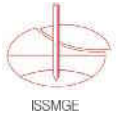




Comité Français
de Mécanique
des Sols



International Society
for Soil Mechanics and
Geotechnical Engineering



Proceedings of the 18th International
Conference on Soil Mechanics and
Geotechnical Engineering

CHALLENGES AND INNOVATIONS IN GEOTECHNICS

*Actes du 18^e Congrès International
de Mécanique des sols et de
Géotechnique*

DÉFIS ET INNOVATIONS EN GÉOTECHNIQUE

Paris 2013

Edited by / Sous la direction de

Pierre Delage, Jacques Desrues, Roger Frank, Alain Puech, François Schlosser

VOLUME 1



Presses des Ponts

Foreword

The French Society for Soil Mechanics and Geotechnical Engineering (CFMS) is most happy to host the 18th International Conference on Soil Mechanics and Geotechnical Engineering (18th ICSMGE) in Paris, France, from Monday 2 to Friday 6 September 2013. The main theme of the Conference is “Challenges and Innovations in Geotechnics”.

In agreement with ISSMGE vision for strengthening the role of the Technical Committees (TCs), the 18th ICSMGE Paris 2013 adopted a new format. The two first days are devoted to plenary sessions with the Terzaghi Oration, seven ISSMGE Honour lectures proposed by the TCs and three Special lectures proposed by CFMS. The two following days are devoted to parallel sessions organised by the TCs: they include 28 Discussion Sessions and 22 Workshops. Whereas Workshops have a free format, the Discussion Sessions are meant to discuss the papers accepted by the ISSMGE Member Societies and presented in the four volumes of these Proceedings.

The structure of the Proceedings corresponds to the organisation of the Conference. They start with the Terzaghi Oration, the Honour lectures and the Special lectures. Then, the papers are presented according to the relevant responsible TC. They are introduced by a TC General Report. The Proceedings also include the papers on Shallow Foundations (Session and General Report organised by CFMS, as no TC covers this subject), on Dams, Dykes and Levees (organised jointly by TC 201 and TC 210), on Geothermal issues (organised jointly by TC 212 and TC 307) and finally the papers on Historic sites, as well as on some case studies (organised by TC 301).

To enhance the diffusion of knowledge free of charge, no transfer of copyright was requested from the authors of the papers published in these volumes. All the papers, together with late contributions, will be made available free of charge on the various appropriate Internet websites.

It was quite a fruitful and exciting experience for the Scientific Committee to work hand in hand with the TCs for the organisation of this Conference. They were enthusiastic and efficient. The Scientific Committee is most grateful to the General Reporters, Chairs, Vice-Chairs and Secretaries of the TCs for their great help in making the 18th ICSMGE in Paris a most successful scientific and technical event.

Pierre DELAGE, Jacques DESRUES, Roger FRANK, Alain PUECH, François SCHLOSSER

Avant-propos

Le Comité français de mécanique des sols et de géotechnique (CFMS) a le grand plaisir d'accueillir le 18^e Congrès international de mécanique des sols et de géotechnique (CIMSG) à Paris, du lundi 2 au vendredi 6 septembre 2013. Le congrès est organisé autour du thème principal : « Défis et Innovations en Géotechnique ».

En cohérence avec le souhait de la Société internationale (SIMSG) de renforcer le rôle des comités techniques (CTs), le 18^e CIMSG Paris 2013 adopte le nouveau format suivant : les deux premiers jours sont consacrés aux sessions plénières avec l'allocution Terzaghi, sept conférences honorifiques de la SIMSG, proposées par les CTs, et trois conférences spéciales proposées par le CFMS. Les deux jours suivants sont consacrés aux sessions parallèles organisées par les CTs, comprenant 28 sessions de discussion et 22 ateliers. Les sessions de discussion sont le lieu du débat autour des contributions acceptées par les sociétés membres de la SIMSG et réunies dans ces actes en 4 tomes du congrès. Le format des ateliers est laissé à la discrétion de leurs organisateurs.

La structure des actes correspond à celle du congrès : ils commencent par l'allocution Terzaghi, les conférences honorifiques, puis les conférences spéciales. Viennent ensuite les contributions, réunies par CT, et précédées du rapport général du CT. Les actes comportent également les contributions sur les fondations superficielles (session et rapport général organisés par le CFMS, car ce sujet n'est celui d'aucun CT), sur les barrages, les digues et les levées (organisation conjointe par les CTs 201 et 210), sur la géothermie (par les CTs 212 et 307), et enfin sur les sites historiques ainsi qu'un certain nombre d'études de cas (par le CT 301).

Dans le but de faciliter la circulation des connaissances, il n'a pas été demandé aux auteurs de transférer leurs droits pour les contributions publiées dans les actes. Toutes ces contributions, ainsi que des contributions disponibles après le congrès, seront mises en accès gratuit sur divers sites internet appropriés.

La collaboration étroite avec les CTs pour l'organisation de ce congrès a été pour la commission scientifique une expérience riche et passionnante, grâce à l'enthousiasme et à l'efficacité de ses interlocuteurs. La commission scientifique remercie vivement les rapporteurs généraux, les présidents, les vice-présidents et les secrétaires des CTs pour leur aide décisive en vue de faire de ce 18^e CIMSG un événement scientifique et technique des plus réussis.

Pierre DELAGE, Jacques DESRUES, Roger FRANK, Alain PUECH, François SCHLOSSER

Introduction / *Introduction*

ISSMGE – The State of the Society (2009-2013)

SIMSG – État de la Société (2009-2013)

Briaud J.-L.

President of ISSMGE, Professor and Holder of the Buchanan Chair, Zachry Dpt. Of Civil Engineering, Texas A&M University, College Station, Texas, 77843-3136, USA. briaud@tamu.edu

Distinguished Colleagues, Dear Friends,

The very first thing I wish to tell you is thank you, thank you for letting me serve you as your President for the last four years. You have given me four of the very best and most exciting years of my professional career. It has been an honor and a true pleasure for me to work with everyone of you for the betterment of our profession. Sometime people ask me how I feel about the Presidency, I answer it feels like a very hard working vacation!

You elected me in Alexandria, Egypt in 2009 and I suddenly found myself on a list next to the names of Terzaghi, Peck, Cassagrande, Skempton, Kerisel, and many other giants of our field (Fig. 1). This prestigious and enviable position also placed a tremendous sense of responsibility on my shoulders and generated a lot of pressure for me to do the very best job I could do. I can assure you that I gave it my very best effort, at the detriment of some of my other responsibilities in life. My wife Janet kept me honest during all this time. I recall asking her how she felt to be married to the President of the International Society. She promptly answered President Briaud don't forget to take care of the garbage!!

1936–1957	K. Terzaghi	Austria, USA
1957–1961	A. W. Skempton	UK
1961–1965	A. Casagrande	USA, Austria
1965–1969	L. Bjerrum	Norway
1969–1973	R. B. Peck	USA
1973–1977	J. Kerisel	France
1977–1981	M. Fukuoka	Japan
1981–1985	V. F. B. de Mello	Brazil
1985–1989	B. B. Broms	Singapore
1989–1994	N. R. Morgenstern	Canada
1994–1997	M. Jamiolkowski	Italy
1997–2001	K. Ishihara	Japan
2001–2005	W. Van Impe	Belgium
2005–2009	P.S. Sêco e Pinto	Portugal
2009–2013	J.-L. Briaud	USA



Fig. 1 Presidents of ISSMGE

1 VISION

My vision as President was

- To involve the membership and generate a sense of ownership in every one of you. I wanted you to feel that you were part of your professional family and that the family cared about you. This would be done for example by creating Board Level Committees where more members could participate and make high level decisions, by writing progress report to ensure that you felt connected, and by creating new awards to recognize those who excel in our profession..
- To modernize the society and further advance it into the electronic age. This would be done for example by starting a series of free webinars, revamping the web site, creating GeoWorld, transferring the Lexicon to an addressable data base available on the web site, having the Board start meeting by Skype conference calls to save money.
- To help developing countries and the young geotechnical engineers. This would be done for example by raising money for the new ISSMGE Foundation which would receive applications and distribute grants, by creating a special group with direct access to the President.
- To mobilize more actively the practitioners side of our society and help bridge the gap between academics and practitioners. This would be done by creating a special group for practitioners with direct access to the president and recruiting more Corporate Associates into the Society.
- To enhance the image of the geotechnical engineer worldwide. This would be advanced by creating a Public Relations Group dedicated to simple steps that would increase the visibility of our profession.

My basic tactic to realize my vision was pretty simple:

- Develop a vision of what I wanted to accomplish
- Surround myself with very smart people. Here I was very lucky to be able to convince the outstanding people including Harry Poulos, Suzanne Lacasse, Mike Jamiolkowski, Marc Ballouz, Dimitris Zekkos, François Schlosser, Jennifer Nicks, Michael Lisyuk.
- Share with them my vision and check if they truly embraced it.
- Give them a lot of freedom and support.
- Be a strong cheer leader for those who did well
- Be a gentle but steady nudge for those who dragged the team down
- Keep thinking and acting with a vision for the relentless pursuit of excellence in a just and friendly atmosphere.



Fig. 2 The 2009-2013 ISSMGE Board Members (in India)

2 THE BOARD (2009-2013)

I had a great team of 11 Board members who helped me accomplish all those initiatives. The Board members are shown in Fig. 2. Standing and from left to right are Samuel Ejezie (Vice President for Africa), Ikuo Towhata (Appointed board member), Ivan Vanicek (Vice President for Europe), Roger Frank (Appointed board member), Charles Ng (Appointed board member), Roberto Terzariol (Vice President for North America). Sitting and from left to right are Askar Zhussupbekov (Vice President for Asia), Michael Davies (Vice President for Australasia, first vice president and treasurer), Neil Taylor (Secretary General), Jean-Louis Briaud (President), Pedro Pinto (Past President), and Gabriel Auvinet (Vice President for North America).

3 BOARD LEVEL COMMITTEES

One of the first step was the creation of Board Level Committees (BLC) (Fig. 3) to engage more members in the affairs of ISSMGE. This process allowed me to have the participation of some 100 new people in charge of major decisions for The Society. The Technical Oversight Committee (TOC) chaired by Suzanne Lacasse in Norway was in charge of quality control for all 29 ISSMGE Technical Committees (TCs). The Membership, Practitioners, and Academicians Committee (MPAC) chaired by Harry Poulos in Australia was in charge of customer service for our 86 member societies including bringing academics and practitioners closer together. The Innovation and Development Committee (IDC) chaired by Dimitrios Zekkos in the USA was in charge of impacting The Society with new ideas and development of these ideas. In life, we rarely take the time to think so I decided that I would create a group whose job it would be to think. The Awards Committee (AWAC) chaired by Francois Schlosser in France would handle awards guidelines, awards decisions, and the creation of new awards if necessary. The Public Relations Committee (PRC) chaired by Marc Ballouz of Lebanon would start work on making geotechnical engineering more visible. The Students and Young Members Presidential Group (SYMPPG) chaired by Jennifer Nicks in the USA would work directly with the President to accomplish some of the goals that would better serve that part of our Society. The Corporate Associates Presidential Group (CAPG) chaired by Michael Lisuyk would play a similar role for practitioners.

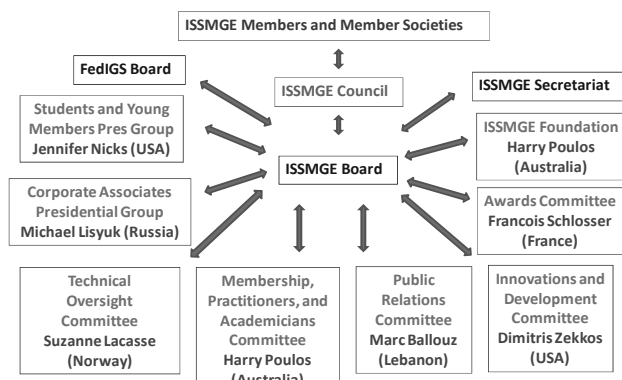


Fig. 3 ISSMGE Organization Chart.

Some of the accomplishments and changes created by these Board Level Committees with subsequent approval of the Board are listed below

1. Young members can participate in Technical Committees as corresponding members without limit. They have to be nominated by the member society
2. Technical committees are no longer disbanded when a new President is elected. They continue right through the president election. However TOC and the President retain the right of closing a TC if it does not perform or change the leadership if the chair does not perform well.

3. The tenure of the chairs of the TCs is four years renewable once. New chairs are suggested to TOC and the President by the members of the TC.
4. The TCs send a progress report to TOC every two years on which basis TOC decides to renew the TC or not but always after conferring with the President.
5. A short video was created by the public relations committee to explain in layman's terms what geotechnical engineers do.
6. A number of innovations were created by IDC and are detailed subsequently.

4 MEMBER SOCIETIES

We have a total of 86 member societies (Fig. 4). On the map of Fig. 4, the member societies are in dark. As you can see from the map, we need to continue our work in Africa to bring in more countries from that region to join ISSMGE. During the last four years two societies lost their membership because of repeated lack of dues payment but three new societies joined ISSMGE: Belarus, Chinese Taipei, and Lebanon. The total number of individual members increased from 18561 in 2009 to 19755 in 2013 or a 6.4 % increase. The members are distributed as follows:

1. Africa: 875
2. Asia: 3673
3. Australasia: 1590
4. Europe: 7985
5. North America: 4285
6. South America: 1347

The largest member societies are the USA (3294) followed by Japan (1155) and the UK (1130). The smallest society has 13 members. All societies have one vote.



Fig. 4 ISSMGE Member Societies in 2013

5 THE NAME OF OUR SOCIETY

We had a great discussion on the possible change of name of the society. The proposal was for ISSMGE to become ISGE: the International Society for Geotechnical Engineering. Arguments in favor and against were presented at the Council meeting in Toronto in 2011. The motion was proposed by several countries and the vote was 23 yes, 39 no, 1 abstain. We had a wonderful and professional discussion on this topic which brought out the passion all of us have for our profession. One of my goal during my presidency has been to engage the membership, I believe this topic definitely contributed to that. This was a very meaningful debate. It is my prediction that the name change to ISGE is only a matter of time but it may be a couple of decades before it occurs; soil mechanics is in our blood but it does not have to be in our name. I further predict that the word geotechnical engineering will soon become geo-engineering.

6 TECHNICAL COMMITTEES



Fig. 5 Location of the TC Chairs and sponsoring member societies

The Technical Committees (TCs) were reorganized in three categories (Table 1), fundamental topics (7 TCs), applications (16 TCs), and impact on society (6 TCs), for a total of 29 TCs.

The location of the chairs and host society of the TCs is shown on Fig. 5.

Table 1 ISSMGE Technical Committees

Cat egory	TC #	TC Official Name	Host Country	TC Chair
Fundamental	101	Laboratory Stress Strain Strength Testing of Geomaterials	France	H. Di Benedetto
	102	Ground Property Characterization from In-Situ Tests	USA	P. Mayne
	103	Numerical Methods in Geomechanics	Hong Kong	K. T. Chau
	104	Physical Modelling in Geotechnics	Switzerland/ Australia	S. Springman (*til 1 July 2010) C. Gaudin
	105	Geo-Mechanics from Micro to Macro	UK/Japan	M. Bolton/M. Hyodo
	106	Unsaturated Soils	Spain	E. Alonso
	107	Laterites and Lateritic Soils	Ghana	K. Ampadu
Applications	201	Geotechnical Aspects of Dykes and Levees, Shore Protection and Land Reclamation	Netherlands	M. A. Van
	202	Transportation Geotechnics	Portugal	A. Gomes Correia
	203	Earthquake Geotechnical Engineering and Associated Problems	Greece	K. Pitilakis
	204	Underground Construction in Soft Ground	France/ Netherlands	R. Kastner/A. Bezuijen
	205	Limit State design in Geotechnical Engineering	UK	B. Simpson
	206	Interactive Geotechnical design	Canada	K. Been
	207	Soil-Structure Interaction and Retaining Walls	Russia	V. Ulitsky
	208	Slope Stability in Engineering Practice	Canada	J. Fannin
	209	Offshore Geotechnics	USA	P. Jeanjean
	210	Dams and Embankments	China	Z. Xu
	211	Ground Improvement	France	S. Varaksin
	212	Deep Foundations	Germany	R. Katzenbach
	213	Geotechnics of Soil Erosion	Germany	M. Heibaum
	214	Foundation Engineering for Difficult Soft Soil Conditions	Mexico	J. L. Rangel
	215	Environmental Geotechnics	Italy	M. Manassero
	Impact on society	301	Frost Geotechnics	Norway
302		Preservation of Historic Sites	Italy	C. Viggiani
303		Forensic Geotechnical Engineering	India	V. V. S. Rao
304		Coastal and River Disaster Mitigation and Rehabilitation	Japan	S. Iai
305		Engineering Practice of Risk Assessment and Management	Singapore	K. K. Phoon
306		Geotechnical Infrastructure for Megacities and New Capitals	Brazil	A. Negro
307		Geo-Engineering Education (include aspects of software in use)	Australia	M. Jaksa
	307	Sustainability in Geotechnical Engineering	Canada	D. Basu

7 HONOR LECTURES

The TCs were given the opportunity to create an honour lecture named after one of the giants in their field. There were already 2 such lectures in 2009 (The Ishihara Lecture and the Mitchell Lecture), 7 more were created between 2009 and 2013 as listed on Fig. 6. Many of them were presented in Paris at the conference. Note that honour lectures are not necessarily permanent. They are created for eight years renewable by decision of the technical committee and approval of the Board.

ISHIHARA - Earthquake
MITCHELL – Site characterization
BISHOP – Laboratory testing
KERISEL – Monument preservation
SCHOFIELD – Physical modeling
McCLELLAND – Offshore geotechnics
FUJITA – Underground construction
MENARD – Soil Improvement
ROWE – Environmental geotechnics

Fig. 6 ISSMGE Honour Lectures

8 WEBINARS

Webinars are lectures presented over the internet as follows. The speaker is at her or his desk in front of the computer screen. The speaker talks and advances the power point slides as would be done in a conference setting. The participants sit in front of their computer many kilometers away and listen to the voice of

the speaker through voice over IP and watch the slides on their computer screen. Fig. 7 shows the list of webinars offered over the last two years and the location of the computers connected worldwide for the first webinar. A contract was established with a web service company to facilitate the connection with many participants. The webinar series started in 2011 and the President gave the first webinar. Until August 2013 the webinars have been free and the recordings have been kept on the ISSMGE web site for free access. These recorded webinars have been accessed 1664 times since they have been uploaded three months ago. All speakers have been generous and offered to present the webinars for free as a gift to their fellow geotechnical engineers.

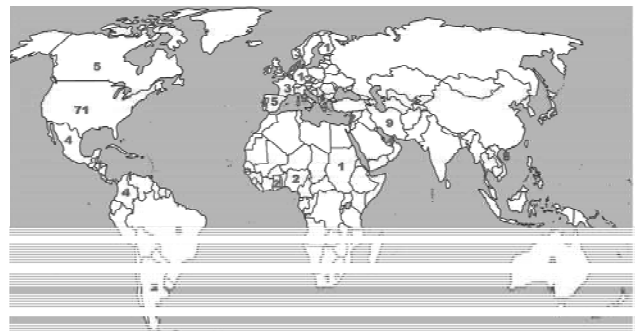


Fig. 7 Webinar series and location of computers connected to the first ISSMGE webinar.

1. Scour and Erosion – Briaud, USA, 23rd Aug 2011

2. Intelligent Compaction – Correia & Chang, Portugal, 25th Oct 2011
3. Eurocode- Bond, UK, 19th Dec 2011
4. Risk and Geotech Engrg – Medina & Uzielli, USA, 24th Feb 2012
5. Landfill liners – Rowe, Canada, April 2012
6. Unsaturated soils – Alonso, Spain, July 2012
7. Pile driving – Rausche, USA, September 2012
8. Earthquake engineering – Towhata, Japan, November 2012
9. Geosynthetics – Koerner, USA, January 2013
10. Ground Improvement – Varaksin/Huybrechts, Belgium, March 2013
11. Geophysics – Foti, Italy, May 2013
12. Foundations of very tall structures – Poulos, July 2013

9 AWARDS

In 2009, we had the Terzaghi Oration which is selected by the President of the Society alone, the Kevin Nash Gold Medal decided by the Council of Past Presidents, and three young geotechnical engineer awards decided by a committee of the Board. After calculating the ratio of awards offered by ISSMGE over the number of individual members of ISSMGE, I discovered that this ratio was extremely small compared to most other professional societies. We created 7 new awards as shown in Fig. 8. Then we created the Awards committee (AWAC) to finalize the awards descriptions, handle the collection of nominations and the selection process. The Board would make the final choice among the two candidates recommended by the Awards committee. The awards will be given at the Awards lunch in Paris and will be recorded on the ISSMGE web site.

- Terzaghi Oration
- Kevin Nash Gold Medal
- 3 Young Geotechnical Engineer Awards
- Outstanding Technical Committee
- Outstanding Member Society
- Outstanding Geotechnical Project
- Outstanding Innovator
- Outstanding Young Geotechnical Engineer
- Outstanding Public Relations
- Best paper in the Int. J. Geoeng. Case Hist.
- 9 Named Lectures

Fig. 8 ISSMGE Awards

10 TRAVEL

I travelled extensively over the last 4 years with a total of 80 trips as shown in Fig. 9. During those trips I met so many people and made so many new friends. It was always a pleasure to meet geotechnical engineers throughout the world and I learned so much. I realized how much of a difference there is in the standard of living across the globe and that these differences cannot be solved by engineering and medicine alone. The biggest impediment to progress in some countries is corruption. Other impediments to an increase in the standard of living are lack of education and transportation. Until such basic problems are solved, the third world cannot rapidly improve. I kept many photographs of my trips and will continue to appreciate them as very special moments (Fig. 10).

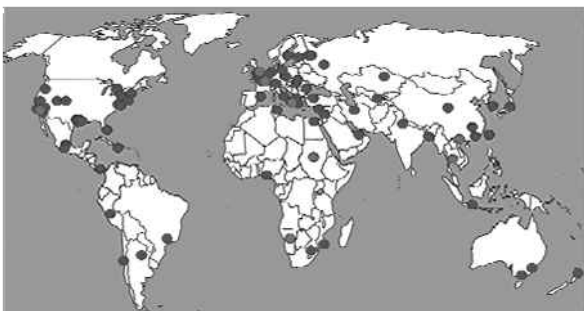


Fig. 9 The 80 places I visited during my Presidency.

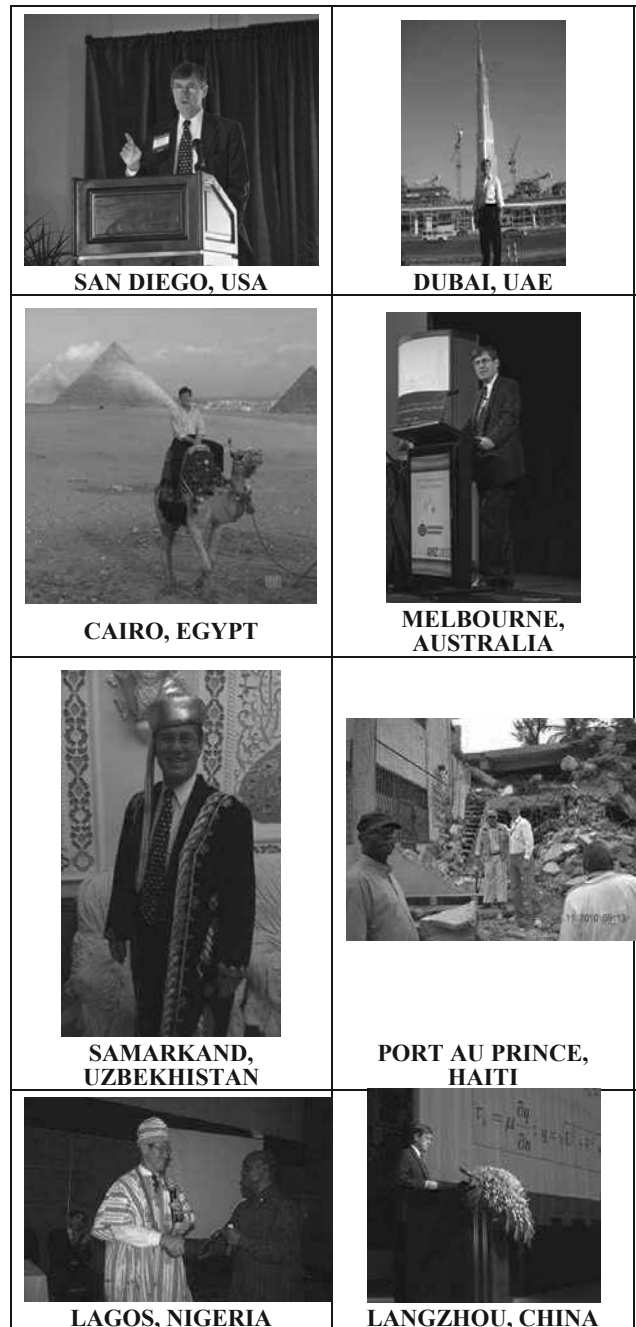


Fig. 10 President Briaud on the road

11 THE ISSMGE FOUNDATION

One of the realizations during my early travel was that there are huge inequalities in the salaries of geotechnical engineers throughout the world. Some people told me that their salary was \$1000/year and added “How can I go to the conferences that you organize when the registration alone approaches one year salary?”. This is when I decided to create the ISSMGE Foundation. By the way, it seemed very appropriate for a geotechnical engineering organization to have a Foundation! Harry Poulos agreed to look after its functioning and to head the grant distribution process. Today, any member of ISSMGE can apply for a grant from the Foundation. The application form and the rules are on our web site at <http://www.issmge.org/en/issmge-foundation>.

Many geotechnical engineers, geotechnical companies, member societies, and even Technical Committees have contributed to the Foundation (Fig. 11) which currently has about \$140,000 and has awarded grants to 19 people worldwide. Remember this saying that when you die, the only part of you that does not die with you is what you have given to others.

- DIAMOND (\$50,000 and above)**
 International Society for Soil Mechanics and Geotechnical Engineering
 Professor & Mrs Jean-Louis Briaud
- PLATINUM (\$25,000 to \$49,999)**
- GOLD (\$10,000 to \$24,999)**
 Chinese Institution of Soil Mechanics and Geotechnical Engineering
 International IGM s.a.r.l - Institute for Geotechnics and Materials
 Geo-Institute of ASCE
 Japanese Geotechnical Society
- SILVER (\$1,000 to \$9,999)**
 Professor John H. Schmertmann
 Deep Foundations Institute
 Yonsei University
 Korean Geotechnical Society
 Californian Geotechnical Engineers Assn.
 Professor Ikuo Towhata
 Chinese Taipei Geotechnical Society
 Professor Zuyu Chen
 East China Architectural Design and Research Institute
 ISSMGE TC Ground Improvement
 Professor Askar Zhussupbekov
 ISSMGE TC Forensic Geotechnical Engineering
 Yoshi IWASAKI
- BRONZE (\$0 to \$999)**
 Professor Mehmet T. Tümay
 Nagadi Consultants (P) Ltd
 Professor Anand J. Puppala -University of Texas Arlington

Fig. 11 ISSMGE 22 Foundation donors

12 CORPORATE ASSOCIATES

ISSMGE Corporate Associates (Fig. 12) are geotechnical engineering companies, including consultants, contractors, and manufacturers who pay dues (\$1500/year) to ISSMGE for a list of benefits (<http://www.issmge.org/en/corporate-associates>) and to support the profession. The Corporate Associates representatives (one per company) also form the Corporate Associate Presidential Group under the leadership of Michael Lisuyk of Russia. This group was created to work on aspects of ISSMGE which could benefit practitioners more specifically. In 2009 we had 21 CAs, today (2013) we have 43 CAs. This remarkable increase in the number of CAs is due to the hard work of many people and is very welcome. However this number still pales compared to the number of CAs in other international societies closely associated with ISSMGE who have more than 100 CAs. If you see your company logo on Fig. 12 we really appreciate your support. If you don't, please consider joining and supporting your profession.



Fig. 12 ISSMGE 42 Corporate Associates

13 THE INTERNATIONAL JOURNAL OF GEOENGINEERING CASE HISTORIES

Practitioners often complain that geotechnical journals are too academically oriented and that there is little useful to them. The IJGCS fills that gap: (<http://www.issmge.org/en/resources/international-journal-of-geoengineering-case-histories>). Born a few years ago in the mind of Dimitris Zekkos, the IJGCS was endorsed by ISSMGE in early 2009 and has seen slow but steady growth. It is free of charge, on line, in color, with embedded spread sheet data when clicking on the figures. It is particularly welcome by developing countries which have access to high quality papers for free. It is not only useful to practitioners but also to professors who can use the case histories for their students in class. Jonathan Bray was the first editor in chief followed recently by Pedro Pinto. The ISSMGE TCs now have the opportunity of setting up special issues and the ISI rating is around the corner. The future of the IJGCS is very bright. I urge all of you to consider publishing a high quality case history in IJGCS. In life you have your financial wealth potential and your intellectual wealth potential. Publishing a case history in IJGCS is making an intellectual gift to developing countries: be generous and take the time to publish in IJGCS.



Fig. 13 GeoMap within GeoWorld: the new geotechnical engineers interaction medium

14 GEOWORLD

Again born in the mind of Dimitris Zekkos and endorsed by IDC and SYMPG, GeoWorld (<http://www.mygeoworld.info/>) is to geotechnical engineers what Facebook is to social networking. It allows geotechnical engineers in the world to interact and make friends on line, to exchange questions and answers on various topics, to post examples, and to become even more connected internationally. Geoworld was launched in October 2011 and has now reached 2600 individual members, 160 companies, and 76 professional organizations. GeoMap is a new application within GeoWorld which allows you to find out members and companies in any geographic area by clicking on the GeoMap (Fig. 13). You can also find the location of upcoming conferences worldwide and the location of the case histories published in the IJGCS.

15 THE NEW ISSMGE WEB SITE

Our new web site was launched in 2012. It was changed to allow ISSMGE to incorporate the latest technology and to modernize the look of the pages while maintaining flexibility of access and modification by the Secretary General's office. The new site has a new conferences database, has increased functionality, hosts the recorded webinars, and promotes the integration with GeoWorld. The number of visitors has nearly double in the short time since it has been open going from 2200 visitors in June 2012 to 4000 in March 2013 (Fig. 14). It also now hosts the new electronic version of the Lexicon.

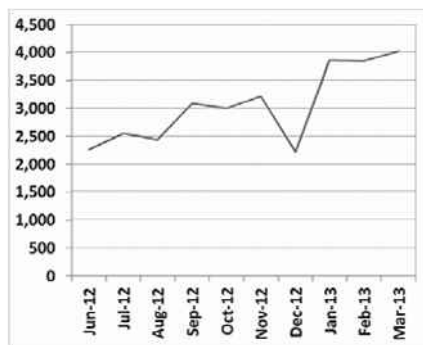


Fig. 14 Traffic on the new ISSMGE web site over the last 10 months.

16 LEXICON

The Lexicon was started around 1953 with the translation of geotechnical engineering terms in three languages: English, French, and German. This was very quickly recognized as a very valuable resource and had reached 8 languages by 1981 (5th edition). It had stayed that way until about 3 years ago when I asked Dimitris Zekkos and the Innovation and Development Committee (IDC) to transform the paper copy into an electronic and addressable Excel spread sheet and if at all possible increase the number of languages. We now have an e-Lexicon on our web site with 12 languages. Note that the e-Lexicon was a huge amount of work and is a great example of team work across country borders by many member societies and enabled by a platform developed by Geotechnical.org. The e-Lexicon includes a web-based application that allows users to query the database and find the translation of a total of 1590 geotechnical terms in 12 languages, specifically: English, French, Spanish, Turkish, Chinese (traditional and simple), German, Japanese, Portuguese, Russian, Persian (Farsi), and Finnish.

17 THE ISSMGE BULLETIN

The ISSMGE Bulletin was remarkably well handled by Ikuo Towhata as Editor in Chief and his team of editors. The Bulletin grew significantly in size and content under his leadership. Furthermore it went from 4 issues per year to 6 issues per year. We are very grateful to him for this enormous responsibility.

18 THE SECRETARIAT IN LONDON

Neil Taylor was our Secretary General for the period and faced his responsibility with great poise. I could always count on Neil to tell me what the bylaws said. Paloma Peers was his assistant and continued to be a rock in a soil's world. I also want to thank my assistant Theresa Taeger for being so reliable and dedicated to perfection.

19 THE FINANCES

The finances of ISSMGE are in very good shape. The Members Societies dues have not changed during the last 4 years yet we have started new free programs for our members such as the webinars. Our budgets over the last 4 years have been approximately balanced and our reserves are healthy. This gives me a good occasion to thank the United States National Society and the Geo-Institute of ASCE for contributing to my yearly budget.

20 THE PARIS CONFERENCE

The 18th International Conference on Soil Mechanics and Geotechnical Engineering will take place in Paris from 2 to 5 September 2013 and judging by the outstanding preparation, it will be a magnificent success. Our professional family will get together, to learn from the best, to exchange ideas and practices, all this in a classy, distinguished, yet relaxed and fun atmosphere. We are very grateful to our host: the French member society and its sponsors. Most of the members of the organizing committee are shown in Fig. 15 including Philippe Mestat, Chair of the Committee (center front row).



Fig. 15 The 2013 ICSMGE Paris conference organizing committee and its chair Philippe Mestat (center front row).

21 THE PROGRESS REPORTS

Communication helps to solve problems and to generate a sense of belonging. This is why I started the monthly progress report in November 2009. The other reason was to tell you what was being accomplished. Since I got elected on 9Oct2009, my monthly report came on the 9th of each month. It required a tremendous discipline and dedication to not miss any of them but it provided a regular self evaluation of my work and our progress.

22 FUTURE OF GEOTECHNICAL ENGINEERING

It is always very difficult to predict the future. A 20 year forecast is easier than a 100 year forecast and a 1000 year forecast is nearly impossible. Yet if we go back in history about 1000 years ago to the time of the Tower of Pisa, we then realize that designing a foundation for that Tower today would be a very simple exercise. Then we wonder by extrapolation what geotechnical engineering will be like in another 1000 years. Will we have?

1. complete non intrusive site investigation of the entire soil volume,
2. automated 4D computer generated design by voice recognition and based on a target risk,
3. tiny and easily installed instruments to monitor geotechnical structures,
4. unmanned robotic machines working at great depth,
5. significant development of the underground,
6. extension of projects into the sea,
7. soil structure interaction extended to thermal and magnetic engineering
8. failures down to a minimum,
9. expert systems to optimize repairs of defective geotechnical engineering projects,
10. geospace engineering of other planets,
11. geotechnical engineers with advanced engineering judgment taught in universities,
12. no more lawyers because of the drastic increase in projects reliability (Fig. 16).

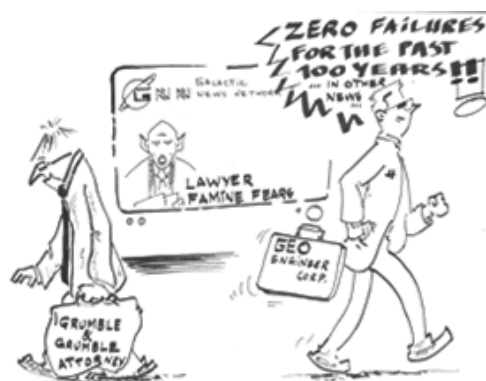


Fig. 16 Improved reliability of geotechnical projects (courtesy of George Nasr, Lebanon)

23 A SUCCESSFUL CAREER

A successful career is built on a series of demonstrated successes by an individual alone or as part of a team. In the performance of your job, remember when you make a decision of any sort that one mistake will take ten successes to erase the mistake from the mind of your peers. This is why it is always important to concentrate and plan. Also remember before a challenging moment that you may have been through similar tough moment before and have done well; this reasoning will give you added confidence and lower the stress. The following are some thoughts on what is important in a career. They have been inspired from discussion with many engineers over time including Clyde Baker and personal experiences as well.

10. Chose the relentless pursuit of excellence as a way of life
9. Be curious. The discovery process is a fountain of youth
8. Work hard but balance your interests (fun, family, sport, art, world news)
7. Make lots of friends. Nurture your public relations
6. Look for solutions and not who is to blame. Leave that to the judge.
5. Be firm in your decisions but always fair and polite
4. Treat others as you wish to be treated, you will lead by example
3. Communication is the best way to solve problems. Convince through logic and data
2. Surround yourself with smart people and role models
1. Go after your dreams with vision and perseverance

24 GEOTECHNICAL ENGINEERING FOR THE PEOPLE, BY THE PEOPLE, WITH THE PEOPLE

While we continue to advance the profession, there is also no doubt that we do not get the recognition that we deserve. If you go in the street today and say to a passerby “my child is a heart surgeon”, that person will be very impressed. If you then say my other child is a geotechnical engineer, you will likely be asked: “what is that?”. There is a need to enhance the public’s recognition and awareness of our profession and this is why we have created the Public Relations Committee led by Marc Ballouz. It will be a very long road before we are recognized as heart surgeons are but the only way we can make a real difference is if every one of you takes the time to explain it to the people in the streets. One of our best ambassadors is Ikuo Towhata from Japan who came up with this saying: “Geotechnical engineering for the people, by the people, and with the people”.

25 CONCLUSION

If someone asked me what has been the most rewarding part of my presidency I would not hesitate and say that it is making so many new friends all over the world (Fig. 17). Bill Gates, the richest man in the world today, was asked “how do you measure success in life?”. I believe he responded something like: “by how many friends you have”. All of you have been very kind to me over the last 4 years. I do not know if I will ever be able to repay such kindness before I die but I can assure you that it did not go unnoticed and it was extremely appreciated. Everywhere I went it felt like coming home for a special event, you welcomed me in your daily life as if I were coming to see the family. You treated me like a close friend and made me feel comfortable.

I believe in team work and the ultimate team is the family (Fig. 18). I think that we have developed a better sense of family in our society and we are stronger for it. I say good bye as your President, but it will be my pleasure to become again a regular member of ISSMGE and to continue to serve you to the best of my ability. You certainly can continue to count on me if I can help. While I will no longer be your president, I will have the same desire to help you and to help the professional family.

You mean a lot to me. Thank you again for all your kindness, take care, and remember that happiness is a choice.



Fig. 17 So many new friends!

ISSMGE is our professional family.

Helping ISSMGE is at the level of a family obligation



Don't ask what ISSMGE can do for you,

ask what you can do for ISSMGE

Fig. 18 The Professional family

To finish I will borrow a saying from ASFE. When it comes to the soil, when it comes to the Earth, you are the best. Indeed, you are the best people on Earth.