IAMG Newsletter

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Official Newsletter of the International Association for Mathematical Geology

Contents

We've been discovered — by explorers from Africa! Who would have thought that a prince from Sierra Leone or the son of a political leader from Nigeria would take an interest in poor and needy mathematical geologists in America. Yes, may be they have heard that some of us have been laid off or fired, or worse yet retired with a 401K that's worth half of what is was 3 years ago. So, it is encouraging to be offered millions of dollars lying around in abandoned bank accounts in Nigeria and tempting to get a share of those funds just by helping a poor widow or orphaned children gain their millions back.

From the Editor

Actually, I have received these scam letters as long as 12 or 15 years ago. Back then it was because I was listed in the AAPG directory. At first I was stunned to discover that I might be involved in some international underworld scheme, afraid that I could be pressured by some nasty thugs. Then, as the offers started repeating, I became amused and finally annoyed. Apparently, the US Secret Service and other agencies are quite aware of these scams and are investigating but haven't been able to stop them.

All the recent scam letters came through my iamg.org e-mail account. Can we assume that the con artists are interested in mathematical geology and visit the iamg.org website to educate themselves? Perhaps we have a source here of potential new members. In reality, it unfortunately confirms the advice that to avoid scam (or spam) e-mails one shouldn't have one's address appear on any website.

If you want to find out more about the Nigerian scam letters look at the website www.quatloos.com/cm-niger/nigerian_scam_letter_museum.htm

On another, related matter: The IAMG Membership Database has been resurrected and made available to the members, and it appears to be streamlined and easy to use. Look for access to the member search engine by scrolling down one page in the IAMG home page (www.iamg.org) and be prepared to enter your special access number and password. These are available from the IAMG office (office@iamg.org) for paid up members. Most of the members should by now have received an e-mail from the office providing them with access number and password. The limited access feature is certainly useful and desirable in view of the various e-mail spamming problems, including the one discussed above.

Harald S. Poelchau

Call for Award Nominations

The Association invites all members to submit nominations for the **Krumbein Medal 2004 and the Griffiths Award 2004.**

Deadline: January 15, 2004

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

The documents which should accompany each proposal are:

• a short statement summarizing the relevant qualifications of the nominee

• a curriculum vitae of the nominee.

Please help your Awards Committee by proposing many candidates!!!

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

Call for Proposals to Organize the
IAMG 2006 Conference

The Association is now accepting proposals for organizing the tenth annual IAMG conference during the summer or fall of 2006.

The deadline for proposals is **February 15, 2004**. Individuals or organizations interested in organizing IAMG 2006 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, preferably by December 25, 2003.

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PRESIDENT'S FORUM

At the Berlin conference in September 2002, a special General Assembly approved a change in our Constitution that de-coupled the requirement that members must subscribe to at least one of our three international journals. At the same time, the classes of membership were fine-tuned, and membership dues were reintroduced (no free breakfast). Although we are only four months into the first year of the change, it is instructive to look at the impact on membership renewals and journal subscriptions. The following table compares the situation at the end of April 2003 with the end of April 2002, as well as the year-end situation in December 2002.

Item	Detail	April 2002	December 2002	April 2003
Membership	Renewals	352	484	418
	New	25	74	39
	Total	377	558	457
Subscriptions	Math Geol	331	417	288
	C&G reg	168	206	139
	C&G stud	13	19	5
	C&G online	62	82	57
	NRR	65	80	67
Monographs (in print)	#2	5	5	0
	#3	6	9	3
	#5	7	8	4
	#6	21	25	13
CDs	Silver CD	37	49	21
	Proc 2001	46	51	26
	Proc 2002	-	-	58
Donations	Number	-	-	25
	Value	-	-	$410
Dues only	(no subs)	-	-	66

Notice that the total number of members at the end of April 2002 was 377, whereas this has climbed to 457 for same period in 2003. As expected, the number of journal subscriptions by members has dropped. Sixty-six members elected to pay dues only (some of these purchased something else, such as a monograph or CD). Over the period April 2002-April 2003, Mathematical Geology subscriptions dropped from 331 to 288, Computers & Geosciences (all categories) dropped from 243 to 201, whereas Natural Resources Research increased slightly from 65 to 67. Monograph orders decreased, but this is because no new ones appeared in the last year (they are in the works), and CDs continue to be modestly popular. Twenty-five members donated an average of $16.40 each (total $410), under a new voluntary donation scheme.

Although it is too early to predict the final figures for this year, after the end of the first 4 months, overall membership is up by about 20%. Subscriptions to MG and C&G are down, but subscriptions to NRR hold steady and remain virtually unchanged. From a financial viewpoint, the loss of subscriptions does not affect the Association, because subscriptions are paid totally to the publishers. MG and C&G are well-established journals with a healthy number of institutional subscribers, bringing in royalties to the Association that support many of our activities. Member subscriptions to these two journals have no effect on royalty payments, which are derived totally from library sales. NRR, on the other hand, has a weak library base, and individual memberships (although not helping the Association financially) will strengthen the commercial viability for the publisher, and bring benefit to members by broadening our publications base. I encourage all members with an interest in NRR to subscribe (cost to members is $55), and even better, to ask their libraries to subscribe (current institutional rate is US$397 per annum).

The small membership dues payment should nearly offset the cost of maintaining our professionally managed office. By the time of the next Newsletter, we will have a better picture of this, but I believe that we are now in an improved position to retain members who either cannot afford our journals, or do not need them because they already have good electronic (or print) access to them through their libraries, and to attract new members for the same reasons.

Any professional organization needs a steady supply of new members to maintain itself as a vigorous entity, and to continue giving value to its members. As a reminder, the benefits of individual membership include:

• *special subscription rates to MG, C&G and NRR;*
• *special rates for IAMG monographs, and conference proceedings on CD;*
• *special rates to register at IAMG conferences and AAPG conventions;*
• *twice-yearly Newsletter;*
• *access to program code published in C&G;*
• *access to the electronic directory of members.*

Our system of awards, and activities such as the new Student Grants Program and Distinguished Lecture Series help the Association to achieve its aim of promoting the use of mathematics and informatics in the geosciences. For $10, members get excellent value, yet our membership numbers are relatively small. If you know of colleagues or students who might like to join, please direct them to our Web page. We are a well-kept secret.

I am happy to report that after a hiatus of about a year, the online membership directory, accessible to members only, is up and running again. It is now being handled directly by the IAMG office. This will facilitate maintenance of the directory and streamline the transition between successive IAMG Treasurers and Web Managers. Access to the directory is from the main IAMG Home Page, which is currently being updated by Eric Grunsky.

Graeme Bonham-Carter

Member News

Tom Jones is retiring

This note is to let you know that I have retired from ExxonMobil as of April 17, 2003. Although it has been an enjoyable, rewarding, and interesting 33 1/2 years, I think it is time to move along.

I plan to remain active in math geology and the IAMG, albeit at a level with fewer resources. I am in negotiation with Rice University for an adjunct-professor position, and may help teach a course this fall in environmental statistics. In addition, I may consider writing a book.

My home address, etc., should be used for future communication:
5211 Braeburn Drive
Bellaire, Texas 77401-4814
(713) 661 - 0490

I don't have an e-mail address yet - our home network refuses to let two work together correctly. For now, use my wife's e-mail, but put in the subject or somewhere that it involves me or IAMG:

tturner@houston.rr.com

I have enjoyed my contact with the IAMG officers and members over the years, and hope to keep in touch. I won't be able to get to IAMG2003, but hope to manage Florence or Toronto; maybe I'll see you there. Until then, best wishes.

Regards, Tom

New Geomathematician

Matthias Urs Christian Herzfeld Mayer, born on March 14, 2003 to Ute Herzfeld and Helmut Mayer (shown here with his big sister Almut)

Ute has moved to the University of Colorado, Boulder, as a Visiting Fellow and is on leave from the Universität Trier (Germany) where she is a professor for geomathematics. For obvious reasons she has spent less time on science during the last few months and more on the new arrival.

Ute and Helmut plan to bring Matthias to the next IAMG meeting.

John Harbaugh honored

John Harbaugh has been selected by the faculty of the Department of Geology and Geophysics at the University of Wisconsin-Madison to receive the 2003 Distinguished Alumni Award. The decision was reached after careful consideration of many prominent members among approximately 2500 geo-alumni. Each year the Department recognizes one or more alumni based on distinguished lifetime achievement and/or service to the University of Wisconsin. John was nominated for his distinguished contributions to mathematical applications in geology, as well as his contributions to the profession.

Academician Jan Harff

Prof. Dr. Jan Harff has been elected a foreign member of the Russian Academy of Sciences. The official induction took place on October 15, 2002 at Moscow University.

He was also elected a foreign member of the Lithuanian Academy of Sciences with the inauguration on November 28, 2002 in Vilnius.

(from GMit 10, p. 110)

And from TU Bergakademie Freiberg (Germany)

… mathematician Dr. Gerald van den Boogaart (boogaart@grad.tu-freiberg.de), who completed his PhD thesis "Statistics for individual crystallographic orientation measurements" in 2001 at the TU Bergakademie Freiberg has been a full time assistant professor with the geoscience mathematics and informatics group since January 2003 and will pursue his major research interests in statistics for dependent data and particularly in generalizations of geostatistics as presented in his contributions the IAMG annual conferences in Cancun and Berlin.

… mathematician PD Dr. Swanhild Bernstein (swanhild.bernstein@fossi.uni-weimar.de), who joined the geoscience

AfterMath of Kansas Black Friday

Events following the Black Friday (7 June 2002) firing of the **Kansas Geological Survey Mathematical Geology Group** were indeed interesting and revealing. After the initial shock wore off about the dismissal of this internationally known group, an effort was made to have the decision, which was based on information challenged by many, reversed. Letters poured in to the Chancellor's Office from all over the world from concerned colleagues and friends, and a petition with more than one hundred names of internationally known scientists was presented to the university administration, to no avail. Several influential university supporters met with the Chancellor in regard to the situation and an appeal was made to the Provost, but again to no avail. The university had made up its mind and refused to reconsider the decision. The group was given a year to finish projects and vacate the premises. That date has passed, so what will the people in the group do in the future?

Dan Merriam giving John Davis a retirement certificate

Gina Ross, the Survey's head of automated cartography (part of Math Geology) and organizer of IAMG2001 in Cancun, was deemed essential and not fired. Some time after the event, two of the dismissed scientists were rehired in other positions: **John Doveton**, noted log analyst and IAMG Councilor, transferred to the KGS Petroleum Research Group and **Geoff Bohling** (IAMG Treasurer), computer specialist, to the Hydrology Section.

John Davis, former section chief, will teach on a part-time basis at Baker University in his hometown of Baldwin City, Kansas and continue his consulting business. John is the IAMG Distinguished Lecturer for 2003 and will keep fulfilling those obligations. **JoAnne deGraffenreid**, IAMG Book Series Editor, will continue in that role from her home office. **David Collins** has taken medical disability leave and **Ricardo Olea** is looking for some opportunities to use his extensive knowledge of geostatistics and log analysis. All four - Davis, deGraffenreid, Collins, and Olea - are considered by the university to be 'retiring'. To honor the members of this internationally celebrated section, a group of close friends and colleagues hosted a 'retirement' party to thank them for their many contributions and wish them all the best for the future.

Math Geology Group at "retirement" party: Dave Collins, Gina Ross, Ricardo Olea, John Davis, Jo Anne de Graffenreid, John Doveton

Contributed by members of the Kansas Geological Survey

mathematics and informatics group to work halftime on the DFG funded research project "High resolution texture analysis" which is essentially an application of spherical wavelets to the numerical inversion of the spherical R1 - Radon transform (x-ray transform) in case of very "peaky" functions.

… Dipl.-Geol. Katrin Lademann (katrin.lademann@freenet.de), who joined the DFG-funded graduate college on Spatial Statistics to work on her PhD project on quantitative analysis of texture and microstructure in high-grade metamorphic rocks which will largely involve EBSD measurements and their analysis and interpretation.

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Satoshi Yamamoto 1948-2003

Prof. Satoshi Yamamoto of University of the Ryukyus, an excellent sedimentologist and mathematical geologist in Japan, passed away in the morning on March 23, 2003 by a cerebral hemorrhage after a kidney transplantation.

Satoshi was born as the first son of the fishermen's boss on the western coast of Hokkaido, Japan on February 23, 1948. He studied geology at Hokkaido University, and graduated with his graduation thesis entitled "Geochemical study on chert using electron microscopy" under the guidance of Prof. Susumu Honjo. In 1970, as Prof. Honjo moved to Woods Hole Oceanographic Institute, he also moved there and studied oceanography. In 1973 he entered Graduate School of Syracuse University, and studied sedimentology and mathematical geology under the supervision of Prof Daniel F. Merriam. In 1977 he submitted the doctoral thesis entitled "Sedimentary geochemistry of carbonate-silicate cyclic sedimentation in deep sea" and obtained the Ph.D. degree. He got a position as assistant professor at University of the Ryukyus in 1978, and he was promoted to Lecturer in 1993, Associate Professor in 1996, and Professor in 1997. He was the Head of Department of Marine Sciences after 2000.

His main interest was pelagic sedimentation and diagenesis of carbonate turbidites and chert, and there are many excellent contributions such as "Correlation between iron and magnesium and its significance on the distribution of heavy metals in deep-sea cherts" (Sedimentary Geology, 1986), "Carbonate turbidites deposited on the floor of the Palau Trench" (Marine Geology, 1988), "Diagenetic enrichment of manganese and other heavy metals in hemipelagic brown clay of the Palau Trench floor" (Journal of Sedimentary Petrology, 1992). He also was interested in the terrigenous sedimentation with reference to pollution prevention, as shown in "Sedimentation of terrigenous red soils in coastal area adjacent to an estuary and coral reefs, the Okkubi River estuary, Okinawa Island, Japan" (Journal of Oceanography, 1994), and "Soil characteristics and fluidity of debris flows at the Gamahara River, at the Harihara River and at the Hachimantai Area" (Journal of the Japan Society of Erosion Control Engineering, 1999). In recent years he studied the dynamics of cosmic particles in relation to the origin of sedimentary particles.

It should be noted that he studied sedimentology and oceanography from geochemical and mathematical view points, which made his conclusions more accurate and more concrete. He was a very serious researcher, and didn't accept any compromise in his research.

He was a member of many academic societies including International Association of Sedimentologists, International Association for Mathematical Geology, SEPM, Geological Society of Japan, Sedimentological Society of Japan.

He married with Emiko and had three boys named Dan, Aru, and Ryo. Thirteen years ago he suddenly had a kidney disease by uncertain cause. After that time he had to have dialysis three times per week, which restricted his time and power very much, but he continued his research actively. In March he had a kidney transplant operation, but he passed away before recovering. He is sorely missed by his family and colleagues.

Satoshi was a valued member of sedimentologists and mathematical geologists. It is a great loss for the IAMG and geoscientists community to lose him in midlife.

Niichi Nishiwaki

Recent Books of Interest

Deposit and Geoenvironmental Models for Resource Exploitation and Environmental Security

Proceedings of the NATO Advanced Study Institute, held in Matráháza, Hungary, 6-19 September 1998

edited by

Andrea G. Fabbri (International Institute for Geo-Information Science and Earth Observation, ITC, Enschede, The Netherlands)

Gabor Gaál (Geological Survey of Finland, Helsinki, Finland)

Richard B. McCammon (U.S. Geological Survey, Reston, VA, USA)

Book Series: NATO SCIENCE PARTNERSHIP SUB-SERIES: 2: Environmental Security continued within NATO SCIENCE SERIES IV: Earth and Environmental Sciences : Volume 80

Geological processes affect the earth itself and human society. Solutions to geological problems, whether natural or man-made, demand close international collaboration. This book presents new approaches to current problems of environmental assessment, demonstrates the interactions between those involved in addressing global problems, and represents a means for the education of others.

The book focuses on four major themes: geoenvironmental models, GIS methods and techniques, assessment and resource management, and resource policies and sustainable development. The major topics falling under each theme are introduced, followed by discussions of specific applications. Reports of the discussions of working groups are also presented to round out the individual contributions.

Kluwer Academic Publishers, Dordrecht, March 2003, 560 pp.

Hardbound, ISBN 1-4020-0989-5, EUR 210.00 / USD 206.00 / GBP 132.00

Paperback, ISBN 1-4020-0990-9, EUR 90.00 / USD 88.00 / GBP 57.00

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Greetings from Prague - IAMG birthplace

Already 35 years will divide us from the foundation of the IAMG in Prague in August 1968 - during the 23rd International Geological Congress in dramatic situation marked by the unfortunate invasion of the "allied" armies. In spite of many political problems of that period in November 1968 a new series of special international sections on mathematical geology started near Prague as part of the Mining Pribram Symposium. In the following years regular meetings of this section served as an unofficial East - West gate for promoters of the relatively new discipline. The regular meetings - since 1993 transferred to Prague - took place until 1999. After 1989 political problems disappeared, nevertheless some cross-cultural differences appeared and in October 1993 two separate consecutive Silver Anniversary meetings of the IAMG (with mostly prevailing participants from the West) and of the Pribram sessions (with dominating Eastern participation) were held in the same week and in the same edifice in Prague with only one commonly accessible brief session on the history.

Since 1992 a birth of a new discipline - geoethics - took place just at Pribram and started a series of regular international meetings organized as part of the Mining Pribram Symposia. The international development of geoethics has been strongly supported by people from the circles of mathematical geologists. Since 1992 until 2001 already 161 geoethical contributions (some of them quantitatively oriented) were prepared for the Pribram sessions by authors from 18 countries.

Both Prague and Pribram had a very important role in the history of mathematical geology. What about a visit to these places in conjunction with the latest international section on geoethics just in preparation for October 14 - 16, 2003 at Pribram? Mathematically and quantitatively oriented contributions on geoethical and geoenvironmental problems received before June 30, 2003 will be accepted. Contacts: The Mining Pribram Symposium / P.O. Box 41 / 261 92 Pribram / CZECH REPUBLIC. - E-mail: "V. Nemec" <Marcinicova@diamo.cz> and/or lidmila.nemcova@quick.cz; Fax: (+420)318623169; Phone: (+420)274811801or (+420)281962158 (recorders).

Vaclav Nemec, IAMG Eastern Treasurer (1968-1980 and 1984-1996), convener of the Pribram international sections on mathematical geology and on geoethics

Association Business

Dr. Frederik P. Agterberg
IAMG 2003 Distinguished Lecturer

The IAMG Distinguished Lecturer Series Committee is pleased to announce the selection of Dr. Frederik P. (Frits) Agterberg as the IAMG's 2003 Distinguished Lecturer. Frits is well-known as the author of the classic text "Geomathematics: Mathematical Background and Geo-science Applications" and as the recipient of the 1978 Krumbein Award. Institutions interested in hosting a lecture by Dr. Agterberg are invited to submit a proposal to Alexandre Desbarats, chair of the IAMG Distinguished Lecturer Committee (desbarat@NRCan.gc.ca) or directly to Dr. Agterberg (agterber@NRCan.gc.ca). Dr. Agterberg's term as Distinguished Lecturer will start in January 2004, after the conclusion of tours by Dr. John Davis, the current DL. 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. Agterberg has prepared a selection of talks suitable for a variety of earth science audiences and technical levels :
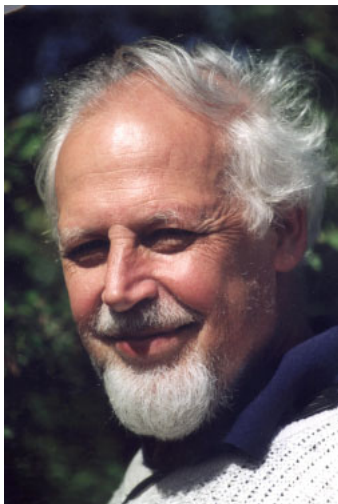
Past and Future of Mathematical Geology

Applications of mathematics in geology commenced slowly during the 19th and the first half of the 20th century. With the advent of computers, numerical modeling in the geosciences became increasingly accelerated. This includes new methods of 3D geological map-making.

Probabilistic Methods for Mineral Resource Potential Mapping

The processing of geoscientific information for the purpose of estimating probabilities of occurrence for various types of mineral deposits was made easier when Geographic Information Systems became available. Weights of evidence modeling and logistic regression are examples of techniques to be discussed.

Lognormal Distributions and Pareto Tails in Geochemistry and Resource Appraisal

The lognormal frequency distribution model has seen many successful geoscientific applications. This includes the modeling of trace element concentration values in rock samples and the sizes of ore deposits and oil pools. Multifractal modeling provides clues on how lognormal distributions can have Pareto tails.

Statistical Methods used for Construction of the 2004 Geological Time Scale

A newly constructed geological time scale uses statistical techniques for integrating age determinations with stratigraphic information. Maximum likelihood chronograms and smoothing splines are used to provide estimates of the ages of chronostratigraphic boundaries and unit durations.

Automated Stratigraphic Correlation

Earliest and latest occurrences of fossils can be sequenced and scaled for the construction of regional stratigraphic zonation columns with incorporation of lithostratigraphic and seismic information. Land-based sections or exploratory wells can be correlated with one another using the scaled optimum sequence.

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IAMG Profile in Episodes

The editor of the IUGS publication Episodes has asked for a profile detailing what IAMG is about. IAMG is one of the organizations associated with IUGS. Ricardo Olea has responded with a short description which was published in the March issue of the magazine. Take a good look at the IAMG logo.

New Members of Awards Committee

The IAMG Council selected Qiuming Cheng (Canada) and Steve Henley (UK) as two new members of the Awards Committee. Their terms will run for 4 years, i.e., from now through 2006. They will join Heinz Burger (Chair), Andre Journel and Hugh Rollinson, whose terms will continue until after the IGC in Florence in 2004. Congratulations to Qiuming and Steve!

Announcement and Proposal Solicitation:

Student Research Grants in Mathematical Geology

The International Association for Mathematical Geology (IAMG) is pleased to announce the availability of the 2003 Student Grants program. The Student Grants Program supports graduate student research in broad areas of mathematical geology for the purposes of advancing the development and application of quantitative methods in the geosciences. Recipients of the awards, which typically amount to $2,000 US, must be enrolled in a formal university program in which they are pursuing a graduate degree (i.e., masters or doctoral students). The competition is not restricted to students sponsored by members of IAMG.

Project proposals and requests for support should include the following:
• Applicant's name
• Applicant's contact information (postal address, home address, telephone, fax, email address, etc.)
• University in which the applicant is enrolled, degree being pursued, and planned completion date of degree
• Transcripts of undergraduate and graduate course work completed to date (or a statement from the applicant's academic advisor that details the applicants academic credentials)
• Lists of prior awards and honors received by the applicant
• Professional and work experience, as well as extra-curricular activities
• Title of the project proposal, an abstract of no more than 500 words, and the target completion date for the project
• An endorsement of the project signed by at least one faculty member from the academic department in which the student is enrolled
• Detailed project budget

All proposals will be 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. Additional guidelines concerning the competition can be found on the Internet at www.iamg.org.

Written proposals for 2003 funding, which must be received no later than close of business on July 15, 2003, should be submitted to:

Donna Dennison
Student Grants Committee, IAMG Office
4 Cataraqui St., Suite 310
Kingston, ON K7K 1Z7 Canada

Tim Coburn, Chair

IAMG 2005 Proposal Accepted

IAMG president Bonham-Carter has received one proposal, from **Qiuming Cheng**, York University, to hold IAMG 2005 in Toronto. This will ensure that we have a North American venue, following a string of European venues (Berlin, Portsmouth, IGC in Florence), which will improve the chances of better participation from USA, where foreign travel is becoming more difficult for many.

The main theme will be "GIS and Spatial Analysis" and the conference is scheduled August 14-19, 2005

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IAMG Journal Report

Disaster averted at MG Office

The bad news is that the hard drive on the editor's mail server locked up over the Christmas break because the temperature in the building was allowed to drop too low. Relatively normal service was only restored as of Monday the 13th of January. The good news is that the editorial office was moved this past November to another building. The previous location was flooded on the 11th by a burst pipe and it will take crews at least a week before any staff or students can reenter the building and who knows when normal operations can be restored.

Ed Sharp, Editor
University of South Carolina

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User-driven integrated software lives: "Paleomag" paleomagnetics analysis on the Macintosh, Craig H. Jones

MultiSpec—a tool for multispectral–hyperspectral image data analysis, Larry Biehl and David Landgrebe

PaleoNet: paleontology, publication and community in the digital age, Norman MacLeod

Geology explorer: virtual geologic mapping and interpretation, Bernhardt Saini-Eidukat, Donald P. Schwert and Brian M. Slator

SIMSAFADIM: three-dimensional simulation of stratigraphic architecture and facies distribution modeling of carbonate sediments, Klaus Bitzer and Ramon Salas

Easy handling of tectonic data: the programs TectonicVB for Mac and TectonicsFP for Windows(TM), Hugo Ortner, Franz Reiter and Peter Acs

PANGAEA—an information system for environmental sciences, Michael Diepenbroek, Hannes Grobe, Manfred Reinke, Uwe Schindler, Reiner Schlitzer, Rainer Sieger and Gerold Wefer

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A test of mining simulation for phosphorus adjustment in a limestone quarry - dynamic programming compared with a genetic algorithm, by T. Ito and T. Nishiyama

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There is something fascinating about science. One gets such wholesale returns of conjecture out of such a trifling investment of fact.

Mark Twain

IAMG 2003 Portsmouth
7-12 September 2003

Arrangements for this year's IAMG conference are proceeding fast. We have now received 110 abstracts, and 200 pre-registrations or registrations. (The maximum number of registrations is 250).

There will be an awards ceremony, at which this year's award winners will be honoured, and papers will be presented in the plenary sessions by winners of the Chayes Award (Dr Antonella Buccianti) and the Vistelius Prize (Karl-Gerald van den Boogaart)

The conference dinner, to be held on the historic ship HMS Warrior, is limited to 150 people and places will be allocated strictly on a first-come, first-served basis. We remind you that early registration discounts will be available up to 23 June 2003. Currently all advertised workshops and field excursions are open for booking (though of course any workshops or field trips for which we receive too few bookings might have to be cancelled).

For authors - we shall confirm acceptance of abstracts as soon as possible, and remind you that the deadline for receipt of final papers is 16th June.

More information from our website

http://www.iamg2003.com,

or by email from info@iamg2003.com.

IAMG Awards

The Awards Committee (H. Burger - chair, Q. Cheng, S. Henley, A. Journel, H. Rollinson) has selected the award recipients for 2003:

2003 Vistelius Award: Karl-Gerald van den Boogaart
2003 Felix Chayes Prize: Antonella Buccianti

G. van den Boogaart was selected from four candidates in a neck to neck race between the first two candidates so that IAMG president G. Bonham-Carter had to break the tie. He is a full time assistant professor with the geoscience mathematics and informatics group at TU Bergakademie Freiberg (Germany).

For the Felix Chayes Prize we only had three candidates from the previous round. A. Buccianti won over the other two candidates. She is a research scientist at the Dipartimento di Scienze della Terra of the University of Florence (Italy) and also serves as special Councilor for the IGC in 2004.

According to the guidelines the members of the committee assigned numerical scores from 1 to 10 to all candidates in relevant categories. A. Journel proposed a ranking method but the evaluation during this round revealed the same results. Therefore the Awards Committee will keep the well established rules.

The Awards Committee has contacted the Local Organizing Committee of IAMG2003 for preparing a proper award ceremony including presentation of the prizes, citation and invited talks of the award winners. The ceremony is scheduled to take place during the up-coming IAMG Annual Conference in Portsmouth – for details see http://www.iamg2003.com. Furthermore, the citations for the winners of the Vistelius Award and the Felix Chayes Prize will be published in Mathematical Geology and Computer & Geosciences, respectively.

I'll take this opportunity to thank all members of the Awards Committee and to give special thanks to J. Harff, H. Schaeben, H. Wackernagel and J.-L. Mallet who supported the committee with nominations and/or citations during this 2003 selection process.

The Council has appointed two new members to the Awards Committee: Stephen Henley (UK) and Qiuming Cheng (Canada). Their terms will run for 4 years through 2006. They join Heinz Burger (Chair), Andre Journel and Hugh Rollinson, whose terms will continue until after the IGC in Florence in 2004.

It was the first time that we had no fresh candidates for an award – a fact which cries out for a change for future award nominations! If you do not nominate your favourite candidate the IAMG Awards will loose the recognition they deserve. Coming up now will be a call for nomination for the 2004 Krumbein Medal, which is the highest award of our association, and the Griffiths Award for excellence in teaching. Please see the IAMG website for details. A final call for nomination for these awards will be presented in the next newsletter. I hope that the list of nominations will be as long as the list of award recipients presented on our website.

Heinz Burger
Chair Awards Committee

30 Years ago...

the first issue of the IAMG News Letter (new series) was published by Newsletter Editor John C. Davis who at that time also held the office of IAMG Treasurer. (The other officers were R. A. Reyment (President), A. T. Barucha-Reid (Vice Pres.) and D. F. Merriam (Secretary General).

IAMG had about 260 members who paid $15 a year and received the Journal of Mathematical Geology and the News Letter. It is interesting to see that IAMG also had Corporate Members ($100 annually) who included AGIP, Cities, Exxon, the Gas Council (UK) and Kennecott Copper. Davis writes about this:

"....it will be very difficult for us to expand our activities significantly if we must rely solely on our individual members alone. Generous though the support of our members has been, it is obvious that these resources are limited, at least in the financial sense! However, our Association is very fortunate in receiving support in the form of Corporate and Academic Memberships form some of the most prestigious industrial and research organizations in Earth sciences......

"One individual deserves a special vote of thanks in connection with our Corporate and Academic Membership program. Dr Mike Horn of Cities Service generously devoted his time to chairing our campaign in 1973 and is largely responsible for its success."

◇

Conference Reports

IAMG Booths at International Meetings

At the Geological Society of America Meeting in Denver, Helmut Mayer organized an Exhibition Booth representing our Society to several thousand meeting participants (October 2002). Dan Merriam, Mike Hohn and Ute Herzfeld put in considerable time sitting in the booth (and, to all our joy, so did Annie Merriam who recovered and is in fairly good health again). After the IAMG meeting in Berlin, we were enjoying to meet now every month ....

The booth was met with great interest by numerous researchers, professionals from academic and business branches alike (several of whom signed the membership forms in our presence!!!).

Winners of Journal subscriptions were announced over the exhibition-hall wide loud speakers (a habit introduced by a here-unnamed automobile manufacturer and picked up by myself to get the meeting focus back on science).

Next was the American Geophysical Union Fall Meeting in San Francisco (Dec 6-10, 2002), where a booth was organized by Ute Herzfeld (with help from Helmut Mayer, who outnumbered me by new memberships). I consider the booth at AGU very important for our society, as many scientists have a great interest in geomathematics and use our journals, but are not aware of the existence of our society.

A wish for next year: more people volunteering their time to sit in the booth would be really wonderful - it is rewarding too, as it gives you an opportunity for meeting other scientists from a new perspective.

Ute Christina Herzfeld

Diploma from TU Bergakademie Freiberg for ...

… Jan A. Pfeifer (janarminpfeifer@hotmail.com) on the completion of his diploma thesis "A statistical approach for the identification and interpretation of geochemical patterns and alteration zones: A case study for the Ruby Hill Prospect, Eureka, Nevada, USA" [in English] supervised by Professors. Peter Herzig (herzig@min.tu-freiberg.de) and Helmut Schaeben (schaeben@geo.tu-freiberg.de).

In his diploma thesis, Jan Pfeifer deals with the statistical analysis of results of a detailed surface mapping and rock sampling program undertaken by Homestake Inc. at the Prospect Mountain Prospect near Eureka, Nevada, USA. Emphasised is the statistical processing (cluster analysis), evaluation, and interpretation of a geo-referenced geochemical data set using ArcView-GIS and SPlus.

The Ruby Hill mineralization outcropping in the area is interpreted as a high-temperature carbonate replacement Pb-Zn-Ag style of mineralization (Ruby Hill) which was initiated by a Cretaceous granodiorite intrusion and was mined during the late decades of the 1800s. An additional sediment-hosted gold mineralization (West Archimedes) north of it shows different alteration and mineralization features which resemble characteristics typical for Tertiary structural bound Carlin-style deposits. The latter mineralization generally seems to overprint the former and is the main gold event.

Aside from testing cluster analysis on an extensive numerical data set, three genetical questions needed to be answered:

- do spatial outlines of alteration zones (skarn, decalcification etc.) correspond to results of remapped samples of cluster analysis,

- is it possible to discriminate both mineralizing processes in their geochemical and spatial extent?

- is the introduced gold solely bound to the last mineralization process (Carlin-style)?

Two procedures were applied for the different questions. For the first question the raw data set of 2850 GPS referenced rock samples, analyzed for 37 major and trace elements (ICP-MS) was cleaned. Those samples for which no lithological description was available or where a strong discrepancy between the described sample and the surrounding lithology was apparent (mafic dykes), were discarded. This filtered data set of 1450 samples was transferred into ArcView-GIS. The data points of the samples were assigned to polygons of a digitized geological map of the area. The data of these obtained sample groups have been log-transformed. Using S-Plus, a hierarchical cluster analysis was applied to each of the resulting groups. Euclidean, Manhattan and angle distance matrix with an average clustering method has been used in order to generate dendrograms. All resulting clusters within the dendrograms were carefully compared with the lithological descriptions. By analyzing the resulting clusters of the Manhattan distance matrix, it turned out to be possible to assign different clusters of the dendrograms to certain geological features in more or less well constrained areas of outcropping lithologies. This works best for discriminating different skarn type zones, and even worked for different grades of overprint by interpreted Carlin-style fluids (Jasperoid, `sanded` dolomite). By combining those clusters of different lithologies, it is possible to highlight different skarn zones across lithologic boundaries in ArcView which correspond to mapped skarn zones.

The procedure for the latter two questions was to apply cluster analysis with the correlation matrix as its discrimination matrix to five gold-pathfinder elements (Au, Hg, As, Sb, Ag) of the cleaned data set, with no reference to the lithologies observed in the area. The results of this analysis, replotted in ArcView made it possible to delineate spatial zones, based on their common distinct geochemical patterns even across lithologic boundaries. Moreover, two main geochemical patterns were detected which resemble similarities to available data of Carlin-style and high-temperature Carbonate replacement deposits. Both patterns can show high gold concentrations. This lets assume that besides Carlin-Style processes high-temperature Ag-Zn-Pb mineralizations are the cause for some strong positive gold anomalies in the area.

With cluster analysis and the distance matrices it seems possible to discriminate between distinct alteration zones, skarn types, background values and mineralization events. Hence, this approach could be an efficient tool for exploration, where large data sets are common. Moreover it seems possible to assign gold anomalies to mineralizing processes responsible. However, the methods outlined above have only been used for sedimentary rocks (carbonates, shales and quartzites) and more studies are needed. Moreover, a comparison with other data such as petrological, microscopical and fluid inclusion data seems to be necessary to verify these results.

Reported by Helmut Schaeben

**INTERNATIONAL ASSOCIATION FOR MATHEMATICAL GEOLOGY
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❑   Computers & Geosciences, electronic subscription, regular or student* ... US$ 37.50
❑   Natural Resources Research .... US$ 55.00
* Password and instructions will be assigned by IAMG Office

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❑   #5: "Computers in Geology: 25 Years of Progress" edited by J.C. Davis and U.C. Herzfeld. .... US$ 49.00
❑   #6: "Modern Spatiotemporal Geostatistics" by George Christakos .... US$ 42.00
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❑   Proceedings IAMG'2002 in Berlin, on CD .... US$ 10.00

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Upcoming Meetings

2003 JOINT STATISTICAL MEETINGS, San Francisco, CA, **3-7 August 2003**. ASA, Linda Minor, 1429 Duke St., Alexandria, VA 22314-3415; (703) 684-1221, E-mail 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, E-mail: gmfriedman@juno.com, Web: http://us.geocities.com/northeasternscifdn

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. E-mail: isi@cbs.nl, www.isi-2003.de

IASTED International Conference on Applied Simulation and Modelling (ASM), Marbella, Spain, **3-5 September 2003**. IASTED Secretariat - ASM 2003, #80, 4500 - 16th Avenue N.W., Calgary, AB, Canada T3B 0M6, Tel: 403-288-1195, Fax: 403-247-6851, E-mail: calgary@iasted.com, Web site: http://www.iasted.org

IAMG (8th 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 and iamg2003@port.ac.uk; Web: www.iamg.org/

International Congress on ROCK MECHANICS "Technology Roadmap for Rock Mechanics" (10th of the International Society for Rock Mechanics), Sandton (Gauteng-Johannesburg), South Africa, **8–12 September 2003**. Mrs Karen du Toit, or Mrs Pam Bester, Congress Co-Ordinators, P.O. Box 61127, ZA-2107 Marshalltown, South Africa; Phones: +27-11 8341273, +27-11 8341277; Fax: +27-11 8338156, or +27-11 8385923; Web Site: www.isrm2003.co.za

Association of EUROPEAN GEOLOGICAL SOCIETIES, Hannover, Germany, **9–13 September 2003**. Dr. Volker Steinbach, E-mail: v.steinbach@bgr.de; or Dr. Heinz-Gerd Röhling, E-mail: gerd.roehling@bgr.de; Web Site: http://www.uni-essen.de/geologie/aegs.htm

GEOSOLUTIONS 2003 incorporating GIS2003 and the AGI 2003 Conference. London, UK.,**16-18 September 2003**. Ph +44 20 8987 7745, fax: +44 20 8987 7521, E-mail: Sarah Tanner at stanner@cmp-europe.com, http://www.geosolutions.com/

AAPG International Conference & Exibition, "Crossroads of Geology, Energy and Cultures," Barcelona, Spain, **21–24 September 2003**. AAPG Convention Department, P.O. Box 979, Tulsa, OK, 74101-0979, USA; Fax: +1-918-560-2684; E-mail: convene@aapg.org; Web Site: www.aapg.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, E-mail: heinicke@physik.tu-freiberg.de, Web: http://www.copernicus.org/ICGG7

International Workshop "StatGIS03" about "Interfacing (Geo)Statistics, GIS and Spatial Databases", Pörtschach, Austria, **29 September - 1 October 2003**. (Geostatistics: Theory and New Methods, Combining Statistics and GIS, Geostatistical Applications, Spatial Data Bases and Mapping, Geostatistical Software Developments). Philipp Pluch, E-mail: statgis03@uni-klu.ac.at, Website: http://www-stat.uni-klu.ac.at/Tagungen/StatGIS-03

12th Annual GIS for Oil & Gas Conference, Houston, TX, USA, **29 September - 1 October 2003**. GITA Headquarters, Phone: 303-337-0513 E-mail: info@gita.org Web: http://www.gita.org

Subsurface Science Symposium: "Advances in Understanding and MODELING SUBSURFACE PROCESSES.", Salt Palace Convention Center, Salt Lake City, Utah, USA, **05-08 Oct 2003**. Inland Northwest Research Alliance (INRA), BethAnn Melad, PO Box 587, Meridian, Idaho, 83680, Phone: 208-288-0290 FAX: 208-288-0291 E-mail: inquire@meetingsystems.com Web: http://www.b-there.com/breg/inra

SEG International Exposition and 73rd Annual Meeting, Dallas Convention Center, Dallas, TX, USA, **26-31 Oct. 2003**. Society of Exploration Geophysicists. Steve Emery, 8801 S. Yale, Tulsa OK 74137, Phone: 918-497-5500 FAX: 918-497-5557, E-mail: semery@seg.org Web: http://www.seg.org

Geological Society of America (Annual Meeting), Seattle, Washington, USA, **2–5 November 2003**. GSA Meetings Dept., P.O. Box 9140, Boulder, CO 80301-9140, USA; tel: +1 303 447 2020; Fax: +1 303 447 1133; E-mail: meetings@geosociety.org; Website: http://www.geosociety.org/meetings/index.htm

American Geophysical Union (Fall Meeting), San Francisco, California, USA, **08–12 December 2003**. AGU Meetings Department, 2000 Florida Avenue, NW, Washington, DC 20009 USA ; Phone: +1 202 462 6900; Fax: +1 202 328 0566; E-mail: meetinginfo@agu.org; Website: http://www.agu.org/meetings

American Association of Petroleum Geologists and Society for Sedimentary Geology (SEPM) (Joint Annual Meeting and Exhibition), Dallas, Texas, USA, **18–21 April 2004**. AAPG Conventions Dept., P.O. Box 979, Tulsa, OK 74119, USA; Phone: +1-918 560 2679; Fax: 1-918 560 2684; E-mail: convene@aapg.org Website: www.aapg.org

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, 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, E-mail: casaitalia@geo.unifi.it, http://www.32igc.org; Geol. Contact: Antonella Buccianti (see address on p.2)
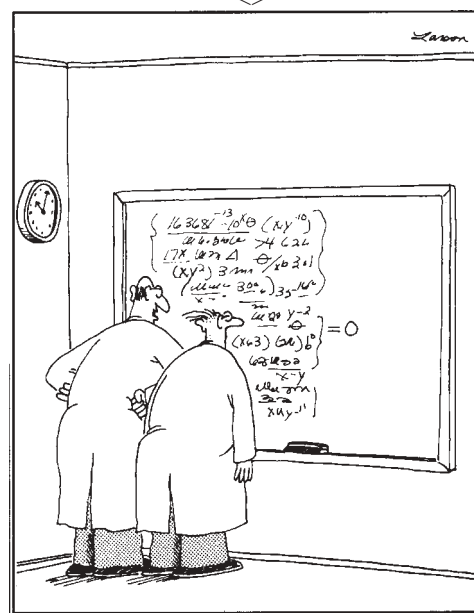
"No doubt about it, Ellington—we've mathematically expressed the purpose of the universe. Gad, how I love the thrill of scientific discovery!"

IPM 77 - Recent Statistical Advances in Geological and Environmental Applications

This Invited Paper Meeting jointly organized by IAMG and the International Statistical Institute (ISI) will be held during the 54th ISI Session at the International Congress Centre in Berlin, Germany, on Saturday, 16 August, 2003. The program is:

Frits Agterberg (Canada), IAMG Vice President – Introduction

Paul Switzer* (USA), Tapan Mukerji (USA) and Jo Eidsvik (Norway) – Hidden Markov Models for Stratigraphic Sequences with Application to Well-Log Data

Ricardo Olea* (USA) – New Lithostratigraphic Applications of the CORRELATOR System

Felix Gradstein* (Norway) – Quantitative Methods for Geological Time Scale 2004

Nicholas Fisher (Australia) – Remarks by Invited Discussant

Walther Schwarzacher (Northern Ireland) – Remarks by Invited Discussant

General Discussion

* Speaker. Written versions of the three invited papers will be available for viewing on http://www.isi-2003.de

International Geostatistics Congress announced

The Seventh International Geostatistics Congress will be held in Banff, Alberta, CANADA from September 25th - October 1st, 2004. The International Geostatistics Congress has been held regularly for more than a quarter century. The Congress has been in North America only once during this time: Lake Tahoe in 1983. The Congress is held every four years. The delegates at the 2000 Capetown conference unanimously supported the bid from North America to host the conference in Banff. The Geostatistics Congress is a rare opportunity to exchange innovative ideas, outstanding applications and emerging technology. Diverse fields of application are represented including mining, petroleum, hydrology, forestry and environmental science. The Congress provides a forum for practitioners and academics.

Deadline for Abstract Submission: September 30, 2003.

 www.geostats2004.com, cdeutsch@ualberta.ca

Modelling Permeable Rocks IV

30 March - 1 April 2004, University of Southampton

This international meeting chaired by AH Muggeridge (Imperial College) will bring together geologists and mathematicians, statisticians and engineers working on the modelling and analysis of the spatial patterns observed in permeable rocks. The emphasis will be on new developments in the mathematical modelling of geological patterns for the purposes of improving fluid flow prediction rather than the purely descriptive. It will be of interest to those who use quantitative/statistical methods to describe heterogeneity patterns in groundwater hydrology, the oil industry, nuclear waste disposal and other areas where geological heterogeneity is important to fluid flow.

Keynote Speakers:
Bo Bodvarsson (Lawrence Berkeley Natl. Lab)
Benoit Nœtînger (IFP)
Don Zhang (Los Alamos Natl. Lab)

More information is available at http://www.ima.org.uk/mathematics/

Analogue and numerical forward modelling of sedimentary systems; from understanding to prediction

Utrecht, The Netherlands, Thursday – Saturday 9-11 Oct. 2003

Understanding the origins of stratal architectures has traditionally been based on qualitative studies of inferences of geological processes and history from outcrop, well and seismic data, and to a lesser extent by quantitative observation of modern sedimentary processes. Today, predictions that were made on the basis of these studies are tested and also extended through the application of numerical and analogue forward models. For example, numerical forward models are used to make quantitative predictions of reservoir and seal distributions away from points constrained by well-data; similar models are also used to predict response of modern coastal systems to rising sea level, taking into account the external forcings, as well as the internal dynamics of sedimentary systems with their inherent non-linear and chaotic effects. This symposium is intended to make a contribution to this process of developing and applying models through presentations organised into two themes:

The symposium is supported by IAMG with a grant of $2000

Address: Netherlands Institute of Geosciences in Utrecht (NITG-TNO), de Uithof (University Campus) Princetonlaan 6, 3584 CB Utrecht;

http://basinmodelling.geo.uu.nl/

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.

PROGRAMME

Opening Session: Lecture by **John Aitchison** (University of Glasgow)

INVITED Lecture by **John C. Davis** (Kansas Geological Survey)

INVITED Lecture by **Nélida Winzer** (Universidad Nacional del Sur – Argentina)

Session 1: **Geometry and Statistics in the Simplex**.

CHAIRS: V. Pawlowsky-Glahn and J.J. Egozcue

Session 2: **Zero Replacement Strategies**.

CHAIRS: J. A. Martín-Fernández and G. Mateu-Figueras

Session 3: **Applications to Archeometry**.

CHAIRS: M. J. Baxter and J. Buxeda

Session 4: **Applications to Geology and Environment**.

CHAIRS: H. von Eynatten and A. Buccianti

Session 5: **Other fields of application**.

CHAIRS: H. Burger, J. Daunis-i-Estadella and R. Tolosana-Delgado

Session 6: **Design of Teaching and Computing Tools**.

CHAIRS: C. Barceló-Vidal and S. Thió-Henestrosa

October 14, 2003. CoDaINTRO Course: from theory to practice
A free one day course on compositional data analysis by John **Aitchison**, University of Glasgow UK, Josep Antoni **Martín-Fernández** and Santi **Thió-Henestrosa**, University of Girona, Spain.

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

IAMG is sponsoring this workshop with $2000 in support of scientists requiring aid to attend the meeting.

Announcements

GEOSTATISTICS
Postdoctoral Research Fellow

The **WH Bryan Mining Geology Research Centre, Australia** (BRC) is a world R&D leader in mining geostatistics, operations research and optimisation in mine design and planning. It is part of The University of Queensland, one of the largest mining and mineral research centres in the world. The BRC is self-funded with substantial links to industry, including collaborative research projects with major mining companies Rio Tinto, De Beers, BHP Billiton, AngloGold, AngloCoal, MIM, Newmont, Western Mining Corporation. In addition to valuable industry and research contacts, the Centre provides state-of-the-art facilities and a stimulating, high tech professional environment for advanced research, industry consulting and graduate training.

The successful applicant will have a PhD in geostatistics/spatial statistics or a closely related field. Applicants should have a good research record, industrial experience, strong computing skills and be able to work both independently and as part of a team. The successful applicant will undertake independent research, research training and teaching activities within the scope of the Centre. They will be responsible for selected BRC research projects and will be expected to collaborate and interact with the mining industry and the Centre's other stakeholders. This is a fixed term full-time appointment for 1 year, with possible renewal up to 3 years subject to funding. The level of appointment will be commensurate with qualifications and experience. The remuneration package includes an employer superannuation contribution of 17%, and will be in the range AUD\$50,142–61,071 p.a.

There is no closing date for applications. Applications including a curriculum vitae and the names of three referees should be sent to WH Bryan Mining Geology Research Centre, The University of Queensland, Brisbane Qld 4072, AUSTRALIA
(tel +61-7-3365-3473; fax +61-7-3365-7028; brc@uq.edu.au)

SCHOLARSHIPS FOR GRADUATE STUDIES
Geostatistics

The **WH Bryan Mining Geology Research Centre at The University of Queensland, Brisbane, Australia** (BRC) is offering scholarships for research on projects of significance to the development of geostatistical models.

Eligibility: Good mathematical/statistical and computing skills are desirable.

The (BRC) is a world R&D leader in mining geostatistics, operations research and optimisation in mine design and planning. It is part of The University of Queensland, one of the largest mining and mineral research centres in the world. The BRC is self-funded with substantial links to industry, including collaborative research projects with major mining companies Rio Tinto, De Beers, BHP Billiton, AngloGold, AngloCoal, MIM, Newmont, KCGM, Western Mining Corporation and Anaconda. In addition to valuable industry contacts that increase future employment prospects, the Centre provides state-of-the-art facilities and a stimulating, high tech professional environment for advanced research, industry consulting and graduate training.

Applications including a curriculum vitae, academic transcripts and the names of at least two referees should be sent to:

> **Professor Roussos Dimitrakopoulos**
> **Director, WH Bryan Mining Geology Research Centre**
> **The University of Queensland**
> **Brisbane Qld 4072, AUSTRALIA**
>
> *Applications must be received by 1 August.*

For further information, contact the BRC on:
(tel) +61-7-3365-3473   (fax) +61-7-3365-7028   (email) brc@uq.edu.au
www.minmet.uq.edu.au/~bryan