IAMG Newsletter

No. 89   Winter 2014

Official Newsletter of the International Association for Mathematical Geosciences

Contents

2015 IAMG Awards !

The Association invites all members to submit nominations for

the **Felix Chayes Prize** and for

the **Andrei Borisovich Vistelius Award**

Deadline: January 31, 2015

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 she or he 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.

The IAMG is truly an international institution, as its name suggests. This year's Annual Conference was in New Delhi (see p. 8-9) and attracted people from many countries all over the globe. The venues of our conferences also reflect the international flavor: in the last five years we have gathered in the USA (California), Hungary, Austria, Australia (Queensland), and Spain. Europe seems to be a more frequent destination - Freiberg in Germany (see p. 5 and 15) next year. And the 35th IGC in South Africa (p. 15) will include the IAMG in 2016; with that conference we will have been on every continent except Antarctica.

From the Editor

The leadership of the IAMG also shows a wide variety of nationalities. The Executive Committee comes from China, UK (N. Ireland), USA, and Canada, and the two vice-presidents from Chile and Germany. The Councilors represent France, China, Australia, and South Africa. Even the editors of our journals are spread across USA, Canada, Australia and Germany.

This was not always the case. For many years most of the IAMG leaders were located in the USA. Starting in 2000 the Canadians were on the rise until 2008. On the other hand, the countries of origin for the Councilors have always been quite varied; this is intentional and furthered by selecting candidates for council election to reflect the demographics of the IAMG.

Being "international" in leadership and membership is also a good thing in the age of globalisation. IAMG is increasingly pursuing affiliation and association with other scientific institutions and organisations. As Qiuming Cheng describes in the Forum (p. 3) we have ties to the IUGS, AAPG, ISI, and have been invited to seek affiliation with the IUGG. In extending our global outreach we have been involved with the International Year of Mathematics of Planet Earth (MPE), Earth Science Matters (ESM) and YES, the Young Earth Scientists Network (p. 4).

Young scientists are, of course, important for the continued growth of our organisation. One effort has been to increase the number of IAMG Student Chapters. We now have nine chapters on three continents (p. 6) in China, India, Germany, France, The Netherlands, USA, and Canada. Student chapters can receive financial support from IAMG and are often visited by our Distinguished Lecturers. In addition, IAMG, through its journals awards, gives research money to selected students (p. 6), and also awards travel grants for students to attend scientific meetings.

Not only do we have members in many countries around the world, but many have moved back and forth across the oceans to make their home in different countries. One is your editor, another is John Tipper, recently retired, whose life journey is described on page 8 and who has lived on three continents and in five countries.

Thinking globally, I wish everyone a good, healthy and successful New Year, whenever this might be in your country or culture.

Harald S. Poelchau

The mission of the IAMG is to promote, worldwide, the advancement of mathematics, statistics and informatics in the Geosciences

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PRESIDENT'S FORUM

Mathematical Geosciences contribute to fundamental science and technology in response to critical earth science issues facing humans in the 21st Century.

A memorial article in a local newspaper in Bolton reminds us of the severe flood disaster which occurred 60 years ago, took 81 lives and left 4000 families homeless in Ontario, Canada. The flood was caused by Hurricane Hazel, the deadliest and costliest hurricane of the 1954 Atlantic hurricane season, which killed as many as 1,000 people in Haiti and 95 in the United States before it struck Canada. Bolton, a small town located along the Humber River in southern Ontario, is a safe place geologically, away from plate boundaries, mountain ridges, large scale faults and ocean coasts. However, there have been several flood disasters, originating from tropical storms, hurricanes and lake-effect snowfall. Damages caused by extreme events such as earthquakes, tsunamis, landslides, volcanoes, hurricanes and floods are increasingly threatening to humans. The mechanisms of these types of singular events are not fully understood. New technologies need to be developed for prediction, monitoring and to provide timely warning to remediate against these problems and for designing cost-effective infrastructure capable of withstanding disasters. The fundamental questions involved in all these important earth science issues facing humans in the 21th Century are mathematical in nature.

One of the questions we are asked by the public is "What is Mathematical Geosciences (MG) as a discipline and how can MG make contributions to critical issues of geoscience?" This is a fundamental question we need to fully appreciate. Mathematical Geosciences is not just applications of mathematics and computers to the geosciences. As an interdisciplinary field merging mathematics, computer and geosciences, MG are sciences studying mathematical properties and processes of the Earth and prediction and assessment of its resources and environments. Mathematical subjects such as geometry, calculus, functional analysis, probability and statistics provide essential theory and methods to be used in quantitative study of the Earth ranging from geometry and dynamics of the Earth and uncertainties of measurement, to observation and prediction of earth events. MG has made indispensable contributions in these fields of geoscience. Examples include: the mathematical models of the Earth's shape which serve as the foundation of geodesy, GPS, remote sensing (RS) and geographical information systems (GIS), the fast growing field of geomatics; the mathematical modeling of mantle convection serving as the foundation of plate tectonics, the most notable development of earth science in the last century; mathematical symmetry and symmetry operations as principles of mineralogy and crystallography, the foundation of solid earth science; mathematical topological modeling as fundamental in GIS, one of the most useful technologies in geoscience; mathematical and statistical modeling of uncertainty and error bars in isotope geochemistry and the geological time scale; mathematical modeling and uncertainty in the prediction of climate change, the most pressing issue of the geosciences; probability theory and stochastic models of prediction of energy and mineral resources, highly demanded by many nations for economic and societal development; and geo-complexity theory such as fractal, multifractals, chaos and self-criticality for modelling and predicting singular events and extreme phenomenal issues.

The International Association for Mathematical Geosciences (IAMG) has earned a reputation for prompting and fostering its members to make contributions to science. Original and significant studies have been published in IAMG journals, books and conference proceedings. In addition, a large body of works is documented elsewhere in publications which cover almost every math subject and aspect of geosciences ranging from statistical data analysis, geometrical modeling, dynamics and processes simulation, to prediction and assessment of Earth systems. Applications include not only conventional solid earth issues such as assessment of mineral and energy resources, but also hydrology, climate change, water resources, alternative energy resources and environmental issues. IAMG increases its quality of research, education and service and broadens its scope by every possible means including interaction and collaboration through affiliation and association with other international organizations; for example, the International Union of Geological Sciences (IUGS), the International Institute of Statistics (ISI), the International Union of Geodesy and Geophysics (IUGG) and the American Association of Petroleum Geologists (AAPG). While IAMG is increasingly known for its contributions to science and society made by its passionate, inspirational and dedicated members, MG as a discipline is not yet recognized and, to some extent, buried in oblivion. There is hardly any hiring of highly qualified personnel in academic institutions or industry with a job title of Mathematical Geoscientist or Geomathematician. As a matter of fact, most of our IAMG members are employed with job titles such as geologists, geophysicists, geochemists, geodesists, computer scientists, mathematicians and GIS specialists instead of geomathematics or mathematical geoscientists. University students who are talented in mathematics and want to pursue mathematical geoscience have to enroll in geophysics or other fields simply because MG does not exist in university programs. There are very few interdisciplinary university programs except actuarial science, mathematical physics and mathematics for business, which have mathematics as part of the subject. A common misconception is that learning mathematics can only serve two purposes: either becoming a pure mathematician or mathematics teacher, or as a prerequisite for other careers in engineering, science or business. Thus, IAMG faces significant challenges when promoting MG as a discipline and facilitating training and education of future generations. This is a key challenge for the IAMG to address to enable the Association to grow and become more successful and influential.

The International Year of Mathematics of Planet Earth (MPE) celebrated last year has generated huge publicity for mathematics in the geosciences. IAMG should take this one step further to promote MPE in middle and high schools in addition to universities. Mathematical courses are offered in all schools from primary to high school to university. Earth science is also a common topic in stories and essays of students. Integration of maths and earth subjects must provide proper and interesting topics for students' maths or science projects. The mathematical and geoinformatical techniques learned by students early on are already powerful tools for exploring the Earth. An excellent example, recently headlined in the media, is a publication by high school student Alice R. Zhai who has analyzed 73 tropical cyclones that made landfall in US and who used multivariate regression to examine the dependence of hurricane economic loss on maximum wind speed and storm size. This study not only proposes a new model by which hurricane damage might be predicted but also provides new evidence showing an area-density power-law property of extreme events.

The development of modern information technology enables everyone to easily retrieve big data to support their studies via internet and web services in a cloud environment. Access to process huge amounts of data is no longer limited to paid professionals. Moreover, more and more specialized software packages and multi-media teaching and training materials or online courses available in the public domain with Twitter, Facebook and YouTube, provide new ways for self-learning. Online communication, discussion and consultation through the internet in and out of the classroom have become common for students. IAMG will continue to provide support to encourage middle school, high school and university students to develop their curiosity in, passion for, and dedication to mathematical geosciences. As William Arthur Ward once said, "If you can imagine it, you can achieve it; if you can dream it, you can become it."

Qiuming Cheng

Association Business

Honors to Gina Ross, Jo Anne DeGraffenreid and John Tipper

At the recent meeting in New Delhi the IAMG Council passed the following resolution:

"A special merit certificate with plaque will be awarded to Jo Anne DeGraffenreid for her extraordinary services to the Association, especially as Editor of the IAMG Monograph Series.

IAMG Honorary Lifetime Memberships will be offered to Jorgina Ross and John Tipper for their exceptionally important contributions."

Jo Anne DeGraffenreid edited "Studies in Mathematical Geosciences" from 1990 to 2014 and became the official Editor of this Oxford University Press Monograph Series in 1997. She also served as co-editor of the IAMG News Letter with John Davis from the early 1980s to 1989.

Gina Ross was IAMG Treasurer from 2004 to 2012 and guided IAMG's finances carefully and successfully through the 2008 financial crisis and recession. She also spearheaded and organized the IAMG 2000 Annual Conference in Cancun, Mexico.

John Tipper served as IAMG Councilor from 1992 to 1996. As Chair of the Education Committee (1992-2000) he led the IAMG's effort to publish a series called "Studies for Students" in association with the European Journal of Soil Science aimed at making applications of mathematical geology easy to understand for students and geologists new to the subject.

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Meetings Committee News

The Committee placed an announcement in the last Newsletter inviting bids to organize IAMG2017. So far, Prof. Phaedon Kyriakidis has contacted the Committee expressing tentative interest to commit. He has joint teaching appointments with the University of California, Santa Barbara, USA, and with the University of the Aegean, Greece. He has suggested three sites: Lesbos and Thessaloniki in Greece and Limassol in Cyprus. In addition, there is interest from the WASM mining engineering department at Curtin University to hold a meeting in Perth, Australia. Also, a new proposal to organize the 2017 Annual Conference in China will be forthcoming. The deadline for IAM2017 proposals is 16 February 2015. Tentatively, IAMG2018 will be held in the Czech Republic in order to celebrate our 50th Anniversary where IAMG was founded.

The Committee has sent to Council a recommendation supporting a grant of 2,500 € to support the Sixth International Workshop on Compositional Data Analysis to be held in Girona, Spain, 1–5 June 2015. (See announcement on p. 6)

In response to a request by C. Thiart, the IAMG is cosponsoring and financially supporting a geostatistical conference organized by the Southern African Institute of Mining and Metallurgy in honor of Danie Krige. The event is intended to take place in Johannesburg from 2 to 4 September 2015. (See back cover for information)

The IAMG Council passed a resolution that the IAMG will co-sponsor CoDa-2015, the 6th international workshop on compositional data analysis to be held in Girona, Spain, 1-5 June, 2015. Financial support for these meetings will amount to 2,500 Euro (CoDa-2015) and $2,000 US (Danie Krige meeting), respectively.

Christien also sent out invitations to organize sessions at the coming International Geological Congress to be held in Cape Town, South Africa, 27 August to 4 September 2016. Response has not been as enthusiastic as it was for the previous Congress in Brisbane. (See more on the 35th IGC on p. 15)

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Outreach Committee

The Outreach Committee was officially established during the IGC in Brisbane in 2012. Frits Agterberg is the Chair with members Graeme Bonham-Carter, Zhijun Chen, Eric Grunsky, Harald Poelchau, Gina Ross, and Faisal Shazad.

Processes taking place in the Present include those resulting in earthquakes, volcanic eruptions, landslides and climate change. IAMG scientists are also concerned with 3-dimensional imaging and modeling of the Earth's crust that contains the products of processes, which took place millions of years ago. These products include accumulations of valuable substances necessary for the survival of humankind. An important question that needs to be answered in the study of Earth-related processes is: "How reliable are Earth predictions?"

Scientific work involving mathematics is needed to make progress in the Earth prediction fields. Two examples of current research by IAMG scientists are (1) compositional data analysis and (2) local singularity analysis. These two topics were singled out for special consideration from among a list of IAMG potential special outreach topics that included:

Mathematical resource modeling: petroleum basins and permissive tracts for mineral deposits
Spatial statistics: variograms and kriging
Geological hazards: Earthquakes and landslides
Geological time scale
Statistics of directional features
Climate change and
Hydrofracturing.

During the past two years, compositional data analysis has been the main topic of collaboration with ESM. Work on this topic still has not been finalized and further reports/publications are expected. Recently, emphasis has shifted to singularity analysis.

IAMG has become formally allied with Young Earth Scientists (YES) as a good way to bring in new young members. Wenlei Wang is our YES representative.

In addition to the IAMG booth originally prepared for the Oslo IGC in 2008 and later put up annually by Ute Herzfeld at the AGU Fall meeting in San Francisco, a new booth was developed in 2012 that is shared with Earth Science Matters and the International Lithosphere Programme. We have already reserved IAMG booth space at the Cape Town IGC in 2016, and plans are being made to take our 2008 booth there for display. The 2012 booth that also was at IAMG 2013 in Madrid continued to travel with Ed de Mulder to various international geoscience meetings including the First International Conference on Geoscience for Politics, Economy and Culture in Tehran (February 2014), and the 3rd YES Congress held in Dar es Salaam (August 2014) where our President presented a keynote address.

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New IAMG Brochure

During August 2014 an updated version of the IAMG brochure was prepared by Zhijun Chen and Frits Agterberg. Two thousand copies of it were printed at CUG Wuhan. It was also incorporated into a new IAMG poster already displayed at the Beijing and Xuzhou workshops. The brochure is available on the IAMG website for downloading: http://iamg.org/information-about-iamg.html
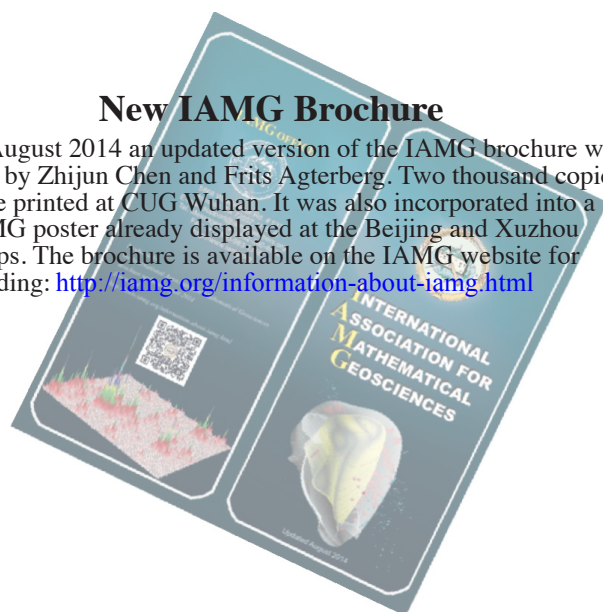
The 17th Annual IAMG Conference 2015

This notice is to inform you about some important practical aspects of the next IAMG conference in Freiberg (Saxony; Germany), September 7 to 10. These include: abstract and paper submission and revision flow, booking accommodations and important tips to plan your travel. Of course, all information can be found as well on http://www.iamg2015.de/

Important dates:

2014-31-12: deadline for courses and topical session proposal

2015-02-01: short abstract deadline

2015-03-16: notification of abstract acceptance

2015-05-01: short paper submission deadline

2015-06-01: brief review of short paper returned to authors

2015-07-01: deadline for the final version of short paper

Acceptance of contributions, as well as poster and oral classification, will be based upon the short abstracts. Apart from, or alternative to, the classical session-based submission, corresponding authors will be asked to classify its short abstract into a two-way system of method vs. topic. The list of topics and methods can be found on the website: if your topic or method is not there, tell us! Also, methodological contributions without a specific topic, and multi-topic/multi-method contributions are welcome! In this way, we plan to offer a flexible and comprehensive scientific program, able to accommodate the whole field of mathematical geosciences and geoinformatics.

Accommodations:

Freiberg is a beautiful small city in the middle of the Ore Mountains, one of the most important historical mining regions of Europe. However, its hotel capacity is quite limited, and it will be stretched almost to its limit if the number of conference delegates exceeds the average attendance of the


last IAMG meetings. To ensure that as many delegates as possible are hosted in Freiberg itself, the organising committee of IAMG2015 has pre-booked ALL hotels of the city, and a centralized hotel booking system will be offered to registered participants. This pre-booking will last until mid May (2015-05-15), and it does not charge any fee for this service. Participants are encouraged to book before that deadline, because the conference will take place in a period which is still active for tourists. Late participants might find the city hotels fully booked, and be forced to stay in Dresden (and commute by train), or in the outskirts of Freiberg (if having a car).

Traveling to Freiberg:

The most important tip: do not fly to Freib**U**rg! That city lies on the southwestern corner of Germany, quite near to Switzerland and France. Freib**E**rg is in the East, south of Berlin and near Dresden and the Czech Republic. The nearest airport is Dresden, regularly served by several airlines (Lufthansa, Austrian, Swiss, Etihad Regional, AirBerlin, AirFrance/KLM, Vueling/Iberia, Aeroflot, Easyjet and GermanWings) from several airports in Europe (Munich, Frankfurt, Amsterdam, Barcelona, Basel, Düsseldorf, Hamburg, Köln/Bonn, London City, Moskow, Palma de Mallorca, Stuttgart, Vienna and Zurich). Alternatively, EuroCity train connections from Prague and Berlin to Dresden are also very comfortable. From Dresden to Freiberg there are regular regional train connections, twice each hour.

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Matheron Lecture at the IAMG2014 in New Delhi

On Monday the 10th October 2014 at the IAMG2014 in New Delhi, India, the Matheron Lecture was presented by Professor **Karl Gerald van den Boogaart**. The Georges Matheron Lecturer is a scientist with proven research ability in the field of spatial statistics or mathematical morphology. As Professor Vera Pawlowsky-Glahn introduced Gerald she stated how he was an obvious choice for the nomination to present the Matheron lecture. Since Gerald was awarded the Andrei Borisovich Vistelius Research Award in 2003, he has grown in scientific stature and has become highly respected in the Mathematical Geoscience community. The Matheron lecture was entitled 'Multiple Point Statistics understood in Matheronian Principles'. As Gerald delivered his pioneering, innovative and provoking lecture, he demonstrated why he was a worthy recipient of this honour. In presenting his new theory Gerald challenged the mathematical geoscience community to think more broadly than our own scientific areas. It became clear to the audience that this was a seminal moment in the development of mathematical geoscience and a highlight of IAMG2015.
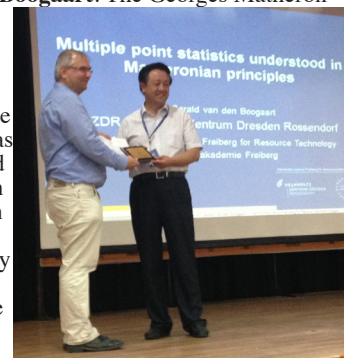
Vera Pawlowsky-Glahn and Jenny McKinley

Distinguished Lecturer for 2015

I delivered the IAMG Distinguished Lecture in New Delhi in late October. The title of the talk was "Reflections on Fifty Years in a Small Corner of Geo-Statistics". I surveyed the history of oil and gas discovery process modeling from its inception in the 1950s to now and, noting that "Geo-statistics is a handmaiden of mineral resource exploration decision making" , briefly surveyed the evolution of methods for decision making under uncertainty applied to minerals — from C. Jackson Grayson's very first ever application of decision analysis to drilling decisions by independent oil and gas operators to modern market based evaluation methods. I can, of course, repeat a variant of this talk to any group that is interested.

I am prepared to give talks on a number of rather different topics:

• "Petroleum Assessment via Hierarchical Modeling". Ray Faith, Jack Schuenemeyer and I project aggregate gas hydrates in place in three major onshore Alaska assessment units using Bayesian hierarchical modeling

• "Prospect Information, Adaptive Successive Sampling and Oil and Gas Discovery Modeling" broadens traditional discovery process models to include both spatial probabilistic dependencies and adaptive updating of projections of returns to drilling as drilling information accrues.

• "A Generalization of Intra-class Correlation Matrices". This generalization arises in assessment of the oil and gas potential of the Circum-Arctic — a large unexplored region constituting approximately 6% of the Earth's surface area — and in assessment of CO_2 sequestration capacity in depleted US natural gas reservoirs. We study properties of this class of matrices and derive exact upper and lower bounds on allowable background correlations and propose simple checks that guarantee coherence of the assessed correlation matrix. (This is a technically more advanced topic suitable for a mathematically oriented audience).

Jef Caers has invited me to talk at Stanford and I am arranging for a talk at the University of Utah. I have not yet finalized travel plans for these talks but am working on them.

Gordon Kaufman
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Letter to the Editor

What do Mathematical Geoscientists Do?

I've commented on this issue before, but it remains a valid issue. Many are engaged in "geostatistical" applications. At the international meeting of the IAMG in 2009 held at Stanford, most of the presentations involved geostatistics. However looking back on my own career, involving successive generations of students in my group at Stanford, we focused mostly on simulating sedimentary geological processes. Some thought we were crazy, but others applauded. This went on for 35 years, from 1964 until 1999. So, there are other fields of application, and in fact many different fields.

Today in the hinterlands, there are some mathematical geoscientists doing very original work involving applications that we'd barely thought about earlier. I'll mention one of today's pioneers, whose focus is on mathematical morphology of geological features, B. S. Daya Sagar of the Indian Statistical Institute at the Bangalore Centre. Notably he's been at it for two decades and has published a lot, including a seminal 546-page book in 2013 entitled "Mathematical Morphology in Geomorphology and GISci" that spans much of the field.

Let's face it, the shapes or forms of geological objects are tantalizing, and some can be astoundingly complex. Landscapes, for example, often exhibit complex forms. Trying to describe their shapes alone can be challenging, but the greater challenge is to explain the processes and morphological forms that affect each other. Everyday features, such as stream meanders on broad floodplains, or lakes on floodplains with short lives, may be common, but they are not simple to categorize or analyze. All the while we're dealing with interdependencies between features and processes. Interdependencies are invariably accompanied by complex cyclic and chaotic behavior. So do you still want to make predictions? Take heart, though, because there are some new tools to help you, and that's where Daya's work is relevant.

John W Harbaugh

Member News

Cedric Griffiths reports:

I resigned from CSIRO effective 30 June 2014, and as of 1 July my CSIRO address can no longer be reached.

I have started a new company 'StrataMod PTY LTD' in Perth progressing stratigraphic forward modelling using primarily Sedsim.

CSIRO has transferred its interest in the Sedsim code to StrataMod effective 1st July 2014 and will no longer offer Sedsim licenses or projects based on its use.

Please direct all future email to either cgriffiths@stratamod.com or cedric_griffiths@hotmail.com

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Xiaogang (Marshall) Ma received the Inaugural ISCU-WDS Data Stewardship Award. The World Data System (WDS) of the International Council for Science (ICSU) supports long-term stewardship of quality-assured scientific data and data services across a range of disciplines in the natural and social sciences, and the humanities. The WDS Data Stewardship Award highlights exceptional contributions to the improvement of scientific data stewardship by early career researchers through their engagement with the community, academic achievements, and innovations. The award ceremony was held on Nov-04-2014, at SciDataCon2014, New Delhi, India, the same venue as for IAMG2014.

Ma also recently published his work in Nature Climate Change: *Capturing provenance of global change information*, by X Ma, P Fox, C Tilmes, K Jacobs, A Waple, Nature Climate Change 4 (6), 409-413.

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Tim Coburn *(University of Tulsa)* writes*:*

On July 1 I became the director of our new School of Energy Economics, Policy, and Commerce. I continue to be the director of our Master of Energy Business, essentially an energy MBA, and have about 150 graduate students for whom I am responsible. The masters program is delivered online, so we are able to take students from all over the world. We also have an undergraduate program largely focused on energy business development.

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John Tipper *has become an Emeritus Professor of the Geologisches Institut, Albert-Ludwigs-Universität, Freiburg. He has just been awarded the* **Honorary Life Membership of IAMG** *(p. 4). John was a Councilor from 1992 to 1996, and led the IAMG's effort to publish a series of applications of mathematical geology called "Studies for Students" in association with the European Journal of Soil Science. Many of his own papers were published in Computers & Geosciences and he won the best paper award of C&G in 1991. Upon my request he sent in the following story.*

Editor

I was the schoolboy who wanted to be a physicist – until he started to study physics at university! Fortunately, Cambridge had insisted that I take as a subsidiary subject this strange thing called geology, which truly let me be in the right place at the right time: Alan Smith, my first supervisor, was fitting continents together; John Dewey, who introduced me to the magic of field geology in Ireland, was applying plate tectonics to the Caledonian orogeny; Harry Whittington was showing how organisms and ecosystems could be reconstructed in deep time; and Brian Harland was running expeditions to Spitsbergen. Brian gets the blame (jokingly, of course) for keeping me away from a first possible contact with the IAMG. Ten weeks in Spitsbergen in the summer of 1968, completely cut off from the world, meant that I came back ignorant of all that had happened then in Prague. I certainly knew nothing of that one special event at the 23rd IGC!

I joined the IAMG in 1972, as a PhD student in Edinburgh. The would-be physicist had by then morphed into a would-be paleontologist, and one who relished Edinburgh's stipulation – a quite unusual one for that time – that he also take a course in computer science. The computer facilities were excellent, even if primitive by today's standards, and the quantitative modelling of fossil morphology and occurrence that I wanted to carry out was therefore feasible. I took this work further as a post-doc in Germany, and it was there, in Bonn, that my IAMG connection was sealed. Desperation was setting in, with the post-doc money about to run out and jobs for paleontologists as scarce as snow in summer. Then the IAMG Newsletter arrived, with an advert for a position at the Kansas Geological Survey. The deadline was past but I still sent in an application. I added a pathetic "I know I'm too late, but bear me in mind if you ever have anything else" footnote. Back came John Davis' reply: "The position's still open and it's yours if you want it!" I did, and moved to Lawrence.

The KGS was then one of the centers of research in mathematical geology, so this newcomer had much to learn. I was part of the Geologic Research Section, with John Davis, John Doveton and Curt Conley as colleagues. My research focussed principally on developing and using CAD techniques to represent and visualize rock bodies, which in retrospect was exactly the right work at exactly the wrong time. The necessary computer hardware was then financially out of reach of all but the aerospace and automobile industries, which left me facing a brick wall. At the same time I was recognizing more and more that I am fundamentally a geologist, not a mathematician or computer scientist. Clearly it was time to move on, to get back to rocks in the field.

Mathematical geologist at work in the field, demonstrating Stromatactis in a Devonian mud-mound in Belgium (Les Wayons)

The move I made was to University College Galway, in Ireland, to teach paleontology and stratigraphy. Poorly funded, poorly housed and poorly equipped, the Geology Department at UCG was the opposite of what I had left behind in Kansas. Yet it could not have been bettered as a place to learn to teach, and as a place to continue accumulating that most precious of the geologist's treasures – experience with rocks in the field. Moreover there was at UCG the golden opportunity to offer courses in mathematical geology, which let me experiment with bringing rocks and quantitative methods together in a teaching as well as a research context. Essentially I could start then to draw together those various threads that were part of what I had done before. I have followed this path ever since, first in Australia and finally here in Germany.

To me the defining characteristic of mathematical geology is its natural interweaving of desktop theory and practical fieldwork – the computer and the hammer. The founding of the IAMG gave formal recognition to this. I feel privileged to belong to the IAMG and to have been of service to it.

John C. Tipper
Freiburg, Germany

CoDaWork 2015

The 6th International Workshop on Compositional Data Analysis

June 1-5, L'Escala (Girona), Spain

| Home | What is CoDa? | Program ▾ | Call for papers ▾ | Introductory Course |

Welcome to CoDaWork 2015

CoDaWork 2015, the 6th international Workshop on Compositional Data analysis, offers a forum of discussion for people concerned with the statistical treatment and modelling of compositional data or other constrained data sets, and the interpretation of models or applications involving them. The primary goal of the workshop is to identify important potential lines of future research and gain insight as to how they might be tackled.

CoDaWork 2015 intends to bring together specialist researchers, data analysts, postgraduate students, as well as those with a general interest in the field, to summarize and share their contributions and recent developments.

The workshop and the traditional previous introductory course will take place in Hotel Nieves Mar (L'Escala).

http://compositionaldata.com/

Conference Reports

CoDaCourse 2014

The CoDaCourse (7-11 July 2014), held on the premises of the University of Girona (UdG), provided an introduction to the theoretical and practical aspects of statistical analysis of compositional data, as well as an informal discussion forum on more advanced modelling topics.

Out of the 23 participants many came from different countries (e.g., Mexico, USA, Canada, Germany or Croatia) and many were members from universities and research institutes. During the course students received instruction on theoretical and practical CoDa techniques. Remarkably, ten students presented their own case studies to the rest of participants. After some discussion of progress, the last sessions were devoted to discuss their preliminary results and future research.

In addition, the summer school included two invited talks: Symbolic Data Analysis (P. Brito) and Three-way Data Analysis (M. Gallo). In these talks participants were exposed to different types of data and their possible connection with CoDA and their own case studies.

In the practical sessions students learned how to apply basic CoDA techniques and were introduced to available software. CoDaPack provides an easy-to-use tool for elementary exploratory analysis of CoDa. It was used in most teaching activities of the course. For more demanding statistical techniques, such as parametric zero replacement, discriminant or cluster analyses and regression, "zCompositions" and other packages (e.g., compositions, robCompositions) for the open source statistical environment R was also used.

The Organizing Committee would like to thank the IAMG for accrediting the course, as well as all the participants for their collaboration. Particularly, we very much thank students for their encouraging participation! In this way they stimulated us to organize further editions! We look forward to their participation in the workshop CoDaWork-2015, to learn about their findings using the CoDa approach.

Thank you very much and CoDa-regards!

On behalf of the Organizing Committee,

J.A. Martín

International Workshop on Frontiers of Mathematical Geosciences

A workshop on Frontiers of Mathematical Geosciences was successfully organized by the R&D Center of the China Geological Survey and State Key Laboratory of Geological Processes and Mineral Resources, China University of Geosciences (CUG), at the China Geological Survey Beijing from October 8-10.

The workshop attracted about 120 participants from China. 13 oral presentations, five from outside of China and eight from China, were delivered at the workshop. Five Krumbein medalists of IAMG (Frits Agterberg, Pengda Zhao, Vera Pawlosky Glahn, Qiuming Cheng and Jef Caers) were invited to give plenary presentations at the workshop.

Several IAMG council members and committee members including Yan Guangsheng (Chair of IAMG-GS Commission), Yongqing Chen and Gang Liu (IAMG councilors), Yongzhang Zhou (Chair of IAMG-CN) attended the workshop. The workshop was chaired by Dr. Yan Guangsheng (Head of the R&D Center of China Geological Survey) and Qiuming Cheng (IAMG president). The workshop was jointly sponsored by the IAMG Chinese Section and Geological Survey of China. Students from two IAMG student chapters (at CUG and at Sun Yat-sen University chapter) participated. Members from IAMG-CN and Student Chapter at CUG were dedicated to serving this workshop. The lectures in English were translated into Chinese and printed in two languages.

Pengda Zhao, Guangsheng Yan, Jef Caers, Frits Agterberg, Vera Pawlosky Glahn, Juan Jose Egozcue

This workshop in Beijing has special significance. In the age of Big Data, mathematical geosciences will play an irreplaceable role in the resources, environment and hazards problems in supporting the sustainability development of China. During the workshop, Guangsheng Yan guided the visit around the National Geological Archives for the participants. He expected the researchers in mathematical geosciences to make excellent researches by using these open scientific data online and offline.

Zhijun Chen, Shubin Zhou, Wenlei Wang
IAMG-CN

GeoMap 2014 Workshop

"Practical Aspects of Geochemical Exploration and Mapping with Logratio Techniques" held in Olomouc, Czech Republic, 16-20 June 2014

Thirty-seven applied/analytical geochemists and mathematicians/statisticians from Europe, USA, and Australia met for the week-long GeoMap Workshop to present and discuss issues and recent developments relating to compositional data. On the Monday and Tuesday morning a Short Course on "Geometry and Statistics of Compositional Data", organised by Raimon Tolosana-Delgado and attended by a dozen people, started off the proceedings. From Tuesday afternoon to Friday, a series of themes structured around a keynote lecture each and two or three shorter presentations, followed by extensive round-table discussions, was planned. The half-day themes were: General issues (keynote lecturer: Clemens Reimann); Fractions, fractionation and multilayer data (Jennifer McKinley); Background versus anomaly detection (Antonella Buccianti); Absolute single-component mapping and uncertainty assessment (Karl Ellefsen); Identifying and mapping processes (Patrice de Caritat); and Analytical issues (Beata Walczak). Lively discussions demonstrated that there are still unresolved issues and problems specific to geochemical (compositional) data, e.g., related to data quality and logratio transformations, mapping single-component distributions, and back-transforming results to the original data space.

A balanced attendance by the geochemical and mathematical communities, ample time for both organised and informal discussions (all participants staying at the conference venue), the relatively small group allowing all to mingle and network, and the perfect organisation by Karel Hron and his colleagues, ensured a very successful Workshop. At the end of the week, six topics requiring further consideration were identified and working groups put together to tackle these out of session and aim for future publication of their findings. Excellent and abundant catering, diverse evening activities including an organ demonstration at the St Moritz Church (whose baroque organ has no less than 8000 pipes) and a conference dinner near the 18th century Svatý Kopeček (Holy Hill) monastery overlooking Olomouc, ensured that everybody left happy in addition to intellectually stimulated.

Patrice de Caritat & Clemens Reimann
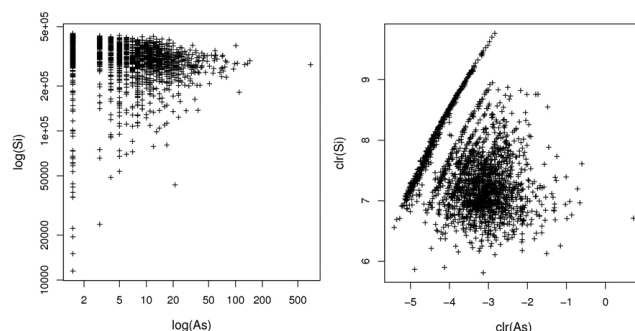
Scatter diagrams illustrating data quality and transformation/back-transformation issues.

GeoMap participants in front of Svatý Kopecek monastery.

The team visit at Taj Mahal

Geostatistical and Geospatial Approaches for the Characterization of Natural Resources in the Environment: Challenges, Processes and Strategies
Venue Convention Centre Jawaharlal Nehru University New Delhi October 17-20, 20

IAMG International Conference
Geostatistical and Geospatial Approaches for the Characterization of Natural Resources in the Environment: Challenges, Processes and Strategies
Venue Convention Centre Jawaharlal Nehru University New Delhi October 17-20, 2014

Opening address by Qiuming Cheng

The Student team JNU

N. Janardhana Raju, TRP Singh and Qiuming Cheng

Qiuming Cheng, Shailesh Nayak

N. Janardhana Raju, Shailesh Nayak, Qiuming Cheng and Dean I S Thakur

JNU female students and staff

Jenny McKinley showing inlays at Taj Mahal

www.ambaphotostudio.com

Clayton Deutsch receiving the Griffiths Award

Local organising committee

Krumbein Medal for Jef Caers

From right: BK Sahu, G Srikanth, ?, Mr.&Mrs. Agterberg, Qiuming Cheng & Ming Wu, Christien Thiart
www.ambaphotostudio.com
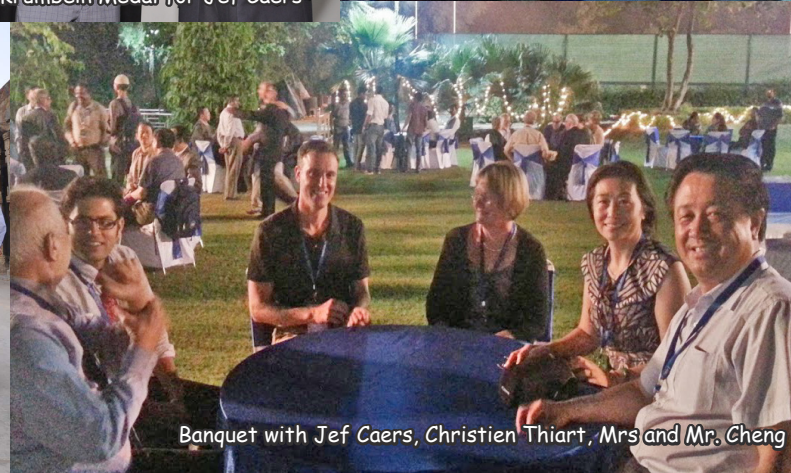
Banquet with Jef Caers, Christien Thiart, Mrs and Mr. Cheng

IAMG 2014 in New Delhi

The international Annual IAMG Conference on "Geostatistical and Geospatial Approaches for the Characterization of Natural Resources in the Environment: Challenges, Processes and Strategies" was organized for the first time on the Indian subcontinent and promoted the mathematical geosciences among the budding scientists working in the fields of geosciences. IAMG is part of the International Union of Geological Sciences (IUGS) which is devoted to international research and cooperation in the field of geological sciences. I take this opportunity to extend my sincere and heartfelt thanks to the President and Executive Committee members of the IAMG for giving us the privilege to organize the 16th Annual Conference at JNU by providing us organizational and financial support.

The conference began with welcome remarks by Prof. I.S.Thakur, Dean School of Environmental Sciences. Dr. N. Janardhana Raju, Chairman of IAMG2014, explained the importance and introduced the themes of the conference. Prof. Qiuming Cheng, President of IAMG, highlighted the programmes of International Association for Mathematical Geosciences during his presidential address. Delivering his address as Chief Guest of the occasion, Dr. Shailesh Nayak, Secretary, Ministry of Earth Sciences strongly emphasized the importance of earth sciences study and environmental issues in the Indian context. In addition, he also shared his thoughts for the exposure to mathematical application in the geosciences of the young researchers which is really in a nascent stage in our country. Dr. Shailesh Nayak delivered the inaugural keynote talk on "Societal Benefits of Earth System Sciences" by giving Indian examples.

IAMG2014 provided an opportunity to Indian earth and environmental scientists who desire to develop application of mathematical skills in earth sciences by interacting with eminent international scientists working in the field of mathematical geosciences. In the long term we expect to exchange scientific and technical know-how between countries through scientists/researchers to facilitate the advance of studies in the field of mathematical geosciences. The IAMG program was organized into four parallel sessions that addressed a variety of science disciplines and technologies and were chaired by national and internationally reputed leaders in the fields of environmental, mathematical geosciences and geoinformatics. We are very happy to have received an enthusiastic response of 357 contributions (251 oral and 106 posters) from our co-researchers covering different parts of India and *Germany, USA, Brazil, Norway, France, Poland, Russia, China, South Korea, Mexico, Japan, Australia, UK, Canada, Italy, Saudi Arabia, Croatia, Spain, Tajikistan, Malaysia and Sri Lanka,* that encompass the identified themes of the conference viz: 3D Visualization in geo- and environmental sciences; Hydrology and time series analysis; Isotope hydrology; Environmental geochemistry and pollution; Climate and groundwater functioning: the need for correct questions; Numerical solutions in hydrogeology; Engineering geology and geotechnical engineering; Trendy geostatistics; Multivariate geostatistics; Classical statistics in the earth sciences; Compositional data analysis and its application; Prediction and characterization of natural disasters; Fractal modeling; Multiple point geostatistics; Marine geology and oceanography; Advances in mining assessment; Petroleum systems; Digital rock geophysics; Mathematical morphology in geosciences and geoinformatics; Remote sensing and geoinformatics for natural resources management; Sedimentary basin analysis; Observed changes in Himalayan cryosphere; Computer application in earth sciences; Spatiotemporal modeling; Agriculture, environment & ecosystems; and New frontiers of mathematical geology for resources exploration. Two pre-conference short courses were organized, one on Mathematical morphology in Geosciences and Geoinformatics by Prof. B.S. Daya Sagar, Bangalore, India and one on Time Series Analysis in Geology: An Antiquated Method? by Dr Wolfgang Gossel, Martin Luther University, Halle, Germany.

There were keynote talks by IAMG Award winners delivered by Prof. Jef Caers, Stanford University, USA on "Multiple-point Geostatistics: Stochastic Modeling with Training Images; Prof. Clayton V. Deutsch, University of Alberta, Canada on "Managing Complex Relationships with Incomplete Data" and Prof. K.G. van den Boogaart, University of Freiberg, Germany on "Multiple Point Statistics Understood in Matheronian Principles". Prof. Qiuming Cheng, President of IAMG delivered a Keynote Speech on "Geomathematical and Geoinformatical Challenges for Resourcing Future Generations" before the Valedictory ceremony. On the first day of the conference a welcome reception was organized in the evening, and a cultural program of Indian dances was performed to entertain the conference participants. A cultural trip to Qutub Minar (a famous heritage site in Delhi) was organized for the participants on 19th October followed by the Banquet Dinner at Palika Services Officers Institute (PSOI), Chanakyapuri, New Delhi.

On the last day of the conference, the valedictory session was chaired by Prof. I. S. Thakur, Dean SES, JNU. Dr. M. Sudhakar, Advisor, Ministry of Earth Sciences was the Chief Guest and elaborated the need of mathematical applications in the geosciences. Prof. Qiuming Cheng, was the Guest of Honour and presented two Best Poster Awards for Young Research Scholars. Dr. M. Sudhakar presented mementos to all the session conveners of the conference. The cooperation and support from Ministry of Earth Sciences; Department of Science and Technology, New Delhi; Coal India Limited, Kolkata; Oil and Natural Gas Limited, Dehradun; National Mineral Development Corporation, Hyderabad; Indian Meteorological Society, New Delhi; Reliance Industries Limited, Mumbai; Hindustan Coca-cola limited, New Delhi; Saudi Aramco Limited, Saudi Arabia is acknowledged.

N. Janardhana Raju FAvH
Chairman IAMG2014
School of Environmental Sciences, Jawaharlal Nehru University

Conference photo album on page 8 with pictures graciously contributed by Jenny McKinley, Qiuming Cheng, and Dr. N. Janardhana Raju, incl. official photos by Ambaphoto Studio.

Student Affairs

New IAMG Student Chapter in Bangalore

The Bangalore IAMG Student Chapter is in existence now. The details about this new chapter are available at:
http://www.isibang.ac.in/~iamg
A final confirmation from IAMG Students Affairs Committee about the formation of this chapter is yet to be received. However, various lectures by experts were already arranged by this chapter.

B. S. Daya Sagar
Indian Statistical Institute-Bangalore Centre, India

IAMG Journal Student Awards

This year, two US$5,000 **Computers & Geosciences Research Scholarships** were handed out. Co-ordination of activities within the selection committee for the C&G scholarships was undertaken by Paul Cumine of Elsevier who has taken over from Katherine Eve as our Elsevier Publisher. Winners of our three US$2,500 **Mathematical Geosciences Student Awards** and two US$2,500 **Natural Resources Research Student Awards** were selected by the other committee chaired by **Jeff Boisvert** who kindly has taken over from Larry Drew who

was the 2013 Chair. Two of the seven winners were actually in New Delhi participating in IAMG2014 so that they could be handed their certificates by the IAMG President at this time. These were **Catarina Guerreiro** (Lisbon, Portugal), winner of a Mathematical Geosciences Student Award,

and **Sujay Bandyopadhyay** (Burdwan Univ., India), winner of a Natural Resources Research Student Award. The other winners were

C&G scholarships:
    Andrew Bell in the UK
    Jeanne Pellerin in France

MG Student Awards:
    Andres Gonzales Quiros in Spain
    Nasser Madani Esfahani in Chile

NRR Student Awards:
    Ngoc Luan Mai in Australia

All award winners have received their certificates in the mail and have been sent their cash awards from the IAMG Treasurer.

Reminder:

Deadline for Student Grant applications is
31 May 2015!
See http://iamg.org/student-affairs
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IAMG can be proud to have nine "active" Student Chapters on three continents. Hopefully, this is where many of our future members will come from. It is, however, difficult for them keep their "active" status which requires an annual report and an active, frequently updated website. Only after repeated urging did Helmut Schaeben (Chair of SAC) receive 7 out of 8 Chapter reports which left a lot of questions open. Website maintenance is difficult for busy students, and that is reflected in the websites (http://iamg.org/student-affairs/student-chapters.html). None of the chapters (except for the new chapter in Bangalore) lists any new activities in the fall semester. Only two other chapters list anything happening in 2014. That seems to be a sad state of affairs, no matter how busy the students are.

Ed.
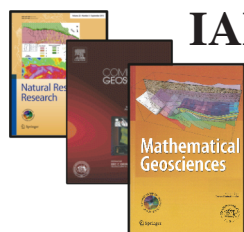
IAMG Journal Report

2013 Best Paper Award for Mathematical Geosciences

"Efficient Simulation of (Log)Normal Random Fields for Hydrogeological Applications" by Phaedon Kyriakidis and Petros Gaganis. Mathematical Geosciences. 45 (6):53 1- 556.

Petros Gaganis is currently an Assistant Professor at the University of the Aegean, Department of Environmental Studies, Mytilene, Greece. He holds a Master of Science (1996) and a Ph.D. (2000) in Groundwater Hydrology from the University of British Columbia, Canada.

Phaedon Kyriakidis is a Professor at the Department of Geography of the University of the Aegean, Greece, and at the Department of Geography of the University of California Santa Barbara. He received his Ph.D. degree in Geological and Environmental Sciences (with specialization in Geostatistics in the Earth Sciences) from Stanford University, USA, in 1999 and his B.Sc. in Geology from the Aristotle University of Thessaloniki, Greece, in 1994.

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Request for Nominations for Special Lectures

IAMG selects and sponsors two lecturers each year: The **IAMG Distinguished Lecturer** and the **George Matheron Lecturer.**

The **Distinguished Lecturer** prepares a series of lectures preferably on a variety of subjects in the mathematical geosciences to be presented in places where IAMG Annual Meetings are not normally held.

The **Georges Matheron Lecturer** should be a scientist with proven research ability in the field of spatial statistics or mathematical morphology. This lecture is presented at the Annual Meeting of the IAMG.

Letters of nomination for both these should include a curriculum vitae of the nominee and a short statement summarizing the ways in which he or she fulfills the nomination criteria (see http://iamg.org/special-lectures. html). Letters should be directed to the Chair of the Lectures Committee, Jennifer McKinley, by e-mail to: j.mckinley@qub. ac.uk

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D. Asahina, J.E. Houseworth, J.T. Birkholzer, J. Rutqvist, J.E. Bolander — Hydro-mechanical model for wetting/drying and fracture development in geomaterials,

Peng-Zhi Pan, Jonny Rutqvist, Xia-Ting Feng, Fei Yan — TOUGH RDCA modeling of multiple fracture interactions in caprock during CO_2 injection into a deep brine aquifer

Andri Arnaldsson, Jean-Claude Berthet, Snorri Kjaran, Sven Þ. Sigurdsson — Numerical scheme to simulate flow through anisotropic rocks in TOUGH2

Lehua Pan, Curtis M. Oldenburg — T2Well An integrated wellbore reservoir simulator

George J. Moridis, Craig M. Freeman — The RealGas and RealGasH2O options of the TOUGH+ code for the simulation of coupled fluid and heat flow in tight/shale gas systems

Zakaria Saâdi, Didier Gay, Jérôme Guillevic, Roselyne Améon — EOS7Rn A new TOUGH2 module for simulating radon emanation and transport in the subsurface

Haruko M. Wainwright, Stefan Finsterle, Yoojin Jung, Quanlin Zhou, Jens T. Birkholzer — Making sense of global sensitivity analyses

J. Florian Wellmann, Stefan Finsterle, Adrian Croucher — Integrating structural geological data into the inverse modelling framework of iTOUGH2

Manuel Plasencia, Andreas Pedersen, Andri Arnaldsson, Jean-Claude Berthet, Hannes Jónsson — Geothermal model calibration using a global minimization algorithm based on finding saddle points and minima of the objective function

George Shu Heng Pau, Yingqi Zhang, Stefan Finsterle, Haruko Wainwright, Jens Birkholzer — Reduced order modeling in iTOUGH2

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Alessio Arena, Claudio Delle Piane, Joel Sarout — A new computational approach to cracks quantification from 2D image analysis: Application to micro-cracks description in rocks

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Jeremy C. Conner, Michael J. Olsen — Automated quantification of distributed landslide movement using circular tree trunks extracted from terrestrial laser scan data

Mattia Natali, Tore Grane Klausen, Daniel Patel — Sketch-based modelling and visualization of geological deposition

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David Clifford, James E. Payne, M.J. Pringle, Ross Searle, Nathan Butler — Pragmatic soil survey design using flexible Latin hypercube sampling

David B. Kemp — Colorimetric characterisation of flatbed scanners for rock/sediment imaging

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Jiannan Luo, Wenxi Lu — Sobol2 sensitivity analysis of NAPL-contaminated aquifer remediation process based on multiple surrogates

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Sungkono, Ayi S. Bahri, Dwa D. Warnana, Fernando A. Monteiro Santos, Bagus J. Santosa — Fast, simultaneous and robust VLF-EM data denoising and reconstruction via multivariate empirical mode decomposition

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Zhiqiang Xu, Jiansi Yang, Chaoyong Peng, Ying Wu, Xudong Jiang, Rui Li, Yu Zheng, Yu Gao, Sha Liu, Baofeng Tian — Development of an UAS for post-earthquake disaster surveying and its application in Ms7.0 Lushan Earthquake, Sichuan, China

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Adrián J. Riquelme, A. Abellán, R. Tomás, M. Jaboyedoff — A new approach for semi-automatic rock mass joints recognition from 3D point clouds

A.G.S. Saraiva, A.R. Paz — Multi-step change of scale approach for deriving coarse-resolution flow directions

Pengliang Yang, Jinghuai Gao, Baoli Wang — RTM using effective boundary saving: A staggered grid GPU implementation

Rhonda D. Phillips, Layne T. Watson, David R. Easterling, Randolph H. Wynne — An SMP soft classification algorithm for remote sensing

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Xuefeng Zhang, Bo Liu, Jieqiong Wang, Zhe Zhang, Kaibo Shi, Shuanglin Wu — Adobe photoshop quantification (PSQ) rather than point-counting: A rapid and precise method for quantifying rock textural data and porosities

Nikolaos Gianniotis, Nicolas Kuehn, Frank Scherbaum — Manifold aligned ground motion prediction equations for regional datasets

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C.M. Freeman, K.L. Boyle, M. Reagan, J. Johnson, C. Rycroft, G.J. Moridis — MeshVoro: A three-dimensional Voronoi mesh building tool for the TOUGH family of codes

David W. Dobson, K. Todd Holland, Joseph Calantoni — Fast, large-scale, particle image velocimetry-based estimations of river surface velocity

Hai Ha Le, Helmut Schaeben, Heinrich Jasper, Ines Görz — Database versioning and its implementation in geoscience information systems

Tania Mochales, Thomas G. Blenkinsop, Representation of paleomagnetic data in virtual globes — A case study from the Pyrenees

Ali Danandeh Mehr, Ercan Kahya, Cahit Yerdelen — Linear genetic programming application for successive-station monthly streamflow prediction

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Davide Tiranti, Roberto Cremonini, Federica Marco, Armando Riccardo Gaeta, Secondo Barbero — The DEFENSE (debris Flows triggEred by storms nowcasting system): An early warning system for torrential processes by radar storm tracking using a Geographic Information System (GIS)

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Rute Coimbra, Victor Rodriguez-Galiano, Federico Olóriz, Mario Chica-Olmo — Regression trees for modeling geochemical data An application to Late Jurassic carbonates (Ammonitico Rosso)

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Journal Statistics

Mathematical Geosciences:

ISI-impact factor for 2013: 1.713 (SJR= 1.79)

5-Year Impact Factor: 1.761 (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:

2012 SJR 2yr cites = 0.656

5 year SNIP: 0.968; SJR 4y=0.876

Rejection rate: 52%

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

Wikipedia Articles on IAMG

Wikipedia articles on International Association for Mathematical Geosciences (IAMG) and its associated features such as IAMG medals, special lectures, awards and prizes have recently been created. Now members of IAMG may take an active role in updating these articles from time to time, and also when new information on IAMG is available. These articles, to name a few, that need rigorous editing to make sure that they provide rich error-free information with proper web-links of verifiable sources (mostly secondary sources) can be accessed at:

IAMG:
http://en.wikipedia.org/wiki/International_Association_for_Mathematical_Geosciences

Krumbein Medal:
http://en.wikipedia.org/wiki/William_Christian_Krumbein_Medal

Georges Matheron Lectureship:
http://en.wikipedia.org/wiki/Georges_Matheron_Lectureship

IAMG Distinguished Lectureship:
http://en.wikipedia.org/wiki/IAMG_Distinguished_Lectureship

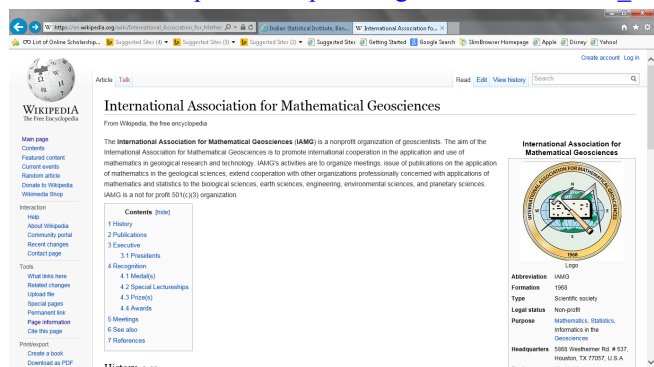Felix Chayes Prize: https://en.wikipedia.org/wiki/Felix_Chayes_Prize

Griffiths Teaching Award:
https://en.wikipedia.org/wiki/John_Cedric_Griffiths_Teaching_Award

Vistelius Award:
https://en.wikipedia.org/wiki/Andrei_Borisovich_Vistelius_Research_Award

Mathematical Geosciences: http://en.wikipedia.org/wiki/Mathematical_Geosciences

A part of IAMG Wikipedia Article

Wikipedia articles on the other awards, journals, meetings, and activities of IAMG would need to be created in due course. It is worth updating the existing articles, and creating the pending articles of relevance to IAMG for better and enhanced visibility for IAMG.

B. S. Daya Sagar
Indian Statistical Institute-Bangalore Centre, India

New positions at HIF in Freiberg!

The Department of Modelling and Valuation of the Helmholtz Institute Freiberg for Resource Technology is offering several positions, for people with background in (geo)informatics/ computer science or economics of the mineral value chain. The Helmholtz Institute Freiberg for Resource Technology (HIF) was founded in 2011 as an initiative of the German Federal Government to foster research along the whole value chain of mineral resources of high technological relevance, and it is a part of the Helmholtz Zentrum Dresden-Rossendorf (HZDR), member of the Helmholtz Society, the largest German research institution.

The Department of Modelling and Valuation works on the mathematical modelling of deposits, ores, mining, processing and their economic and ecological effects, which involves several of the fields of expertise of IAMG (geostatistics, compositional data analysis, stereology, stochastic modelling and optimisation, etc). This is done in close collaboration with all other departments of the HIF and the corresponding institutes at Technische Universität Bergakademie Freiberg.

The profiles sought are:

28/2014: A **programmer and system administrator**, for a technical position as an IT-expert at HIF in coordination with the IT department of HZDR; moreover, this person should be able to support the department in its scientific questions, so knowledge or experience in numerics, database programming, process simulation and acquaintance with cluster systems will be favoured.

30/2014: A **senior researcher** in the field of **Economics of raw materials/resources**, for a position as group leader in the research area "Economics of raw materials". The group should be formed by around 6 people, including PhD and master students. Experience in quantitative valuation of natural resources, the economic and financial aspects of mineral resources, or in industrial management, as well as leading skills are expected

27/2014: A **PhD position** in the field of **Economics of raw materials/resources**, in coordination with the professorship "Finance, Centre of Finance, Risk- & Commodity Management" from the Technische Universität Dortmund, in the topic of risk management in the market of mineral metal resources.

More information, the exact job description (with the codes given above) and application procedures can be found at:
https://www.hzdr.de/db/!JobList?pNid=490

If you are interested, hurry up!

The Annual Danie Krige Medal Award

Daniel Gerhardus Krige (26 August 1919 – 3 March 2013), one of South Africa's most influential mining engineers and geo-statistician of international repute, passed away last year. The South African Institute of Mining and Metallurgy (SAIMM) will honour his memory and contribution to the mineral industry through several activities:

• The publication of a Danie Krige Commemorative Volume of the Journal (2014-2015);

• The Danie Krige Geostatistical Conference to be held in August 2015;

• An annual Danie Krige Memorial Lecture to be facilitated by the School of Mining Engineering at the University of the Witwatersrand;

• The annual award of a Danie Krige medal for a qualifying geostatistics paper published in the SAIMM in the previous year.

Process and criteria for medal paper nomination and selection

Process
An awards sub-committee of the Council will be convened under a chairperson as agreed by Council.

The Chairperson nominates four adjudication panel members from the geostatistical community who are requested to participate in the process of adjudication. These members should preferably, but not necessarily exclusively, be SAIMM members.

A call for nomination and submissions for the award of the Danie Krige Memorial Medal is drafted and issued by the sub-committee.

The timing of the selection and adjudication process should be such that award of the medal is made at the Annual General meeting of the SAIMM in August of each year.

Selection Criteria
The Danie Krige Medal will be awarded annually to the author (or co-authors) of the best geostatistical paper published in the previous calendar year. The Danie Krige medal will comprise a 38 mm diameter medal in an engraved rosewood case and carry an impression of Danie Krige on one side and the SAIMM logo on the other. Accordingly, SAIMM members would be invited to nominate and/or submit papers for consideration on an annual basis. The following criteria will govern the award:

Papers on theoretical or applied geostatistics are eligible;

The papers must have been published in the Journal of the SAIMM in the preceding calendar year;

Nominations for the award may be made by a member of the SAIMM (who is not an author) or submissions may be made by the author(s);

Nominations and submissions must be submitted by email in pdf format to the SAIMM for attention of the Chairperson of the Danie Krige Medal committee;

An individual may only submit one paper (or be nominated, based on one paper) for the award in any year;

No award will be made if none of the papers in a given year meet the minimum standards of the Danie Krige Medal committee. In evaluating papers the committee will use the following criteria and apply their professional judgment:

The impact and contribution to knowledge of the paper in its specific field;

How innovative are the ideas or techniques described in the paper;

The relevance of the problem being addressed, and

How well the paper is written (language, structure, supporting figure etc.);

Only one paper, or one series of papers on a topic by the same author, per year, will qualify for the award;

The decision of the Danie Krige Medal committee on the award of the medal will be final; and

Award of a Danie Krige Medal excludes the winning paper from consideration for any other SAIMM publications awards, i.e. the SAIMM Gold and Silver medals for Journal papers.

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Upcoming Meetings

GeoProc2015: International Conference on Coupled THMC Processes in Geosystems, Salt Lake City, USA, **25 - 27 February 2015**. www.inl.gov/geoproc2015

SPE/EAGE Joint Workshop - Improving the Value of Our Models: Implications for Engineering Practice, Rome, Italy, **9 - 11 March 2015**. www.spe.org/events/14jbar

EGU 2015 European Geoscience Union, General Meeting. Vienna, Austria, **12-17 April 2015**. (Session 3.6 organized by Cheng and Agterberg with at least 11 speakers). http://www.egu2015.eu

7th International Workshop on Information Fusion and Geographic Information Systems: Deep Virtualization for Mobile GIS, Grenoble, France, **18 - 20 May 2015**. http://if-gis.com

AAPG 2015 Annual Convention, Denver, Colorado, **31 May - 3 June 2015**. www.aapg.org/events/conferences/ace

77th EAGE Conference & Exhibition 2015, "Earth Science for Energy and Environment", Madrid, Spain, **1 - 04 June 2015**. www.eage.org/event/index.php?eventid=1237

CoDaWork 2015, 6th International Workshop on Compositional Data Analysis, L'Escale (Girona), Spain, **1-5 June 2015**. http://compositionaldata.com/ - see p.14

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

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 State Convention & Trade Center, **9 - 12 August 2015**. E-mail: jsm@amstat.org http://www.amstat.org/meetings/jsm/2015

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

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

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

Geological Society of America Annual Meeting, Baltimore, Maryland, 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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35th International Geological Congress, Cape Town, South Africa, **27 August – 4 September 2016.** http://www.35igc.org

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Mathematical Morphology in Geosciences

A two-week long summer school on "Mathematical Morphology in Geosciences" is going to be held from 24 March 2015 to 8 April 2015 at the Indian Statistical Institute-Bangalore Centre, Bangalore, India. This summer school is being organized at the suggestion of the Department of Science and Technology (DST), Ministry of Science and Technology, Government of India. The number of attendees is restricted to 20 in-service scientists and/or faculty members. These attendees would be selected by the DST. About 4 to 6 overseas participants may be accommodated to attend this summer school. Local hospitality may be given to those overseas participants. Those who are interested may contact the coordinator of the summer school at: bsdsagar@isibang.ac.in.

B. S. Daya Sagar
Indian Statistical Institute-Bangalore Centre, India

35th IGC

In just under two years' time, we will be welcoming you in Cape Town, South Africa for the 35th IGC. As you can imagine, preparations are already well underway, and we thought you would be interested in what we have planned. Renowned South African geologist, Dr Richard Viljoen, gives you some background to what we are planning in a video on the website www.35igc.org

PROGRAMME

The most important aspect of the Congress is its very extensive Technical Programme, featuring papers, posters, short courses and workshops. The principal themes for the scientific program are: Geoscience in Society, Geoscience in the Economy and Fundamental Geoscience. Your contribution to this program is crucial. You can find the call for proposals for symposia, short courses or workshops on the website. In addition, please feel free to contact the Technical Chair, Prof Laurence Robb (Laurence.robb@earth.ox.ac.uk) for further information.

SCIENTIFIC FIELD TRIP

We have some really exciting field trips planned, but the highlight is certainly the Great Southern African Geo-safari Train Trip. You can find more information about the route and some of the highlights here http://goo.gl/Tvi2Fu.

EXHIBITION AND ADVERTISING BOOKINGS OPEN

The 35th IGC is an excellent opportunity to connect with geologists from around the world. One of the best networking forums at the event will be the exhibition centre. Bookings for booths for the Conference is now open. Please go to http://goo.gl/IhVdTO and book your booth/s or advertising space. (The IAMG has already reserved its own booth space.)

EARLY BIRD BOOKING CLOSES 31 DECEMBER 2014 SO TAKE ADVANTAGE OF THESE DISCOUNTED RATES!

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A new style of IAMG conference

IAMG2015 is the first IAMG conference not financed by the local organizing committee but underwritten by IAMG itself; therefore you, our members, are asked to help organize this meeting. IAMG2015 invites contributions along the whole field of Mathematical Geosciences and Geoinformatics without limitation to predefined sessions. You are invited to define focus sessions, where you meet your best colleagues in the field. The interactive process of focus session definition has started and will end January first. Simply log in with your iamgmembers.org login and password to www.iamg2015.de and look at the session proposals, define your own session or contact tentative conveners for improvements. Make this Conference your conference. Non-members can contribute to the process by opening a login. Abstract submission is possible as of now and ends February 1, 2015. Together we can define the ideal scientific program in the field of our society. We know that this is a tight schedule after the late date of IAMG2014 in Delhi, but acceptance is based on short abstracts, and we would like to have a discussion conference, where you can discuss your ideas with your peers. Therefore, IAMG2015 invites you to extend your "long" abstracts to full papers and submit them to the journals of our society.

The core scientific program takes place from September 7 to 10 in Freiberg (Sachsen) Germany which has a history of 750 years of silver mining, hosted by the world's oldest mining university, the TU Bergakademie Freiberg, celebrating its 250th anniversary during the year of the conference, and by a new research Institute, the Helmholtz Institute Freiberg for Resource Technology, founded recently by the German central government as a National Research Institution, key part of its Resource Strategy. Walk the streets where high tech elements like Indium were discovered, where people like Alexander von Humboldt learned their science, and concepts like sustainability were invented.

Along with the scientific program we have a rich social program of optional activities consisting of geological fields trips, touristic activities, short courses and special activities for young presenters and high level keynote lectures from the 2015 award winners of the IAMG. The program is still open for contributions. Please see www.iamg2015.de and the article on page 5 for details.

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International Association for Mathematical Geosciences (IAMG)

c/o IAMG Office

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THE DANIE KRIGE GEOSTATISTICAL CONFERENCE

Geostatistical geovalue —rewards and returns for spatial modelling

Johannesburg · 19–20 August 2015

THEME

The theme of the conference is 'Geostatistical Geovalue—Rewards and Returns for Spatial Modelling', a theme which emphasizes the improvement in, or addition to, value that spatial modelling can bring to the process of mine evaluation and mineral resource and reserve estimation. Spatial modelling of earth related data to estimate or enhance attributed value is the principle domain of geostatistics, the broad content of the Danie Krige Commemorative volume, and the focus of this conference.

OBJECTIVES

The conference provides authors who have recently published papers in the SAIMM's Danie Krige Commemorative Volumes, a platform to present their research. In addition an invitation to geostatisticians, resource estimation practitioners, and those with an interest in geostatistics to present new papers for inclusion in the proceedings is now open. The conference will explore advances in technology and methodologies, and case studies demonstrating the application of geostatistics. It will cross the commodity boundaries, with applications presented from precious to base metals, and diamonds. This is a valuable opportunity to be involved in constructive dialogue and debate, and to keep abreast with the best practice in this specialist field.

WHO SHOULD ATTEND

The conference provides a platform for:

· local and international geostatisticians
· geologists
· engineers
· researchers
· software vendors
· mineral resource managers and practitioners, across the mining industry
· consultancy and academia, to present their work and contribute to the advancement of this field.

BACKGROUND

Geostatistics constitutes a globally accepted technical approach to mineral resource-reserve estimation and the basic toolkit for mine evaluation practitioners. Following the call for papers and the publication of the Danie Krige Commemorative volume, the SAIMM invites submission of papers for the Danie Krige Geostatistical Conference to be held in Johannesburg, South Africa, 19–20 August 2015.

SAIMM
THE SOUTHERN AFRICAN INSTITUTE OF MINING AND METALLURGY

120 YEARS OF TECHNICAL EXCELLENCE 1894 - 2014

For further information contact:
Conference Co-ordinator, Yolanda Ramokgadi
SAIMM, P O Box 61127, Marshalltown 2107
Tel: +27 (0) 11 834-1273/7
E-mail: yolanda@saimm.co.za
Website: http://www.saimm.co.za

EXHIBITION/SPONSORSHIP

Sponsorship opportunities are available. Companies wishing to sponsor or exhibit should contact the Conference co-ordinator.

First Announcement & Call for Papers

THE DANIE KRIGE GEOSTATISTICAL CONFERENCE

Geostatistical geovalue —rewards and returns for spatial modelling

Johannesburg · 19–20 August 2015

Call for Papers

TOPICS

· Optimisation of mineral resource estimates, communicating confidence in Mineral Resource and Mineral Reserve estimates, and Mineral Resource Classification, use of localised and localised direct conditioning estimates for resource estimates
· Performance of kriging estimates, kriging indicators and non-linear geostatistics, algorithmic smoothing of kriged estimates, factorial kriging for multiscale modeling, optimal kriging variance estimation
· Multivariate uniform conditioning for mineral resource modeling, multivariate block simulation and post-processing
· Methods, application and optimisation of Localised Uniform Conditioning estimates
· Discrete Gaussian change of support models
· Genetic algorithms and scenario reduction
· Variography, simulated annealing, sampling, and depositional structures
· Long-tailed distributions
· Geological ore body modeling
· Integration of radiometric data and soil geochemistry using Bayesian updating
· Gold reef evaluation
· Dispersion variance, simulation, and blending piles
· Medical geography, mathematical geology and medical geology
· Modelling of petroleum reservoirs
· Design of RC drilling grids for short term planning

CALL FOR PAPERS

Prospective authors are invited to submit titles and abstracts of their papers, in English. The abstracts should be no longer than 500 words and should be submitted to:

Yolanda Ramokgadi
Conference Co-ordinator, SAIMM
E-mail: yolanda@saimm.co.za
P.O. Box 61127, Marshalltown 2107, South Africa.

Telephonic enquiries may be made at
Tel: +27 (11) 834-1273/7
Facsimile +27 (11) 838-5923 or
E-mail: yolanda@saimm.co.za

KEY DATES

23 January 2015	Submission of abstracts
2 February 2015	Acceptance of abstracts
2 March 2015	Submission of papers
19–20 August 2015	Conference

✂

The Southern African Institute of Mining and Metallurgy

Conference Co-ordinator

Danie Krige Geostatistical Conference

P.O. Box 61127, Marshalltown, 2107, Tel: 27 11 834-1273/7
THE DETAILS OF THIS FORM CAN BE POSTED TO US, or E-MAILED TO: Yolanda@saimm.co.za
FAXED TO: 27 11 838-5923 / 833-8156

❑   I am interested in attending the Conference

❑   I may be interested in participating in a technical visit

❑   I intend to submit an abstract of the proposed paper entitled:

Title of paper: . . . .

Personal details: Name . . . .

                Address . . . .

                Tel: . . . . Fax: . . . .

                E-mail: . . . .