

August 23rd

Figure 13 Decreasing inflow of water into the lake in August, 2010 (NASA images)

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S. Hamid Hussain and Adnan A. Awan (2009) Causative mechanisms of terrain movement in Hunza valley, *Geological Survey of Pakistan*, August.

Daily pager reports from January to July 2010 from the database of National Disaster Mitigation Authority Pakistan, http://ndma.gov.pk/AttaHunzaLandslide.html

Pamir Times http://pamirtimes.net/

APPENDIX. FLOODING IN AUGUST 2010

Pakistan suffered terrible flooding in August of 2010. This flooding was caused by an unprecedently heavy rain fall in the northwest part of the country. All the early warning systems for floods have been installed in the eastern rivers, and nothing has been monitored on the western and south western rivers, which are the source of the terrible flooding in 2010. A flood from these channels do not have any evidence in the recent history. Probably there will be a chance for this bulletin to report this flooding event.

Technical Information

Geotube

By Professor D.T. Bergado, Asian Institute of Technology, Thailand

ABSTRACT

Global warming is happening now with devastating effect on climate change. The result of climate change can be floods in China, Thailand and Vietnam (to name a few) as well as increasing frequency of strong typhoons and associated heavy rainfall in the Pacific and hurricanes in the Carribean and the U.S.A. These heavy rainfalls and wind-driven waves as well as strong water currents are the main causes of coastal erosion. Traditional mitigation techniques utilizing rock, concrete, and steel for erosion protection are being increasingly challenged by alternatives offered using geosynthetics in the form of geotubes for revetments, groynes, berms, erosion protection, etc. The various types of geosynthetics can be applied towards the construction of erosion resistant structures in shorelines. This paper points out the erosion damages and demonstrates mitigation measures.

Keywords: Erosion, Climate Change, Geosynthetics, Geo-disaster

INTRODUCTION

Global warming is evident with 11 of the previous 12 years (from 1955 to 2006) ranking among the warmest since 1980, according to the Global Environment Outlook: Environment for Development published by the UN Environmental Program. The resulting climate change is indicated by abnormal weather patterns and increased frequency of strong typhoons with the associated heavy rains.

Geosynthetics can play important and vital roles in the protection, mitigation and rehabilitation efforts in affected coastal areas. Geosynthetics have been used in hydraulic and geotechnical engineering for about the past three decades. Their use is well established for the purposes of material separation, filters, drainage, and reinforcement. There are various types of geosynthetics such as geotextiles (GT), geogrids (GG), geomembranes (GM), geonets (GN), geocomposites (GC), geopipe (GP) and geofoam (GF). The functions and geosynthetic types are tabulated in Table 1. The use of geosynthetics has advantages such as speed of construction, flexibility and durability, low mass per unit area, high strength and stiffness, and its cost effectiveness. Geosynthetics can be applied to construct artificial dunes by geotubes, erosion resistant coastal road/railway embankments, earth reinforcement earth slopes and scour resistant coastal structures by geobags and geocells, etc.

Table 1. Function vs. Geosynthetic Type.

Type of geosynthetics	Separation	Reinforcement	Filtration	Drainage	Containment
geotextile	√	√	√	√	
geogrid		√			
geonet				√	
geomembrane					√
geosynthetic clay liners					√
geopipes				√	
Geofoam	√				
geocomposites	√	√	√	√	√

Technical Information (continued)

Geotube

However, the use of geosynthetics requires a proper understanding of soil-geosynthetic interaction mechanisms. The pullout behavior of geogrids and geotextiles has been investigated by full-scale tests, laboratory model tests and numerical analyses (Long et al., 1997; Bergado et al., 2002a; Sugimoto and Alagiyawanna, 2003). However, most of the previous studies were directed to investigate the interaction parameters (i.e., pullout resistance and shear stress-strain characteristics) between geosynthetics and granular soils. Researches have been done relevant to the evaluation of the interaction parameters between the cohesive soils and the geosynthetics (Bergado et al., 2002b; Long et al., 2006).

COASTAL EROSION IN THAILAND

Prior to the current industrial development and population explosion, the causes of coastal erosion in Thailand were due to natural processes (Siripong, 2008). The coastal areas which face the strong monsoon winds suffer severe erosions as follows:

a) During Southwest Monsoon from May to September: erosions occur along the Andaman Sea Coasts, Inner Gulf Coasts and Northeastern Coasts from Chonburi to Trat.

b) During Northeast Monsoon from October to March: erosions occur along the eastern coastlines of Southern Peninsula from Petchaburi to Narathiwat.

In the past, the coastal areas were dynamically stable as tabulated in Table 2. Nowadays, the eroded coastal areas are dominant. In general, the causes of coastal erosion are shown in Fig. 1, namely: climate change, coastal processes, sea level rise, human activities, and sediment budget. However, the erosional features from waves and tsunami waves are different. The erosional features of the storm waves are caused by the breaking waves and wind-driven currents (Fig. 2).

Table 2. The status of Thai coasts (total length of 2637 km) (Sinsakul, et al., 2002)

Status/Length (%)	Andaman	Gulf of Thailand
Severe erode > 5 m/yr	23(2.45%)	181 (11%)
Mid erode 1-5 m/yr	90.5(9.65%)	302(18%)
Deposition/Accretion	35(3.7%)	127(8%)
Changing	148.5(15.8%)	610(37%)
Stable (dynamic)	788.5(84.2%)	1090(63%)
Total length (km)	937	1,700

Technical Information (continued)

Geotube

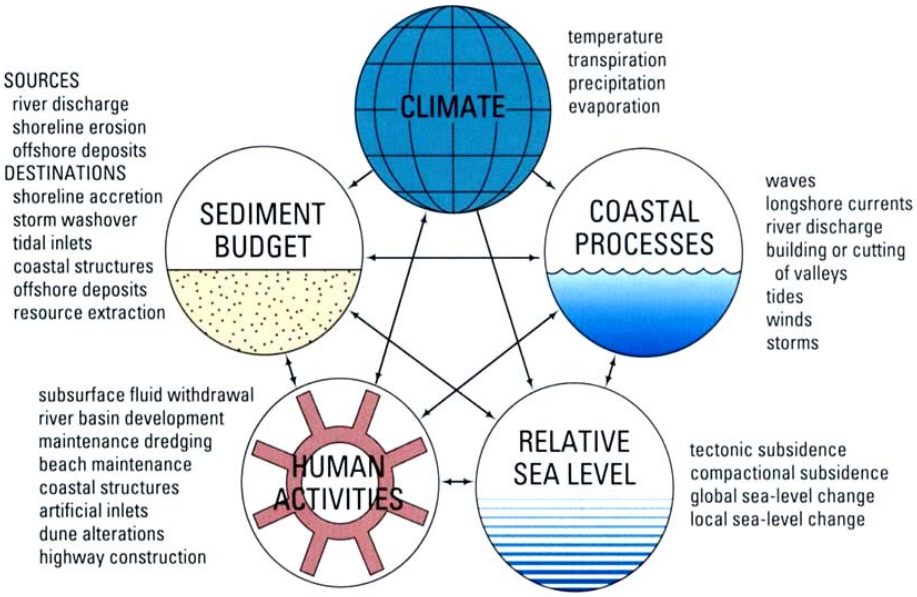

Figure 1. The causes of coastal erosion (Pilkey et al., 1989).

Figure 2. Beach erosion by strong waves (from Bangkok Post Newspaper).

Technical Information (continued)

Geotube

MITIGATION AND REHABILITATION FOR EROSION CONTROL

Rigid sea walls made of reinforced concrete structure may cause wave reflection preventing wave energy dissipation that lead to more erosion at the base of the wall (Fig. 3). Moreover, the seawalls may block the sea turtles from laying their eggs in the beach. For severe erosion due to continuous wave action, the shoreline may be hardened with stone revetment along the coastal area as shown in Fig. 4. Revetments are protective surface capable of resisting hydraulic forces that cause erosion. These revetments can only function properly if geotextiles are utilized underneath for separator, filtration and drainage purposes and prevent internal erosion.

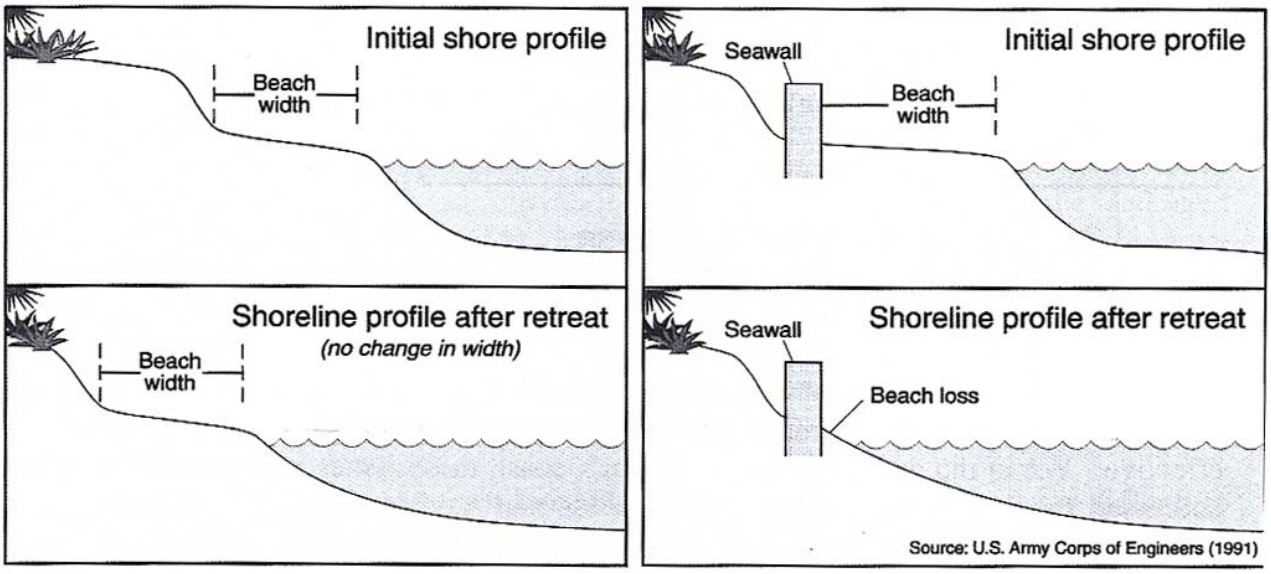

Figure 3. Potential impact of seawalls.

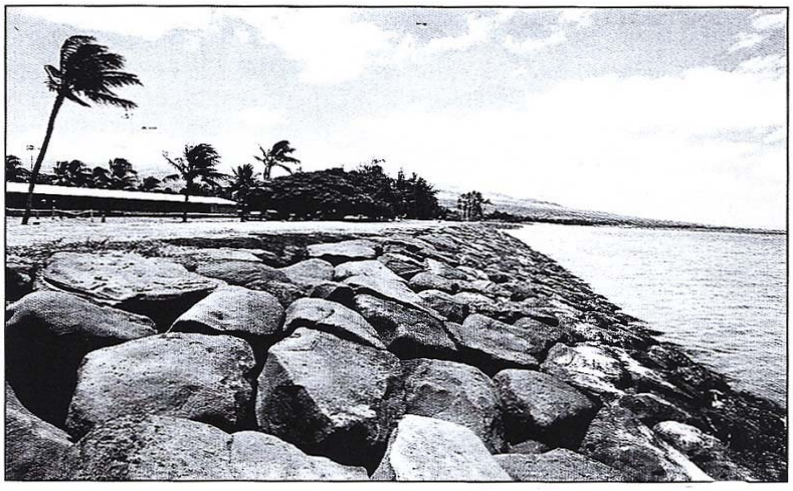

Figure 4. Shoreline hardening with stone revetments.

Technical Information (continued)

Geotube

In recent years, the use of geotextile bags (Fig. 5), geotextile tubes filled with sand (Fig. 6), and geotextile wrap-around revetment (Fig. 7) have been used for erosion control. The sand bags can be stitched together to form a barrier against erosion. The geotextile tubes are closed-ended geotextile tubes with regular filling ports filled with sand/water slurry. The geotextile consists of high strength and high permeability geosynthetics. Figures 8 and 9 demonstrate the wave energy reduction due to the installation of geotextile tubes parallel to the coastline which can greatly reduce beach erosion. Groynes are geotubes that are oriented at some angle to shorelines for erosion protection in case of oblique currents (Fig. 10).

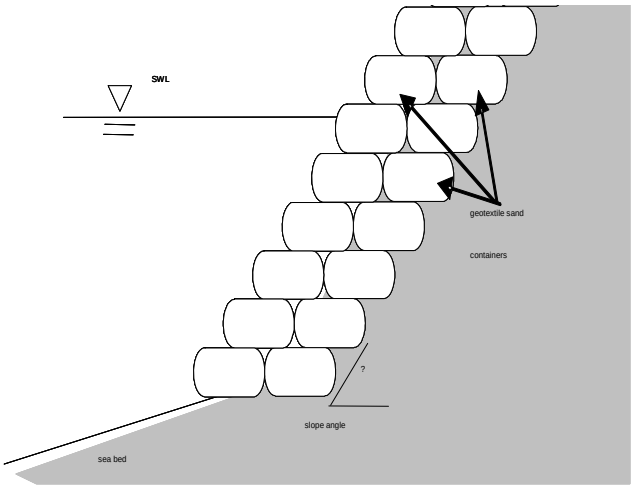

Figure 5. Revetment made with geotextile sand containers.

Technical Information (continued)

Geotube

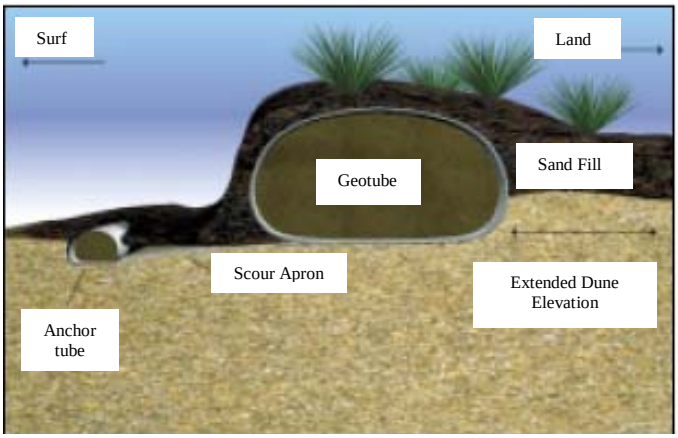

Figure 6. Schematic diagram of geotube.

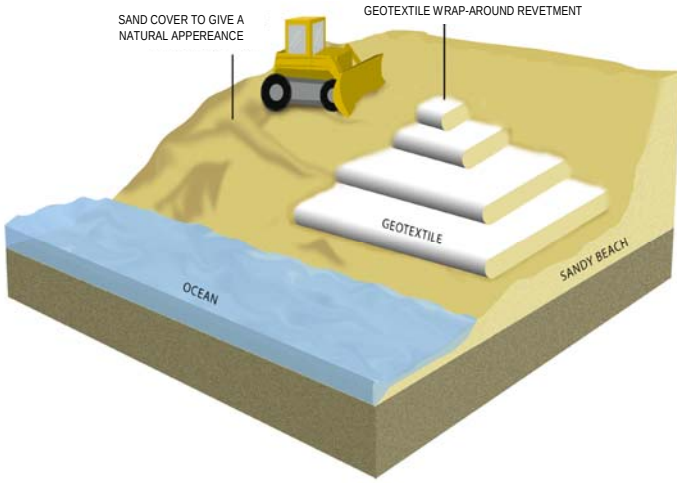

Figure 7. Geotextile wrap-around revetment (Saathoff and Zitscher, 2001)

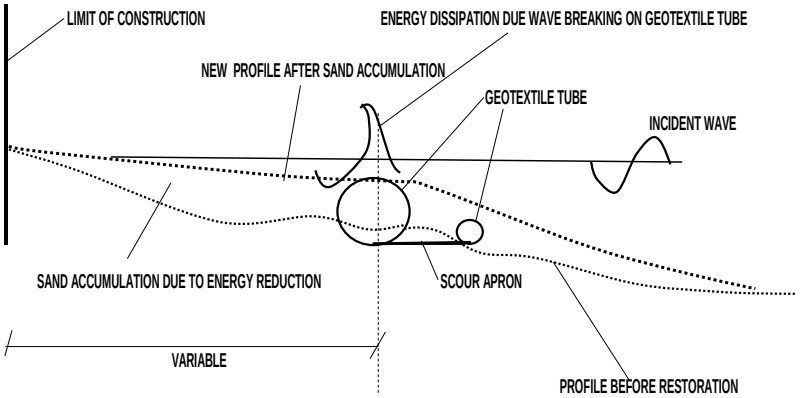

Figure 8. Schematic section of wave energy reduction (Alvarez et al, 2005)

Technical Information (continued)

Geotube

Figure 9. Geotextile tube inducing wave breaking for energy attenuation (Alvarez et al, 2005)

Figure 10. Groyne for prevention of coastal erosion

CONCLUSIONS

Global warming is already occurring with consequent climate change spawning abnormal weather conditions such as more frequent strong typhoons and hurricanes. Subsequently, heavy rains, high velocity flow and strong currents caused soil erosion along coastal areas. Traditional methods such as seawalls may not be the most effective mitigation measures. The use of flexible geosynthetics such as geobags and geotubes and geocells as well as gabions, mattresses and revetments are advisable techniques to prevent beach erosion and scour.

Technical Information (continued)

Geotube

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News

President Briaud's International Visits

(1) Taipei, Taiwan

In May, ISSMGE President Professors Jean-Louis Briaud visited Taiwan. He met geotechnical engineers and lectured at the 17th Southeast Asian Geotechnical Conference. His lecture addressed bridge foundation scour. In a special session he discussed the future of geotechnical engineering with 25 young members. A series of meeting took place between President Briaud and various dignitaries including the Vice Premier of Taiwan, Dr. Chen, the president of South East Asia Geotechnical Society, Dr. Chin, the president of the Chinese Taipei Geotechnical Society, Professor Liao, and the president of Moh and Associates, Dr. Moh. President Briaud also visited two universities: National Taiwan University where he was hosted by Professor Lin and National Chiao Tung University where he was hosted by Professor Fang. On the lighter side, Professor Briaud took time off to visit one of the tallest towers of the world: Taipei 101.

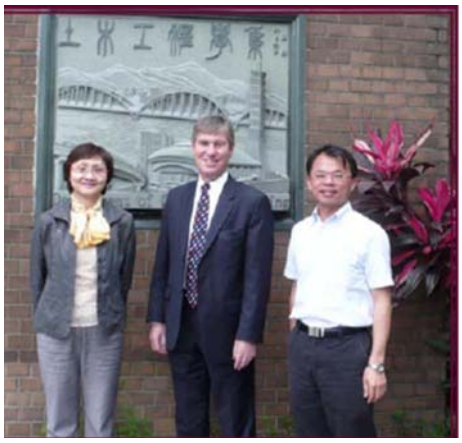


Photo 1. President Briaud with Dr. Lin (left) at National Taiwan University

(2) Moscow, Russia

In June, President Briaud travelled to Moscow, Russia, to visit geotechnical engineers and participate in the International Conference on Geotechnical Challenges in Megacities. The conference was organized with participation of several ISSMGE Technical committees on "Deep Foundations", on "Underground Construction in Soft Ground", on "Engineering Practice of Risk Assessment and Management", on "Soil-Structure Interaction", and on "Geotechnical Infrastructure for Mega Cities and New Capitals". At the conference he delivered a lecture on Excavation Support Using Deep Soil Mixing and visited many practicing engineers. A series of meetings took place between Professor Briaud and various dignitaries including the Director of NIIOSP, Professor Petrukhin, and President of the Russian Society for Soil Mechanics and Geotechnical Engineering, Professor Ilyichev. Technical visits were organized by Professor Ilyichev at several geotechnical projects including the Bolchoi Theater renovation. On the lighter side, Professor Briaud took time off to visit Red Square and the Kremlin with his colleagues Professor Petrukhin and Dr. Kolybin.

Photo 2. President Briaud at National Chiao Tung University

News

President Briaud's International Visits (continued)

Photo 3. Technical visit

Photo 4. Profs. Petrukhin, Briaud, and Ilyichev from left

Photo 5. ISSMGE Board Members with our Russian hosts

News

The 7th International Conferences on Physical Modelling in Geotechnics (ICPMG)

The 7th ICPMG was held at ETH in Zurich, Switzerland between 28th June and 1st July 2010. The 4-day conference attracted more than 300 delegates from 32 countries, who exchanged novel technical ideas and scientific information. The conference was chaired by Professor Sarah Springman, who had worked tirelessly, together with the conference Vice Chair Dr Jan Laue, prior to and during the conference. Two volumes of conference proceedings have been published and they contain keynote lectures and papers on a wide range of technical subjects, such as soil structure interaction, natural hazards, earthquake and soft soil engineering. The ever increasing complexity of modelling was discussed and debated during the conference while challenging the existing understanding of similitude. One of the special features of the conference was the inclusion of a series of parallel technician sessions for supporting staff from various geotechnical centrifuge centres from four continents to get together to discuss and exchange their hands-on experience and joyfulness.

Figure 1 Professor Sarah Springman (in the middle) hosted an outdoor dinner for TC2 core members

Figure 2 Technician session

News

Vietnamese Geotechnical Day

A national geotechnical conference, which was called "Vietnamese Geotechnical Day", was held on 18th June 2010 in Hanoi to commemorate the 30th Anniversary of VSSMGE and the 15th Anniversary of Vietnamese Geotechnical Institute (VGI). The event was attended by more than 250 participants including delegations from Sweden, Canada, USA, Cuba, Japan, South Korea, Taiwan, Malaysia and Singapore.

The conference started with opening address by Prof. Dr. Nguyen Manh Kiem on "50 years of Geotechnical Engineering in Vietnam" followed by congratulatory message to VSSMGE and VGI by Prof. Delwyn G. Fredlund (Canada). A letter of congratulation to the conference from Prof. Sven Hansbo (Sweden) was also read out by Dr. Phung Duc Long. A comprehensive review on "30 years of Co-operation between Vietnam and Sweden and other countries in Geotechnical Engineering, Geo-engineering and Construction Technology" was presented by Dr. Bo Berggren (Sweden) and Prof. Nguyen Truong Tien.

The technical program for the day consisted of 5 keynote lectures and 16 lectures given by local and foreign speakers. The keynote lectures were: Keynote lecture 1 by Prof. Akira Asaoka (Japan) – "All Soils, All States, All Round Geo-analysis Integration"; Keynote lecture 2 by Prof. Delwyn Fredlund (Canada) – "Assessment of Moisture Flux Boundary Conditions for Near-ground Surface Geotechnical Engineering Problems"; Keynote lecture 3 by Datuk Hong Lee Pee (Malaysia) – "Pile Talk"; Keynote lecture 4 by Ir. Kenny Yee and Dr. Ooi Teik Aun (Malaysia) – "Ground Improvement: Innovation and Sustainability"; and Keynote lecture 5 by Dr. Nat Fox (USA) – "Lime-soil Stabilization for Road Construction in Mekong Delta River". After the technical sessions, VSSMGE held their internal congress meeting, which was attended by more than 100 members, represented for geotechnicians in the country. At the meeting, Prof. Nguyen Truong Tien was re-elected as the President of VSSMGE. Prof. Le Duc Thang and Dr. Phung Duc Long were elected as the Vice-Presidents of VSSMGE. The Secretary-General is Dr. Nguyen Cong Giang. The Vietnamese Geotechnical Club (VGB) was also inaugurated on this day and the president of the club is Prof. Le Duc Thang. With a new young executive board of 24 members, VSSMGE are ready for new activities and challenging tasks in geotechnical field in Vietnam.

The event was closed with a cultural show and dinner in the evening that ended at 9.45 pm. The theme for the evening was "To know and understand the Sounds and Souls of our Mother Land". The Vietnamese Geotechnical Day was considered by all participants as one of the most successful geotechnical events ever in Vietnam.

Figure 1 Local and foreign lecturers at the conference

News

4th Japan-China Geotechnical Symposium in Okinawa, Japan

4th Japan-China Geotechnical Symposium was held in Okinawa, Japan from April 12th to 14th. It was organized jointly by the Japanese Geotechnical Society (JGS) and the Chinese Institution of Soil Mechanics and Geotechnical Engineering (CISMGE).

Following the successful symposia held in China (the first one in Beijing in 2003, the second in Shanghai in 2005 and the third on a ship starting from Chonging in 2007), the conference was held for the first time in Japan, at a beautiful resort area in southern islands.

This series of symposium has become one of the most important activities between the two organizations. It is nowadays conducted based on AGREEMENT OF COOPERATION that was signed in 2006. In order to provide an opportunity for researchers, engineers and project managers to exchange information and share experiences, the main theme of the symposium was set as "Recent Developments of Geotechnical Engineering".

The symposium collected 108 papers and 144 participants from the two organizations. Photograph below shows the delegates appearing in the opening ceremony of the symposium, who enjoyed 5 keynote lectures, paper presentations and discussions, study tours, and several cultural events.

Figure 1 Group photo

News

KGS-KGS Joint Geotechnical Seminar in Kazakhstan

As described in the Memorandum of Understanding between the Kazakhstan Geotechnical Society (KGS) and the Korean Geotechnical Society (KGS), a joint KGS-KGS geotechnical seminar was held on 21-22 July, 2010 in Astana (Kazakhstan) to commemorate the Year of Korea in Kazakhstan (2010) and Year of Kazakhstan in Korea (2011). These events had received official endorsement from the Presidents of Republic Kazakhstan and Korea, Mr. Nursultan A. Nazarbayev and Mr. Myung-Bak Lee.

The international seminar was held in the Conference Hall of the main Campus of the L.N. Gumilyov Eurasian National University (Astana, Kazakhstan). The theme of the First KGS-KGS joint geotechnical seminar was "Geotechnical Infrastructure of Megacities and New Capitals" (the remit of ISSMGE's Technical Committee 305). Three sessions were organized by the Kazakhstan and Korean Geotechnical Societies, and they were involved by TC305 as well as the Asian Regional Technical Committees ATC19 - Geotechnical Engineering for Heritage Monuments and Sites, ATC10 - Geo-Informatics and Zoning for Hazard Mapping, and ATC3 - Geotechnology for Natural Hazards. In all, about 50 papers were presented and published in English in the Proceedings, which were produced on CD as well. The event was attended by about 100 participants, including delegations from South Korea (20 participants), Kazakhstan (about 60 participants), Russia (about 20 participants), France, and Turkey. The international seminar started with an opening address by the Rector of the Eurasian National University, Prof. Abdraim B. Zh. who stressed the importance of the planned events in 2010 and 2011 for both South Korea and Kazakhstan (Photo №1). The President of the Korean Geotechnical Society, Prof. Kim Hong Taek delivered a welcome message to the Kazakhstan Geotechnical Society on behalf of his society, and also congratulated Prof. Askar Zhussupbekov on being appointed Vice President of ISSMGE for Asia.

Prof. Askar Zhussupbekov gave an outline of the current situation of ISSMGE (as discussed at the ISSMGE Board Meeting in Moscow, June, 2010) and also reported the improvement in Asian membership and the reactivation of Asian technical committees (Photo №2).

The technical program for the day consisted of 5 keynote lectures, 3 special lectures, and 6 special reports. Among them, The keynote lectures were: Keynote lecture 1 by Prof. Y.S. Jang (Korea) - "A Case History of Curtain Grouting for Water Cut off around Vertical Shafts"; Keynote lecture 2 by Prof. E.C. Shin (Korea) - "Frost Penetration Depth of Paved Road: Field Monitoring Data in Korea"; Keynote lecture 3 by Prof. V.A. Homyakov (Kazakhstan) - "Influence of Dynamic Loading to the Strength Properties of Clay Soils"; Keynote lecture 4 by Prof. A.Zh. Zhussupbekov (Kazakhstan) **-** "Zoning of Territory of Astana for Optimization Length of Piles"; and Keynote lecture 5 by Prof. V.L. Korotkov (Kazakhstan) - "Theoretical Determination of Critical Value of Stress Intensity Factor related to the Fracture Mechanics of Underground Construction".

Furthermore, the special lectures were: Special Lecture 1 by Senior Researcher Ph.D. C.Y. Choi (Korea) - "Reduction of Shear Strength of Weathered Granite Soils with Cyclic Freeze - Thaw"; Special Lecture 2 by Senior Researcher Ph.D. H.K. Kim (Korea) - "Establishment of Integrated Safety Management Network System for Geotechnical Structures"; and Special Lecture 3 by Senior Researcher Ph.D. M.H. Cho (Korea) - "Determination of Volumetric Moisture Contents of Asphalt Concrete Pavements in Korea with CS616 Sensor Calibration Equation".

The special reports were also given as what follows. Special Report 1 by Ph.D. Student J.K. Kang (Korea) - "Analysis of Geotechnical Properties by Database System within Incheon Port Area"; Special Report 2 by Senior Researcher, Ph.D. R.E. Lukpanov (Kazakhstan) - "Research of Interaction between Displacement Pile and Soil Basement"; Special Report 3 by Senior Researcher, Ph.D. Y. Ashkey (Kazakhstan) - "The Applications of Dynamic and Static Piling Tests of Kazakhstan"; Special Report 4 by Prof. M.K. Kuderin (Kazakhstan) – "Soil Profile Model Based on Geoinformatic Database of Pavlodar city (North Kazakhstan)"**;** Special Report 5 by Prof. M. Shintemirov (Kazakhstan) - "A Spatial Method of the Stability Analysis of Rock Coasts"; **and** Special Report 6 by Ph.D. Student T. Muzdybayeva - "Geosynthetics in the Roads".

News

KGS-KGS Joint Geotechnical Seminar in Kazakhstan (continued)

At the closing ceremony, the Secretary General of the Kazakhstan Geotechnical Society, Dr Zhunisov, on behalf of the Organizing Committee, was pleased to present Prof. Kim Hong Taek and Prof. Lee Eun Soo with their "chapans", the Kazakhstan national costume (Photo № 3)

Photo №1.
(from left to right: Prof. Askar Zhussupbekov, Eurasian National Univ., Astana, Kazakhstan, ISSMGE VP for Asia, and President of Kazakhstan Geotechnical Society; Prof. Abdraiym Zh. Bakytzhan, Rector of the L.N. Gumilyov Eurasian National University; Prof. Hong Taek Kim, Hongik Univ., South Korea, and President of the Korean Geotechnical Society)

Photo №2.
Technical session during the seminar

Photo №3.
(from left to right: Prof. Askar Zhussupbekov, Prof. E.S. Lee, Hanyang Univ.; Prof. Hong Taek Kim

Photo №4.
The Organizing and Scientific Committee of the Kazakhstan Geotechnical Society – Korean Geotechnical Society Joint Geotechnical Seminar

News

KGS-KGS Joint Geotechnical Seminar in Kazakhstan (continued)

A cultural show and farewell dinner were held in the evening. In addition, colorful social programs and technical tours were organized for the delegates in both Astana and Almaty. The technical tour to Astana took place on the 22nd July, and participants were able to visit the Bayterek Tower, the Khan Shatyry Entertainment Palace and the Peace Palace (the last two designed by the British architects Foster and Partners) as well as a piling construction site. On the 23rd July, the Korean delegation flew to Almaty and visited the Medeo Dam, which had been built to protect Almaty from mud and debris flows, the construction site at Chimbulak of the Asian Games, and subway construction sites in Almaty.

Feedback from the participants was very positive, and the symposium was considered to be one of the most successful international geotechnical events ever hosted in Kazakhstan. The 2nd KGS-KGS seminar will be held in Seoul, South Korea, in 2011 - the Year of Kazakhstan in Korea.

Obituary for Professor Keiichi Fujita

A tribute to Keiichi Fujita (1924-2010)

On July 31, 2010, Dr. Keiichi Fujita died suddenly at home at the age of 85 after he was diagnosed as cancer at the end of May. His death has deprived Japanese and international community of geotechnical engineering of an eminent engineer and distinguish leader. He was a rare breed of academician who integrated the practices of foundation engineering with research and education.

He was born in 1924 and graduated from the Department of Civil Engineering, University of Tokyo in 1946. He embarked on his career as a civil engineer at construction company, Hazama. Because of his high caliber as a man of hardworking with vitality and intellect, he was given an assignment to work in the section of research and exploration of new technologies associated with soil mechanics and foundation engineering. His achievements were highly recognized in the company culminating in 1983 in the position of Executive Director of Hazama in charge of research and exploitation of new technologies.

In 1988, he was conferred professorship at the Tokyo University of Science and move to academic arena as an educator and a researcher. Since then he kept on being affiliated with this university until he completely retired in 2004.

From an early year of his career, Dr. Fujita engaged himself positively in the work of the Japanese Geotechnical Society (JGS) as members of several technical committees discussing practical problems such as pile drivability, ground anchors and deep excavation. His engagement with JGS was not only in the technical areas but also more deeply in voluntary businesses associated with management of the Society as a self-supporting organization. He was instrumental in improving details of clerical works of the Society consisting of about 15 personnel.

In 1983 he was elected to the President of the JGS and served for two years exercising a great deal of his ability as a leader of an organization. Out of 31 presidents ever elected in JGS, Dr. Fujita was one of the two from private industries. It was truly congratulating for all of us to have a leader from private sector having the high capability in the practice of geotechnical engineering.

As well-known, Dr. Fujita was elected to the Chair of TC-28 (now TC204) in ISSMGE on Underground Construction in Soft Ground assisted by Dr. O. Kusakabe which was initiated in 1989 at the time of the 12th International Conference held in Rio de Janeiro in Brazil. He conceived and spearheaded the organization of the International Symposium on Underground Construction in Soft Ground which was held in 1994 at the time of the 13th ICSMFE in New Delhi. The symposium on the same title was held in London in 1996 under his leadership. He fully exercised an enviable ability as a leader and worked hard consistently by himself to bring the Conferences to fruition. After the chairmanship was passed over to the hands of Professor R. Mair, the modalities and formats were established and the third symposium was held in 1999 in Tokyo. It should be reminded that theme of the underground construction in soft ground were brought about in the limelight of the geotechnical community first by late Professor R.B. Peck in 1969 at the time of the 7th ICSMFE held in Mexico city. However, this subject had been put in the shadow for 20 years under other themes emerging from year after year. It goes without saying that this subject began to be reactivated by the efforts of TC-28 under the leadership of Dr. K. Fujita. It should be remembered that, in the today's development of mega cities in the world, most of infrastructure construction are in progress underground, not above the ground. In view of this, the subject of underground construction will, for sure, be the most promising topics of pivotal importance. For which uttermost emphasis should be placed in the community of the geotechnical engineering.

Dr. Fujita was something of Renaissance man who could excel at regeneration of the subject for which he dedicated his life. He will be remembered for his immense contribution to the development of the underground geotechnics, for his role as a great leader in our society, for his achievements in the technology innovation, and for his consistent dedications as an educator and a mentor to engineers in new generations. We are all thankful that he chose to dedicate his talents and his life to civil engineering and particularly to geotechnical engineering.

Kenji Ishihara, Professor
Research and Development Initiative, Chuo University

Coming Event

2nd International Symposium on Frontiers in Offshore Geotechnics

2nd International Symposium on Frontiers in Offshore Geotechnics (ISFOG)
8 to 10 November 2010
www.cofs.uwa.edu.au/ISFOG2010

The Centre for Offshore Foundation Systems (COFS) at the University of Western Australia (UWA) will be hosting the 2nd International Symposium on Frontiers in Offshore Geotechnics (ISFOG) in Perth in November this year.

This international gathering is hosted on a 5-year cycle by COFS and provides a specialist forum for industry leaders, practitioners and academics to exchange ideas and address current and emerging challenges in offshore geotechnical engineering. We anticipate attendance of approximately 200 delegates from over 20 countries representing both academia and industry.

ISFOG will comprise 10 technical sessions over 3 days including 7 Keynote presentations, general reports, a single stream of invited oral presentations of papers, a poster exhibition and specialist industry expo. The Proceedings of the symposium will be collected in a bound hard copy volume and CD 'Frontiers in Offshore Geotechnics II' that will be provided to delegates or can be purchased from the publisher at www.taylorandfrancis.com

The themes of the papers include geohazards, gas hydrates, in situ site characterisation and pore pressure measurement, site investigation, soil characterisation, foundations for renewable energy, shallow foundations, jack-up units, piled foundations, anchoring systems, pipelines and risk and reliability. New and established design methods representing industry best practice are discussed alongside new construction technologies and emerging research ideas.

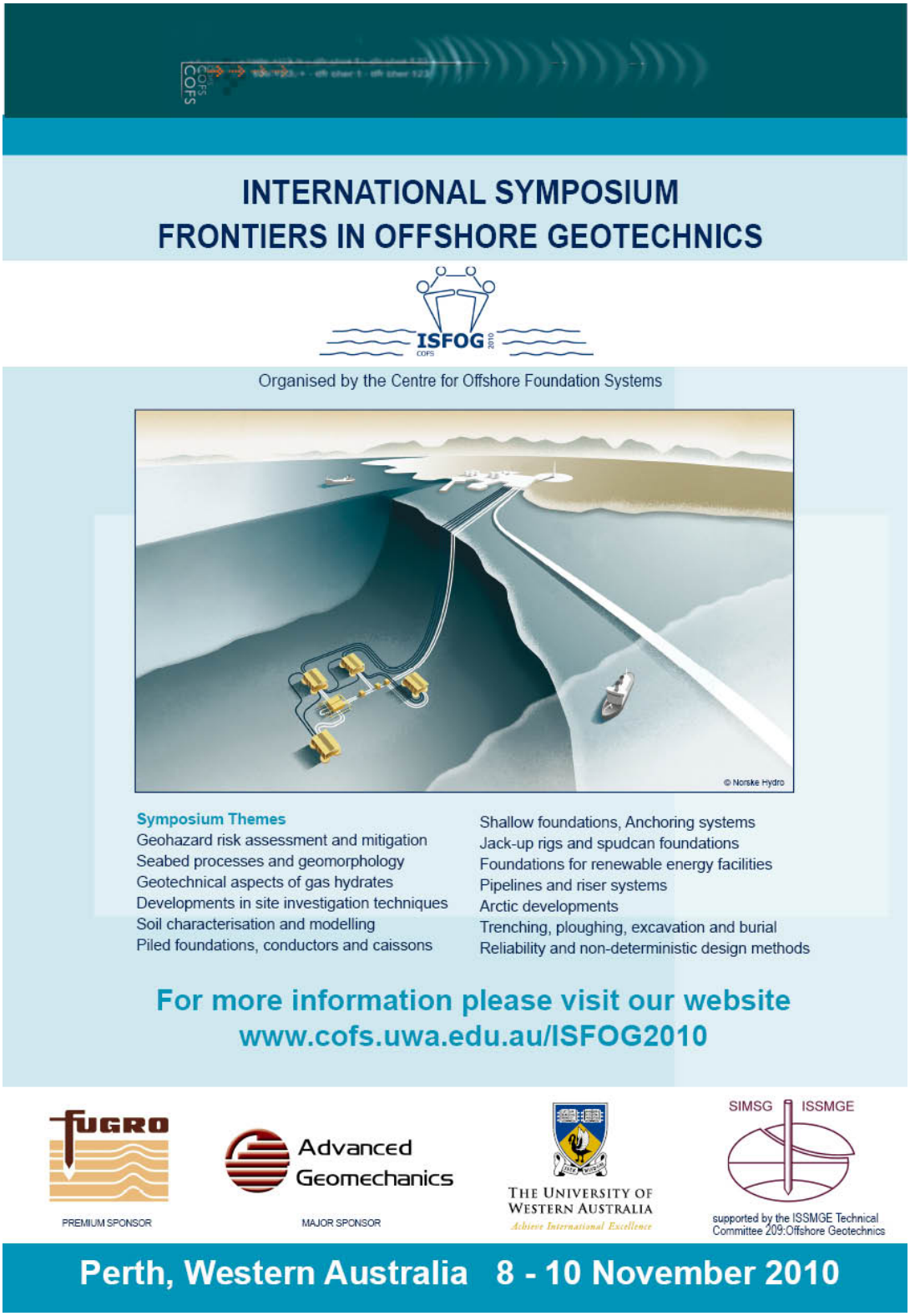
Keynote presentations:

- Trevor Evans, BP, UK "A systematic approach to offshore engineering for multiple-project developments in geohazardous areas"
- Don DeGroot, U Mass, USA "Recommended best practice for geotechnical site characterisation of cohesive offshore sediments"
- Jean-Louis Colliat, Total, France "Gulf of Guinea deepwater sediments: geotechnical properties, design issues and installation experiences"
- David White, COFS and David Cathie, Cathie Associates, Belgium "Geotechnics for subsea pipelines"
- Carl Erbrich, Advanced Geomechanics, Australia "Axial and lateral pile design in carbonate soils"
- Christophe Gaudin, COFS and Ed Clukey, BP, USA "New frontiers for centrifuge modelling in offshore geotechnics"
- Bob Gilbert, U Texas at Austin "Risk and reliability on the frontier of offshore geotechnics"

Further information about the 2nd International Symposium on Frontiers in Offshore Geotechnics is provided on the ISFOG website: www.cofs.uwa.edu.au/ISFOG2010

Coming Event

2nd International Symposium on Frontiers in Offshore Geotechnics (continued)



Event Diary

ISSMGE SPONSORED EVENTS

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

2010

International Symposium on Geomechanics and Geotechnics: From Micro to Macro
Date: 10 - 12 October 2010
Location: Tongji University , Shanghai, China
Language: English
Organizer: Tongji University
• Contact person: Prof. Mingjing Jiang
• Address: Dept. of Geotechnical Engineering, Tongji University
200092 Shanghai
China
• Phone: 86-21-65980238
• Fax: 86-21-65980238
• E-mail: mingjing.jiang@tongji.edu.cn
Website: geotec.tongji.edu.cn/is-shanghai2010/

Bangladesh Geotechnical Conference 2010; Natural Hazards and Countermeasures in Geotchnical Engineering (04-05 Nov)
Date: 4 - 5 November 2010
Location: Sheraton Hotel , Dhaka, Bangladesh
Language: English
Organizer: BSGE
• Contact person: Yasin, Sarwar J M
• Address: Professor, Civil Engg. Dept., BUET
1000 Dhaka
Bangladesh
• Phone: 01817036073 (cell)
• Fax: 880-2-9665639
• E-mail: bsge.hgs@gmail.com
Website: www.bsge-bd.org (under construction)

6th International Congress on Environmental Geotechnics
Date: 8 - 12 November 2010
Location: New Delhi, India
Language: English
Organizer: Indian Geotechnical Society
• Contact person: Dr. G. V. Ramana
• Address: Associate Professor, Department of Civil Engineering.
Indian Institute of Technology Delhi, Hauz Khas
110016 New Delhi
India
• Phone: 911126591214
• Fax: 911126581117
• E-mail: 6icegdelhi@gmail.com
Website: www.6iceg.org

Fifth International Conference on Scour and Erosion (ICSE-5)
Date: 8 - 10 November 2010
Language: English
Organizer: Geotechnical Institute of ASCE
• Contact person: Cathy Avila
• Address: 712 Bancroft Road, Suite 333
94598 Walnut Creek
California
United States of America
• Phone: 1-925-673-0549
• Fax: 1-925-673-0509
• E-mail: cavila@avilaassociates.com
Website: www.icse-5.org

2nd International Symposium on Frontiers in Offshore Geotechnics (ISFOG)
Date: 8 - 10 November 2010
Location: Univ. of Western Australia , Perth, Western Australia, Australia
Language: English
Organizer: COFS
. Contact person: Stephanie Boroughs
. Address: M053, Centre for Offshore Foundation Systems, University of Western Australia, Crawley
WA 6160 Perth
Australia
. Phone: 61 8 6488 7401
. Fax: 61 8 6488 1044
. E-mail: ISFOG2010@civil.uwa.edu.au
Website: www.cofs.uwa.edu.au/ISFOG2010

International Symposium on Forensic Geotechnics of Vibratory and Natural Hazards
Date: 14 - 15 December 2010
Location: Indian Institute of Technology , Mumbai, Maharashtra, India
Language: English
Organizer: TC 302, IGS (India), IITB
• Contact person: Prof. G L Sivakumar Babu
• Address: Department of Civil Enginering
560012 Bangalore
Karnataka
India
• Phone: 00918022933124
• Fax: 00918023600404
• E-mail: gls@civil.iisc.ernet.in
Website: civil.iisc.ernet.in/~gls/default_files/FGE_Full%20brochure.pdf

Event Diary (continued)

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 N° 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. Paula Leishman
• E-mail: paula@leishman-associates.com.au
•Website: http://www.anz2012.com.au/
• Abstract submission will start 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
. 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: vinod@uow.edu.au

NON-ISSMGE SPONSORED EVENTS

2010

XX Argentinian Congress of Soil Mechanics and Geotechnical Engineering
Date: 6 - 9 October 2010
Location: CAMSIG 2010 , Capital, Mendoza, Argentina
Language: Spanish - English
Organizer: UTN - UNCu
• Contact person: Noemi Graciela Maldonado
• Address: Rodríguez 273
M5502AJE Capital
Mendoza
República Argentina
• Phone: 542615244572
• Fax: 542615244551
• E-mail: camsig2010@frm.utn.edu.ar
Website: www.frm.utn.edu.ar/camsig2010

DFI 35th Annual Conference on Deep Foundations
Date: 12 - 15 October 2010
Location: Renaissance Hollywood Hotel , Hollywood, CA, United States
Organizer: Deep Foundations Institute
• Contact person: Theresa Rappaport
• Address: 326 Lafayette Avenue
07506 Hawthorne, NJ
USA
• Phone: 9734234030
• Fax: 9734234031
• E-mail: trappaport@dfi.org
Website: www.deepfoundations2010.org

2nd International Conference on Geotechnical Engineering - ICGE 2010 - Innovative Geotechnical Engineering
• Date: 25 - 27 October 2010
• Location: Hammamet, Tunisia
• Language: English and French
• Contact person: Dr Imen Said
• Address: National Engineering School of Tunis
ENIT, BP 37,
Le Belvédère 1002
Tunis, Tunisia
• Phone: (216) 22 14 66 34
• Fax: (216) 71 87 14 76
• E-mail: imensaid2@gmail.com, essaieb.hamdi@enit.rnu.tn

Event Diary (continued)

Website:
www.enit.rnu.tn/fr/manifestations/icge2010/index.html

4th International Conference on Geotechnical Engineering and Soil Mechanics
Date: 2 - 3 November 2010
Location: Power Institute of Technology, Tehran, Tehran, Iran
Language: English-Farsi
Organizer: Iranian Geotechnical Society
• Contact person: Dr. Ali Noorzad
• Address: Power and Water University of Technology
East Vafadar Boulevard
4th Tehran Pars Street,
P.O.Box 16765-1719
Tehran
Iran
• Phone: 98-21-7393-2487
• Fax: 98-21-7700-6660
• E-mail: noorzad@pwut.ac.ir

International Conference on Geotechnical Engineering
Date: 5 - 6 November 2010
Location: U.E.T. Lahore , Lahore, Pakistan
Language: English
Organizer: PGES & UET, Lahore
• Contact person: HAMID MASOOD QURESHI
• Address: GT&GE DIVISION, NESPAK HOUSE, 1-C, BLOCK N, MODEL TOWN EXTENSION
54700 LAHORE
PAKISTAN
• Phone: 92-42-99090393
• Fax: 92-42-99231950
• E-mail: hamid833@hotmail.com, hamid.qureshi@nespak.com.pk

All Russia Scientific and Technical Conference Devoted to 100 Anniversary of Prof. Boris I. Dalmatov
• Date: 10-12 November 2010
• Location: St. Petersburg, Russia
• Language: Russian and English
• Organizer: Russian Society for Soil Mechanics, Geotechnics and Foundation Engineering and St. Petersburg State Architectural and Civil Engineering University (SPBGASU)
• Contact person: Prof. R.A.Mangushev
• Address: 190005, St. Petersburg, 2-d Krasnoarmejskaja, building 4
• Phone: Dr. D.V.V. Konyushkov at +7-812-946-01-33
• E-mail: v.konyushkov@mail.ru, konyushkov@ya.ru
• Due date of paper submission: October 1 2010

XXV Reunión Nacional de Mecánica de Suelos e Ingeniería Geotécnica A.C.
Date: 10 - 13 November 2010
Location: Hotel Crowne Plaza , Acapulco, Guerrero., Mexico
Language: Español
Organizer: SMIG
. Contact person: Felipe F. Cancino Lopez
. Address: Valle de Bravo #19
Col. Vergel de Coyoacán
14340 Tlalpan
Distrito Federal
México
. Phone: 015556773730
. Fax: 015556793676
. E-mail: smig2009@prodigy.net.mx
Website: xxvrnms.smig.org.mx/index.php?id=1

9th International Symposium of Structures, Geotechnics and Construction Materials
Date: 23-26 November 2010
Location: Centro de Convenciones, Boliva , Santa Clara, Villa Clara, Cuba
Language: Spanish, English, Portuguese
Organizer: Facultad Construcciones, UCLV
• Address: UCLV, Facultad de Construcciones
Carretera a Camajuani km 5. 1/2
54830 Santa Clara
Villa Clara
Cuba
• Phone: 53 42 205872
• Fax: 53 42 281655
• E-mail: ana@uclv.edu.cu
• Website: www.uclv.edu.cu

International Symposium on Geotechnical and Geosynthetics Engineering: Challenges and Opportunities on Climate Change
Date: 7 - 8 December 2010
Location: Miracle Grand Convention Hotel, Bangkok, Thailand
Language: English
Deadline for abstract submission: 1 August 2010
Organizer: Prof. Dennes T. Bergado
• Contact person: Conference Secretariat
• Address: c/o Asian Center for Soil Improvement and Geosynthetics, Asian Institute of Technology, P.O.Box 4, Klong Luang, Pathumthani 12120 Thailand
• Phone: +66-2-524-5500/12/23
• Fax: +66-2-524-6050
• E-mail: climatechange@ait.ac.th
Website: www.set.ait.ac.th/acsig/climatechange

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

Event Diary (continued)

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

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 Kabarovsk
Russia
• Phone: 74212407540
• E-mail: its@festu.khv.ru
Website: www.igsh4.ru

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 3 in September 2010. The Editorial Board 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)

The June Issue showed a newly-developed CPT guideline but download website was not yet decided. Now interested people can download it from the ISSMGE site at:
http://www.issmge.org/web/page.aspx?pageid=166956

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FRANCE

Foundation Donors

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

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  - c. Geo-Institute of ASCE http://content.geoinstitute.org/
  - d. Japanese Geotechnical Society http://www.jiban.or.jp/
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  - e. CalGeo – The California Geotechnical Engineering Association www.calgeo.org

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f. Prof. Ikuo Towhata  http://geotle.t.u-tokyo.ac.jp/
towhata@geot.t.u-tokyo.ac.jp

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

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The ISSMGE Foundation is requesting donations from industries as well as individuals. The donated fund is spent to financially support young promising geotechnicians who intend to further their geotechnical engineering knowledge and enhance their practice through various activities which they could not otherwise afford. These activities include attending conferences, participating in continuing education events, purchasing geotechnical reference books and manuals. All our ISSMGE members can contribute to the ISSMGE Foundation by sending President Briaud an email (briaud@tamu.edu). If you wish to apply for a grant, on the other hand, you can download the form (http://www.issmge.org/web/page.aspx?pageid=126068), fill it, and send it to Prof. Harry Poulos at Harry.Poulos@coffey.com who chairs the Foundation effort. A request for grant above $2000 is unlikely to be successful. Smaller requests especially with indication of cost sharing have the best chance.