



# IAMG

No. 65 December 2002

# Newsletter

Official Newsletter of the International Association for Mathematical Geology

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## Call for Award Nominations

The Association invites all members to submit nominations for the **2003 Vistelius Award** and the **2003 Chayes Prize**.

**Deadline: January 15, 2003**

See the "Guidelines for Awards within the IAMG" section of "Guidelines and Procedures" on the Organization's web page [http://iamg.org/awards\\_guidelines.html](http://iamg.org/awards_guidelines.html)

The documents which should accompany each proposal are:

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

It is also not too early to think about candidates for the **2004 Griffiths Award** and **Krumbein Medal**. Help your Awards Committee!!!

Please submit documentation in electronic format (preferably in .rtf format) to:

Heinz Burger - Chair, Awards Committee  
Freie Universität Berlin - Geoinformatik  
Malteserstr. 74-100  
12249 BERLIN, Germany  
E-mail: [hburger@zedat.fu-berlin.de](mailto:hburger@zedat.fu-berlin.de)

Changes and more changes! A major change for IAMG membership was announced and voted on at the General Assembly in Berlin in September and you'll see it reflected on the membership renewal form: a new structure for membership fees which are now decoupled from IAMG Journal subscriptions. The new \$10 fee is certainly more affordable

From the Editor  
From the Editor  
From the Editor

for those of us who are out of work or retired, with journal subscriptions as an option. We hope that this will attract new members and keep old ones.

The Berlin meeting was a full success (as were all of the previous meetings I have attended). Kudos to the organizers Heinz Burger, Wolfdietrich Skala and Agnes Schumann for making a change that addressed one of my pet peeves: they gave a wonderful space and plenty of time for poster presentations instead of banning posters to small side rooms while other sessions were going on at the same time. Let's hope that change will become a permanent feature of all future IAMG conferences - posters have an important place in communicating research results in our professional meetings.

With the passing away of John Butler last year, one of the standard features in Computers & Geosciences disappeared: his regular column ANON - Another Node On the interNet. Without suggesting that John could be replaced, we are wondering if the column shouldn't be continued in some fashion. Is there somebody among the IAMG members or the mathematical geology community who could pick up where John left off and contribute? President and C&G editor-in-chief Graeme Bonham-Carter would be overjoyed to hear from volunteers.

*Harald S. Poelchau*

## Call for Proposals to Organize the IAMG2005 Conference

The Association is now accepting proposals for organizing the ninth annual IAMG conference during the summer or fall of 2005.

The deadline for proposals is February 15, 2003. Individuals or organizations interested in organizing IAMG 2005 should follow the instructions in "Guidelines to prepare IAMG conferences" available at the web site <http://iamg.org/conference.html>.

Bids should be sent to the IAMG President. In addition, it would be helpful for planning purposes for the President to receive some forewarning--a notice of intent to submit a proposal--ahead of the official deadline.

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PRESIDENT'S FORUM

Those members who attended the recent IAMG conference in Berlin were treated to yet another excellent meeting. All the IAMG conferences to-date have been successful, both scientifically and financially. In every one so far, the conference organizers have shown a high degree of professionalism, imagination and attention to detail. Without belittling any of the considerable achievements of previous conferences, it can be said that IAMG Berlin 2002 attracted one of the largest group of registrants to-date (260), excelled by offering a large number of plenary speakers and well organized poster sessions, and was served by an administration that had thought about the many small things that go to make a smooth conference. Thank you Berlin organizers—you have set the bar very high for future meetings.

I can report that besides the printed proceedings volumes given to each registrant, the proceedings will also be available on CD from the IAMG office for a nominal cost of \$10. The Cancun organizers were the first to do this, and the IAMG office has already sold about 60 copies of the IAMG 2001 proceedings. Our conference proceedings are now an important publication of IAMG, and their availability on CD will greatly increase their accessibility and value. There are also plans to put the proceedings on the IAMG server for even greater access.

During Berlin 2002, a special General Assembly was held to make some amendments to our Constitution. General Assemblies are held automatically every four years at the International Geological Congress, at which time a new Council and Executive is voted on. In order to make changes to

Bylaws during intervening years, a special General Assembly must be called. On this occasion, changes were made to Bylaws 1 and 2 that deal with membership and benefits.

In short, the changes now make journal subscriptions optional, not a mandatory aspect of membership. We are returning to an earlier practice of charging dues to all members (\$10 for ordinary members, \$5 for students). Of course, we hope that most members will continue to subscribe to at least one journal. The change will, however, encourage new members that for a variety of reasons did not want to pay for a journal. We hope to encourage individuals to join from countries that are less favoured economically, to keep retired members from dropping out of the Association, and to get new members who previously had good access to the journals through their libraries and saw no particular reason to subscribe individually. Classes of membership have been streamlined, dropping some older (never used) categories. We now offer a student membership, in addition to the half-price student rate for Computers & Geosciences (that continues).

These changes have been recommended by a Membership Commission, discussed and accepted by Council, and ratified at the Berlin General Assembly. You will by now have received the 2003 membership renewal form, on which these new changes are implemented. The modified Bylaws and a document describing Benefits of Membership are posted on [www.iamg.org](http://www.iamg.org). I hope that you will tell your colleagues and friends about the changes, and encourage them to join our Association.

Graeme F. Bonham-Carter

Member News

Carol Crawford receives superlative honor from American Statistical Association

The 162nd Annual Meeting of the American Statistical Association was held in New York City, August 13, 2002. During the Presidential Awards Ceremony, IAMG Secretary **Carol Crawford** was elected ASA Fellow in recognition of her outstanding professional contributions in the field of statistical science. Her citation and affiliation at the time of induction were listed as:

Carol A. Gotway Crawford, Senior Mathematical Statistician, National Center for Environmental Health: *"For influential collaborative research and innovative applications of statistical methodology across a spectrum of scientific disciplines and for key research contributions in spatial modeling, geostatistics, and environmental statistics."*

Congratulations, Carol!



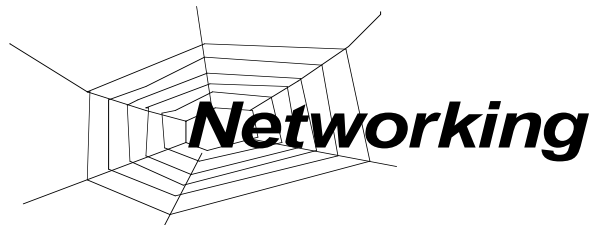
**Andrea Fabbri** is leaving his present job at ITC in Enschede and will be associated with the Free University of Amsterdam and the University of Milan



**Ute Herzfeld** has received a new grant and will reside in Boulder, Colorado for the next couple of years.



Webmaster **Eric Grunsky** is now located at Geological Survey of Canada Natural Resources Canada 601 Booth St. Ottawa, Ontario CANADA K1A 0E8



Report from the Webmaster Eric Grunsky

The primary web site ([www.iamg.org](http://www.iamg.org)) is currently located in Ottawa, Ontario, Canada and is hosted by Natural Resources Canada. Security features at this site are excellent and the integrity of the web site and its contents are maintained at the highest standard. The Ottawa site uses SUN computers and the UNIX operating system platform. A second IAMG computer is now located at the Geological Survey of Canada. This machine is an INTEL computer running Windows NT 4.0 and is under consideration as a replacement for the current UNIX server that may be phased out within the next couple of years.

With the recent move of the web site manager to the Geological Survey of Canada, there will be closer integration between the server and the management of the IAMG web site pages.

The Membership Directory is currently unavailable because of firewall security issues. A plan is underway to relocate it either to the Ottawa server or to the IAMG business office. The latter would facilitate updating of membership information by the IAMG business office staff as well as place the on-line directory within a secure server environment. It is unlikely that it will again be operational before March of 2003.





# Association Business

IAMG Council has decided to give support of \$2,000 for a special session at the 8th South African Geophysical Association (SAGA) meeting in Pilanesburg, South Africa, as requested by **Gordon Cooper**.

## Report of the IAMG Distinguished Lecturer Committee

Under the chairmanship of **Alex Desbarats** (Geological Survey of Canada), a committee was formed in order to implement the recommendations of the report prepared by the IAMG Distinguished Lecturer Commission under **Ricardo Olea**. The committee members are: **Patrick Bogaert** (Université Catholique de Louvain), **Jianping Chen** (China University of Geosciences), **Natalya Hunter-Williams** (Geological Survey of Ireland), **Sean McKenna** (Sandia National Laboratories) and **Graeme Bonham-Carter** (ex-officio). This committee was approved by council ballot on October 22<sup>nd</sup> 2001.

As a first task, the committee was charged with identifying potential candidates for distinguished lecturer, meeting the criteria given in Recommendation #3 of the DL Commission report. Committee members were also asked to identify potential host institutions in their respective regions with programs in mathematical geology.

A call for nominations for the 2002 IAMG Distinguished Lecturer was placed in the December 2001 issue of the IAMG Newsletter.

In response to the call for nominations, one letter, nominating **John C. Davis**, was received. This nomination was unanimously endorsed by the DL committee and was forwarded to the IAMG president, Graeme Bonham-Carter, for approval. The DL committee notes that the IAMG is extremely fortunate to have a DL candidate of the caliber of Dr. Davis in order to launch the DL series.

On April 4<sup>th</sup> 2002, the IAMG president issued a formal letter to Dr. John C. Davis of the Kansas Geological Survey inviting him to be the inaugural lecturer of the DL series.

Dr. Davis has accepted this invitation, despite current turmoil within the KGS. He was introduced formally as the IAMG 2002 Distinguished Lecturer at the Berlin meeting where he provided outlines of the talks that he has prepared for the lecture series (see below).

Following the Berlin meeting, the DL committee and Dr. Davis will consult on itineraries for one or more lecture tours, as funding resources permit.

## John Davis - IAMG 2002 Distinguished Lecturer

Dr. John C. Davis of the Kansas Geological Survey is the IAMG's 2002 Distinguished Lecturer.

He will be familiar to many as the author of the classic text "Statistics and Data Analysis in Geology", recently released in its 3rd edition. Institutions interested in hosting a lecture by Dr. Davis are invited to submit a proposal to Alexandre Desbarats, chair of the IAMG Distinguished Lecturer Committee ([desbarat@NRCan.gc.ca](mailto:desbarat@NRCan.gc.ca)) or directly to Dr. Davis ([jdavis@kgs.ku.edu](mailto:jdavis@kgs.ku.edu)). The IAMG will fund the speaker's travel expenses to the extent allowed by the DL series budget; However, host institutions will be expected to contribute toward the speaker's meals and accommodation as their resources permit. Dr. Davis has prepared a selection of talks suitable for a variety of earth science audiences and technical levels :

1. Computing Risk for Oil Prospects : Even a little operator can use big tools!

This presentation is on the quantitative evaluation of petroleum prospects. It is based on research conducted by Dr. Davis at the KGS since 1973, and which has resulted in two books, two industry training programs, an academic course, and numerous publications. Most of the examples in the presentation use data on oil exploration in Kansas, although additional material is drawn from his cooperative research on regionalization conducted with Prof. Jan Harff of the Institute for Baltic Research in Germany. This presentation would be of interest to those concerned with improving the state-of-the-practice in prospect evaluation and resource estimation.

2. Geological Hazard Prediction : Landslides—Not tornados—In Kansas??

This presentation draws on recent research conducted by Dr. Davis in cooperation with Dr. Greg Olmacher on risk assessment applied to landslides. This research project in northeastern Kansas is still underway and a presentation of the mathematical theory behind the risk assessment procedure was given at the 12th Annual Conference of the IAMG in Berlin. The presentation includes additional recent work on environmental hazards done by Gunther Hausberger in Austria.

## First Annual Awards through the IAMG Student Grants Program

The Student Grants Committee of the IAMG recently completed its work on reviewing student proposals for financial support under the Student Grants Program. A number of quality proposals were submitted from around the world, three of which were selected by the Committee for funding. The awardees for 2002, along with their university affiliations and their project titles, are:

**Ning Liu**, University of Tulsa, Conditional simulation of facies distributions with truncated pluri-gaussian model

**Carolina Guardiola-Albert**, Universidad Politécnica de Valencia, Stochastic inverse modeling for the improvement of the reservoir characterizations accounting for the heterogeneity of relative permeabilities

**Hirota Saito**, University of Michigan, Multiphase sampling strategy for geosciences: application to selective remediation of contaminated sites

All proposals were evaluated on the basis of the applicant's academic record, endorsement from the sponsoring university and faculty, relevance and feasibility of the project, and financial need.

The Committee congratulates these students and is pleased to recommend IAMG sponsorship of their research. **Students who are interested in applying for funding in 2003 are invited to review the program guidelines found on the IAMG website at [www/iamg.org/studentgrants.html](http://www/iamg.org/studentgrants.html).**

*Tim Coburn*  
Student Grants Committee chairman.

3. Geochemical Data and How to Map It : Looking for minerals—Finding the environment

The topic of this presentation is the analysis of multiple geological properties. It is based on material from several sources, but mostly on the work done by Dr. Davis during his tenure as a Fulbright scholar in Austria. This material consists of geochemical data produced for the Geochemical Atlas of the Austrian Republic, for which the KGS provided mapping software solutions and advice on statistical analyses. Additional examples are drawn from grain-size data from the Baltic Sea provided by the Institute for Baltic Research. These data are used to illustrate discussions on the issue of closure and the application of multivariate statistical methods such as canonical analysis.

4. Classical Statistics for Geological Problems : Regulation, monitoring, and other nasty tasks

The role of classical statistics in the analysis of geologic data is the subject of this presentation which is based on KGS experience in quality control and analysis of variance applied to water level measurements in the High Plains Aquifer of western Kansas. The presentation also describes applications of regression and time-series analysis to climate data.

5. Alternatives for an Unpopular Business : Decision-making in the mining and mineral industry

This presentation describes the use of probabilistic modeling in the minerals industry. It addresses the possible costs of societal decisions that may adversely affect mining, and how financial models incorporating alternative actions can be used as management decision tools. Although these risk-based methodologies are not widely known in the mining industry, they are commonly used in petroleum exploration and are discussed in the book, Computing Risk for Oil Prospects, co-authored by Dr. Davis.

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## Laudatio for Ian Lerche - 2002 John C. Griffiths Teaching Award

In presenting this citation, I cannot help but recall the apocryphal story of the young man who breathlessly entered the church as a couple was about to be married, and rasped out, "No, no! Stop! Please, don't let this happen!" But, it has happened, it is not stopping, and we are here to celebrate the presentation of the John C. Griffiths Teaching Award to Ian Lerche. Much as Griffiths pioneered the application of quantitative methods to a variety of geological and economic topics, Ian pioneered the application of inverse methods to a variety of geological, geochemical, basin analysis, thermal history and economic problems. However, his many achievements in the geosciences are only half of his professional story. He did his Ph.D. degree in theoretical astrophysics at the University of Manchester and taught 15 years in the Astronomy and Astrophysics Department at the University of Chicago. Suddenly, in 1981, he shifted careers and disciplines when he joined Gulf Research and Development Company. Since then he has conducted and published research in both geosciences and astrophysics.

Ian is a prodigious worker and a prolific publisher. He has over 700 research articles to his credit, of which about half are in the geosciences and the other half in astrophysics. He also has published 17 single- or co-authored books on a variety of geological topics and risk analysis. Unfortunately, at least from the standpoint of education and teaching, not a single person in the world has read all these articles; not even Ian.

One possible explanation for his almost unbelievable productivity is that he sleeps only three hours a night. Being a systematic person, he makes sure that he gets some writing done each day. So, he rises very early and limbers up for writing by painting a room or two. Then he writes until about 7AM, when he leaves for work. This is a constant source of friction with his ever-suffering wife, Kathleen, because she lives in a surprise house that has been repainted once a week.

The point of all this is that his immense scientific output is a main ingredient in his teaching. He teaches by example. During the course of their graduate studies, Ian encourages (maybe this is too gentle a term) his students to publish their in-progress work. Many of his papers are co-authored with his students and former students. I'm sure this is valuable knowledge and skill he imparted to them as they launched their own careers.

In the spirit of Karl Popper, Ian also teaches by attempting falsification. He has an uncanny ability to listen to a qualitative, in-depth discussion about some geological topic until he understands that piece of science. Then he formulates equations that seem to represent the behavior of that particular system. Once, I moderated a three-day session of scientists to condense expert knowledge about carbonate systems into some rules of thumb so that we could then formulate some mathematical models of that system. The goal was to then build a stratigraphic model capable of simulating these systems. Ian was one of the participants and a few weeks after the conference he sent me a long type-script paper outlining a possible model approach with numerous partial differential equations that might prove a usable starting point. He is famous among his students for taking this approach toward multiple ideas and topics, and then demanding that they show him what is wrong with the equations. He has a healthy and skeptical attitude about the formulation of equations that presume to describe the behavior of some natural system; he treats them all as empirical and modifiable through experience. Perhaps this is why he has applied inversion to so many different topics.

His tenacity to quantify geology and falsify hypotheses leads him naturally to practice rigor and, therefore, teach rigor by example. He once modeled a water/gas system in Canada where there was supposedly water updip from gas. The client company proposed and was infatuated with a subtle diagenetic "water block" model. After modeling, Ian told them with a straight face that the barrier had a permeability of .000000000001 md, about that of granite! They were happy in that he "proved" their theory. He was happy because they didn't ask him what that barrier had to be.

I've tried to identify other special qualities that have helped make Ian a great teacher and one comes prominently to mind: generosity. Ian is a very generous and caring person. On a professional level, he is amazingly fast in turning around a manuscript, thesis or proposal he received for review and comment. Often he completes this job the same day or the next that he receives a paper to review. Nearly all of his former students I contacted expressed their appreciation for his generosity in helping them this way. Maybe this is another explanation for his productivity.

I first became acquainted with Ian when we were beginning stratigraphic inversion. About 3 years after we began, he published a paper that said stratigraphic inversion was theoretically impossible because of the nonuniqueness problem. When he learned that we were attempting it anyhow and were having problems with the gradient descent method, he generously taught us another "pathfinder" method that he had previously devised. He has been helpful to us throughout our work, even though our work countered the conclusions he had previously reached.

On a personal level, Ian was always generous to students, regularly taking them into his house, loaning them his truck, sending them to conferences and so forth. He did not even get mad when a former student locked the keys in his truck and had to break into the truck to retrieve them. From the perspective of a stranger, Ian's generosity and caring character isn't always apparent, especially as Ian tends to use pejorative language more than most. One of his former students who had not seen Ian for several years was certain to see him at an AAPG meeting. He planned to "one up" Ian by cursing him as a greeting, much like Ian did when he was a student. However, when they saw each other, Ian got the first punch and shouted: "McKenna, you're fat and you're bald."

Finally, I want you to know that Ian really appreciates this award. Upon learning that he was going to be presented with the Griffiths award, several friends and students wanted to celebrate with a dinner. However, it was Good Friday, and Ian said that there was not a restaurant in Columbia that would serve beer with dinner on Good Friday. Instead, he left work early and went home to paint the master bedroom as a means of celebrating. Monday morning he reported to class with a black eye, two broken thumbs, a rotated shoulder and cracked ribs. He had fallen down the basement stairs on his way to fetch more paint to finish the celebration. His only comment was "It seems that the Easter Bunny came to kick me."

Ian, it is a pleasure to recognize you as the 2002 John C. Griffiths Teaching Award winner. Congratulations.

*T.A. Cross*

## Acceptance Speech for John Cedric Griffiths Award

Thank you for the wonderful laudation, which is almost more than my embarrassment can stand. I am not quite sure I should have been honored with the Griffiths Award for "outstanding teaching" because it seems to me that I have not measured up to the standards demanded for the Award. Let me give you some examples of my failure to educate after a short personal background.

I was trained as a theoretical astrophysicist and practiced that profession for many years until it became obvious to me that I would rapidly go bankrupt in attempts to put my children through college. By serendipity, I had the good fortune to be asked to solve some simple classical physics ray tracing problems for seismic waves by Gulf Oil Corporation which had been massacring Fermat's ray travel path theorems. After successfully completing this wonderfully well-paid task, Gulf offered me a permanent position at about three times my astrophysics salary- a no-brainer for me in terms of college tuition versus bankruptcy.

Seeking to educate me in the ways of geophysics, geology, geochemistry and economics, Gulf decreed that I should participate in a geological field excursion with a bunch of other employees.

As we walked by an outcrop, there on the top was a freestanding rock in relatively stable condition because it hadn't fallen since at least Permian time. A colleague (who shall be anonymous, but whose name is an anagram of lladneK) remarked "That is a huge rock sitting up there". I allowed as to how it was indeed a rock and then I commented, "It's the biggest rock of its size in the world". This observation was met with a few moments of presumed cerebral activity before lladneK then remarked,

"What do you mean by that?" So there is one situation where "outstanding teaching" failed miserably.

As a second example of my failure to teach I would like to regale you with an attempt to use my astrophysics training to communicate the increase in the length of the day with geological time to a colleague (not lladneK but an equally anonymous colleague whose name is an anagram of He Not). After explaining to He Not that, because of tidal action over the millennia, the Earth was now rotating more slowly on its axis than it had done about 500 million to a billion years ago, He Not commented that this must mean the years were longer in the past than at present. When I attempted to point out that the spin of the Earth was not related to the time of the Earth to orbit the Sun, He Not noted that it had to be so there would be the same amount of daylight over the course of a year. So once again my silver-tongued magical explanations availed me not at all, and I was reduced to a quivering blob of inept protoplasm.

It therefore became apparent, even to me eventually, that if I could not do an outstanding job of teaching verbally the basics of quantitative geology at the individual level, perhaps I would do better in written format at educating a bulk of the scientific population: a quantity versus quality argument.

So I set to work trying to put together papers and books in what I presumed was sharp and clearly written English. The idea here was, hopefully, to find a broader audience receptive to such measures of objective scientific discourse. Alas, again my efforts were foiled and/or delayed by both the many reviewers of my works (mostly anonymous,

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Lerche continued from p. 5

of course, so they could vent their spleen without fear of being cornered by me in some dark alley at some future time), and by critics of my books that had been designed, at least so I thought, to educate.

For instance, one book reviewer wrote, "This research monograph would seem not to follow the conventional wisdom" although no definition of what that meant was given. And, indeed, one would hope a book would not follow conventional wisdom or nothing new has been learnt! Or again, in commenting on a paper I had done (and one that I was inordinately proud of at the time) a reviewer wrote "I disagree with his philosophy and therefore the paper must be rejected even though I agree with the scientific arguments" Fortunately the editor was somewhat less swayed by this masterpiece of English double-speak and the paper eventually appeared.

So it would seem that my attempts to be an "outstanding teacher" have been less than 100% successful over time. And yet, despite such vicissitudes, slowly and steadily work did get published in both paper and book form; I did give progressively more talks per year at scientific meetings; and have been blessed with more than my fair share of very capable graduate students and post-docs, to whom any successes I have achieved are beholden, in extremely large measure, rather than to any abilities I might profess to have.

At my home University of South Carolina, this progressive and systematic long-term success was met with several notable events, clearly designed to enhance and promote what the University deemed to be its own best interests. Three such events that have marked the distinction attendant on the burgeoning success over the years are:

1. Arbitrary removal by the Department Chair of all space for my research group of 14 graduate students when I was out of town, without my knowledge or approval; a truly unique honor.
2. Attempted removal by the Department administration of my personal office space when I went on sabbatical- and I also enjoy the unique distinction of being the only faculty member to whom this has ever occurred;
3. Systematic lowest percentage pay raises out of all the faculty in the Department over a 12 year period by the same Chair - to the point that the Dean finally put in writing that such were clearly discriminatory. This distinction is surely the ultimate accolade.

It would therefore seem that my ability to be an "outstanding teacher" of ethics to a less than fair administration is also smaller than 100%.

So as I said at the beginning of this acceptance speech, I am not quite sure I should have received the Griffiths Award of the IAMG. But I am very honored, and extremely flattered, that I was chosen. At the very least, the Award tells me that, over the long haul, I must surely have been able to teach some group of people something, even if not how big rocks are, how the Earth rotates sunny-side up, how to conquer the personal pejorative phraseology of reviewers, nor how to instill a sense of fair play into unethical behavior. Perhaps I can be content with the knowledge that I may have succeeded somewhere down the line in getting to about 50% in the direction of "outstanding teaching" and even that would seem to be a major accomplishment given the failures I have listed.

Thank you for the honor that IAMG confers on me today. I am truly very much more appreciative than any platitudes I say can possibly convey.

Ian Lerche

A group of managers is given the task of measuring the height of a flagpole. They go out to the flagpole with ladders and tape measures, expecting to finish the job quickly. They end up falling off the ladder, dropping the tape measures — the whole thing is a mess.

An engineer walks over, pulls the flagpole out of the hole, lays it flat on the ground and measures it from end to end. Then he gives the measurement to one of the managers and walks away.

After the engineer leaves, one manager turns to another and laughs, "Isn't that just like an engineer?" he says. "We're looking for the height and he gives us the length!"

(from the files of Burris Wood, Dallas)



## Mathematical Geology 2001 Best Paper Award

Lin Y. Hu, Georges Blanc, and Benoit Noetinger (Institut Français du Pétrole) are the winners of the MG 2001 Best Paper award. Their paper: "Gradual deformation and iterative calibration of sequential stochastic simulations"

in *Mathematical Geology* 33(4):475-489, has been selected by a panel as the Best Paper for 2001 in the journal. Winners of the Best Paper award receive a free subscription to *Mathematical Geology* for one year, paid by the Association. They also receive a certificate signed by the IAMG President and by the Secretary General.

## JOURNAL CONTENTS

### NATURAL RESOURCES RESEARCH

#### Volume 11, number 4 (2002)

A reconnaissance method for delineation of tracts for regional-scale mineral-resource assessment based on geologic map data, by G.L. Raines and M.J. Mihalasky

Conditional independence test for weights-of-evidence modeling, by F.P. Agterberg and Q. Cheng

Evolution of sandstone porosity through time. The modified Scherer model: a calculation method applicable to 1-D maturity modeling and perhaps to reservoir prediction, by D.W. Waples.

Enrichment ratio-tonnage diagrams for resource assessment, by T. Shoji.

Statistical characteristics of xenoliths in the Antioch kimberlite pipe, Marshall County, northeast Kansas, by S. Kotov and P. Berendsen

Applying four different risk models in local ore selection, by A. Richmond.

### Computers & Geosciences

#### Volume 28, Issue 4 (May 2002)

Efficient representation of digital terrain models: compression and spatial decorrelation techniques, Jan T. Bjørke and Stein Nilsen

Analysis of bulk fabrics and microstructure variations using tessellations of autocorrelation functions, Renée Heilbronner

Geophysical data analysis using Python, Jon Sáenz, Juan Zubillaga and Jesús Fernández

QUADRO—a program to estimate principal curvatures of folds, Sait Ismail Ozkaya

PX-NOM—an interactive spreadsheet program for the computation of pyroxene analyses derived from the electron microprobe, R. Sturm

Numerical simulation of the evolution of aquifer porosity and species concentrations during reactive transport, Jui-Sheng Chen and Chen-Wuing Liu

DSISoft—a MATLAB VSP data processing package, K. S. Beaty, G. Perron, I. Kay and E. Adam

A procedure for map updating using digital mono-plotting, Manuel Jauregui, José Vélchez and Leira Chacón

FLUVSIM: a program for object-based stochastic modeling of fluvial depositional systems, C. V. Deutsch and T. T. Tran

Teaching ocean wave forecasting using computer-generated visualization and animation—Part 1: sea forecasting, Dennis J. Whitford

Teaching ocean wave forecasting using computer-generated visualization and animation—Part 2: swell forecasting, Dennis J. Whitford

An alternative implementation of indicator kriging, Andrew Richmond

A fractal concentration-area method for assigning a color palette for image representation, Qiuming Cheng and Qingmou Li

Web-based distribution of geo-scientific models, Steven L. Markstrom, Gregory McCabe and Olaf David

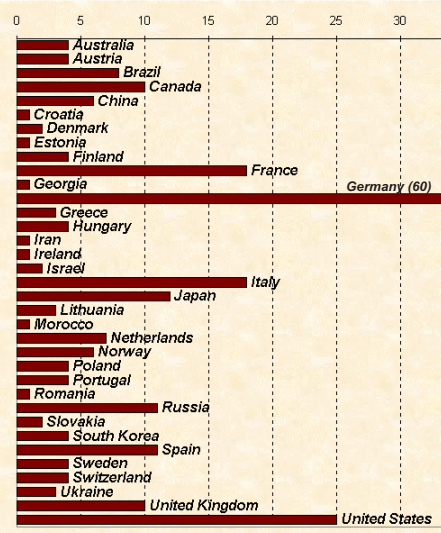
RW3D.m: three-dimensional random walk program for the calculation of the diffusivities in porous media, Yoshinori Watanabe and Yoshito Nakashima

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# IAMG 2002 – BERLIN

The Annual Conference of IAMG was held in Berlin, Germany Sept. 15 – 20, 2002. It was a well managed and very successful meeting which attracted 260 participants from 35 countries (see chart).



Organized and chaired by Heinz Burger & Wolf-Dietrich Skala assisted by Agnes Schumann, the conference was co-sponsored by Free University of Berlin (FUB) and German Research Foundation (DFG). DFG also provided financial support to 21 participants from Eastern Europe.

Digital copies of all contributions will be available from the IAMG office; a limited number of printed copies can be ordered by e-mail (hburger@zedat.fu-berlin.de). Costs will be

€40 (plus €5 for shipment outside Germany).

Snapshots from sessions, icebreaker party and banquet can be downloaded from [www.fu-berlin.de/IAMG2002/addendum.htm](http://www.fu-berlin.de/IAMG2002/addendum.htm).

See the following pages for a selection of pictures.



2002

# I A M G

## Fieldtrip to Rüdersdorf



In addition to the technical sessions, a geological fieldtrip was organized by Hannes Thiergärtner (center) to visit the Rüdersdorf limestone quarry, the biggest Muschelkalk quarry in Germany and an interesting historical site.





*Sunday Icebreaker*

*Council Meeting*



L to R: Roy Kouda, Codine Agterberg, Harald Poelchau, Frits Agterberg, Mike Hohn, John Cubitt, Gert Jan Weltje, Vera Pawlowsky, Heinz Burger, Carol Gotway Crawford, Graeme Bonham-Carter, Maria-Theresa Schafmeister, Ed Sharp





Opening addresses by dignitaries and organizers in the main auditorium



... and lectures ...



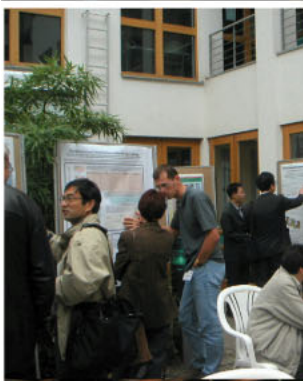
Presentation of awards to Ian Lerche (L) and Mike Hohn (R) and laudatio by Tim Cross (C)







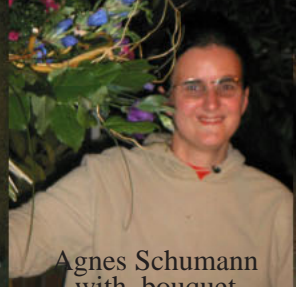
Goulash soup supper before the evening 3D lecture



Poster session



Four of the oldest living founders:  
Thiergärtner, Merriam, Reymont and  
Agterberg



Conference dinner in the  
Botanical Gardens

Agnes Schumann  
with bouquet



Reymont receives certificate



# IAMG 2003 Conference in Portsmouth, UK

## 7–12 September 2003

**John Cubitt** and **John Whalley** are in the midst of organizing a very promising conference and preparations are proceeding to schedule. Details can be found on the conference web site [WWW.IAMG2003.COM](http://WWW.IAMG2003.COM). The analysis, modelling and hazards will include, inter alia, symposia on stochastic processes, risk analysis in the application of remote sensing and GIS modelling of geohazards, and simulation.



A programme of 17 symposia, 8 workshops and 7 field trips has been devised by the organising committee and suitable convenors identified and invited. Approximately 70% of those to be approached have already agreed to participate.

Accommodation and equipment for all technical sessions and residential requirements has been booked with the University of Portsmouth conference office.

A first circular/call for papers has been produced and circulated to a mailing list of approximately 900. This includes all IAMG members and delegates to IAMG2002. Prospective attendees are encouraged to pre-register on the conference website or use the circular form.

A second circular will be issued by the end of this year. It will set deadlines for abstract submission and registration.

The organising committee has discussed various options for publications arising from the conference. An abstracts volume will be available to all delegates at the start of the conference. This will also be available as a CD-ROM. Options for publication of selected full papers are being explored.

Conference secretariat:

IAMG 2003

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### Investigation of Geologic Reasoning as a New Objective of Geoscience and Geohazard Assessment

Cyril A. Pshenichny

Petrography Dept., Faculty of Geology, St. Petersburg State Univ., Universitetskaya Naberezhnaya 7/9, 199034 St. Petersburg, Russia. [pshenich@kp1306.spb.edu](mailto:pshenich@kp1306.spb.edu)

Conventional understanding of the evolution of a natural science is (i) accumulation of data, (ii) their summarization and, as a result, (iii) the development of conceptual models which are used then to interpret new data. However, is this the end of the story?

Concepts accumulate, swarm, merge or repeat one another, or come to contradict each other, at times explicitly but often such contradictions are hidden by natural language, and thus eventually form a space one can hardly navigate. This is exactly the case in modern geology. Similar objects or data sets meet a number of diverse interpretations, and even a specialist in a narrow field can hardly encompass the ideas put forth in this very field. The choice of concepts becomes purely a matter of the scientist's intuition, taste or competence.

This problem becomes urgent in hazard assessment, when non-professionals expect substantiated and bias-free solutions from scientists. Physical modeling or statistical methods claimed to be strict solutions of geologic problems cannot be taken as a remedy, because both are related to geologic objects by some simplifications which, in turn, are determined by the researcher's intuition, taste or competence. Thus the problem becomes obscured, but not solved.

In general, this conceptual uncertainty accompanies other known types of uncertainty discussed, for example, in risk analysis – time, structural, metric, and translation uncertainties (Rowe, 1988). But, contrary to these, it cannot be solved by the known methods of uncertainty elimination: Monte Carlo method, Bayesian approach, fuzzy arithmetic and others (Vaganov and Im, 2001).

To cope with conceptual uncertainty, knowledge processing methods are required. Obviously, they should be formal to the knowledge processed, i.e. should deal only with the form and not with the contents of statements. Meanwhile, the technologies of knowledge processing (e.g., expert systems, knowledge bases) applied so far in geoscience focus not on the relations between the statements, but on the relations between the objects these statements describe. Hence, these technologies in their

modern state are not really formal and need to be accompanied by other, purely formal ways to investigate reasoning in natural sciences. Which are these ways?

First, there is classical logic. "Classical" means that it operates with two truth values only, TRUE and FALSE. It can unequivocally judge whether a statement can be inferred from a set of others solely by the form of the statements. Though developed since the time of Leibnitz, classical logic has had very limited application in descriptive science in general and in geology in particular. To the author's knowledge, very few attempts have been made (Sirovinskaya (1986), Pshenichny and Moukhachov (2001), Pshenichny et al. (in press)).

Next, there are some non-classical logical approaches originating from classical logic which treat truth values more liberally, allowing transitional values between TRUE and FALSE. One such approach is fuzzy logic applied in geology by Cagnoli (1998), Klir (2002) and others.

Logic is an universal method of knowledge structuring, but is it unique?

Some fields of geology can be fairly well translated into the language of mathematics. It seems plausible that logic and mathematics are complementary and form a continuum of methods formal to any other human knowledge. This conclusion was reached by Lotfi Zadeh (1995). However, the "border" between logic and mathematics in any given domain of knowledge (e.g., geoscience) is an open question. What is better described by logic and what by mathematics?

Still, logic and mathematics possibly do not exhaust the continuum of formal approaches. As another 'end-member', in the author's view, may be linguistics (philology). Isn't it a common feeling of field geologists that nature is "speaking" to us in every outcrop, sample, or thin section? Aren't these just "texts", in which certain bodies (grains, inclusions, groundmass, etc.) are "words" and the structure/texture is the "grammar"? Isn't it possible, then, to view geology as a natural language? Robert Frodeman has introduced the terms "geo-poetry" and even "ecothology" (relating them along with "geo-politics" and "geoscience") to a general field defined as "geo-logic", or "geology" in his recent lecture at the Colorado School of Mines (<http://www.phil.unt.edu/talks/frodeman.htm>).

Furthermore, describing the behavior of various objects, especially hazardous ones, aren't we recognizing the types of their "temper", or "spirit"? If so, the experience of psychology may appear appropriate, and this discipline could appear formal to geological knowledge.

Philology and psychology may have another application to reasoning research in geoscience. Every scientist has a specific national and cultural background and gender. It is unlikely that the personality does not influence the pathways of the researcher's mind and the solutions he or she finds. Gender dimension in ecologic studies has been researched by Claudia Empacher and co-workers at ISOE (Institute for Social-Ecological Research), <http://www.isoe.de/english/projects/gia.htm>.

And what do you think? What is your standpoint/your feeling about reasoning in geoscience? What formal pathways, in your view and experience, work best in geology? Maybe you have your own approaches, or an intuition that rarely betrays you? Have you tried to describe it? To explain it to someone else? To teach someone else?

This is exactly what we are going to discuss through the new mailing list on GEOLOGICAL REASONING launched in early June 2002. To join the list, just send an email to the author of this article ([pshenich@kp1306.spb.edu](mailto:pshenich@kp1306.spb.edu)). Try to state your point as formally (i.e., make it as independent of certain circumstances, which led to it) as possible – and do not be afraid that your ideas may be 'half-baked'. Any contribution is appreciated, whether you are a modeler, a theoretician, or a field geologist never concerned with any formal methods, or a student ready to give us your first understanding of the science. We are at the very beginning, and the idea for now is not to exhibit our results to each other (it is too early to speak about them), but to share common problems and hesitations. This will be our joint (and hopefully, delightful) intellectual adventure aiming to outline the fundamentals, main directions and approaches of reasoning research in geoscience in general and geohazard research in particular. Three basic questions are, (i) what the continuum of formal approaches consists of, (ii) what are the relations between its parts and (iii) what geologic/geohazard tasks each of them fits best?

Our talks and ideas will be summarized at the workshop directly following the IAMG conference "Modeling Geohazards" on September 14, 2003, in Portsmouth, UK. Even if you have not participated in the electronic discussion – nothing prevents you from joining us there!

References

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## Conference Reports

### Recent Developments in Geostatistics

During the Joint Statistical Meetings (JSM 2002) in New York City, Frits Agterberg had organized an Invited Paper Session on "Recent Developments in Geostatistics" on Monday afternoon, August 12<sup>th</sup>, 2002. Carol Gotway Crawford chaired this meeting. The four invited speakers were:

1. André Journel - Multiple-point Geostatistics: A New Challenge
2. George Christakos - The Emergence of Parmenidean Knowledge Synthesis in Spatiotemporal Modeling
3. Timothy Haas - Monte Carlo Space-Time Statistical Analysis in JavaSpaces
4. Noel Cressie - Finding Large-Scale Spatial Trends in Massive, Global, Environmental Datasets.

André Journel pointed out that traditional two-point statistics (co-variance) cannot model the complexity of geological structures. Curvilinear patterns require multiple-point (MP) statistics involving the joint variability at three or more points over a given geometric template. The MP statistics are obtained from training images depicting expected geological patterns. A 3D case history study was presented for illustration.

George Christakos stated that a Parmenidean framework throws light on challenging theoretical and interpretive questions of knowledge synthesis (KS) by combining epistemic ideals with random field theory. KS generates space-time maps and multi-point distributions using conditionalization and information principles. No restrictions are imposed on shapes of distributions or forms of the predictors.

Tim Haas explained that coarse-grained parallel computing has the potential for allowing a variety of computationally intensive spatiotemporal statistical calculations to be performed by anyone with access to a network of 50 or more PCs. These calculations include robust estimation of nonlinear trend models, Monte Carlo assessment of model goodness-of-fit and parameter estimate reliability, and optimal random field prediction at many locations.

Finally, Noel Cressie pointed out that, as technology progresses, the availability of massive environmental datasets with global spatial coverage has become quite common. An example is Total Column Ozone (TCO), remotely sensed from a satellite. The speaker proposed a sequential aggregation method for detecting large-scale spatial trend at a given time point, producing different levels of coarser spatial resolution while preserving both the local information content and the locations of the raw data.

The Joint Statistical Meetings (JSM) is the largest gathering of North American statisticians (about 5,000 in 2002). Its main sponsor is the American Statistical Association. The general theme of JSM 2002 was "Statistics in an Era of Technological Change". The IAMG had been invited to participate in a stiff competition between many organizations with statistical orientation and won its invited paper session spot on the JSM program because of the quality of the four research papers and importance of spatial statistics. This well-attended session held in Royal Ballroom B at the Sheraton New York Hotel led to animated floor discussions.

### IAMG-ISI joint meeting in Berlin, August 2003

The IAMG has been invited and accepted to organize, as a Guest Society, an invited paper meeting at the 54<sup>th</sup> Session of the ISI to be held in Berlin, Germany, August 13-20, 2003. This Invited Paper Meeting (IPM) is entitled: IPM 77 "Recent Statistical Advances in Geological and Environmental Applications".

The three invited speakers with tentative topics are:

Paul Switzer, Stanford University - Statistics and Stratigraphy  
Felix Gradstein, University of Oslo - Quantitative Biostratigraphy and Numerical Time Scales

Ricardo Olea, Kansas Geological Survey - New Regional, Lithostratigraphic Applications of the CORRELATOR Expert System.

This joint IAMG-ISI meeting is organized by Frits Agterberg. The two invited discussants for ISI 2003 IPM 77 are Heinz Burger, Mathematische Geologie, Freie Universität Berlin, and Nicholas Fisher, ValueMetrics Australia.

*Frits Agterberg*

### New Paper in "Studies for Students" Series

The fourth paper in the Studies for Students Series, sponsored by IAMG in association with the European Journal of Soil Science has appeared in print. The full list of papers in the series is:

1. Webster, R., 1997, Regression and functional relations: European Journal of Soil Science 48, 557-566, 3 figures.
2. Horgan, G.W., 1998, Mathematical morphology for analysing soil structure from images: European Journal of Soil Science 49, 161-173, 10 figures.
3. Lark, R.M. and Webster, R., 1999, Analysis and elucidation of soil variation using wavelets: European Journal of Soil Science 50, 185-206.
4. Webster, R. and Payne, R.W., 2002, Analysing repeated measurements in soil monitoring and experimentation: European Journal of Soil Science 53, 1-13, 1 figure, 7 tables.

The abstracts of these papers are on the IAMG Home Page. The series owes its existence mainly to **John Tipper**, former Chair of the IAMG Education Committee, and Richard Webster, Editor in Chief of the European Journal of Soil Science. Anyone interested in contributing more papers to the series (in non-IAMG geoscience journals), please contact Graeme Bonham-Carter.



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### C&G Volume 28, Issue 5 (June 2002)

Computer modelling of trace metal ion speciation: practical implementation of a linear continuous function for complexation by natural organic matter, Christophe Huber, Montserrat Filella and Raewyn M. Town

VImageCImage: a silicate melt-H<sub>2</sub>O-CO<sub>2</sub> solution model written in Visual Basic for excel, Sally Newman and Jacob B. Lowenstern

ArArCALC—software for 40Ar/39Ar age calculations, Anthony A. P. Koppers

TRACER: an EXCEL workbook to calculate mean residence time in groundwater by use of tracers CFC-11, CFC-12 and tritium, Serdar Bayari

A GIS method for reconstruction of late Quaternary landscapes from isobase data and modern topography, David W. Leverington, James T. Teller and Jason D. Mann

Vario functions of higher order — definition and application to characterization of snow surface roughness, Ute Christina Herzfeld

Erosion database interface (EDI): a computer program for georeferenced application of erosion prediction models, Simone Beatriz Lima Ranieri, Quirijn de Jong van Lier, Gerd Sparovek and Dennis C. Flanagan

HJWFTAC: software for Hantush–Jacob analysis of variable-rate, multiple-extraction well pumping tests, Sean W. Fleming, Gregory J. Ruskauff and Alison Adams

A linear analytical boundary element method (BEM) for 2D homogeneous potential problems, Jürgen Friedrich

Detecting differences in temporal distribution of small earthquakes before and after large events, T. Matcharashvili, T. Chelidze, Z. Javakhishvili and E. Ghlonti

Display of Munsell color values, earthquakes, and other three- and four-parameter datasets in stereo 3D, Neil A. Wells

SINCLAS: standard igneous norm and volcanic rock classification system, Surendra P. Verma, Ignacio S. Torres-Alvarado and Zulma T. Sotelo-Rodríguez

Analysis of sediment transport paths using grain-size parameters, J. P. le Roux, R. D. O'Brien, F. Rios and M. Cisternas

### C&G Volume 28, Issue 6 (July 2002)

Parallel numerical modelling of the Antarctic Ice Sheet, Andrea Takeda, Simon Cox and Antony J. Payne

Probabilistic modeling of uncertainties in earthquake-induced landslide hazard assessment, Alberto Refice and Domenico Capolongo

Geophysical: MATLAB-based software for the simulation, display and processing of near-surface geophysical data, Alan Witten

Rapid extraction of image texture by co-occurrence using a hybrid data structure, David A. Clausi and Yongping Zhao

DIPSLIP: a QuickBasic stress inversion program for analysing sets of faults without slip lineations, Tobore Orife, Luis Arlegui and Richard J. Lisle

The status of digital geological mapping in Europe:: The results of a census of the digital mapping coverage, approaches and standards of 29 European geological survey organisations in the year 2000, Ian Jackson and Kristine Asch







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- #6: "Modern Spatiotemporal Geostatistics" by George Christakos ..... US\$ 42.00

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# Upcoming Meetings

SIAM Conf. on Mathematical and Computational Issues in the GEOSCIENCES (GS03), Austin, Texas, **17-20 March 2003**. [meetings@siam.org](mailto:meetings@siam.org)

EGS, AGU, and EUG Joint Assembly, Nice, France, **7-11 April 2003**. Meetings Department, 2000 Florida Avenue, NW; Washington, DC 20009 USA, Phone: +1-202-462-6900, FAX: +1-202-328-0566, EMail: [meetinginfo@agu.org](mailto:meetinginfo@agu.org), Web: <http://www.copernicus.org/egsagueug/>

34th LUNAR AND PLANETARY SCIENCE Conference, League City, TX, **17-21 March 2003**, Paula Walley, Meeting Coordinator, LPI Education and Program Services Department, 3600 Bay Area Blvd., Houston, TX 77058-1113, Phone: 281/486-2144, EMail: [walley@lpi.usra.edu](mailto:walley@lpi.usra.edu)

16th Ann. Symp. on the Applications of GEOPHYSICS to ENVIRONMENTAL & ENGINEERING Problems (SAGEEP 2003), San Antonio, TX, **6-10 April 2003**. EEGS, 720 S. Colorado Blvd., Ste 960-S, Denver, CO 80246, Phone: 303/756-3143, FAX: 303/691-9490, Web: <http://www.eegs.org>

SUBMARINE SLOPE SYSTEMS: processes, products and prediction, Univ. of Liverpool, Liverpool, UK, **28 - 30 April 2003**. David Hodgson, Dept. of Earth Sciences, University of Liverpool, Liverpool, UK, Phone: +44 151 794 5141, EMail: [hodgson@liv.ac.uk](mailto:hodgson@liv.ac.uk), Web: <http://www.slope2003.net>

RIVER BASIN Management 2003, Las Palmas, Gran Canaria, **28-30 April 2003**. Conf. Sec., River Basin03, Wessex Inst. of Technology, Ashurst Lodge, Ashurst, Southampton, SO40 7AA, UK, EMail: [shobbs@wessex.ac.uk](mailto:shobbs@wessex.ac.uk), Web: <http://www.wessex.ac.uk/conferences/2003/riverbasin03>

WATER RESOURCES 2003, Las Palmas, Gran Canaria, **30 April - 2 May 2003**. Conf. Sec., Water Resources03, Wessex Inst. of Technology, Ashurst, Southampton, SO40 7AA, UK, EMail: [shobbs@wessex.ac.uk](mailto:shobbs@wessex.ac.uk), Web: <http://www.wessex.ac.uk/conferences/2003/waterresources03>

GEOFLUIDS IV: 4th int'l conf. on fluid evolution, migration and interaction in sedimentary basins and orogenic belts, Utrecht, The Netherlands, **12-16 May 2003**. TNO-National Geological Survey, Ms. J.M. Verweij, PO Box 80015, 3508 TA Utrecht, The Netherlands, Phone: +31 30 256 4600, FAX: +31 30 256 46 05, EMail: [j.verweij@nitg.tno.nl](mailto:j.verweij@nitg.tno.nl), Web: <http://www.nitg.tno.nl>

Using Science to Assess ENVIRONMENTAL VULNERABILITIES, Valley Forge Hilton, King of Prussia, PA, USA, **13-15 May 2003**. Conference Coordinator, TPMC, Mill Wharf Plaza, Suite 208, Scituate, MA 02066, Phone: 781.544.0423, FAX: 781.544.3086, EMail: [conference@tpmc.com](mailto:conference@tpmc.com), Web: [www.maia-reva.org](http://www.maia-reva.org)

May 18-24 39th Forum on the Geology of INDUSTRIAL MINERALS, Sparks, Nevada, USA, **18-24 May 2003**. Nevada Bureau of Mines and Geology, Nevada Division of Minerals, and Nevada Mining Association. Terri Garside, NBMG/MS 178, University of Nevada, Reno, NV 89557-0088, Phone: 775-784-6691 ext 126, FAX: 775-784-1709, EMail: [tgarside@unr.edu](mailto:tgarside@unr.edu), Web: <http://www.nbmg.unr.edu/imf2003.htm>

GAC/MAC/SEG Joint Annual Meeting, Vancouver, British Columbia, **25-28 May 2003**. Venue West Conf. Services, 645-375 Water Street, Vancouver, BC V6B 5C6 Canada, Phone: +1 604 681-5226, FAX: +1 604 681-2503, EMail: [vancouver2003@nrca.gc.ca](mailto:vancouver2003@nrca.gc.ca), Web: <http://www.vancouver2003.com>

EAGE European Assoc. of Geoscientists and Engineers (65th Ann. Conf. & Exhibition), Stavanger, Norway, **2-5 June 2003**. EAGE Business Office, Registration Dept., PO Box 59, 3990 DB Houten, The Netherlands, Fax: +31 30 6343534, E-mail: [registration@eage.nl](mailto:registration@eage.nl), <http://www.eage.nl/conferences/index2.phtml?confid=9>

Origin of PETROLEUM, BIOGENIC AND/OR ABIOTIC AND Its Significance in Hydrocarbon Exploration and Production (AAPG Hedberg Conference), London, UK, **9-12 June 2003**. Debbi Boonstra, AAPG Education Dept., P.O. Box 979, Tulsa, OK 74101-0979; Fax: +1-918 560 2678; E-mail: [debbi@aapg.org](mailto:debbi@aapg.org); Web: [www.aapg.org/education/hedberg/london/index.html](http://www.aapg.org/education/hedberg/london/index.html)

2003 JOINT STATISTICAL MEETINGS, San Francisco, CA, **3-7 August 2003**. ASA, 1429 Duke St., Alexandria, VA 22314-3415; (703) 684-1221, E-mail [meetings@amstat.org](mailto:meetings@amstat.org), <http://www.amstat.org/meetings/jsm/>

Silver Jubilee Anniversary Meeting of the NORTHEASTERN SCIENCE FOUNDATION - "Innovative Studies and Discoveries", Troy, NY, USA, **10-12 August 2003**. Gerald M. Friedman, Brooklyn College and Graduate Center of CUNY, Northeastern Science Foundation, 15 Third St./P.O. Box 746, Troy, NY 12181-0746, USA, Phone: 518/273-3247, FAX: 518/273-3249, EMail: [gmfriedman@juno.com](mailto:gmfriedman@juno.com), Web: <http://us.geocities.com/northeasternscifdn>

## COMPOSITIONAL DATA ANALYSIS WORKSHOP

### CODAWORK'03

OCTOBER 15-17, 2003 GIRONA, SPAIN

The Workshop on Compositional Data is intended as a forum for discussion of hot topics related to the statistical treatment and modelling, as well as applications and interpretation, of compositional data. The goal of such discussions is to get some insight into the most appealing future lines of research in the field.

In order to attain this general but clear goal, the Network on Compositional Data, headed by the Girona Compositional Data Group, tries to meet with a significant number of specialists, users and interested people to collect critical contributions and facilitate stimulating brainstorming.

The contributions and discussions are intended to center around the following:

- Geometry and statistics in the simplex
- Design of teaching and computing tools
- Applications to archaeology
- Applications to geology and environment
- Other fields of application

The workshop will consist of 2 hour sessions on the above tentative themes. The chair of each session will present a summary of the contributions and will stimulate an open discussion on the concerned topics. Written contributions on these topics, and particularly on applications, are welcome (see abstract submission).

#### IMPORTANT DATES

- January 31, 2003 Abstracts due
- February 28, 2003 Author notification
- May 31, 2003 Electronic papers due
- June 30, 2003 Early registration

#### ABSTRACT SUBMISSION

The Organising Committee welcomes abstracts of contributions on the workshop topics. The abstract should include:

- The title of the proposed paper
- Sufficient detail (200-400 words) to allow the Scientific Committee to judge the contents of the proposed paper
- The name, affiliation, mailing address, phone number and e-mail address of the author(s) Abstracts should be sent to the workshop secretariat by January 31, 2003. Notification of acceptance will be mailed by February 28, 2003. The final electronic paper will be due before May 31, 2003, to allow the Scientific Committee final acceptance. Only papers of participants registered before June 30, 2003 will be included in the proceedings CD. TEX-LATEX, MSWord, PDF allowed

Final versions of contributed papers will be sent in electronic format. They will be published in the CoDaWork'03 CD (with ISBN) and will be available in the sessions of the workshop.

<http://ima.udg.es/Activitats/CoDaWork03/>

ISI - Int'l Statistical Institute, 54th Biennial Session (includes meetings of the Bernoulli Soc., the Int'l Assoc. for Statistical Computing, the Int'l Assoc. of Survey Statisticians, the Int'l Assoc. for Official Statistics and the Int'l Assoc. for Statistical Education, as well as a Session of the IAMG), Berlin, Germany, **13-20 August 2003**. ISI Permanent Office, Prinses Beatrixlaan 428, P.O. Box 950, 2270 AZ Voorburg, The Netherlands. Tel.: +31-70-337-5737; Fax: +31-70-386-0025. Email: [isi@cbs.nl](mailto:isi@cbs.nl), [www.isi-2003.de](http://www.isi-2003.de)

IAMG (10th Annual Conference of the International Association for Mathematical Geology), Portsmouth, U.K, **7-12 September 2003**. Conference secretariat, IAMG 2003, School of Earth and Environmental Sciences, University of Portsmouth, Burnaby Road, Portsmouth PO1 3QL, UK; Phone: +44 23 9284 2259; Fax: +44 23 9284 2244; E-mail: [info@iamg2003.com](mailto:info@iamg2003.com) and [iamg2003@port.ac.uk](mailto:iamg2003@port.ac.uk); Web: [www.iamg.org/](http://www.iamg.org/)

7th International Conference on GAS GEOCHEMISTRY, Freiberg University, Sachsen, Germany, **22-26 September 2003**. Dr. Jens Heinicke, Sächs. Akademie der Wissenschaften /TU-BAF, B-v-Cotta Str. 4, Phone: +49-3731-392212, FAX: +49-3731-392212, EMail: [heinicke@physik.tu-freiberg.de](mailto:heinicke@physik.tu-freiberg.de), Web: <http://www.copernicus.org/ICGG7>

11th International Symposium on WATER-ROCK INTERACTION, Saratoga Springs, New York, USA, **27 June - 2 July 2004**. Dr. Susan Brantley, Secretary General, Dept. of Geosciences, The Pennsylvania State University, 239 Deike Building, University Park PA USA 16802, Phone: 814-863-1739, FAX: 814-863-8724, Web: <http://www.outreach.psu.edu/C&I/WRI/>

10th Int'l Congress on MATHEMATICAL EDUCATION, Tech. University of Denmark, Copenhagen, **4-11 July 2004**. Congress Consultants, Martensens Alle 8, DK-1828 Frederiksberg C, Denmark, Tel: +45 70 20 03 05, Fax: +45 70 20 03 15, E-mail: [icme@congress-consult.com](mailto:icme@congress-consult.com), [www.ICME-10.dk](http://www.ICME-10.dk)

IGC - Int'l Geological Congress, Florence, Italy, **15-28 Aug. 2004**. Scient. Sec. Chiara Manetti, Dip'to di Scienze della Terra, Univ. di Firenze, Italy, ph.+39 055 2382146, Email: [casaitalia@geo.unifi.it](mailto:casaitalia@geo.unifi.it), <http://www.32igc.org>; Geol. Contact: Antonella Buccianti (see address on p.2)



## Laudatio for Michael E. Hohn

### 2002 William Christian Krumbein Medal

Mike developed a fascination with geology at an early age. While a ninth grader, he had to take an earth science course. During the first day of class, the teacher asked who had rock collections. Mike was the only student to raise his hand, which made him a favorite pupil. Unbeknownst to Mike, that Christmas the teacher called his parents to suggest that what Mike needed for the Holidays was a collection of minerals, which Mike received, but with all labels removed. He had to identify them. By that time, he knew he wanted to be a geologist.

Mike is the oldest of four siblings. Both of his parents had some post-high school education and concentrated efforts on teaching their children broad principles, such as the importance of a good education, to have an inquisitive mind, and be conscientious about all pursuits in life. Michael Edward Hohn was born in Chicago in 1950 but moved to his father's home state of New York when he was four. He remained in New York until he went to Bloomington, Indiana, to pursue graduate studies in geology.

Consistent with his unequivocal interest in geology, his undergraduate degree was also in geology, which he received with honors from the State University of New York at Binghamton. The choice of graduate school came as a combination of a Texaco Fellowship, recommendations from his adviser at Binghamton, and the familiarity that Mike gained of instructors while attending Indiana University field camps in Montana. Mike went to Bloomington with the intention to specialize in paleontology. While trying to excel analyzing paleontologic data, Mike became familiar with mathematical geology, particularly with the techniques of cluster and factor analysis. His first computer program was a cluster analysis program that he coded to study fossil assemblages. His dissertation "Seed of fatty acids: taxonomic an evolutionary significance in recent and fossil seeds" is an interesting application of quantitative method to address paleontological issues.

Mike was not satisfied with the completion of a doctoral degree. He went to the University of Bristol, England, as Leverhulme Visiting Scholar. Curiously, this is the place where the previous medalist—Richard Howarth—earned his undergraduate degree. In his two years in Bristol, Mike was active in organic geochemistry doing primarily pattern recognition and classification.

1978 was a big year for Mike. Toward the end of his stay in England, he decided to look for jobs back in the United States and to tie the knot with Kay Christensen, the American fiancée he had left behind. Mike ended up accepting a position with the West Virginia Geological and Economic Survey (WVGS), his present employer. The first professional assignment was in geostatistics, a relatively new field for most everybody in the 1970s, including Mike. His strong background in applied statistics proved helpful to allow him to venture in the use of geostatistics in energy related projects—coal, oil, and gas. In a short period, Mike had reached such a level of proficiency in geostatistics that Mike accepted the challenge to write a book at the request of Dan Merriam, editor of the Series of *Computer Methods in the Geosciences*. At a time when the main references in geostatistics had been written by mining engineers, Mike thought that what would be useful was a geostatistics book written from the perspective of a petroleum geologist. The result was *Geostatistics and Petroleum Geology*, published by Van Nostrand Reinhold in 1988 as the seventh title in the series. The book was such a success that it saw a second edition by Kluwer Academic Publishers in 1998.

In 1989, Mike was promoted to Senior Research Geologist, in which capacity he initiated and completed research projects funded at the state level or from outside sources. Projects include several on the gas resources of Devonian shales in West Virginia; reservoir characterization of oil fields, mapping coal quality in West Virginia, coal availability, a statewide geographic information system for coal, and U.S. Department of Agriculture-funded projects utilizing geostatistics. Current projects include study of an Upper Devonian strand-plain oil field, and analysis of uncertainty in coal bed thicknesses used in property assessment for tax purposes. Mike is the West Virginia Survey's coordinator of the STATEMAP program, funded by the U.S. Geological Survey.

At WVGS, Mike has demonstrated excellent skills in analyzing and building solutions to the agency's problems. During the Desert Storm military operation in Kuwait, the WVGS Deputy Director was recalled to active duty and Mike was asked to take over the job in the emergency. He performed with such a resolve and insight that he received a Commendation of Thanks from the Military Sealift Command Southwest Asia. More recently the WVGS had a legislative performance audit as part of the sunset legislation process. The auditor found a number of areas of concern. Mike was assigned to coordinate and develop a response and courses-of-action to deal with the performance audit issues. The final product convinced both the West Virginia House and Senate that the WVGS could make the requisite changes promptly and properly. His mobilization of a working team of WVGS senior staff made the agency shine. In 2002, Acting Director Carl J. Smith promoted Mike to Acting Assistant State Geologist in recognition of his quality service to WVGS.

In 1983, Mike was invited to teach a course on quantitative methods at the Department of Geology and Geography of the University of West Virginia, where he is an adjunct professor. Such connection has proved to be rewarding for Mike. After teaching the course in 1983, he has been invited to present colloquia, to serve in the doctoral committees of several students, and to take care of the quantitative analysis in papers in which the main author is a professor at the Department. The Department was also instrumental in making him a collaborator of A. M. Sandy Liebhold with the U.S. Department of Agriculture Forest Service. Together they have done extensive research and written several papers on tracking the invasion

of the gypsy moth, an insect causing the defoliation of trees in eastern United States.

Mike joined IAMG immediately after being hired by the West Virginia Geological and Economic Survey. He had his first personal acquaintance with IAMG members and other mathematical geologists when he attended the Eighth Geochautauqua of 1979, the last of the Syracuse meetings. He was an immediate fit as he has been in every organization that he has joined. Five years later, he was elected Western Treasurer and was organizing the Thirteenth Geochautauqua in Morgantown, West Virginia, on "Big Programs in Small Machines: Research Methods on Mini and Microcomputers." Mike is the most recent one out of only three members who has been elected to serve as Treasurer, Secretary General, and President. The other two are John C. Davis and Richard McCammon. Mike made his service to IAMG unique by additionally serving as Deputy Editor of *Nonrenewable Resources* and Editor-in-Chief of our flagship journal *Mathematical Geology*, let alone serving countless times as reviewer, convener, speaker, chairman, and person in charge of the IAMG booth at numerous congresses. He is currently Chairman of the Publications Committee and Book Review Editor of *Natural Resources Research*.

During Mike's term as president in 1992-96, the Association celebrated its 25 years with a memorable meeting in Prague. Mike and IAMG Vice President Chan-Jo Chung saw in this meeting the opportunity to upgrade the informal geochautauquas. After securing financial support from both the Geological Survey of Canada and the US Geological Survey, Mike and Chang-Jo decided to go ahead with the first IAMG Conference. The meeting took place in Mont Tremblant, Quebec, in 1994, thus starting the present system of conferences taking place every year that there is not an International Geological Congress. Mike was also instrumental in expanding the system of major awards to include the one in honor of John Griffiths and the prize in honor of Felix Chayes. Upon first IAMG President A. Vistelius's passing away in 1995, the IAMG changed the name of the President's Prize to the Vistelius Award. The same year, Mike used his good contacts at the American Association of Petroleum Geologists (AAPG) to make IAMG and Associated Society of AAPG.

In addition of being a distinguished scientist and generously serving the Association, the third condition to receive the Krumbein medal is service to the profession, where Mike has also excelled. Mike has been particularly active with AAPG, where he is currently President of the Eastern Section, after serving annual terms as Vice President and Secretary. Mike is also a member of Sigma Xi, for which he was President of the West Virginia University Chapter from 1983-86.

As a bonus, Mike is an exemplary family man who cares dearly for his wife, his two children and his community. For a while, he was involved in a film club that showed eclectic films once a month at the hospital auditorium. Many were foreign films that had never been in Morgantown, but were worthy of seeing. Mike was greatly involved in making that club work. Since 1995, he has shared his time and talent with the Shack Neighborhood House, a charity organization serving low-income communities of coal miners and unemployed former coal miners. He served as Vice President and President. He has been highly supportive of the athletic abilities of both son Geoffrey and daughter Abigail by assisting coaches and driving them hither and yon, with a ride to Canada over a weekend holding the record. Mike is a tolerant and understanding father, even allowing his son to dye his hair red and then green.

Mike balances his intellect and quick wit with a practical everyday side. He is flexible and surprising, for he may be solving some complex geostatistical problem one moment and the next he is tearing up his kitchen floor putting in a new surface. In fact, Mike and Kay did a lot more than that—they completely renovated the wonderful 1859 house where they live. His stories of contractors, weather delays, and loss of his delightful rose garden, show his resilience and perseverance. The house is now squarely in town but was in a rural setting when built. Mike's current challenge is to build a new garage. The project is nearing completion and has already been the site for his son's garage band practice.

Mike and Kay also share an interest for antiques, which outfit much of their house. As newlyweds they attended an auction in rural West Virginia within a week of their wedding. For a while this passion became a small business as Kay bought and sold antiques at local antique markets with the assistance of Mike during his free time. For about four years, they bought and sold almost anything largely out of the shop near Pittsburgh, but were particularly interested in furniture and ceramics. Ten years ago, the shop started to interfere with rearing the children, so they retired from business. Today Mike particularly enjoys learning about the history of New York railroads before 1900 and building models at a scale of 1: 72, also called an HO scale. He is a member of the National Model Railroad Association (NMRA) as well as President of the Mon Valley Railroad Club, Morgantown. Mike has worked hard to display the club's rail layouts in the community and has won various awards. His accomplishments as railroad modeler earned him a spot in the January 2000 edition of the NMRA Bulletin. The Internet site <http://home.att.net/~m.e.hohn/mhrr.htm> is another good place to learn about this less known side of Mike.

In recognition of all his exceptional merits, the Awards Committee of the International Association for Mathematical Geology was pleased to select Michael Ed Hohn as the 2002 Krumbein Medalist. R.B. McCammon and C. J. Smith were of great help in preparing this citation.

Ricardo A. Olea

## Announcements

### POSTGRADUATE SCHOLARSHIPS GEOSTATISTICS

*Eligibility:* Postgraduate scholarships are offered for research on projects of significant importance to the minerals industry. High standards are desirable in mathematical / statistical and computing abilities.

The WH Bryan Mining Geology Research Centre (BRC) is a world R&D leader in geostatistics and mine planning. It is a member of the Sustainable Minerals Institute at one of the largest mining and mineral research centres in the world, The University of Queensland. The BRC provides state of the art facilities and a stimulating, high tech and professional environment in which to work. It conducts advanced applied research, industry and postgraduate training in geostatistics, resource modelling, and optimisation in mine design and planning. The Centre is self-funded with substantial links to industry, including collaborative research projects with major mining companies such as Anaconda, Anglo Coal, Anglo Gold, BHP Billiton, De Beers, Highlands Pacific, Kalgoorlie Consolidated Gold Mines, MIM, Newmont, Rio Tinto, Western Mining Corporation; our postgraduate students gain valuable industry contact which secures their future upon completion of their studies.

Applications should include curriculum vitae, academic transcripts and the names of at least two referees. Please forward to:

**Prof. Roussos Dimitrakopoulos, Director**  
**WH Bryan Mining Geology Research Centre**  
**The University of Queensland**  
**Brisbane, Qld, 4072. Australia.**  
**Web: [www.minmet.uq.edu.au/~bryan](http://www.minmet.uq.edu.au/~bryan)**

Application date is open. Further information can be obtained from the BRC, Phone: 61 (0) 7 3365 3473; Fax: 61 (0) 7 3365 7028; Email: [brc@uq.edu.au](mailto:brc@uq.edu.au)

### Request for US- Russian Cooperation Projects

Dear colleagues:

We have received information concerning an announcement of a new competition for Cooperative Grants Program provided by U.S. Civilian Research and Development Foundation (CRDF). "This program allows joint teams of U.S. and former Soviet Union (FSU) scientists and engineers to apply for one- to two-year support for cooperation in any area of civilian research and development in the natural sciences..." (see an attachment for details or <<http://www.crdf.org>>[www.crdf.org](http://www.crdf.org)).

It would be much appreciated if you could recommend any US scientists who would be interested in such a cooperation. Our present research interest concerns mainly the mathematical modelling of contrast layering formation in mafic-ultramafic intrusions on the basis of models of synergetics, where the conception of order and chaos is playing the leading role. But we would consider with enthusiasm any other offerings in the field of mathematical geology.

Sincerely yours,

Dr. Victor Dech, Dr. Sergey Kotov.

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Russian Academy of Natural Sciences  
Institute of Precambrian Geology and Geochronology  
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**By Michael Edward Hohn**

*West Virginia Geological & Economic Survey, Morgantown, USA*

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#### Review

'I reviewed that first edition ... with the following conclusion: "This is a highly recommendable book, a starter text for both students and practitioners, and a complementary text to more theory-oriented publications." I would maintain in all points that recommendation for this long overdue second edition. ... it is easily accessible, it speaks common sense and articulates the theory around examples with real data backed with geological interpretation. I definitely would add Michael Hohn's second edition of **Geostatistics and Petroleum Geology** to the list of required readings for any introductory class in geostatistics. The book delivers a global picture of the practice of geostatistics in clear, understandable terms. The examples are models of concision, the trademark of a good teacher.'

**Andre G. Journal in Mathematical Geology, 32:1 (2000)**