IAMG Newsletter

No. 90 Summer 2015

Official Newsletter of the International Association for Mathematical Geosciences

Contents

It's not too early to nominate candidates for the 2016 IAMG Awards !

The Association invites all members to submit nominations for the **John Cedric Griffiths Teaching Award**

and the **William Christian Krumbein Medal**

Deadline: January 31, 2016

For details about prerequisites for nominations please see the IAMG web site **http://www.iamg.org/** and click on **Awards**

There is also a list of past recipients and their laudatios on the web site. Please have a look at it before sending your nominations!

The (informal) documents which should accompany a proposal are:

- a short statement summarizing the relevant qualifications of the nominee
- a curriculum vitae of the nominee

Nobody gets an award without a nomination, so please support your colleague when you believe he/she deserves an award by submitting a nomination.

Nominations can be submitted by a single person or by a group. The Laudations written over the last few years and published in Mathematical Geosciences are a good source of inspiration on how to write a nomination. Nominations can be submitted via e-mail (jackswsc@q.com) or sent to:

John H. Schuenemeyer - Chairman, IAMG Awards Committee
Southwest Statistical Consulting, LLC
960 Sligo St
Cortez, CO 81321 USA

Nominations for other Awards may also be submitted at any time.

From the Editor

Twenty years ago I took over the job of Newsletter editor from Jim Carr and produced my first issue, Newsletter No. 50. Forty Newsletters have been published since then, eclipsing John Davis' and JoAnne DeGraffenreid's record 38 News Letters over 16 years (seven of those were double issues). Those 20 years of production have been a varied, interesting and educational experience for me. I had the opportunity to work with and get to know six different IAMG presidents (Mike Hohn, Ricardo Olea, Graeme Bonham-Carter, Frits Agterberg, Vera Pawlowsky-Glahn, and Qiuming Cheng) and their administrations, each having different agendas but all being supportive and helpful. The Newsletter was written and edited successively in three different locations (Jülich, Germany; Lawrence, Kansas; Dallas, Texas) and mailed from The Netherlands, Kansas, Kingston (ONT), Texas, and now from Germany. At least eight different print shops have been involved in the production, and uncounted thousands of stamps applied.

644 pages

20 years

Not all issues were printed and mailed. Starting in 2002 until 2004 we distributed the Newsletter electronically via our website, with e-mail notification. This was an experiment which was only partially successful. So, when Frits Agterberg became president, he decided to mail out hardcopy again, and from that point on use color printing. And when Vera and treasurer Gina Ross were steering IAMG through the great recession we went back to electronic distribution for one issue in 2009.

When IAMG closed the Kingston office which had handled the printing and mailing until 2009, I had to take over that chore again (as I used to in the beginning in Jülich), and after a disastrous experience with Fedex/Kinko, I found a reliable and reasonable local printer. (To have some copies for the IAMG meeting in Hungary we actually had it printed in Budapest.) Labeling and sticking stamps on each copy was always time consuming. I remember one summer when I received a print run just before leaving on a trip: my sister and I put stamps on in the car and stopped every 100 miles or so to drop a batch in a local post office. Starting with NL84 in 2012 Regina in our IAMG office in Freiberg has handled printing and shipping; it turned out to be more economic to send her the pdf file and and have it done in Germany.

6 presidents

So, you ask why are we still sending out Newsletters when print media are disappearing and everything is being done online? In my view, the Newsletter's purpose is to keep the IAMG community up-to-date on developments, personnel changes, awards, meetings, members, etc., although the news is often delayed because of its semiannual publishing schedule. But it is also a repository and archive of the history of the Association: to inform and to preserve. While much of this can be accomplished with our website (and we try to keep it current), web content tends to be ephemeral in the long run, as we have experienced in the past when our web services have changed and our web site had to be rebuilt. Last but not least, the Newsletter is also the face of IAMG and is usually handed out or laid out at various meetings and conferences.

41 NL issues

Harald S. Poelchau

P.S.: Is anybody interested in taking over?

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PRESIDENT'S FORUM

In this forum I will briefly update the main progress of IAMG business, and then I wish to share with you a few thoughts about Earth Science frontiers and how they are related to Mathematical Geosciences (MG).

I am very pleased to report that during the past half year, IAMG has been doing very well. Information about some of the progress can be found in this issue of the Newsletter. For example, preparations for the IAMG2015 annual conference in Freiberg are going well and the submission of abstracts and registrations received indicate we will have another very successful conference this year. Congratulations and thanks are due to the local organizers, the Meetings Committee chaired by Ricardo Olea and the many others who are involved. Special thanks should be given to Dr. David Collins, our Treasurer, and Mrs. Regina van den Boogaart, IAMG Office Manager, who have put in extra efforts to work closely with the conference organizers in dealing with the logistics of the conference since this year it is the first time that IAMG offers our annual conference while keeping full financial responsibility itself. We also have a conference site for IAMG2017, which will be held in Perth, Australia. Thanks are due to the proposers of this conference (Oktay Erten, Ute Mueller and June Hill) and to the Meetings Committee for evaluating the proposal and to Council for discussions and approval of the proposal. A third site includes our sessions during the 35th IGC to be held in Cape Town, South Africa in 2016. Soon we will need to decide on the site for IAMG2018 at which IAMG will celebrate its 50th anniversary. Comments and suggestions about this important celebration are welcome and will be highly appreciated. I would like to congratulate Professor Yongzhang Zhou (Sun Yat-Sen University, China) who has been selected as the winner of the 2015 Felix Chayes Prize for Excellence in Research in Mathematical Petrology and Dr. Xiaogang (Marshall) Ma (Rensselaer Polytechnic Institute, USA) who is the recipient of the 2015 Andrei Borisovich Vistelius Research Award. Both winners will deliver their plenary presentations at IAMG2015. I should extend my sincere gratitude to the Awards Committee chaired by Professor John H (Jack) Schuenemeyer and the IAMG members who have made nominations of all candidates in the awards competition. I would like to thank the Lectures Committee chaired by Jennifer McKinley, IAMG Executive Vice President, for selecting the 2016 Distinguished Lecturer (DL) and the 2015 Georges Matheron Lecturer (ML). I congratulate Dr. Sean McKenna (Ireland) for being selected as our 2016 DL and Professor Roussos Dimitrakopoulos (Canada) as our 2015 ML. Both will make plenary presentations at IAMG2015. I want to congratulate Mrs. JoAnne DeGraffenreid who is receiving the IAMG Special Merit Award for her extraordinary services to the Association. You can find her laudation on p.4 in this issue, and many of you will meet JoAnne at IAMG2015 in Freiberg this September. Harald Poelchau is thanked for preparing this excellent ninetieth issue our Newsletter in which you can find many other good news and stories about our IAMG members. I must give my heartfelt thanks to Frits Agterberg, our Secretary General, who has maintained high efficiency dealing with IAMG business in a very special and difficult period with his wife Codien sick at home. Best wishes for a speedy recovery to Codien!

IAMG has been rapidly expanding its scope from traditional geostatistics or statistical geology to more comprehensive interdisciplinary sciences for mathematically studying properties and processes of the Earth with prediction and assessment of its resources and environments. What are the current trends of MG and how are they associated with the Earth Science frontiers? An accurate list of frontiers for MG can only be reached on the basis of collective comments from all IAMG members and others involved in the study of MG. A survey should be done to collect the opinions of all individuals from within IAMG in order to develop a new vision and trends for MG. Of course, there exist several previous publications by IAMG members that have discussed past, current and future trends for the IAMG. Here I will just share some thoughts based on my personal observations of several recent events and activities. You may know that, since last year, several international organizations have developed and published trends of scientific research within their organizations and strategic plans for the next 5-10 years; for example, the International Council for Science (ICSU) published its strategic research agenda for Future Earth 2025 Vision; the International Union of Geological Sciences (IUGS) has launched the Resourcing Future Generations (RFG) initiative, an international collaborative program; the US National Science Foundation (NSF) published a strategic plan for 2014-2018, and the American Geophysical Union (AGU) produced a scientific trends report, just to name a few. In addition to studying the initiatives involved in the above programs I have also had the chance to attend several events concerned with these issues. For example, last January 28-29 I was invited to attend the 68th IUGS Executive Meeting in Vancouver with representatives from several international organizations including the ICSU, IUGG and the 35th IGC. At this meeting I presented a progress report on behalf of the IAMG highlighting some of our current scientific achievements. Last April 14-18 I co-chaired with Professor Eduardo de Mulder a session on multifractal modeling and local singularity analysis in mineral exploration and environments at the European Geoscience Union (EGU) conference held in Vienna (see also p.7). This session was co-sponsored by Nonlinear Processes in Geophysics (NP), a division of EGU and IAMG. I witnessed several current NP topics presented at this EGU meeting. During my stay in China during the last several months I have exchanged ideas about current research trends in the earth sciences in China with administrators of the National Natural Science Foundation of China (NSFC). I was invited to participate in several workshops organized by the China University of Geosciences (CUG Wuhan) and by the Journal of Earth Science Frontiers, CUG Beijing, on current trends and frontiers of the earth sciences. Experts invited to these workshops covered climate change, paleontology and life in extreme environments, geophysics, unconventional energy, mineral resources, deep space exploration, deep earth dynamics, water resources, carbon cycle and hazardous geosciences.

The following summary of key topics can be extracted from the above sources of information to reflect the current trends and frontiers of the earth sciences. These key topics include but are not limited to data science, data analysis, computation, inter-/multi-/cross-/transdisciplinary science, integrated models, uncertainty relative to observations and predictions, properties and dynamics of the planet, climate change, disruptive processes such as earthquakes and storms, and Arctic, Antarctic and Tibet Plateau. The fundamental issues are for understanding Earth and environmental systems and their interactions with human activities, and for developing reliable monitoring systems, models, and information technologies for predictions and early warnings of large-scale and rapid change. The current challenges facing earth scientists are understanding and modeling the geo-complexity of the Earth and environmental systems with their interactions, chaotic nature and predictability of geo-processes, earth singularity and human mitigation and adaptation to extreme events, plus observation and monitoring multiple-scale mixing nonlinear processes. Although most organizations neither recognized nor explicitly mentioned this, the majority of these frontiers are fundamentally related to MG. A long period of incremental advances of new mathematical theories and models in conjunction with modern technologies for solving these earth science problems may lead to creative leaps of innovation. MG has huge challenges and responsibilities facing the earth science frontiers. MG scientists are indeed at the frontier of earth science tackling fundamental problems of the Earth as can be evidenced by the recent advancements reflected in the topics of plenary presentations at IAMG conferences and in the best papers published in IAMG journals; for example, on multi-point geostatistics – a new field of spatial-temporal modeling; compositional data analysis – a new way to explore the composites of the Earth; singularity analysis and singularity physics – new theory and methods of studying geodynamics and geo-complexity; big data visual analytics for exploratory data analysis; semantic web technology for geoinformation; uncertainty in ecosystem mapping by remote sensing; integrating structural geological data into inverse modeling frameworks; stationary and isotropic vector random fields on spheres; and mathematical morphology modeling in GIS.

Qiuming Cheng

Association Business

JoAnne DeGraffenreid to receive IAMG Special Merit Award

At the 2014 IAMG Conference in New Delhi, the IAMG Council passed a resolution to award a special merit certificate with plaque to JoAnne DeGraffenreid for her extraordinary services to the Association, especially as Editor of the IAMG Monograph Series. The award recognizes a lifetime commitment to editing and producing mathematical geology texts where she has seen and mastered an extraordinary range of hardware devices and software programs.

In 1963, at the tender age of 21, JoAnne began her wordsmithing career as a Clerk-Typist at the Kansas Geological Survey and within seven years had risen to be Acting Editor with responsibility for all Survey publications. However, when State civil bureaucrats decreed that she could not be an Editor because she did not have a degree in Journalism, the Survey Director transferred her to the Geologic Research Section, which was pioneering the dissemination of geomathematical publications and programs. Here she put her talents to work in the specialized manuscript preparation of mathematical geology that reached beyond the bounds of the conventional editorial process. (Confronted by a FORTRAN program listing, a previous editor had attempted to correct its grammar!)

She quickly expanded her skills to book publishing and edited book manuscripts for many authors, with publications by the AAPG, Pergamon Press, Elsevier Scientific, and Kluwer Academic, among others. These included "Computing Risk for Oil Prospects" by John Harbaugh, John Davis and Johannes Wendebourg (Pergamon, 1995), R. A. Olea's textbook, "Geostatistics for Engineers and Earth Scientists" (Kluwer, 1999), and the third edition of John Davis' "Statistics and Data Analysis in Geology" (Wiley, 2000). In addition, JoAnne produced innumerable workbooks and short-course manuals, all on topics in mathematical geology.

However, most of JoAnne's editorial and publishing efforts benefited the IAMG.

JoAnne had worked in a variety of publication media, but the production of camera-ready copy for the IAMG Monograph Series had its own unique challenges. So, for example, the preparation of the Geostatistical Glossary and Multilingual Dictionary in IAMG Monograph 3 (Ricardo Olea) called on the inclusion of Greek, Cyrillic and Chinese characters which required a Herculean effort that combined computer typesetting with manual cut–and–pasting! In 1996, Dick McCammon retired as IAMG Monograph Editor and JoAnne assumed his responsibilities. These included dealing with both Oxford University Press and with prospective contributors and authors. In addition to editing the raw manuscripts, JoAnne now had to arrange for reviewers, help authors with permissions, and sometimes arrange for drafting and other services for contributors who lacked institutional support.

The last IAMG Monograph prepared by JoAnne is John Doveton's "Principles of Mathematical Petrophysics", Monograph 9, issued in 2014. Ironically, Oxford Press chose to set the book in electronic type rather than have JoAnne prepare camera-ready files. The edited manuscript was sent to a Hong Kong job shop and the book was printed and bound in China. Unfortunately, security at the typesetter must have been somewhat lax—electronic copies were available at numerous on-line pirate sites before the book was even released by Oxford!

With the successful publication of Monograph 9, JoAnne announced that she was resigning as Monograph Editor. Along with most of the staff of the Mathematical Geology Section of the KGS, JoAnne had been "retired" from the Kansas Geological Survey in 2003. Although she no longer had access to the facilities of the Survey, JoAnne had continued her work as an IAMG editor from her home in Baldwin City, Kansas, and from her part-time abode in Leoben, Austria. Communicating with authors and the publisher was not a problem thanks to the modern internet, and JoAnne had excellent computing and printing resources. However, more personal circumstances have compelled JoAnne to give up the mantle of IAMG Monograph Editor. In 2014, progressive development of a genetic disorder called Fuchs dystrophy necessitated corneal transplant operations on both her eyes. Much to her disgust, this made close work on the computer difficult over the past half year of convalescence, and JoAnne decided that it was time to give up her editorial blue pencil and to hang up her green eyeshades.

You will have an opportunity to visit with JoAnne when she attends the IAMG2015 Conference in Freiberg this coming September. Congratulations, JoAnne!

John Doveton

IAMG 2015 Awards

The IAMG Awards Committee (Chair, Jack Schuenemeyer) has selected **Yongzhang Zhou** as the winner of the 2015 **Felix Chayes Prize**, and **Xiaogang (Marshall) Ma** as the winner of the 2015 **Andrei Borisovich Vistelius Research Award**.

Professor **Yongzhang Zhou** teaches at Sun Yat-sen University in Guangzhou and is the director of the Research Center for Earth Environment & Resources. From 1993 to 1998 he was at the Guangzhou Institute of Geochemistry, Chinese Academy of Sciences.

Zhou is also Chair of IAMG-CN, the Chinese regional interest group of IAMG, and founder and advisor of the IAMG Student Chapter at Sun Yat-sen University.

Xiaogang (Marshall) Ma has a Ph.D. in Earth Systems Science from the University of Twente, The Netherlands, and received the D.Eng. and B.Eng. (with distinction) from China University of Geosciences, Wuhan.

He is now working on Semantic eScience and Data Science at Tetherless World Constellation, Rensselaer Polytechnic Institute (RPI). Currently, Ma is project leader for Global Change Information System: Information Modeling and Semantic Application Prototype (NSF), and sub-project leader for Deep Carbon Observatory–Data Science (Alfred P. Sloan Foundation) and ECO-OP: Integrated Ecosystem Assessment (NSF). Ma was the founder of the IAMG Student Chapter at the University of Twente.

See more at http://homepages.rpi.edu/~max7/bio.html

Special Lectures

The Lectures Committee (Chair: Jennifer McKinley) announces their choices for the 2015 Matheron lecture and the 2016 Distinguished Lecturer:

Professor **Roussos Dimitrakopoulos** has been selected to deliver the **2015 Matheron lecture** at IAMG 2015 in Freiberg, Germany.

Roussos teaches at McGill University, Montreal, is Professor at Department of Mining and Materials Engineering, Canada Research Chair (Tier I) in Sustainable Mineral Resource Development and Optimization Under Uncertainty, and Director of the COSMO Stochastic Mine Planning Laboratory

Dimitrakoupolos has been Editor-in-Chief of Mathematical Geosciences since 2006. He was IAMG Distinguished Lecturer in 2009/10 and has been awarded Best Paper of MG in 2003.

He has done research on high-order and multi-scale, non-linear and non-gaussian stochastic models of spatial uncertainty; mine design and production scheduling optimization under uncertainty – stochastic mine planning; subsurface CO2 sequestration; environmental risk analysis; sustainable mineral resource development.

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Dr **Sean McKenna** has been selected as the **2016 Distinguished Lecturer**.

McKenna is Senior Manager at the IBM Smarter Cities Technology Centre (SCTC) in Dublin, Ireland. Sean's particular research interests are centered on inverse parameter estimation of heterogeneous spatial processes, estimation and anomaly detection in spatio-temporal data sets and information extraction from networked sensors. These interests are being applied to improving the efficiency and sustainability of urban infrastructure systems.

Until 2012 Sean was at the Geohydrology Department, Sandia National Laboratories where he worked among other areas on fluid flow and solute transport in heterogeneous porous media and fractured rock systems, and also led development of the open-source water quality event detection software, CANARY. He also spent two years as Sandia Representative in Singapore.

Sean was Chair of the IAMG Distinguished Lecturer Committee from 2005 to 2012.

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IAMG Distinguished Lecture Series

2015 Distinguished Lecturer

Gordon Kaufman delivered three lectures in the spring. He writes:

"...(1) I was invited by Keith Long, a USGS geologist, to give a talk on hierarchical modeling to a group of mostly geologists assembled to complete a very large world-wide study of porphyry copper resources. This took place at the USGS offices at the University of Arizona in Tucson.

(2) Jef Caers invited me to Stanford for a full two days of lecturing and meetings. I gave two talks," Reflections on Fifty Years in a Small Corner of Geo-statistics" and "Assessment of Alaskan Hydrates using Hierarchical Modeling" and also met individually with four graduate students in Jef's department to hear about their research and exchange ideas.

I am in the process of arranging a rather busy Fall schedule.... "

Part of his preliminary lecture plans for the fall include France, Cambridge, and Alberta.

More on Gordon's lectures is available on our website iamg.org under Special Lectures/Current Distinguished Lecturer (scroll down).

He can be contacted at gkaufman@mit.edu

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2014 Distinguished Lecturer

Eric Grunsky unfortunately had to interrupt his tour in 2014. He reports:

"...I've given 12 presentations and have plans for many more, as I've listed below. It's unlikely that I will be able to fulfill all requests. I'm trying to limit my travel to less than 10-12 days. I may pursue these presentations after the DL funding disappears and will request that inviting institutions cover as much of my costs as possible.

To date I have given lectures at:

November/December 2013
University of New South Wales – Sydney, Australia
Australian National University – Canberra, Australia
Geoscience Australia – Canberra, Australia
University of Western Australia – Perth, Australia
University of Hong Kong – Hong Kong, China

March 2014
Logan Club Lecture – Geological Survey of Canada, Ottawa

January 2015
Vancouver Geochemists Working Group – Vancouver, Canada

March 2015
University of Waterloo, Ontario

April 2015
University of Wyoming – Laramie, Wyoming
Colorado School of Mines – Golden, Colorado
Keynote Address – International Applied Geochemists Symposium – Tucson, Arizona
Geochemistry Short Course – International Applied Geochemists Symposium – Tucson, Arizona

Confirmed planned lectures:

June 2015
CoDaWork 2015 – Spain
University of Girona – Spain
Technical University of Barcelona, Spain – Department of Statistics
Technical University of Barcelona – Department of Geology

September 2015
IAMG meeting – Freiberg, Germany
Technical University – Freiberg, Germany
Geological Survey of Ireland – Dublin, Ireland
Queen's University – Belfast, Northern Ireland ..."

In addition, Eric has invitations, yet unconfirmed, from:
Italy, Austria, Denmark, South Africa, Australia, China, Canada, and New Zealand

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Member News

Jef Caers has been appointed Professor of Geological Sciences at Stanford University (previously with Energy Resources Engineering) in an effort to broaden the scope of research at the Stanford Center for Reservoir Forecasting. In addition to the current themes of geostatistics & uncertainty quantification for reservoir modeling, Jef will focus in his new department on applications of geothermal energy prospecting, hydrology & environmental sciences.

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On March 19, 2015, I gave a guest lecture 'Exploring the Web of Data for Earth and Environmental Sciences' at McGill University, Department of Mining and Materials Engineering. The lecture covered an introduction to semantic web and linked data, a few recent geoscience projects using semantic technologies, and technical details about computing similarities between entities on the web of data. The lecture was hosted by Prof. Roussos Dimitrakopoulos. In 2010 I invited Prof. Dimitrakopoulos for a guest lecture at ITC when I was leading the IAMG student chapter there.

Also, a special issue 'Semantic eScience' of the journal Earth Science Informatics, edited by **Xiaogang Ma**, Peter Fox, Tom Narock and Brian Wilson, was published by Springer in March, 2015. The issue includes 11 papers, which were grouped by the guest editors into four categories: modeling and encoding, community of practice to promote data interoperability, rethinking the data life cycle, and semantics for relationship recognition and inference.

Xiaogang (Marshall) Ma

Professor **Walther Schwarzacher** has retired from his position as Professor and later Emeritus Professor after working in Queen's University, Belfast, for 65 years. I knew Walther as one of my lecturers in the former Geology Department at Queen's and I was pleased that his role within Mathematical Geoscience and as a founding member of the IAMG was acknowledged during my time on the Executive Council. He was awarded lifetime IAMG membership. So typical of Walther, he left very quietly and said his farewells to a few people. To honour him, the School of Geography, Archaeology and Paleoecology hosted a farewell event for Walther and June.

My colleague Alastair Ruffell, who taught with Walther at Queen's University has added this:

"I knew Walther's name before I came to Queen's University Belfast. Cyclo- and sequence stratigraphy were important subjects in the late 80s and 90s and so was Walther. Many geologists know about sequence stratigraphy, and how in sedimentology it is the paradigm shift that plate tectonics was. What is probably less known is that the early sequence stratigraphy workers all looked to Walther and co-workers for their lead. I also knew his name as he had published on my PhD successions, the Lower Greensand. Walther had a portakabin (a temporary structure!) that he taught in with all the sedimentary collections. I inherited all his material and he was appalled when taking another colleague and I through it all how I didn't know what the Dachstein limestone was. I do now!

Walther never ceased to amaze me. The other thing about Walther is that he is amazingly humble for such a genius. He wanted to learn GIS and sequence stratigraphy at the age of 80! Incredible".

Jennifer McKinley

Plans for future IAMG Annual Meetings

After lengthy discussions about the next annual meetings it appears that after the 35th IGC in 2016 in Cape Town (South Africa), the next meeting, **IAMG 2017,** will be in **Perth, Australia**, 2 - 7 September 2017. The original proposal was submitted by Oktay Erten (MEA-Curtin University), Ute Mueller (Edith Cowan University), and June Hill (CSIRO), and was accepted by the IAMG Council in April 2015, subject to some modifications.



In **2018**, IAMG will celebrate the 50th anniversary of its founding in Prague (Czech Republic). The Council has been discussing possible venues with Dr. Václav Němec, one of the founding fathers of IAMG, and with Karel Hron of Olomouc where a recent CoDa Workshop was held. Discussions will continue at the Annual Meeting in Freiberg in September. Probably, there will be a scientific meeting in Olomouc and the anniversary celebrations in Prague.

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Letters to the Editor

Dear Editor

Three remarks are of "higher importance":

a) The International Conference on Geoethics 2015 (coordinates in the Calendar) is the only International Conference to the subject of Geoethics in the world in this year and only the second one after the latest IGC 2012 in Brisbane. Useful recommendations will be prepared for the November/ December 2015 Climate Changes Summit in Paris as well as for geoethics sessions at the IGC 2016. It is expected to take objective standpoints to all main present neuralgic points of ethics and geoethics in the world in any liaison with the Earth sciences and with the needed improvement of ethical climate in Europe and in the world (a new International Independent Commission on Geoethics shall be established to this purpose). Various new concepts outside main streams should be open for a discussion where constructive alternative solutions may help: a) to accelerate the needed progress of the science; b) to improve short and long term predictability of natural disasters in the present period of extreme conditions beyond any memory of the human kind (for optimizing needed prevention measures).

b) I have been always appreciating the standpoint of the IAMG in the L´Aquila case when a "false alarm" was organized by ICSU and supported by the IUGS after the 1st stage verdict in the process against 7 scientists; a further development has shown that a real predictability of natural events has been possible and should be further developed also by means of new models where a substantial support, fresh ideas and new visions are expected just from the IAMG. Disrespect of the palaeoclimate research by Earth scientists leads to permanent poor coincidence of hydro-meteorological models with reality even in case of short term forecasting. Common efforts of geoethicists and mathematically oriented Earth scientists appear as an extremely important challenge of nowadays.

c) I am happy that the IAMG top officers started to pay attention to the 50th IAMG anniversary (2018) and its remembrance in Prague where the founding IAMG meeting took place under very strange conditions in 1968. I am looking forward to a personal meeting with the IAMG Council and with many old friends of our community on September 5 and 6 in Freiberg for discussions - also in presence of Karel Hron who has offered to cover a special scientific part of the Golden Conference in Olomouc. (Some useful meetings possible also at the IUGG General Assembly in Prague June 22 - July 2, 2015).

All the best from the IAMG birth-place,

Václav Němec

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I suggest that we need to focus on the connections that can provide conditional probabilities and financial decision making. After all, that's what economic geology is all about. Consider an oil prospect: conditional probabilities involving regional geology and local seismic data may define the prospect, but a decision to drill is a financial issue. The linkages are critical but are often very subjective.

My point is that here is an opportunity for mathematically oriented geologists to be involved.

John W Harbaugh

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Student Affairs

Bangalore IAMG Student Chapter

The Indian Statistical Institute at Bangalore now has an IAMG Student Chapter officially approved by the IAMG Council. Prof. B.S.Daya Sagar and Prof. Saroj Kumar Meher are the faculty advisiors. Presiding over the chapter is President **Mohit Garg** <mohitji@drtc.isibang.ac.in>, assisted by Secretaries Ushashi Chatterjee and Anwesha Bhattacharya and by Treasurer Anindya Basu. The chapter website is at http://www.isibang.ac.in/~iamg .

A brief report of chapter activities follows:

Bangalore Section IAMG Student Chapter arranged three lectures with the support of the Systems Science and Informatics Unit (SSIU), Indian Statistical institute-Bangalore Centre, India.

These lectures were delivered by Professor Vera Pawlowsky-Glahn of University of Girona, Spain, Professor Juan José Egozcue of University of Barcelona, Spain, and Professor Katsuaki Koike of Kyoto University, Japan. These three lectures—with the titles (i) The simplex: the sample space of compositional data (Aitchison geometry and exploratory analysis), (ii) Bayes Spaces: from compositions to densities and (iii) Geostatistics-based modeling of fractures, hydroquality, and hydrofacies in rocks and sediments for clarification of comprehensive groundwater system—were given at the SSIU of Indian Statistical Institute-Bangalore Centre, India on 15 and 20 October 2014. During November and December of 2014, Bangalore IAMG Student Chapter was also involved in organizing lectures on "Earth Science Informatics: An Overview" and " Advanced Neural Adaptive Processing in Interferometric and Polarimetric Radar Imaging", respectively, by Dr. H. K. Ramapriyan (on 11 November 2014), and Professor Akira Hirose (on 8 December 2014).

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New Team at Sun Yat-sen Student Chapter

IAMG-SYSU in Guangzhou held a meeting about the new team building in March 2015. **Gao Le** is the new president of IAMG-SYSU student chapter. He is 2012 Ph.D. student with study focusing on 3D modeling in School of Earth Science and Geological engineering, Sun Yat-sen University, and has studied Geophysics in Uppsala University supervised by Christopher Juhlin from Sep. 2013 to Mar. 2015, funded by China Scholarship Council (CSC).

2015 Ph.D student **Liu Qiyuan** is secretary-general. **Yu Pengpeng & Niu Jia** are vice-presidents. They are 2014 Ph.D students in SYSU. Also there are 16 members from the School of Earth Science and Geological engineering & School of Mathematics and Computational Science in IAMG-SYSU.

See more at
earth.sysu.edu.cn/IAMG/ShowArticle.asp?ArticleID=1101

Conference Reports

Mathematical Morphology in Geosciences

A two-week Summer School on "Mathematical Morphology in Geosciences" was held at the Systems Science and Informatics Unit (SSIU), Indian Statistical Institute-Bangalore Centre, India from 24 March to 8 April 2015. This summer school was fully sponsored by the Earth Science (ES) wing of Science and Engineering Research Board (SERB), Department of Science and Technology (DST), Government of India. 25 participants (Photo) selected to attend this school included young research scholars, who have been pursuing doctoral studies, and young faculty members. The were drawn from the Indian Institutes of Technology (Kharagpur, Roorkee, Gandhinagar), National Institute of Technology-Rourkela, Maharaja Sayajirao University of Baroda, Mangalore University, Pondycherry University, Anna University, Jawaharlal Technological University-Kakinada, Delhi University, Jawaharlal Nehru University-Delhi, Wadia Institute of Himalayan Geology, Indian Statistical Institute-Bangalore, Central University of Karnataka.

Professor N. S. N. Sastry, Head of Indian Statistical Institute-Bangalore Centre welcomed the participants on the first day of the summer school. Chairman of Programme Assessment Committee (PAC) for ES-SERB-DST, Professor Subimal Sinha-Roy delivered the inaugural lecture on "Quantitative Geomorphology in Earth Surface Processes and Tectonic Analyses", followed by an "Overview on DST Summer School on Mathematical Morphology in Geosciences" delivered by Prof. B. S. Daya Sagar, Coordinator of the Summer School. A total of sixty hours of lectures on tightly-connected topics on 'Mathematical Morphology in Geosciences' categorized into seven parts were delivered by Daya Sagar, and a panel of experts that included B. L. Deekshatulu, Bhabatosh Chanda, Chakravarthy Bhagvati, Bhanu Prasad, Saroj Meher, and young researchers Sravan, Aditya, Paratp Vardhan, and Raghvendra Sharma. The seven parts of the lectures included:

I: Binary and Greyscale Mathematical Morphology; II: Binary and Greyscale Granulometries and Skeletonization; III: Morphological Decompositions, Morphometric Analysis and Quantitative Characterization; IV: Morphological distances, Interpolation and Extrapolation, and Quantitative Spatial Reasoning;V: Case Studies and Demonstrations with Hands-On Activity; VI: Graph Morphology; VII: Expert Lectures.

Lectures from Parts I to IV were delivered by B. S. Daya Sagar, demonstrations and hands-on-activity from part V were handled by Raghvendra Sharma and Paratp Vardhan, lecture from part VI was delivered by Sravan and Aditya, and expert lectures from part VII were delivered by B. L. Deekshatulu, Bhabatosh Chanda, Chakravarthy Bhagvati, Bhanu Prasad, Saroj Meher, and Manoranjan Mohanty. On 3rd of April 2015, being a holiday due to Good Friday, all the participants were taken on a tour and shown several places in and around Mysore. This one-day tour was enjoyed by the participants as most of these participants represent various parts of India. On the day of valedictory on 8 April 2015, Manoranjan Mohanty, Member Secretary of PAC-ES-SERB-DST delivered a talk on "Research Initiatives in Earth Sciences by Department of Science and Technology".

B. S. Daya Sagar

General Assembly of the European Geoscience Union (12 - 17 April)

Vienna was the epicentre of European geoscience exchange and communication in spring 2015 again. The 11,837 participants from 108 countries among which 23% students enjoyed this big event with fine weather conditions inviting people to escape from the Conference buildings at coffee breaks and during lunch times. Apart from the 4,870 oral presentations there were 8,489 posters and 705 PICO presentations which attracted quite a lot of attention. One of the 577 sessions was on Multifractals and singularity analysis in mineral exploration and environmental assessment which was held on Thursday afternoon, in a small room and attended by some 50 people. Convenor was our President Qiuming Cheng who also held one of the main oral presentations. I acted as a co-convenor as Frits Agterberg was unable to come to Vienna. The first presentation was by Shaun Lovejoy (Canada) who is the President of the non-Linear Processes sessions in the EGU. His inspiring presentation was on the role of scales in linear and non-linear processes. That presentation set the stage for Qiuming Cheng who spoke on Local Singularity Analysis. As one of his former students (Shuyun Xie) was scheduled as a third oral presentation but could not make it to Vienna, Qiuming presented a series of nice examples of this mathematical technique to highlight hidden mineral resources from various continents. The next speaker was Mário Gonçalves from Lisbon, Portugal who used multifractal modelling as a (standard) tool in geochemical exploration and gave some interesting examples of local singularity analysis from other parts of the world. As last speaker in this session Hans-Balder Havenith from the University of Liege (Belgium) spoke about the Tien Shan geohazards database and dealt with earthquake and landslide size-frequency statistics. The oral presentations were followed by about ten posters with fine examples of local singularity analysis for mineral exploration and environmental issues in China. Qiuming explained every poster often resulting in lively discussions. One day earlier, on Wednesday morning 15th of April, Daniel Schertzer delivered a presentation as a Lewis Fry Richardson Medal Lecture entitled 'Motionless travel across scales: Gulliver's scale free geophysics and the Pandora's multifractal box'. There were several more sessions on non-linear process in the geosciences at EGU that week . For more information please check http://meetingorganizer.copernicus.org/egu2015/sessionprogramme.

Eduardo de Mulder

New Ph.D. at University of Girona

Dissertation Title: Hotelling T2 control chart for compositional data

Author: **Marina Vives-Mestres**

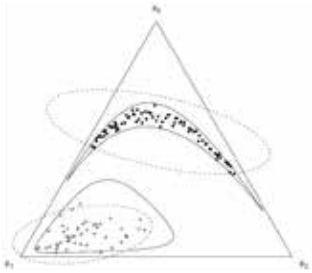
Directors: Josep Daunis-i-Estadella and Josep Antoni Martín-Fernández

Abstract: Compositional data (CoDa) are defined as vectors of components that represent parts of a whole, i.e., which carry relative information. Some examples of compositional variables are measures in percentage units, parts per million, mg/l or molarities, among others. CoDa are widely found in chemical, pharmaceutical and food industries, as well as in fields such as geology, biology, economics, and demographics, among others.

This thesis proposes a statistical method to control processes in which the quality characteristic, i.e., the variable that defines the quality of the product, is a composition. More precisely, the thesis proposes a control chart based on Hotelling's T2 statistic, which is a measure of the distance of a point to the centre of a distribution taking into account the correlation of the data. The control chart determines when there is an observation (product) that has a composition different from what would be statistically expected.

The thesis shows how the traditional approaches to monitor CoDa are not consistent with this type of data, which live in a special sample space. For example, traditional methods do not follow the principle of subcompositional coherence, which states that inference should be consistent, regardless of whether the inference is based on a subcomposition (a part of a composition) or on the full composition. It is also shown that traditional techniques result in control regions outside the restricted space, as shown in the Figure below.

The thesis proposes a new control chart called compositional T2 (T2C). It is based on a representation of CoDa coordinates in real space, where the T2 statistic is calculated. The coordinates are calculated using log ratio transformations of components. The thesis also proposes a graphical method and an algorithm to identify the components that are responsible for the anomaly (out of control signal).



Throughout the thesis the proposed methods and concepts are applied to real industrial examples. One of these examples is a product that is composed of large, medium and small particle sizes; the interest lies in monitoring the variability of the process, to assure that it is not higher than expected. Another example is the impurity profile of a drug substance, which controlled during the manufacturing process.

Reported by Vera Pawlowsky-Glahn

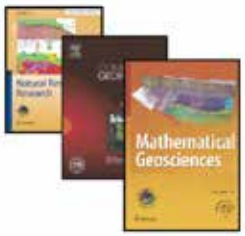
Xiaogang Ma Visit at CUG at Wuhan

Dr. Xiaogang Ma from Rensselaer Polytechnic Institute (RPI), USA visited China University of Geosciences (Wuhan) and made an excellent academic presentation on Feb. 10th, 2015. The faculties and students from School of Computer Science and Institute of Geological Information Science and Technology attended this seminar.

The theme of his report was on "Geodata sharing and application in the Semantic Web". Dr. Ma introduced the basic concept, theory and development tendency of Semantic Web. He focused on the design idea and method of Resource Description Framework (RDF) W3C: <subject, predicate, object> as the basic data structure in the semantic web, and its application value in the semantic expression, data provenance and data relation retrieval. At last, Dr. Ma explained his own understanding of Semantic eScience by AIR^3: 1) Anyone can say anything on any topic; 2) Interoperability, interactivity, intercreativity; 3) The right information for the right person at the right time. Discussions indicate that method and technology of semantic web will have extensive applications in the age of geoscience big data.

Gang Liu
China University of Geosciences (Wuhan)

IAMG Journal Contents



Natural Resources Research

Volume 24, Issue 1, March 2015

Retraction Note to: The Ogallala Formation of the Great Plains in Central US and Its Containment of Life-Giving Water — Marios Sophocleous, Dan Merriam

Drilling and Completion Cost in the Louisiana Haynesville Shale, 2007–2012 — Mark J. Kaiser, Yunke Yu

Haynesville Louisiana Drilling and Production Update 2012 — Mark J. Kaiser

S-curve Model of Relationship Between Energy Consumption and Economic Development — Anjian Wang, Gaoshang Wang, Qishen Chen, Wenjia Yu, Kun Yan, Haibo Yang

Cost Analysis and Life-Cycle Environmental Impacts of Three Value-Added Novel Bioproducts: Processing and Production — Emmanuel K. Yiridoe, Qiaojie Chen, Rodney Fry, Derek Lynch, Gordon Price

Evaluation of Development Options for Alaska North Slope Viscous and Heavy Oil — Emil D. Attanasi, Philip A. Freeman

Potential Impact of Unconventional Oil Resources on Major Oil-Producing Countries: Scenario Analysis with the ACEGES Model — Ken'ichi Matsumoto, Vlasios Voudouris

NRR Volume 24, Issue 2, June 2015

Estimation of Facies Boundaries Using Categorical Indicators with P-Field Simulation and Ensemble Kalman Filter (EnKF) — Siavash Nejadi, Japan Trivedi, Juliana Y. Leung

Determinants of the Price of High-Tech Metals: An Event Study — Markus Wanner, Tobias Gaugler, Benedikt Gleich, Andreas Rathgeber

EOR Potential from CO2 Captured from Coal-Fired Power Plants in the Upper Cretaceous (Cenomanian) Woodbine Group, East Texas Basin, and Southeastern Texas Gulf Coast, USA — W. A. Ambrose, C. Breton, V. Núñez-López, G. Gülen

Washability of Coal from Seams IV and VIII of the Tavantolgoi Deposit — S. Jargalmaa, T. Gerelmaa, E. Baterdene, G. Tsatsral, B. Avid, B. Purevsuren, J. Dugarjav

Mercury and Chlorine in the Balingian Coal from Sarawak, Malaysia — Say-Gee Sia, Wan Hasiah Abdullah

Laboratory Enrichment of Radioactive Assemblages and Estimation of Thorium and Uranium Radioactivity in Fractions Separated from Placer Sands in Southeast Bangladesh — Takayuki Sasaki, Mohammad Rajib, Masafumi Akiyoshi, Taishi Kobayashi, Ikuji Takagi, Toshiyuki Fujii, Md. Mashrur Zaman

Application of Genetic Algorithm (GA) in History Matching of the Vapour Extraction (VAPEX) Heavy Oil Recovery Process — Suxin Xu, Min Zhang, Fanhua Zeng, Christine Chan

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Computers & Geosciences

Volume 74, January 2015

Sheng-Shin Chu, Ming-Lang Lin, Wen-Chao Huang, Wei-Tung Nien, Huan-Chi Liu, Pei-Chen Chan — Simulation of growth normal fault sandbox tests using the 2D discrete element method

Achim Knörchen, Gunnar Ketzler, Christoph Schneider — Implementation of a near-real time cross-border web-mapping platform on airborne particulate matter (PM) concentration with open-source software

Ben A. Leshchinsky, Michael J. Olsen, Burak F. Tanyu — Contour Connection Method for automated identification and classification of landslide deposits

Michele M.C. Carafa, Gabriele Tarabusi, Vanja Kastelic — SHINE: Web application for determining the horizontal stress orientation

C. Burlet, Y. Vanbrabant, K. Piessens, K. Welkenhuysen, S. Verheyden — Niphargus: A silicon band-gap sensor temperature logger for high-precision environmental monitoring

Emmanuel John M. Carranza, Alice G. Laborte — Random forest predictive modeling of mineral prospectivity with small number of prospects and data with missing values in Abra (Philippines)

Gautier Laurent, Guillaume Caumon, Mark Jessell — Interactive editing of 3D geological structures and tectonic history sketching via a rigid element method

C.L. Ramn, A. Corts, F.J. Rueda — Inflowoutflow boundary conditions along arbitrary directions in Cartesian lake models

Mahyar Yousefi, Emmanuel John M. Carranza — Fuzzification of continuous-value spatial evidence for mineral prospectivity mapping

Robert Marschallinger, Carmen Jandrisevits, Fritz Zobl — A visual LISP program for voxelizing AutoCAD solid models

Fabio Veronesi, Lorenz Hurni — A GIS tool to increase the visual quality of relief shading by automatically changing the light direction

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Sabrina Bonetto, Anna Facello, Anna Maria Ferrero, Gessica Umili — A tool for semi-automatic linear feature detection based on DTM

Wei Luo, Thomas Pingel, Joon Heo, Alan Howard, Jaehoon Jung — A progressive black top hat transformation algorithm for estimating valley volumes on Mars

Si-Ming He, Wei Liu, Juan Wang — Dynamic simulation of landslide based on thermo-poro-elastic approach

Halvor Mll Nilsen, Knut-Andreas Lie, Olav Myner, Odd Andersen — Spill-point analysis and structural trapping capacity in saline aquifers using MRST-co2lab

Meiling Liu, Xiangnan Liu, Da Liu, Chao Ding, Jiale Jiang — Multivariable integration method for estimating sea surface salinity in coastal waters from in situ data and remotely sensed data using random forest algorithm

Wang Feng, Wang Gang, Pan Deji, Liu Yuan, Yang Liuzhong, Wang Hongbo — A parallel algorithm for viewshed analysis in three-dimensional Digital Earth

Seo Jin Ki, Tak Sugimura, Albert S. Kim — OpenMP-accelerated SWAT simulation using Intel C and FORTRAN compilers: Development and benchmark

Philippe Pasquier — Stochastic interpretation of thermal response test with TRT-SInterp

Charmaine Bonifacio, Thomas E. Barchyn, Chris H. Hugenholtz, Stefan W. Kienzle — CCDST: A free Canadian climate data scraping tool

C&G Volume 76, March 2015

David S. Young, Jane K. Hart, Kirk Martinez — Image analysis techniques to estimate river discharge using time-lapse cameras in remote locations

Lan Huang, Youfu Du, Gongyang Chen, GeoSegmenter: A statistically learned Chinese word segmenter for the geoscience domain

Shuang Liu, Xiangyun Hu, Yufei Xi, Tianyou Liu — 2D inverse modeling for potential fields on rugged observation surface using constrained Delaunay triangulation

Meriam Bayoudh, Emmanuel Roux, Gilles Richard, Richard Nock — Structural knowledge learning from maps for supervised land cover/use classification: Application to the monitoring of land cover/use maps in French Guiana

Sangho Lee, Jangwon Suh, Hyeong-Dong Park — BoreholeAR: A mobile tablet application for effective borehole database visualization using an augmented reality technology

Peter-Paul van Maanen, Freek S. Busschers, Anne-Marie Brouwer, Michiel J. van der Meulen, Jan B.F. van Erp — Quality control of geological voxel models using experts' gaze

Jihoon Kim, Eric Sonnenthal, Jonny Rutqvist — A sequential implicit algorithm of chemo-thermo-poro-mechanics for fractured geothermal reservoirs

Houman Bedayat, Arash Dahi Taleghani — Two interacting ellipsoidal inhomogeneities: Applications in geoscience

G.L. Queiroz, E. Salamuni, E.R. Nascimento — Knickpoint finder: A software tool that improves neotectonic analysis

Stephanie S. Romañach, Mark McKelvy, Kevin Suir, Craig Conzelmann — EverVIEW: A visualization platform for hydrologic and Earth science gridded data

A.T. Ringler, M.T. Hagerty, J. Holland, A. Gonzales, L.S. Gee, J.D. Edwards, D. Wilson, A.M. Baker — The data quality analyzer: A quality control program for seismic data

E. Florido, F. Martínez-Álvarez, A. Morales-Esteban, J. Reyes, J.L. Aznarte-Mellado — Detecting precursory patterns to enhance earthquake prediction in Chile

Journal Statistics

Mathematical Geosciences:

ISI-impact factor for 2013: 1.713 (SJR= 0.92)

5-Year Impact Factor: 1.753 (SJR 4y=1.813)

Rejection rate: 59.9%

Turnaround time: 75.4 days (average; submission to first decision)

Computers & Geosciences:

2013 Impact Factor: 1.562 (SJR=0.81)

5-Year Impact Factor: 1.952 (SJR 4y=0.917)

Turnaround time: 55 days (average; submission to initial decision)

Natural Resources Research:

2013 SJR 2yr cites = 0.564

5 year SNIP: 0.968; SJR 4y=0.876

Rejection rate: 52%

Ave. turnaround time: 182 days (submission to final decision)

Xue Cunjin, Song Wanjiao, Qin Lijuan, Dong Qing, Wen Xiaoyang — A mutual-information-based mining method for marine abnormal association rules

Jeanne Pellerin, Guillaume Caumon, Charline Julio, Pablo Mejia-Herrera, Arnaud Botella — Elements for measuring the complexity of 3D structural models: Connectivity and geometry

Mauricio A. Bermúdez, Christoph Glotzbach, Pedro Alson — A new Poissonian algorithm for the determination of fission-track ages

W.F. Florez, M. Portapila, A.F. Hill, H. Power, P. Orsini, C.A. Bustamante — The control volume radial basis function method CV-RBF with Richardson extrapolation in geochemical problems

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Q. Lin, S.J. Neethling, K.J. Dobson, L. Courtois, P.D. Lee — Quantifying and minimising systematic and random errors in X-ray micro-tomography based volume measurements

Hongwu Lei, Tianfu Xu, Guangrong Jin — TOUGH2Biot – A simulator for coupled thermal–hydrodynamic–mechanical processes in subsurface flow systems: Application to CO2 geological storage and geothermal development

Yaling Chen, Binliang Lin, Jie Lin, Shujie Wang — Effects of stream turbine array configuration on tidal current energy extraction near an island

Wei Zhou, Matthew D. Minnick, Earl D. Mattson, Mengistu Geza, Kyle E. Murray — GIS-based geospatial infrastructure of water resource assessment for supporting oil shale development in Piceance Basin of Northwestern Colorado

Hernán Calderón, Jorge F. Silva, Julián M. Ortiz, Alvaro Egaña — Reconstruction of channelized geological facies based on RIPless compressed sensing

V.M. Mantas, Z. Liu, A.J.S.C. Pereira — A web service and android application for the distribution of rainfall estimates and Earth observation data

Zhenhong Du, Lei Fang, Yan Bai, Feng Zhang, Renyi Liu — Spatio-temporal visualization of air–sea CO2 flux and carbon budget using volume rendering

J.D. Shutler, M.A. Warren, P.I. Miller, R. Barciela, R. Mahdon, P.E. Land, K. Edwards, A. Wither, P. Jonas, N. Murdoch, S.D. Roast, O. Clements, A. Kurekin — Operational monitoring and forecasting of bathing water quality through exploiting satellite Earth observation and models: The AlgaRisk demonstration service

Edgar Berrezueta, Luís González-Menéndez, Berta Ordóñez-Casado, Peter Olaya — Pore network quantification of sandstones under experimental CO2 injection using image analysis

Carlos H. Grohmann — Effects of spatial resolution on slope and aspect derivation for regional-scale analysis

Katherine Silversides, Arman Melkumyan, Derek Wyman, Peter Hatherly — Automated recognition of stratigraphic marker shales from geophysical logs in iron ore deposits

Qiang Wu, Hua Xu, Xukai Zou, Hongzhuan Lei — A 3D modeling approach to complex faults with multi-source data

Pauline Collon, Wendy Steckiewicz-Laurent, Jeanne Pellerin, Gautier Laurent, Guillaume Caumon, Guillaume Reichart, Laurent Vaute — 3D geomodelling combining implicit surfaces and Voronoi-based remeshing: A case study in the Lorraine Coal Basin (France)

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Huan Zhang, Xiaofan Li, Hanjie Song, Shaolin Liu — An adaptive subspace trust-region method for frequency-domain seismic full waveform inversion

Junichi Takekawa, Hitoshi Mikada, Naoto Imamura — A mesh-free method with arbitrary-order accuracy for acoustic wave propagation

Tomás Ferreirinha, Rúben Nunes, Leonardo Azevedo, Amílcar Soares, Frederico Pratas, Pedro Tomás, Nuno Roma — Acceleration of stochastic seismic inversion in OpenCL-based heterogeneous platforms

Taghi Jokar Arsanjani, Reza Javidan, Mohamad Jafar Nazemosadat, Jamal Jokar Arsanjani, Eric Vaz — Spatiotemporal monitoring of Bakhtegan Lake's areal fluctuations and an exploration of its future status by applying a cellular automata model

Hongda Hu, Hong Shu — An improved coarse-grained parallel algorithm for computational acceleration of ordinary Kriging interpolation

Bruno Tourlière, Evren Pakyuz-Charrier, Daniel Cassard, Luc Barbanson, Charles Gumiaux — Cell Based Associations: A procedure for considering scarce and mixed mineral occurrences in predictive mapping

A. Lacasta, C. Juez, J. Murillo, P. García-Navarro — An efficient solution for hazardous geophysical flows simulation using GPUs

David Jones, Norm Jones, James Greer, Jim Nelson — A cloud-based MODFLOW service for aquifer management decision support

D.C. Bowman, J.M. Lees — Near real time weather and ocean model data access with rNOMAD

Sina Kashuk, Magued Iskander — Reconstruction of three dimensional convex zones using images at model boundaries

Kai Liu, Guoan Tang, Ling Jiang, A-Xing Zhu, Jianyi Yang, Xiaodong Song — Regional-scale calculation of the LS factor using parallel processing

Nilo C. Bobillo-Ares, Jesús Aller, Fernando Bastida, Omar Menéndez, Richard J. Lisle — StrainModeler: A Mathematica"!-based program for 3D analysis of finite and progressive strain

Karel Jedlicka, Ján Sládek, Jakub Silhavy — Semiautomatic construction of isobase surfaces: A case study from the central Western Carpathians

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Alain Burgisser, Marina Alletti, Bruno Scaillet — Simulating the behavior of volatiles belonging to the C–O–H–S system in silicate melts under magmatic conditions with the software D-Compress

Halvor Møll Nilsen, Knut-Andreas Lie, Odd Andersen — Analysis of CO2 trapping capacities and long-term migration for geological formations in the Norwegian North Sea using MRST-co2lab

Tuan Ta, Kyoshin Choo, Eh Tan, Byunghyun Jang, Eunseo Choi — Accelerating DynEarthSol3D on tightly coupled CPU–GPU heterogeneous processors

Roberto Tonini, Laura Sandri, Mary Anne Thompson — PyBetVH: A Python tool for probabilistic volcanic hazard assessment and for generation of Bayesian hazard curves and maps

E.J. Hill, J. Robertson, Y. Uvarova — Multiscale hierarchical domaining and compression of drill hole data

Tom Narock, Victoria Yoon — An agent-based approach for capturing and linking provenance in geoscience workflows

Mahyar Yousefi, Emmanuel John M. Carranza — Prediction–area (P–A) plot and C–A fractal analysis to classify and evaluate evidential maps for mineral prospectivity modeling

Ting Zhang, Yi Du, Tao Huang, Jiaqing Yang, Xue Li — Stochastic simulation of patterns using ISOMAP for dimensionality reduction of training images

Jie Yang, Frederik P. Agterberg, Qiuming Cheng — A novel filtering technique for enhancing mineralization associated geochemical and geophysical anomalies

Björn Zehner, Jana H. Börner, Ines Görz, Klaus Spitzer — Workflows for generating tetrahedral meshes for finite element simulations on complex geological structures

Alexey A. Novoselov, Serguei Popov, Carlos Roberto de Souza Filho — Evaluation of uncertainties in solid–aqueous–gas chemical equilibrium calculations

Nan Yang — The connectedness of the structure generated by the midpoint displacement algorithm: Letter to the Editor concerning "Three-dimensional midpoint displacement algorithm for the generation of fractal porous media" by Jilesen J. et al.; Computers and Geosciences 2012; 46:164–73

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Richa Rastogi, Abhishek Srivastava, Kiran Khonde, Kirannmayi M. Sirasala, Ashutosh Londhe, Hitesh Chavhan — An efficient parallel algorithm: Poststack and prestack Kirchhoff 3D depth migration using flexi-depth iterations

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New Book

Multiple-point Geostatistics: Stochastic Modeling with Training Images. by **Gregoire Mariethoz, Jef Caers**, ISBN: 978-1-118-66275-5. 376 pages. December 2014, Wiley-Blackwell

Description. "This book provides a comprehensive introduction to multiple-point geostatistics, where spatial continuity is described using training images. Multiple-point geostatistics aims at bridging the gap between physical modelling/realism and spatio-temporal stochastic modelling. The book provides an overview of this new field in three parts. Part I presents a conceptual comparison between traditional random function theory and stochastic modelling based on training images, where random function theory is not always used. Part II covers in detail various algorithms and methodologies starting from basic building blocks in statistical science and computer science. Concepts such as non-stationary and multi-variate modeling, consistency between data and model, the construction of training images and inverse modelling are treated. Part III covers three example application areas, namely, reservoir modelling, mineral resources modelling and climate model downscaling. This book will be an invaluable reference for students, researchers and practitioners of all areas of the Earth Sciences where forecasting based on spatio-temporal data is performed."

Special Session: Presentation of 3D Geomodeling and Mining Software

at the 17th Annual IAMG Conference

This letter invites individuals, companies, and institutions to participate in a session exclusively dedicated to the presentation of commercial software products featuring 3D modeling in geosciences and mining.

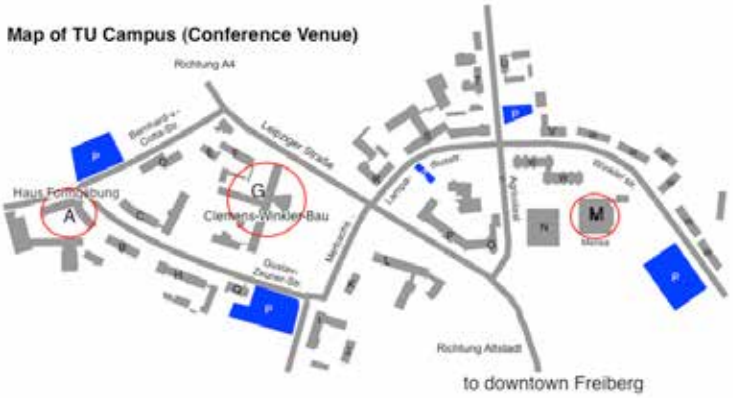
This session with oral software presentations and exhibitions is planned for September 8 and 9, 2015, during the 17th Annual Conference of the IAMG held in Freiberg, Saxony, Germany, with scientific sessions Sep 7-10, 2015 (see back cover and www.IAMG2015.de).

Both exhibition and software demonstrations are open to the interested public, not just to registered participants of the conference. The session is part of the conference program and the session is within walking distance of the conference venue.

IAMG2015 will feature several sessions directly related to 3D geomodeling. Ian Jackson, former director of information and chief of operation with the British Geological Survey, agreed to deliver a keynote.

Since Freiberg is celebrating the 250th anniversary of its University we expect about 250 international participants from academia and research institutions, state geological surveys, and industry.

The venue for IAMG2015 will be the "Clemens-Winkler-Bau" (marked by G in the map image below) with other major lecture halls and pc pools within short walking distance (http://tu-freiberg.de/universitaet/profil/campusplan). The exhibition and software demonstration will take place in the "Haus Formgebung" (labeled A) with a lecture hall equipped with beamer etc. for presentations and ample space to present your company. We will provide a table, two chairs, power socket including normal power consumption, 3 meters of space behind the table that can be used for company presentation (roll-ups, monitors, posters).



The schedule of your presentation will be announced in the program of the conference. Multiple presentations may be possible during the two days. The basic fee is US$ 1,100 (€ 950 as of today) including one fully registered conference participant, technical services as outlined above, and personnel to assist your presentations in the lecture hall. Special fees apply if you wish to register additional conference participants.

The print publication of a one-page announcement of IAMG2015 in IAMG's journals is in preparation, your logo might be included in the advert, terms and conditions on request.

Please do not hesitate to contact me at helmut.schaeben@tu-freiberg.de if you have any questions concerning the conference or the exhibition and software demonstration offered with my letter.

I hope my invitation appeals to your interests, and I am looking forward to your response.

H. Schaeben

(Chair, IAMG2015 Annual Conference)

SIAM Conference on Mathematical and Computational Issues in the Geosciences (GS15), Stanford University, Stanford, California USA, **29 June - 2 July 2015**. www.siam.org/meetings/gs15

AAPG/SPE/SEG: URTeC 2015, San Antonio, TX, USA, **20-23 July 2015**. http://urtec.org/2015

International Statistical Institute, 60th ISI World Statistics Congress, Rio de Janeiro, Brazil, **26 - 31 July 2015**. ISI Permanent Office, P.O. Box 24070, 2490 AB The Hague, The Netherlands. Phone: +31–70–3375737, Fax: +31–70–3860025, E-mail: isi @cbs.nl; www.isi2015.ibge.gov.br

2015 Joint Statistical Meetings, Seattle, Washington, **9 - 12 August 2015**. E-mail: jsm@amstat.org, http://www.amstat.org/meetings/jsm/2015

IAMG2015 Annual Meeting in Freiberg, Germany, **5 - 13 September 2015**. http://www.iamg2015.de/

The Danie Krige Geostatistical Conference 2015: Geostatistical geovalue — rewards and returns for spatial modelling, SAIMM, Johannesburg, South Africa, **19–20 August 2015**. http://www.saimm.co.za IAMG is a Premium Sponsor.

Geomodel 2015, 17th science and applied research conference on oil and gas geological exploration and development, Gelendzhik, Russia, **7 - 10 September 2015**. www.eage.org/event/index.php?eventid=1334

Petroleum Geostatistics 2015 Biarritz, France, **7 - 11 September 2015**. www.eage.org/event/index.php?eventid=1155&Opendivs=s3

AAPG - International Conference & Exhibition, Melbourne, Australia, **13 - 16 September 2015**. http://ice.aapg.org/2015

Marginal Seas and Their Coastal Areas –Transit and Buffer Zones in Continent–Ocean Interaction, Yantai, China, **17-21 Sept, 2015**. Workshop co-organized by Chinese Academy of Sciences and IAMG. http://mstca2015.csp.escience.cn/dct/page/1

Geostatistics for Seismic Data Integration in Earth Models - short course by Olivier Dubrule, London, UK, **23 Sep 2015**. http://shop.seg.org/Default.aspx?TabId=177&ProductId=5606943

4th Annual International Conference on Geological and Earth Sciences (GEOS 2015). Global Science and Technology Forum. Singapore. **5 - 6 October 2015**. Tel. 6563270166, fax: 6563270162, email: secretariat@geoearth.org, http://www.geoearth.org/index.html

DIGITAL EARTH 2015 "Towards a One-World Vision for the Blue Planet", Halifax, NS, CANADA, **5-9 October 2015**. http://digitalearth2015.ca/

15th Water Rock Interaction, Evora, Portugal, **16 - 21 October 2015**. www.wri15portugal.org

SEG International Exhibition & 85th Annual Meeting, New Orleans, LA, USA, **18 - 23 Oct 2015**. http://www.seg.org/web/seg-new-orleans-2015/

Geological Society of America Annual Meeting, Baltimore, MD, USA, **1 - 4 November 2015**. http://geosociety.org/meetings/2015

AGU Fall Meeting, San Francisco, California, USA, **14 - 18 December 2015**. http://fallmeeting.agu.org/2015

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AAPG 2016 Annual Convention & Exhibition, The American Association of Petroleum Geologists with SEPM (Society for Sedimentary Geology) and Canadian Society of Petroleum Geologists (CSPG), Calgary, Alberta, Canada, **19–22 June 2016**. http://ace.aapg.org/2016

2016 Joint Statistical Meetings, Chicago, IL, USA, **30 July - 4 August 2016**. http://www.amstat.org/meetings/jsm.cfm or phone toll-free (888) 231- 3473

35th International Geological Congress, Cape Town, South Africa, **27 August – 4 September 2016.** http://www.35igc.org

GEOSTATS2016, Valencia, Spain, **5-9 September 2016.** Chairman is J. Jaime Gómez-Hernández at the Technical University of Valencia.

GSA Annual Meeting & Exposition, Denver, Colorado, USA, **25–28 Sept. 2016**. http://www.geosociety.org/meetings/2016/

SPE Annual Technical Conference & Exhibition, Houston, Texas, USA, **28 - 30 Sep 2015**, http://www.spe.org/atce/2015/

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35th IGC in Cape Town, South Africa, 2016

Update on the IAMG stream of sessions

This event will take place at the Cape Town International Convention Centre from 27 August to 4 September 2016 (http://www.35igc.org/). Cape Town was voted the best city destination in the world (http://www.telegraph.co.uk/travel/citybreaks/11271025/The-worlds-best-cities.html). Furthermore this is the first IAMG meeting in Africa.

IAMG has submitted eight symposia:

1 Geostatistics for Geological Resources Modeling - Jef Caers (jcaers@stanford.edu)) and Julián Ortiz (jortiz@ing.uchile.cl)

2 Mathematical Morphology in Geosciences and Geoinformatics - B.S. Daya Sagar (bsdsagar@isibang.ac.in)

3 New Theories and Methods in Resources Exploration - Katsuaki Koike (koike.katsuaki.5x@kyoto-u.ac.jp), Ryoichi Kouda (roy.kouda@aist.go.jp) and Jorge K. Yamamoto (jkyamamo@usp.br)

4 Quantitative characterization coal resources and hazards - Ricardo A. Olea (rolea@usgs.gov) and C. Özgen Karacan (cok6@cdc.gov)

5 Statistical analysis of Compositional Data. Theory and Applications to Earth sciences - Giovanni Vezzoli (giovanni.vezzoli@unimib.it)

6 Mining Geostatistics and Operations Research in Mine Planning - Oktay Erten (oktay.erten@curtin.edu.au) and Erkan Topal (e.topal@curtin.edu.au)

7 Coast and society - Jan Harff (jan.harff@io-warnemuende.de)

8 Contributions of young Earth scientists to mathematical geoscience for resource strategic issues *(jointly-organized by IAMG and YES network)* - Wenlei Wang (wenleiw@163.com)

and one workshop on Mathematical Morphology in Geosciences. The main themes can be found in the scientific programme (http://www.35igc.org/Verso/5/Scientific-Programme).

Abstract submission is opening July 2015 and closing at the end of January 2016 (details still under construction). The conference is also offering 'Super Early-bird' registration before November 2015.

Hope to see you all in Cape Town!

Christien Thiart

Call for papers:

Big Data in Geosciences Workshop

at 2015 IEEE International Big Data Conference

Santa Clara, CA, USA, **Oct 29 - Nov 1, 2015**.

http://geo-bigdata.github.io/

Submission due date: Aug 30, 2015

Topics of Interest:
Big Data in Geosciences - needs, requirements, and use cases
Big Data infrastructure being developed and deployed at science facilities
Semantic representation and integration including Linked Open Data and efficient query and integration techniques
Frameworks and methodologies for handling big data in science applications
Data analytics utilized/needed for data reduction, cross-heterogeneous data analysis, and science research
Use of Big Data technologies (e.g. Hadoop and NoSQL) for science
Visualization of scientific Big Data
Big Data and Data Science education in the geosciences

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"This sudden spike shows where we think the earthquake is lying."

THE NEW YORKER, JUNE 10 & 17, 2013

International Association for Mathematical Geosciences (IAMG)
c/o IAMG Office
Balthasar-Rößler-Str. 58
09599 Freiberg
Germany

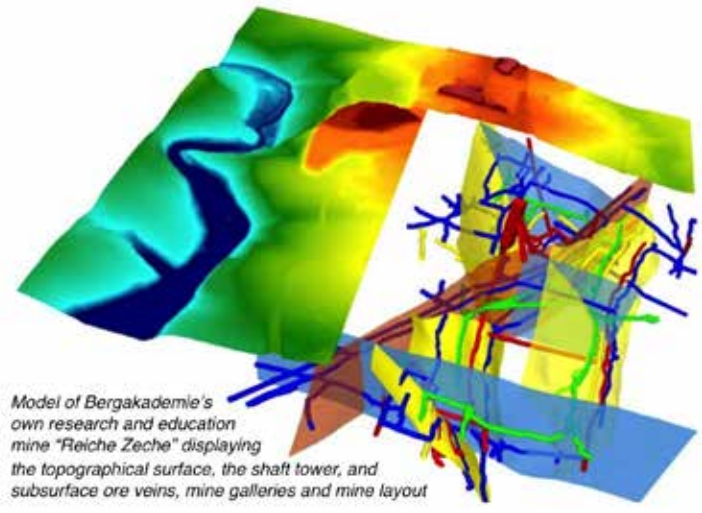
INVITATION

IAMG2015 - 17th Annual Conference of the International Association for Mathematical Geosciences

September 5–13, 2015, Freiberg (Saxony), Germany,

http://www.iamg2015.de

IAMG2015, the 17th Annual Conference of the International Association for Mathematical Geosciences (IAMG) will be held in Freiberg, Germany, from September 7–10, 2015. Scientific sessions will provide ample opportunities to present methodological and applied contributions to the whole range of mathematical geosciences, including various aspects of mathematics, statistics, numeric and informatics in the earth sciences and geo-related engineering. Keynote presentations by award-winning speakers will complement the program. Conference contributors are invited to submit full paper versions of their high-level contributions to Mathematical Geosciences or to one of the other IAMG sponsored journals, Computers & Geosciences and Natural Resources Research, respectively.



Model of Bergakademie's own research and education mine "Reiche Zeche" displaying the topographical surface, the shaft tower, and subsurface ore veins, mine galleries and mine layout

Out of 15 focus sessions , I would like to explicitly mention here the sessions:

- Commemorating William Smith: 200 Years of Geomodeling
- Communicating Digital Geomodels – Methodologies and Challenges
- Computer Geomodels for Mineral and Hydrothermal Resources

as well as the special session:

"Presentation of 3D Geomodeling and Mining Software", with oral presentations and exhibition of commercial software on Sep 8 and 9, 2015. Both exhibition and software demonstrations are open to the interested public including

(i) State Geological Survey of Saxony, Freiberg http://www.smul.sachsen.de/lfulg

(ii) Saxonian Board of Mines http://www.oba.sachsen.de

(iii) Geocompetence Center http://gkz- ev.de/mitglieder, an association of more than 100 commercial geo-consulting companies in the region,

(iv) the recently founded Helmholtz Institute Freiberg for Resource Technology https://www.hzdr.de/db/Cms?pNid=2423, and

Technische Universität Bergakademie Freiberg – The University of Resources http://tu- freiberg.de/en/university/profile.

Admission is not restricted to participants of the conference.

At this time, the companies

LeapFrog http://www.leapfrog3d.com

Midland Valley http://www.mve.com

Mira Geosciences http://www.mirageoscience.com

have confirmed their participation, and registration is still open.

The Organizing Committee of the 17th Annual Conference of the International Association for Mathematical Geosciences very much looks forward to welcoming you to Freiberg.

Helmut Schaeben, Chair IAMG2015, TU Bergakademie Freiberg