IAMG Newsletter

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Official Newsletter of the International Association for Mathematical Geology

Contents

Happy Birthday, I.A.M.G. !

The year 1998 marks the 30th birthday of our association. It was born at the turbulent, tumultuous International Geological Congress in Prague, 1968, when Russian troups occupied Czechoslovakia and the city of Prague after the so-called Prague Spring.

The IAMG has prospered in those 30 years. It has founded three international journals and a monograph series, a newsletter, sponsored numerous professional meetings and brought together scientists from all over the world for the exchange and development of ideas. Its original aim of "promoting international cooperation in the application and use of mathematics in geological research and technology" has been fulfilled and continues to be one of its major goals. We wish the Association continuing health and prosperity, and success in supporting and promoting mathematical geology.

From the Editor

The IAMG has shown once again that is indeed a truly international organization. Note the distribution of award winners who are announced in this issue (p. 6): Gert Jan Weltje - Netherlands, the SDBP committee with members from many countries and chairman Jose Brandle - Spain, Jan Harff - Germany, and John Doveton - USA. Four awards winners - at least four different countries. True, there may be a bit of a European bias (even John Doveton has direct European roots). And the composition of the awards committee (also an international gremium) appears to reflect the origin of the awardees somewhat (2 from US, 1 each from England, Spain and Germany) but - "honi soit qui mal y pense" - we know there was certainly no patriotic bias, and each of the award winners truly deserves the award. We should reflect also on what nominations the awards committee had to work with. There was in fact no plethora of suggestions. These remarks should in no way be misconstrued to cast any aspersions on the choice and the merit of the award winners. But wouldn't it be great if more members took an interest in the nomination procedure and mailed in their favorite, deserving mathematical geologist? Perhaps we could make the awards even more broad-based by including winners from many of the other countries represented by our international membership. Newsletter 55 as well as the IAMG web site (www.iamg.org) lists the qualifications and selection criteria of each of the four awards. Send your suggestions to the new Awards Committee chairperson Vera Pawlowsky (see p. 7).

The IAMG conference scene also has become very international. The last conference on North American soil was held 1994 in Mont Tremblant, Canada. Before that was the silver anniversary meeting in Prague; since then there have been Japan, China, Spain; this year it's Italy and next year Norway, and then Brazil in 2000. I think that's great for us in those respective countries since it makes it easier (less costly) to attend these conferences. But it's still a bit odd, with more than 45% of the membership in North America, that for so long conferences have been held elsewhere and so far no US conference is in sight (well, we understand that Americans like to travel to far and exotic places; so that is probably the reason).

Harald S. Poelchau

IAMG'99 Venue Set !

In 1999 the IAMG will meet in Trondheim (Norway) for its annual conference. The meeting will be organized by Richard Sinding-Larsen of the Department of Geology and Mineral Resources Engineering at the Norwegian University of Science and Technology NTNU.

This international conference will focus primarily on the use of mathematical geological modeling in the petroleum industry. In addition to resource assessment and exploration, other topics such as environmental studies, prediction and prevention of geological hazards, computer applications in geology and theoretical development in geostatistics, will be included in relevant sessions according to the wishes of the international scientific committee. The call for presentation of proposals of tutorial workshops and short courses will be launched together with the first announcement.

The conference will take place in Trondheim, August 8-13, 1999. Trondheim is a city in mid-Norway situated on a fjord. In 1997 it celebrated its 1000 year history. In early 1997 the city hosted the world championship in the Nordic ski disciplines and later in the year was the finishing line for the Cutty Sark tall ship race. The sessions will be held at the campus of the Norwegian University of Science and Technology. Vørnes, the airport of Trondheim, serves both domestic and international flights. There are also train connections going both to the capital city of Oslo and to Stockholm in Sweden.

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PRESIDENT'S FORUM

Have you ever wondered where the money is coming from to pay for the preparation and distribution of this your free Newsletter? It comes from royalties paid by the publishers of our publications, as is the case for the funds to finance most of the Association's activities. Because our publications are and will continue to be the Association's main source of income in the foreseeable future, I want to share with you some facts and issues that should concern all members.

As you may know, the Association publishes three journals and a monograph series:

	Editor-in-Chief	Publisher	Start	Issues/year
Computers & Geosciences	G. Bonham-Carter	Elsevier	1975	10
Mathematical Geology	M. E. Hohn	Plenum	1969	8
Nonrenewable Resources	R. B. McCammon	Plenum	1992	4
Monograph Series	J. A. DeGraffenreid	Oxford	1987	Variable

The Editors-in-Chief operate independently in the production of the publications, but all belong to a Publications Committee which is chaired by Frits Agterberg and also includes D. F. Merriam, N. Nishiwaki and J. Tipper. The committee provides a forum to resolve problems of common interest and is in charge of long term planning—including the recommendation to the IAMG Council for open-ended appointments of the Editors-in-Chief. Recently, for example, there was a case of alleged plagiarism against the authors of a paper published by Nonrenewable Resources. The case, instead of being resolved internally by the journal, was passed to the Publications Committee, which has concluded its investigation and is preparing recommendations, valid not only for this particular case and journal, but for future publications submitted to all our journals.

Another role of the Publications Committee is to coordinate the journals to minimize overlapping in topics. Computers & Geosciences is primarily devoted to the informatics of mathematical geology. Traditionally Computers & Geosciences has been a journal for the dissemination of new computer programs. Case studies are employed to illustrate novel capabilities and use of the software. Mathematical Geology has retained the pure and applied research aspects of mathematics and statistics applied to geology, with examples having a secondary role to illustrate methodology. Although application of a novel technique requires computer programming, papers in Mathematical Geology do not cover in details the preparation or use of the software.

Editor-in-Chief McCammon is retiring from professional activities and resigned last year as founding Editor-in-Chief of Nonrenewable Resources and the Oxford Monograph Series. The IAMG Council, following the recommendation of the Publications Committee, appointed Jo Anne DeGraffenreid and Daniel F. Merriam as his replacements. Jo Anne's appointment went into effect last Fall and Dan will take over Volume 8 of the journal to be published during 1999. Under Dan's direction, Nonrenewable Resources will change its title to Natural Resources Research and will be devoted to the application of existing mathematical and statistical methods to geology. Explanation of the methodology will be restricted to references or short reviews while the main focus will be on the application.

The Association benefits financially from its publications through the royalties paid annually by the publishers. Each journal and monograph has a separate contract. In the case of the monographs, the royalties have gone to the author(s), the Association, or both. Oxford has printed five monographs for the IAMG.

Following a common practice by publishers, the percentage of royalties paid on journals increases with volume of sales. The first increase in the royalty schedule for all journals occurs at 1000 institutional subscriptions, at which level the percentage goes up from 7% to 10%. The base of the first interval is set by zero institutional subscriptions both for Computers & Geosciences and Mathematical Geology, but by 301 institutional subscriptions for Nonrenewable Resources. Royalties in these schedules are based on percentage of gross receipts. Institutional subscriptions excludes IAMG member subscriptions and typically comprise libraries. The following is the amount of royalties IAMG received during 1997 for the year 1996:

	subscribers		
	members	non-members	royalties
Computers & Geosciences	287	512	$44,237.00
Mathematical Geology	430	343 (*)	13,842.22
Nonrenewable Resources	113	75 (**)	0.00
Monograph Series			160.73

(*) 131 outside USA
(**) 37 outside USA

Oxford published the last monograph 5 years ago and the first one is out of print, which explains the small payment. You may have noticed that during 1996 both Computers & Geosciences and Mathematical Geology were in the 7% royalty bracket and the Association did not receive royalties for Nonrenewable Resources because its institutional subscriptions were below the 301 minimum. Subscription rates for 1996 were:

	subscription rates US$			Year of
	member	non-member		contract
		USA	Outside USA	expiration
Computers & Geosciences	65	1,355*	1,070	1999
Mathematical Geology	30	525	615	2004
Nonrenewable Resources	45	210	245	2005

(*) In the case of C&G, the USA rate applies to all the Americas.

The Association charges as member's fee the cost of journal subscriptions of choice. Hence actual dues for individual members to belong to the IAMG are zero. Journal contracts regulate only the member subscription rates and promotion of our journals among libraries is primarily in the hands of the publishers. For your reference, the current rates are:

	member	non-member	
		USA	Outside USA
Computers & Geosciences	$69	1,443*	1,230
Mathematical Geology	32	595	695
Nonrenewable Resources	45	245	285

(*) In the case of C&G, the USA rate applies to all the Americas.

Computers & Geosciences is the Association's main source of income because it has both the largest number of institutional subscriptions and the highest price (too high in the eyes of many). The Association, however, has been unsuccessful in its efforts to convince Elsevier to lower library subscription rates on Computers & Geosciences or stop increasing them as a way to counterbalance drops in institutional subscriptions.

While the Association remains in good standing, the fact that besides interest on investments (derived from royalties), our income is drawn primarily from only one source should be of some concern. Conventional marketing practices recommend some minimal diversification, which in the case of other professional societies include charge of membership dues, advertisement in magazines and journals, and organization of conferences at a profit, all of which remain unexplored avenues at IAMG.

In the long run, sales and subscriptions to publications are largely determined by their quality. As a member and a scientist I encourage you to contribute to the Association's publications as the best way to help fulfill the IAMG's mission and secure its livelihood.

Ricardo Olea

IAMG Journal Report

NRR = NonRenewable Resources =>

Natural Resources Research!

Editor-in-Chief-Elect **Daniel F. Merriam**, who will assume responsibility for the journal from **R. B. McCammon** starting with vol. 8 (1999) has persuaded Plenum to go with a new name for the journal: Natural Resources Research. NRR is deeply in need of support to survive. Currently the number of non-member subscribers is 25% of the minimum required to start receiving royalties, which roughly is equivalent to the minimum number of non-member subscribers that Plenum considers a commercial success to keep the journal alive. Dan is visiting various conferences to promote NRR and solicit papers. As of 1 April he had five papers committed.

See the Plenum flyer next page

Computers & Geosciences

Nineteen ninety-seven, our 23rd year of publication, was an important one for Computers & Geosciences, with two innovations: the use of a compact disk, and the start of the 'online' version. The special issue on Exploratory Cartographic Visualization (v.23, no.4), edited by Alan MacEachren and Menno Kraak, was designed originally to be fully online. Because the journal was not quite ready for the online move by the publication date, and because of the limitations on speed of transmission, it was decided to include the full electronic version of the issue on a CD in a back pocket. Several of the papers in the issue demonstrate dynamic graphics functions, some requiring the user to download special 'plug-ins'. There has been an excellent response to the issue from readers and judging by the complaints from libraries that the disk is much sought after, the CD was a success. The online version started in earnest in time for the Fall AGU meeting in San Francisco. Although this does not yet have quite the polish of Elsevier's EPSL Online, it is an impressive start, and subscribers to the journal can get full access to Computers & Geosciences Online at no additional cost, at least for 1998.

There are worries that the speed of transmission is still too slow for regular access to electronic journals to be popular. I suppose that we can just hope that the technology will evolve fast enough to keep up with the demand for satisfactory performance. Certainly there are some important advantages of online access. The ones that appeal to me the most are the ability to use colour illustrations at will, and the possibility to include datasets that would normally be too voluminous to include in print.

Although the journal does not charge for colour figures if separations are supplied (an important feature of the printed version), the author still must physically make the separations, and this can be a costly process. Colour figures and images are now produced readily by many computer applications, and the full impact and information content of graphical output often demands colour for proper interpretation of results. With online publication, colour illustrations can be used at will, without incremental cost.

Current publications in print are normally restricted to small tables of data. Large data tables are simply not practical, and where they are used, the reader who needs the data digitally must either retype it by hand, scan (and edit) it, or obtain a digital copy from the author. Data in an online journal is not restricted, and can be downloaded easily to the reader's machine. It remains to be seen whether authors will take advantage of this capability, but it could herald new types of paper, with large data sets to document in full the results of analysis. Such a feature could be particularly useful for GIS and image analysis studies, for example.

Of course the next step is to provide code in executable form attached to a paper, so that readers can run analyses of their own, and make their own data interpretations. For the time being we are staying with distribution of source code via FTP, but such a development may not be too far away.

There are several other advantages of online access. For those unable to get to a library that subscribes to the journal, the online version is a wonderful asset. It may also simply be more convenient to look up an article electronically, than to walk to the library! Making printable copies by downloading a file is probably easier than using the FAX machine for some. Being able to look for a paper by author, keywords and titlewords is also very useful, and such a search need not be restricted to a single journal. The ability to bring up and read abstracts of cited papers, not simply look at the bibliographic reference, is another important asset.

Of course, online access will not suit everybody. For those without good Internet access, online journals are a non-starter. And for many, reading extensive text material on a computer monitor is trying on the eyes, and forces the body into a position that is not comfortable for extended periods. Many people prefer to read in an armchair, on a plane, or even out in the park, places not conducive to computer use. Let us hope that printed journals will still be with us for some time to come. Of course, there is the nasty question of cost, but that is a topic that can wait for another day.

Graeme Bonham-Carter

COMPUTERS & GEOSCIENCES

''Special Issue: Applications of Virtual Intelligence in Geosciences" - Guest Editor: *Shahab Mohaghegh*

Planned is a special issue for the Computers & Geosciences Journal on Virtual Intelligence Applications in Geosciences. Virtual Intelligence may be defined as a set of sciences, paradigms, and techniques attempting to imitate life. From mimicking the human brain when solving complex, nonlinear problems to using Darwinian theory for solution optimization, Virtual Intelligence is a fast growing discipline with high potential in many areas of science and engineering. The past decade has witnessed new initiatives in applying Virtual Intelligence to the research and development of the earth and related sciences — a new and promising area that deserves attention and recognition. This issue will be dedicated to the use of three Virtual Intelligence paradigms in geosciences — artificial neural networks, fuzzy set theory, and evolutionary computing. Welcome are papers in areas such as geology, geophysics, reservoir engineering, geostatistics, reservoir modeling, and other topics related to the earth sciences. If you are interested in submitting a paper to this special issue, send an abstract to the address below by July 1, 1998.

Final manuscript deadline is December 15, 1998.

Publication guidelines may be found on the IAMG homepage: http://www.IAMG.org

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Nonrenewable Resources

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Recent Books of Interest

The book "Geographic Information Systems for geoscientists" (Pergamon, 1994) by Graeme Bonham-Carter was reprinted for a second time (i.e., 3rd printing) last Fall. Information and order form is available at http://www.elsevier.nl:80/inca/publications/store/3/0/5/2/3/

E.O. Holzbecher (Institute for Freshwater Ecology, Berlin, Germany) **Modeling Density-Driven Flow in Porous Media** 1998 . XVIII, 286 pp. 115 figs., 52 tabs. With CD-ROM. ISBN 3-540-63677-3, Hardcover DM 128.- , Springer-Verlag, Publication date: June 1998

N. Kresic (Texas Christian University, Forth Worth, TX, USA) **Quantitative Solutions in Hydrogeology and Groundwater Modeling** 1997. XVI, 461 pp., ISBN 1-56670-219-4, Hardcover DM 156.-

F.-W. Wellmer (Hannover, Germany) **Statistical Evaluations in Exploration for Mineral Deposits** 1998 . XXII, 379 pp. 120 figs., 74 tabs. , ISBN 3-540-61242-4, Hardcover DM 98.-, Springer-Verlag

M. Armstrong (Fontainebleau, France) **Linear Geostatistics** 1998 . Approx. 220 pp., ISBN 3-540-61845-7, Hardcover, Springer-Verlag, Publication date: November 1998

A. Danesh (Department of Petroleum Engineering, Heriot Watt) **PVT and Phase Behaviour of Petroleum Reservoir Fluids** 1998, Hardbound, ISBN: 0-444-82196-1, 400 pages, NLG 275.00, US$ 158.00, Elsevier

Journal of Classification

Aims and Scope

To publish original and valuable papers in the field of classification, numerical taxonomy, multidimensional scaling and other ordination techniques, clustering, tree structures and other network models (with somewhat less emphasis on principal components analysis, factor analysis, and discriminant analysis), as well as associated models and algorithms for fitting them. Articles will support advances in methodology while demonstrating compelling substantive applications. Comprehensive review articles are also acceptable. Contributions will represent disciplines such as statistics, psychology, biology, information retrieval, anthropology, archeology, astronomy, business, chemistry, computer science, economics, engineering, geography, geology, linguistics, marketing, mathematics, medicine, political science, psychiatry, sociology, and soil science.

Published two times a year, Journal of Classification typically has four sections in each issue: articles, short notes and comments, software abstracts, and book reviews.

Members of the Classification Society of North America (CSNA) will receive the Journal of Classification as part of annual membership dues (US $65 for the current year).

Springer-Verlag, ISSN 0176-4268

Announcing a new journal title:

Natural Resources Research

Formerly: *Nonrenewable Resources*

Currently edited by Richard B. McCammon, *U. S. Geological Survey, Reston, VA*

Starting in 1999, this journal will be edited by Daniel F. Merriam, *Kansas Geological Survey, University of Kansas, Lawrence, KS*

Natural Resources Research, as this journal will be known starting with the first issue in 1999, will be revitalized and redirected by Dr. Merriam.

This journal is sponsored by the International Association for Mathematical Geology, and thus the scope will be revised to orient the journal towards its roots in mathematical geology.

In particular, the scope will be broadened to include all natural resources, not just nonrenewable ones. So ***Natural Resources Research*** will provide insight into the understanding, development, and use of mineral resources, including minerals, industrial minerals, coal, oil and gas, water, and geothermal. Papers will explore the use of quantitative approaches to solving problems involving mineral resources and the environment in which they occur. Emphasis will be on the origin, accumulation, and occurrence of mineral resources. Equally important is the origin and development of sedimentary basins in which the mineral resources occur.

The journal will consist of peer reviewed research articles, short notes, and where appropriate review articles, letters to the editor, and items of interest to the readers. Some forthcoming articles will explore burial history on the Arkoma Basin, petroleum exploration in south-central Kansas, fuzzy mineral potential mapping, and geothermal resources of North Dakota.

IAMG Awards, Prizes, Medals

The recipients for the four IAMG awards to be presented at the annual meeting in Ischia have been chosen by the IAMG Awards Committtee:

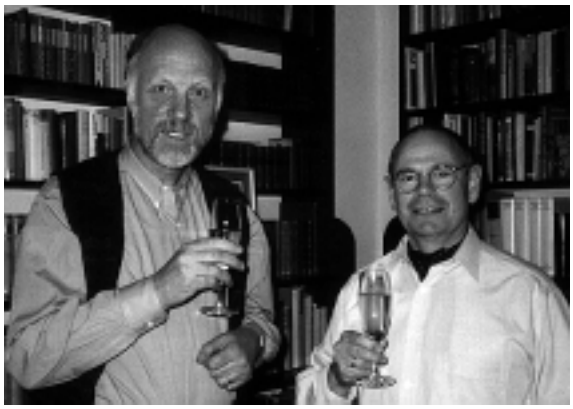
Chayes Prize - Subcommission on Databases for Petrology;
Griffiths Award - John Doveton;
Krumbein Medal - Jan Harff;
Vistelius Award - Gert Jan Weltje.

The SDBP (**Subcommission on Data Bases in Petrology**), which is honored with the Chayes Prize, is one of four subcommissions in the IUGS Commission on Systematics in Petrology. The SDBP was established in 1980 by Prof. Chayes. The objectives of the SDBP are to organize, plan, create, update and distribute multi-purpose petrologic data bases to facilitate their use in research and education. Up to now two petrologic data bases have been created for two main rock types. **Ig**neous Data **Ba**se, IGBA, the brain-child of Felix Chayes, was constructed in successive IGCP Projects No. 163 and No. 239 (led by F. Chayes and J. Frizado, resp.). **Sed**imentary Data **Ba**se, SEDBA was realized in IGCP Project No. 269 (led by N. Nishiwaki), both have been constructed by many volunteers from different countries. IGBA has more than

Members of SDBP at the 1986 meeting of IGCP nº 239 in Turkey. From left to right upper row: C.Unan, A. AlMishwat, J.Durham, Felix Chayes, J. Brandle, G. Nagy
lower row: J. Hirson, N. Nishiwaki, and R. Clark.

22000 records of analytical data from all over the world with geographic and geological information (major, minor, trace elements, mineralogical, petrological, radiometric age and others) and SEDBA has about 4000 records of analytical data with a variety of sedimentological information. After the termination of these projects, the SDBP is the independent organization which manages these data bases. The data bases are available in different forms via Internet, together with descriptions and documentation, from the following web-sites: http://www.ige.csic.es/sdbp.htm
http://www.koka.ac.jp:8080/ss2/yamamoto.
Many researchers from different countries have actively joined the SDBP. Current members of the SDBP are as follows.
Chairman: J. L. Brandle, Secretary: G. Nagy, Active members: N. Nishiwaki (Leader of Sedimentary Rocks), A. Mishwat, J. Nan, S. Ruxiang, V. Ryakhwsky, C. Unan.

John H. Doveton, the Griffiths Award winner, received his MA degree from Oxford and PhD from Edinburgh University, both in geology. Following work as an exploration geologist for Mobil Oil Canada, he has been a research associate at the Kansas Geological Survey and Adjunct Professor in Geology at Kansas, Kansas State, and Wichita State universities, with publications in the area of computer applications to geology and petro-physics. He has taught over 70 log analysis courses and workshops for universities and industry in the United States, Canada, Europe, South America, and the Middle East since 1975. Doveton is an author of the widely-used KOALA/TERRALOG interactive computer log analysis system. He received the 1981 Best Paper Award from "The Log Analyst" and has been a Distinguished Speaker for the SPWLA. He is the author of the textbooks, "Log Analysis of Subsurface Geology: Concepts and Computer Methods" (Wiley-Interscience, 1986), "Geologic Log Interpretation" (SEPM, 1994), and "Geological Log Analysis Using Computer Methods" (AAPG, 1994).



Doveton and Harff celebrating their awards

Jan Harff, who will receive the Krumbein Medal, is head of the Marine Geology Section at the Baltic Sea Research Institute in Warnemünde (IOW), Germany and a professor at the University of Greifswald. He has worked on many aspects of quantitative geology including the development of basin modeling methods and application for oil and gas geology while he was employed at the Central Insitute for Physics of the Earth in Potsdam, former East Germany. Since his move to the IOW in 1992 he has been involved with modeling of sedimentary facies and modern marine environments. One of his special fields of interest is methods of multivariate geostatistics where he brought ideas together from the eastern and western hemisphere, particularly in cooperation with John C. Davis' group at the Kansas Geological Survey in Lawrence. Harff has been very active in IAMG and currently heads the membership committee.

The Vistelius Award recipient, **Gert Jan Weltje**, is an assistant professor of Mathematical Geology at the Faculty of Civil Engineering and Applied Geosciences, Delft University of Technology, and at the Netherlands Institute of Applied Geosciences TNO (National Geological Survey), both in Delft, the Netherlands. He is a native of the Netherlands and received his B.Sc., M.Sc. and Ph.D. degrees in Earth Sciences from Utrecht University (dissertation: 'Provenance and dispersal of sand-sized sediments: reconstruction of dispersal patterns and sources of sand-sized sediments by means of inverse modelling techniques.')

He has held research and teaching positions at the Earth-Science Faculty of Utrecht University. Research on radiometric provenance analysis was carried out in collaboration with the department of Nuclear Physics, University of Groningen. At the Vrije Universiteit, Amsterdam, in the Netherlands Research School of Sedimentary Geology (NSG) he worked on a project aimed at the development of new techniques for mass-balancing of basin fills and their source areas. During the same period, he also worked as a statistical-sedimentological consultant for the oil industry.
Weltje's research interests centre on formalisation and quantification of concepts in sedimentary geology. He is currently attempting to establish a fusion between inverse methods in sedimentary petrology and macroscopic sedimentary process simulation, in order to develop tools for geologically constrained petrophysical prediction and reservoir assessment.

CALL FOR AWARD NOMINATIONS

The IAMG council has agreed to change the policy of IAMG awards: starting next year, the awards will be presented in the same year for which the award is given. Normally, there would be two awards in each year on alternating schedule. To catch up, all four awards, like this year in Ischia, will again be presented together in 1999 at the meeting in Trondheim.

The Association invites all members to submit nominations for the 1998 awards, which according to the new biennial schedule are the Krumbein Medal and the Griffiths Award.

The **William Christian Krumbein Medal**, the highest prize given by the Association, is awarded to senior scientists for career achievement, which includes (a) distinction in application of mathematics or informatics in the earth sciences, (b) service to the IAMG, and (c) support to professions involved in the earth sciences. There is no stipulated preference for fields of application within the earth sciences.

The **John Cedric Griffiths Teaching Award** is presented to honor outstanding teaching, with preference for teaching that involves application of mathematics or informatics to the earth's nonrenewable natural resources or to sedimentary geology. Age or academic status are not conditions for the award.

Before **October 15, 1998**, please send nominations including a resume and short statement summarizing the relevant qualifications of the nominee to the Awards Committee Chair:

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Escola Tecnica Superior d'Enginyers
de Camins, Canals i Ports
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Vera Pawlowsky has recently been appointed Awards Committee chairperson by the IAMG Council, replacing **John Harbough** who was the founding chair.

While selection of the recipients belongs to the Awards Committee, it is the **privilege of the IAMG members** to make the nominations. You also have the opportunity to suggest candidates for the other two awards given in and for 1999: the **Vistelius Award** and the **Chayes Prize (**deadline**: 15 Jan. 1999)**.

Letter to the Editor - More Eigen lore

Dear Editor:

I must commend you for revitalizing the *IAMG Newsletter*. The mention in your premiere issue (no. 50) of Rudolf Gottlieb Viktor Eigen (1833–1876), recognized by many as the father of mathematical geology, and your request for "serious" contributions to Eigenlore struck a nerve. As I perused *Newsletter* no. 54, with its revelations about a self-described "aging algebraist of the Far North" (Viktor Eigen—the namesake and presumed great-grandson of the renowned R.G.V. Eigen), I resolved to speak out.

Perhaps I have held my peace too long, selfishly clinging to my meager bits of information while others magnanimously post their megabytes. It is exactly the "serious" nature of what I am about to relate that has stayed my pen these many years—that, and my time-consuming preoccupation with genealogical investigation that scarcely lets me complete one project before I am off on another. I pray that my disclosures are not premature and that my conjectures, thus entrusted to younger, more vigorous researchers, may lead one day to valid conclusions and a better understanding of our honored forefather.

My long-ago, first genealogical endeavor was that of tracing back, from dot to dot, the line of my paternal grandmother. This led eventually to Fagersta and thence to Söderberke—by way of Sthlm! *Farmor* was instantly forgotten as I realized that the opportunity of a lifetime beckoned. My petition for an audience with RAR, the exalted scholar whom I can only regard as Keeper of the Holy Ancient Briefcase, was favorably received.[1] Soon I held in my gloved and trembling hands the actual *Eigentum* of R.G.V.

At that time, miraculously and almost unaccountably, the extraordinary trove of Eigen documents[2] recovered from the dusty garret in Sthlm included a letter presumed to be from English mathematician and writer, Charles Lutwidge Dodgson (1832–1898), intended for his German collaborator, Antonie Zimmermann. How this came to pass we can only speculate, but it is well known that Aloysius Jacobi was an ardent admirer of Queen Victoria and lavished vicarious attention upon Her Majesty's young daughter. Could the letter have inadvertently slipped between the pages of Princess Beatrix's "Alice..." *Übersetzung*, of which Dodgson (Lewis Carroll) was so proud, thereby falling into the hands of Aloysius? (See *IAMG News Letter* no. 26.)

Except for a few pleasantries and the initials, L.C., the letter to Antonie (written in Dodgson's unmistakable hand) contained nothing but the words of Carroll's rather indifferent poem, "A Game of Fives," of which Verse 5 was doubly underlined:

> Five dashing girls, the youngest Twenty-one:
> But, if nobody proposes, what is there to be done?
>
> — 1869

This is doubtless an allusion to Eigen's Göttingen coterie, the notorious *Nachtfalterfünflinge*, and its junior member, Ännchen von Vysherad.

Although the Rudolf Gottlieb Viktor Eigen Memorial Committee has referred briefly to the incident at Göttingen University (ca. 1860) that forced the resignation of young Prof. Eigen,

> "a scandal that rocked the university and purportedly involved no less than *five* [italics mine] professors' daughters"
>
> — *IAMG News Letter* no. 6

there has been no published account of this tumultuous phase of R.G.V.'s early life—a life cut short by the tragic accident on the Pasterzen glacier.

Sentiments expressed by the mid-19th century Göttingen intelligentsia echo in the description of the modern-day Viktor (JD, *Newsletter* no. 54), who is said to possess "all the intellectual passions and hot-blooded lifestyle that are the birthright of a true Eigen." It is these traits that account for the irresistible, moth-to-the-flame reaction of the fair sex to men such as R.G.V. Eigen and his predecessor, Gordon Lord Byron. Byron wooed his conquests with poetry, Eigen with song. We can imagine the exquisite, golden tenor of young Eigen as he serenaded the *Gänseliesel*:

> I bin a jungs Bürscherl, kann lesn und schreibn,
> drei ho da ro, drei ho da ro,
> und kann a mein Dianderl die Langweil vertreibn,
> drei ho da ro und schneids å![3]

One of England's great beauties, upon first seeing Byron, is said to have exclaimed, "This pale face will be my destiny." It was a phrase oft repeated in Göttingen's most intimate circle and, indeed, for one lovely *Nachtfalter*, that destiny was an ordeal of alternating *Liebe und Schmerz*.

To be continued.

[name, known to Editor, withheld upon request]

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[1] In fact, I did not meet the great one, himself, whom I understood to be taking a bath. I now believe tea was meant. It was a weekday, after all, and rather late in the day.

[2] Extraordinary, indeed! The attribution of Eigen's Romani *Wörterverzeichnis* to Otto v. Habsburg (11 years old at the time of R.G.V.'s death) seems dubious. Is it not more likely that it was, in fact, Otto's list that was derivative? Deciphering the so-called "Sthlm Cryptograms," integral parts of which are characterized by recurring notation of the form sinam *z*, cosam *z*, Δam *z*, tanam *z* interspersed with metalinguistic expressions, has proven a daunting task; work continues.

[3] Man's intellect, through weary toil, grown stale,
besieged by numbers, words, unanswered mail,
finds respite twixt the skirts of fair companions,
and tops it off with several pints of ale!

Member News

André Journel honored twice

Prof. Andre Journel has been selected as the 1998 recipient of the SPE Anthony F. Lucas Gold Medal. The Medal is the Society's highest recognition for technical contributions to the advancement of petroleum engineering technology. In recognising Andre with this award, the SPE cited his landmark contributions to the theory of geostatistics and its application.

In addition, André Journel has been elected to the Academy of Engineering. Election to the academy is considered one of the highest professional distinctions that a U.S. engineer can receive. Academy membership honors those who have made "important contributions to engineering theory and practice, including significant contributions to the literature of engineering theory and practice," and those who have demonstrated "unusual accomplishment in the pioneering of new and developing fields of technology."

Journel is the Donald and Donald M. Steel Professor of Earth Sciences at Stanford University in geological and environmental sciences and petroleum engineering. Born in Vietnam and educated in France, Journel earned his bachelor's degree in mining engineering in 1967 at the National School of Mines in Nancy, France, and received doctoral degrees in economic geology (1974) and applied mathematics (1977), both from the University of Nancy. In the late 1960s, he became a protegé of Georges Matheron at the Paris School of Mines; together, they worked to bring the power of the computer to practical problems such as the evaluation of mineral resources.

Journel introduced geostatistics to Stanford when he arrived in 1978. At the time, he recalled, the idea of stochastic modeling of geological structures was considered a little "crazy." Classic models of underground structures like an oil reservoir are calculated from whatever data are available, for example from drilling wells; underground terrain can vary dramatically between the wells, but it is difficult to account for that uncertainty. Geostatisticians start instead, Journel said, "by accepting your ignorance and then correcting it gradually by incorporating knowledge." A stochastic model, he explained, begins with random numbers that are constrained as more data are added about the reservoir. The result is a model with multiple images, equally probable, to describe how oil in the reservoir may behave. "Those different images provide a representation of your uncertainty which you can use to manage your risk," Journel said.

Currently Journel works with 16 graduate students on a range of projects from environmental modeling to petroleum engineering. He is codirector of the Stanford Center for Reservoir Forecasting, an interdisciplinary group which students and faculty work with industrial affiliates on problems of oil reservoir forecasting.

Excerpted from: http://www-leland.stanford.edu/dept/news/report/news/february18/nae218.html

High Honors for Danie Krige

For his efforts in geostatistics, the Moscow State Mining University in Moscow has awarded **Daniel G. Krige** an honorary Doctorate on 2nd September 1997. This is an especially great honor as it is only the second Honorary Doctorate awarded by this University to a non-Russian.

Clayton V. Deutsch has returned "home". Effective January 1, 1998 he is no longer at Stanford but is teaching and conducting research as Associate Professor at the University of Alberta. He remains a Consulting Professor at Stanford to take care of finishing Ph.D. students. His new coordinates are:

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Department of Civil & Environmental Engineering
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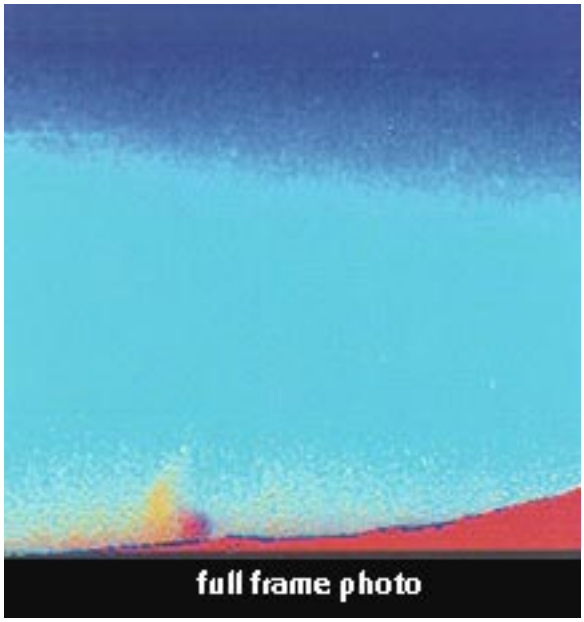
ΣΣ

James V. Carr, former IAMG Newsletter editor, forwards the following news release:

University of Nevada, Reno researchers make major discovery in Mars images

Dust devils on the surface of Mars have been discovered in images being examined by researchers at the University of Nevada, Reno.



Mars' famous dust storms - which can be seen from backyard telescopes and sensationally cover the red planet's surface every several years - may be triggered by dust devils.

"Mars' atmosphere is extremely thin and very high wind velocities are needed to pick up dust. These dust devils, or mini-twisters, cause these high winds," said professor James R. Carr of the Department of Geological Sciences at the university's Mackay School of Mines.

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Geoffrey S. Watson, 1921-1998

Ask a geologist, economist, environmental scientist, or any scientist working with time series to name a statistic. Chances are good the responses will include "Durbin-Watson." Dr. Geoffrey Watson died on January 3, 1998, one month after his 76th birthday. Rare for a statistician, he received a full obituary in The New York Times (January 18, 1998, page 25).

Dr. Watson's connection to IAMG is fundamental: He was the first vice president of the Association, serving from 1968 to 1972. Dr. Watson's connections to the co-authors are also direct: He established the precedent that a statistician would serve as vice president of IAMG, and Dr. Gotway currently holds the position. Also, he was the major professor for Dr. Cressie, who in turn was the major professor for Dr. Gotway.

Dr. Watson's life and career would fill many paragraphs even if recounted only in outline. Born in Australia, he graduated from Melbourne University in 1942. In 1947, he went to the United States to study at the Institute of Statistics in North Carolina. In 1949, he received an appointment to the Department of Applied Economics at Cambridge University, where he began a long collaboration with James Durbin. Receiving his Ph.D. from North Carolina State University in 1951, Dr. Watson returned to Melbourne to teach. Subsequent academic assignments included the Australian National University, the University of Toronto, Johns Hopkins (founder of the Department of Mathematical Statistics), and Princeton University, where he chaired the Department of Statistics for a large portion of the period from 1970 to 1985. He retired from the University in 1992. The town of Princeton remained his principal residence, though he loved the mountains and had a "country place" in the Adirondacks.

Dr. Watson reviews his career—and adds the spice of life events—in his whimsically titled autobiographical sketches "A Boy from the Bush" and "Circling the Square," most conveniently available in The Art of Statistical Science: A Tribute to G.S. Watson (K.V. Mardia, ed., John Wiley & Sons, 1992). He had a long and enjoyable association with John Wiley & Sons, not only publishing but also serving on the editorial board of the Wiley book series in probability and statistics for several decades. The Durbin-Watson statistic, Dr. Watson's most widely used scientific contribution, provides scientists a test for autocorrelation in serial data. Developed in the late 1940s, the method has been technically refined, but it remains a hallmark diagnostic test. Though best known for the Durbin-Watson method, Dr. Watson worked in many statistical fields, including time series, directional data analysis, compositional and shape data analysis, technical problems in inference, spatial statistics, and genetic statistics. He made widely recognized contributions addressing geologic (e.g., continental drift theory, global warming, combustion of fossil fuels, and ozone depletion) problems. His statistical approach to directional statistics was best summarized in his 1983 book Statistics on Spheres. His writings were a joy to read, always scientifically informed, technically masterful, and presented with wonderful intuition. Outside of academics, Dr. Watson and Shirley, his wife of 45 years, raised four children. He enjoyed hiking, sailing, and traveling and was an accomplished artist. His water colours (to use his native spelling) of landscapes were featured in exhibitions.

We expect that Dr. Watson is at work somewhere applying statistical methods to a practical problem, or clearing away trees and bushes, or painting a beautiful scene. In all his many facets, he will be missed.

Carol Gotway Crawford and Noel Cressie

Stephen Metzger, a doctoral student at Nevada, made the discovery from Mars Pathfinder imagery, using methods suggested by Carr. Metzger made the discovery in images downloaded from the NASA Jet Propulsion laboratory in Pasadena, Calif., using color filters.

By comparing and contrasting the Mars data with that from arid regions on Earth, such as Nevada, Metzger said much can be learned about local air pollution, acid rain and global climate change.

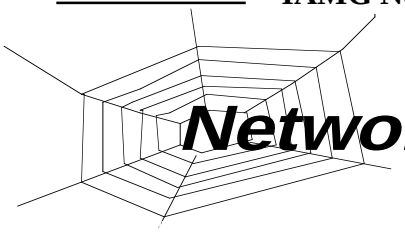
"Dust devils were thought to have been discovered by the Viking orbiter in 1976, but that was difficult to confirm," Carr said. "The significance of this discovery is that it confirms the Viking discovery and shows that dust devils are an important geological process on Mars. In fact, dust devils may be the primary soil erosion process on Mars."

Upon making the initial discovery, Metzger contacted Timothy Parker, a NASA scientist in Pasadena, and Jeff Johnson, U.S. Geological Survey scientist, in Flagstaff, Ariz., for verification and further image processing. Results of this image processing were presented Tuesday, March 17, in Houston at the Lunar and Planetary Science Conference.

After seeing these results at last week's international gathering of planetary scientists in Houston, several NASA science teams are eager to use the dust devil images in their atmospheric science and geology research, Metzger said.

NASA officials have credited Metzger and Carr as the first researchers to discover the dust devils in Pathfinder imagery. Metzger is a NASA Fellow, funded by the University of Nevada System Space Grant Consortium. He also is involved with the Desert Research Institute, a sister institution of the University of Nevada, Reno.

An image showing the dust devils is available at this website: http://www.unr.edu/nevadanews/vol2no118.htm



Our Web master has just started a new position at the Alberta Geological Survey as Information Geologist. His new coordinates are:

Eric Grunsky
Alberta Geological Survey
6th Floor, 9945 108 Street
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Webmaster Grunsky reports that he has finally established a **European mirror site** at:
`http://www.sbg.ac.at/kiz/mirror/iamg/`
It has the same content as the official IAMG (`http://www.iamg.org`) and should be easier to reach for European net surfers.

New web site for Mathematical Geology

We now have a web site set up for the journal "Mathematical Geology". It includes instructions to authors, and the contents of issues prepared and sent to the publisher. There will be more information as it occurs to me and **Michael Hohn,** Editor-in-Chief of Mathematical Geology, finds time. The address is: `http://epidote.wvgs.wvnet.edu/~mathgeo/`
Mike Hohn would be interested in any suggestions for ways in which the web site could be made more useful to authors and readers of the journal.

Also, Mike would like to expand the pool of reviewers for MG. Anyone who might like to review papers submitted to the journal should contact Mike with their name, address, and the type of papers they would like to see.
(Find his address on p. 2)

The **Virtual Geosciences Professor**'s Page at:
`http://www.uh.edu/~jbutler/anon/anon.html`
has been updated. There are more than 170 institutions with about 900 course resources listed. In addition, there are nearly 150 "virtual field trips" listed along with assorted other resources that you and your colleagues may be interested in.

Journal Contents - Continued from page 4

Using logistic regression to merge mineral databases: Deborah J. Shields and Stella W. Todd

A case study of model selection and parameter inference by maximum likelihood with application to uncertainty analysis: Eulogio Pardo-Igúzquiza and Peter A. Dowd

Mesostructural and microstructural evidences for a two-stage tectono-metallogenetic model for the uranium deposit at Mika, northeastern Nigeria—A research note: C.E. Suh and S.S. Dada

Book Review: Steps for preparing uranium production feasibility studies—A guidebook, John A. Patterson, Bethesda, Maryland; Correspondence to William N. Szymanski

Book Review: United Nations International Framework Classification for Reserves/Resources—Solid Fuels and Mineral Commodities, Richard Nötstaller, Osterreich, Austria; Correspondence to William N. Szymanski

Book Review: Dominion, Janet S. Sachs, U.S. Geological Survey, Reston, Virgina; Correspondence to William N. Szymanski

NRR Volume 7, no. 2 (1998)

Directions Column: The Times; Lawrence J. Drew

Introduction: Special Issue on Energy Supply and Demand, and Their Relationship to the Transportation Sector: Timothy C. Coburn

Forum article: The transportation side of energy supply and demand: Michael F. Lawrence

Oil as a finite resource: James J. MacKenzie

An assessment of oil supply and its implications for future prices, Danilo J. Santini

Transportation energy demand: Model development and use: Chris Kavalec

The future of global oil demand and the growing role of the transport sector: Silvia Pariente-David,

Transportation subsidies, public goods, economic efficiency, and equity, Michael F. Lawrence

Question & answer session from "Energy supply and demand: Policy issues for the next millennium, Part I:" Timothy C. Coburn

A simplified spreadsheet program for estimating future growth of oil and gas reserves: James W. Schmoker and Robert A. Crovelli

Book Review: Opals, Howard T. Evans, Jr., U.S. Geological Survey (retired), Bethesda, Maryland; Correspondence to William N. Szymanski

Book Review: Computing Risk for Oil Prospects: Principles and Programs, Hernani Chaves, URCA - Rio de Janeiro - RJ - Brasil; Correspondence to William N. Szymanski

NRR Volume 7, no. 3 (1998)

Directions Column: The 1997 climate conference in Kyoto, Japan; Lawrence J. Drew

Forum article: The concept of validity on mining claims: J.R. Evans

Geologic anomaly analysis for space-time distribution of mineral deposits in the middle-lower Yangtze area, southeastern China: Lu Xinbiao and Zhao Pengda,

Three-dimensional distribution analysis of Phosphorus content of limestone through a combination of geostatistics and an artificial nerual network: Katsuaki Koike

Factor analysis of trends in energy and metals production and consumption in developed and developing countries: Saul B. Suslick

On depletion of an exhausting natural resource: Lester D. Taylor

The microeconomics of mineral extraction under capacity constraints: Robert D. Cairns

Mathematical Geology

Volume 30, Number 1 (1998)

Singularity and nonnormality in the classification of compositional data — GC Bohling, JC Davis, RA Olea, J Harff

Ordinary cokriging revisited — P Goovaerts

Spectral estimation of irregularly sampled nonstationary multidimensional processes by time-varying periodogram — L Chao G

Analysis and estimation of natural processes with nonhomogeneous spatial variation using secondary information — Cassiani, G Christakos

Interpolation with splines in tension: A Green's function approach — P Wessel, D Bercovici

Maximum likelihood estimation of spatial covariance parameters — E Pardo-Igúzquiza

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IAMG'98 Ischia, Italy: 4-9 Oct. 1998

SCIENTIFIC SESSIONS

S1 New avenues in spatio-temporal estimation

Conveners: Marc Serre and Patrick Bogaert

Stochastic space/time analysis and mapping are of increasing importance in geoscientific problems. Most of the theoretical tools and techniques of stochastic data processing have been designed to operate exclusively in space or in time. However, powerful models and techniques that study problems in a composite space/time domain have been recently developed and are applied in new and diverse scientific fields, such as water quality assessment, exposure analysis and health effects of pollutants, transport modeling, and land use patterns, to just name a few. A modern space/time analysis should include a spatio-temporal integration of knowledge and information bases coming from a variety of sources concerning the problem analyzed. This session will address this issue by exploring new avenues in space/time modeling and mapping. While traditional minimum mean square error methods have been widely used in spatial estimation, giving rise to the popular kriging methods, they seem to be lacking the flexibility to incorporate important sources of general and case-specific knowledge that are often available. Therefore this session will not restrict itself to minimum mean square error methods, but will also consider alternative avenues such as information-theoretic, bayesian maximum entropy, neural network, etc. methods, which provide a sound methodology to incorporate various combinations of soft data and information in the estimation procedure when they are relevant. The focus will be on both theoretical developments and case studies demonstrating how general as well as case-specific knowledge and data (hard and soft) can be included in space/time analysis in a systematic and rigorous manner. Following the presentations, the discussion will focus on the fruitful interaction between theoretical modeling and practical needs. Interested parties should contribute by sending an abstract focused on specific theoretical and/or practical aspects of space/time analysis, for example in the following areas:

For detail information on IAMG'98 see:
http://www.unina.it/dgv/IAMG98.html

Composite space/time analysis and processing; Incorporation of various kinds of knowledge-bases in space/time analysis; Space/time analysis of multivariate data sets; Quantitative assessment of spatio-temporal heterogeneity; Computer visualization and animation of space/time data sets; Applications of spatio-temporal analysis (case studies);

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Patrick Bogaert, Université Catholique de Louvain, Faculté des Sciences Agronomiques, Unité de Biométrie, Place Croix du Sud, 2 Bte 16, B-1348, Louvain-la-Neuve, Belgium, e-mail: bogaert@biom.ucl.ac.be

S2 Predictive modeling in environmental geosciences

Conveners: Roussos Dimitrakopoulos and Andrea G. Fabbri

The earth sciences are undergoing a transformation in which the emphasis on exploration and mapping for natural resources is matched by environmental analysis and the assessment of the impacts of natural processes and of human activity on quality of life. A multitude of quantitative methods and of computer techniques which were initially developed for mineral resource assessment and predictions, are now being applied to support decision processes in environmental applications where natural and/or human influence become determinant factors in the identification of acceptable solutions. The environment has become a resource to be managed and protected for the future. This session will collect contributions dealing with the space/time prediction of processes and impacts using quantitative models. Oral and poster contributions on the following topics will be welcome:

Quantitative predictions in space and time; Hazard, vulnerability and risk assessments; Environmental impact assessment; Multi-objective/multi-criteria decision analysis; Pattern recognition; Multi-dimensional and dynamic representations; Spatial data analysis and integration; Applications of remote sensing and geographical information systems to environmental analysis

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S3 Predictive models of landslide hazard

Conveners: Alberto Carrara and Chang-Jo Chung

Over the past 40 years the assessment of landslide occurrence has constituted a major task attempted by many institutions and individuals. However, landslide hazard zoning and risk mitigation remain a largely unsolved issue both in developed and developing countries. Toward the end of the International Decade for Natural Disaster Reduction (IDNDR), it is of great relevance to summarize the state-of-the-art in quantitative predictive modeling of such widely diffused catastrophic events. Hence, this session will constitute an opportunity to critically review methods currently available for predicting landslide hazards, mitigating their impact, and investigating the potential of new technological advancements for improving hazard forecast and risk reduction. The session will cover the following topics:

Quantitative methods for predicting landslide occurrence in space and time; Role of data and models in predictive reliability; Role of modern technology in hazard assessment; Spatial models vs. temporal models; Statistical vs. deterministic models; Social and economic implications of risk or prediction maps

Both oral or poster contributions are strongly encouraged

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Dr. Chang-Jo Chung, Geological Survey of Canada, 601 Booth Street, Ottawa, Ontario, Canada, K1A OE8, tel. +1 613 996 3726, fax. +1 613 996 3413, email: CChung@gsc.NRCan.gc.ca

S4 Investigation and modeling of subsurface flow and contaminant transport with emphasis on the estimation of the uncertainty of the predictions

Conveners: Maria-Th. Schafmeister and Ghislain de Marsily

Groundwater resources are increasingly at stake at the end of this second millennium: increasing water demand, need for increased recharge or reinfiltration of wastewater, water salinization, or water quality deterioration due to diffuse sources (e.g., agricultural) or point sources (e.g., past or future waste disposal practices). These management questions require the use of groundwater flow and transport models, but with very clear indications on the confidence interval of their predictions. It is indeed no longer acceptable to build a model and make predictions without simultaneously quantifying the associated uncertainty. This is the focus of the session. Interested parties should contribute to this session by sending an abstract focused on the theoretical and/or practical aspect of uncertainty estimation in groundwater flow and transport, for example in the following areas:

Inverse modeling; Enhanced hydrogeological interpretation by means of combined geophysical and hydrogeological data; Evaluation of groundwater recharge and of groundwater reserves; Groundwater quality assessment with point source and non-point source contaminants

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Ghislain de Marsily, Université Pierre et Marie Curie, Laboratoire de Géologie Appliquée, B123, 4, Place Jussieu, F-75252 Paris Cédex 05, France, e-mail: gdm@ccr.jussieu.fr

S5 Applications of Geostatistical Estimation and Simulation

Convener: Margaret Armstrong

Although geostatistics has been used in the earth sciences for more than 20 years, new and interesting developments continue to be made both in estimation techniques and in simulation methods. The aim of this session is to gather together high quality papers that present practical applications of more recent techniques or thought-provoking applications of more classical methods in the earth sciences. Real world applications of the newer simulation methods would be particularly welcome as would comparative studies. Papers on studies where geostatistics was used to assist in economic decision making would be appreciated. Contributions presenting applications on the following would be welcome:

object-based simulations; pixel-based simulations; nonlinear estimation; estimating and simulating categorical data; nonstationary estimation or simulation; economic decision-making based on geostatistical models

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S6 Multivariate statistics in the earth sciences

Conveners: H. Burger and A. Buccianti

The IAMG'97 meeting revealed a continuing interest in multivariate statistical methods applied to geoscientific problems. The combination of multivariate statistics and geoinformation systems or computervision open new aspects for the interpretation of geoscientific data (geochemical exploration, marine geology, petrophysics, soil science, etc.) You are invited to contribute to this session that will include the following topics:

New methods in multivariate statistics; Spatial analysis of multivariate data sets; End-member modeling; Visualization of multivariate analysis results (GIS); Application of multivariate statistics (case studies)

Contributions are encouraged from all fields of geosciences.

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Antonella Buccianti, Dipartimento di Scienze della Terra, Università di Firenze, Via La Pira, 4 I-50121, Firenze, Italy, tel. +39 55 2757496, fax. +39 55 284571, e-mail: buccianti@cesit1.unifi.it

S7 The statistical analysis of compositional data in the earth sciences

Conveners: John Aitchison and Vera Pawlowsky-Glahn

After a successful experience during IAMG'97, we would like to continue our debate on the statistical analysis of compositional data in the earth sciences. We are therefore organizing a scientific session during IAMG'98 on the same subject. In accordance with the wishes of the organizers of the meeting, authors presenting case studies will be particularly welcome. You are invited to contribute to this session that will include the following topics:

Methodological approaches to compositional data analysis; Software suitable for compositional data analysis; Application of new methodologies and case studies

Contributions are encouraged from all fields of geosciences.

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Vera Pawlowsky-Glahn, Universitat Politécnica de Catalunya, Departamento de Matemática Aplicada III, ETS de Ing. de Caminos, Canales y Puertos, c/ Gran Capitán, s/n, E-08034 Barcelona, Spain, e-mail: pawlowsky@etseccpb.upc.es

S8 Fractals and nonlinear dynamics

Conveners: Frits Agterberg and Qiuming Cheng

In recent years, applications of fractals and nonlinear dymanics have been increasing in the earth sciences. New mathematical theory for geoscience fractal modelling is being developed. An important challenge is to determine the extent to which traditional Euclidian geometry and linear model applications can be modified to incorporate these new developments. Computer simulation with use of nonlinear difference equations will help to explain the widespread occurrence of random phenomena commonly modelled as random variables in existing applications of mathematical statistics. Some types of phenomena are chaotic or cyclic depending on minor changes of input parameters and boundary conditions. The concept of self-organized criticality offers new ways to explain power-law relations characteristic of fractal behaviour. Fractals can be regarded as special cases of continuous or discrete multifractals. The multifractal spectrum is related to the frequency distribution of random variables with spatial support defined for chemical element concentration values or geophysical field intensity measurements. Multifractals and fractals result in specific types of semivariogram functions. This provides new directions for geostatistical research. Finally, the statistical estimation of fractal dimensions remains an important topic of investigation. Current solutions emphasize visual straightline fitting but nonlinear statistical modelling can make valuable contributions in this field. The main topics that will be treated in this session will be:

Geoscientific theory and applications of fractals; multifractals, lacunarity and wavelet analysis; Accuracy and precision of estimates of fractal dimensions; Relation between geostatistics and fractals; Nonlinear models resulting in chaotic behaviour; Complexity and self-organized criticality; Applications in different fields including geochemistry, sedimentology, geology, stratigraphy and paleontology

Contributions are encouraged which cover and bring together these different aspects of geoscience

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Qiuming Cheng, Dept. of Earth and Atmospheric Science, York University, 4700 Keele Street Toronto M3J 1P3 - Canada, tel: +1 416 736 5245, fax.: +1 416 736 5817, e-mail: qiuming@yorku.ca

S9 Marine Geology

Conveners: Bernd J. Haupt, Karl Stattegger, James Syvitski

After a successful session during IAMG'97, we would like to continue our discussion on numerical modeling approaches combined with data analysis in the field of marine geology. We are therefore organizing a scientific session during IAMG'98 on this subject. You are invited to contribute to this session that will include the following topics:

Evaluation of proxy-data: statistics, areal and spatial distributions of sampling-based data; Geophysical data and basin morphology; Trends and periodicities in the sedimentary record; Data-based facies models; Numerical modeling in hydrodynamics and paleoceanography - large, medium, small scale; Mass balancing: water and sediment; Particle and sediment transport; Modeling of the ocean-basin sediment fill

Contributions are encouraged which cover and bring together these different aspects of data analysis and numerical modeling in marine geology.

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fax. ++1 303 492 6388, e-mail: james.syvitski@colorado.edu

S10 Geoscience data bases and standards

Conveners: William Hay and Roberto Potenza

The management and exploitation of data bases changed fairly fast in the last years, mainly due to the impact of new treatment software, and the expanding use of networks for data exchange and search. The need for exchange tools as well as for standards in formats, language and methods is therefore more and more up to date. We are therefore organizing a technical session during IAMG'98 on this subject. You are invited to contribute to this session that will include the following topics:

New models in geoscience data bases; Data base management in local and network environments; Standards for access to geoscience data bases; Language reference tools; Methods to access target data in remote systems; Complex geoscience data integration

Contributions are encouraged which cover and bring together these different aspects of geoscience data base creation and use.

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S11 Image Analysis Technique in Geoscience

Convener: Bruno Capaccioni

The need to overcome the original "naturalistic" approach to investigate geological phenomena resulted in a rapid development of quantitative and instrumental methods. In order to achieve this target many researchers have begun to develop computer-assisted image-analysis procedures, and quantitative and reproducible data are now available on topics that in the past were only qualitatively described.

After the first astronomical applications, digital image analysis was extensively applied to many other fields of sciences: medicine, physics, and so on. At present many researchers that work in several fields of geoscience are using image analysis software packages to improve and quantify data from images taken from very small (for example SEM) or very large (e.g., remote-sensing, air or satellite photographs, etc.) dimensional scales.

The aim of this session is to collect contributions from researchers who apply, develop or improve digital image analysis procedures in order to analyse geological and environmental data in all the different fields of application.

Contributions presenting applications on the following would be welcome:

methods of digital image enhancement and image segmentations; particle shape analysis; rock tectural fabric measurements; mathematical and statistical methods applied to data from image analysis; image analysis and remote sensing

Bruno Capaccioni, Institute of Volcanology and Geochemistry, University of Urbino, Loc. Crocicchia, 61029 Urbino (PS), Italy, tel.: ++39 722 304257, e-mail: b.capaccioni@geo.uniurb.it

S12 Topics in Quantitative Geology and Geophysics

Conveners: Andrea Förster and Dan Merriam

Every year advances are made in developing quantitative techniques to analyze geological and geophysical data and every year new applications are made utilizing the new techniques as well as the true and tried ones. This session will explore some of the innovations made in the area of new methods and applications. The presentations will cover a wide spectrum of subjects to give a sampling of recent progress.

Andrea Förster, GeoForschungsZentrum Potsdam, Telegrafenberg D224, D-14473, Potsdam, Germany, e-mail: for@gfz-potsdam.de

Dan Merriam, Kansas Geological Survey, The University of Kansas, 1930 Constant Ave., Campus West, Lawrence, Kansas 66047, tel. : +1 785 864 3965, fax.: +1 785 864 5317, e-mail: dan_merriam@msmail.kgs.ukans.edu

S13 Computer Applications and Software in Geosciences

Conveners: Nina Gorelikova, Fabio Rosso and J.J Egozcue Rubí

This sessions is open to papers in which recent developments in software and computer applications are discussed. Particular attention will be devoted to the fields of Engineering Geology, Geotechnics and Applied Geology. The necessary complexity of models that describe natural systems means that analytic solutions to mathematical and statistical procedures are rarely available. As a consequence, efficient computational techniques must be developed in order to perform the analysis of the proposed models. The main topics that will be treated in this session will be:

Theoretical aspects of the models used in different fields of the Geosciences; Theoretical properties of the algorithms that are generally used to solve the problems and the recent developments in their implementation; Latest results in optimization software for high performance computer; Nonlinear optimization field, including algorithms software evaluation and implementation issues; Applications and future areas of research.

Contributions are encouraged which cover and bring together these different aspects of Computer Applications and Software in Geosciences.

Nina Gorelikova, Institute of Geology of Ore deposits, Petrography, Mineralogy and Geochemistry, Russian Academy of Sciences (IGEM RAS), 35 Staromonetny Per. Moscow, 109017 Russia, tel.: 007 095 2308427, fax.: 007 095 2302179, e-mail: ngor@igem.msk.su

Fabio Rosso, Dipartimento di Matematica, "U. Dini", Università di Firenze, Viale Morgagni, 67/a, Firenze, Italy, tel.: 39 55 4237147, fax.: 39 55 4222695, e-mail: rosso@udini.math.unifi.it

J.J Egozcue Rubí, Universitat Politécnica de Catalunya, Departamento de Matemática Aplicada III, ETS de Ing. de Caminos, Canales y Puertos, c/ Gran Capitán, s/n, E-08034 Barcelona, Spain

S14 Volcanic Hazard

Conveners: Maria Teresa Pareschi

Volcanic hazard is defined as the probability that a certain area will be affected, within a limited time interval, by a destructive phenomenon. It contributes to the definition of risk, quantitatively evaluated as the product of three factors: value, hazard and vulnerability. Value represents the number of human lives, the capital value of property, or the productive capability subject to a stated danger. Vulnerability is the estimated (on probabilistic basis) fraction of the value that will be destroyed as a consequence of the stated destructive phenomenon. Hence, probability and statistical questions arise in connection with the criteria of risk assessment, rating, underwriting and risk acceptance, reinsurance, risk management and risk optimization, to cite only a few fields. This session will address problems concerning:

the probability issues related to hazard evaluation (position of the vent, expected intensity, magnitude, type of eruption, evaluation of average return period of eruptive events, mathematical modelling of volcanic eruptions to hazard zoning, etc.), probabilistic estimation of vulnerability, of volcanic risk and induced risk (domino effects).

Maria Teresa Pareschi, C.N.R., c/o Dipartimento di Scienze della Terra, Università di Pisa, Via Santa Maria, 53, 56100 Pisa, Italy, tel.: 39 50 847267, e-mail: pareschi@dst.unipi.it

Additional information on IAMG'98 from the following address:

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tel. +39 55 2757496, fax. +39 55 284571
e-mail: buccianti@cesit1.unifi.it

MMES'98 — MATHEMATICAL METHODS IN EARTH SCIENCES

Workshops for IAMG'98 (mostly one day)

W1 — Spatio-temporal analysis of natural systems

George Christakos, DESE, School of Public Health, University of North Carolina, 111 Rosenau Hall, Chapel Hill, NC 27599-7400, e-mail: george_christakos@unc.edu

W2 — New methods and concepts in mathematical geology a) Multifractal modelling in relation to geostatistics, b) Data integration techniques, c) Geological time and quantitative stratigraphy

Frits P. Agterberg, Natural Resources Canada, 601 Booth Street Ottawa K1A 0E8 - Canada, tel.: +1 613 996 2374, fax.: +1 613 996 0473, e-mail: agterberg@gsc.NRCan.gc.ca

Qiuming Cheng, Dept. of Earth and Atmospheric Science, Dep. of Geography, Faculty of Pure and Applied Science,, York University, North York, Ontario M3J 1P3, Canada, tel.: +1 416 736 5529, fax.: +1 416 736 5950, e-mail: qiuming@yorku.ca

W3 — Geostatistical simulation in geology

Alain Galli and *Margaret Armstrong*, Centre de Géostatistique de l'École des Mines de Paris, 35 Rue Saint Honoré, 77305 Fontainebleau, France, e-mail: galli@cg.ensmp.fr, e-mail: armstrong@cg.ensmp.fr

W4 — Basic geostatistics: a one day introductory course

Vera-Pawlowsky-Glahn, Universitat Politécnica de Catalunya, Departamento de Matemática Aplicada III, ETS de Ing. de Caminos, Canales y Puertos, c/ Gran Capitán, s/n, E-08034 Barcelona, Spain, e-mail: pawlowsky@etseccpb.upc.es

W5 — Environmental spatial data analysis. Do it yourself with spatial statistics and neural networks — Case studies of soil pollution for decision system support with spatial statistics packages (Geostat Office, Faipack, Multigeo) and with neural network residual kriging and generalized regression.

Prof. *Michel Maignan*, University of Lausanne, Switzerland; e-mail: michel.maignan@imp.unil.ch

Prof. *Mikhail Kanevski*, IBRAE Institute of Nuclear Safety, Moscow, Russia;

Prof. *Roberto Bruno*, University of Bologna, Italy;

Prof. *Giuseppe Raspa*, University of Roma, La Sapienza, Italy;

Dr. *S. Canu*, Heudyasic, University of Compiegne, France.

W6 — Environmental Geostatistics

Roberto Bruno, Dip. di Ing. Chimica, Mineraria e delle Tecnologie Ambientali, Univ. of Bologna, V.le Risorgimento, 2 - 40136 Bologna, Italy, Tel.(+39-51) 6443393; fax (+39-51) 6443392; E-mail: roberto.bruno@mail.ing.unibo.it

Chantal de Fouquet, Centre de Géostatistique de l'École Nationale Superieure des Mines de Paris, 35 Rue Saint-Honoré - 77305 Fontainebleau - France, Tel.(+33-1) 64694761; fax (+33-1) 64694705; E-mail: fouquet@cg.ensmp.fr

Giuseppe Raspa, Dip. di Ing. Chimica, dei Materiali, delle Materie Prime e Metall., Univ. of Rome "La Sapienza", V. Eudossiana, 18 - 00187 Roma, Italy, Tel.(+39-6) 44585627; fax (+39-6) 44585618; E-mail: raspa@columbus.it

W7 — Predictive Modeling of Geologic Hazard Using Bayesian Probability and Fuzzy Sets (two-day short course)

Dr. *Chang-Jo F. Chung*, Geological Survey of Canada, 601 Booth Street, Ottawa, Ontario, CANADA K1A 0E8, tel. +1-613-996-3413, fax.: +1-613-996-3726, e-mail: cchung@gsc.nrcan.gc.ca

Prof. *Andrea G. Fabbri*, Head, Geological Survey Division, International Institute for Aerospace Survey and Earth Sciences, Enschede, Hengelosestraat 99, P.O. Box 6 7500 AA Enschede, The Netherlands, tel.: +31-53-487-4282, fax.: +31-53-487-4336, e-mail: fabbri@itc.nl

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Permutation Methods for Determining the Significance of Spatial Dependence — Douglas D. Walker, Jim C. Loftis, and Paul W. Mielke

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Nonstationarity of the Mean and Unbiased Variogram Estimation: Extension of the Weighted Least-Squares Method — François Beckers and Patrick Bogaert

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Comment on A Special Issue: Geostatistics@ edited by A. G. Journel, Guest Editor — Kyrre Bratvedt, Erik Bølviken, Tore Gimse, Helge Holden, Lars Holden and Ragnar Knarud

Reply to Comments by Kyrre Bratvedt, Erik Bølviken, Tore Gimse, Helge Holden, Lars Holden and Ragnar Knarud — A. Journel, C. Deutsch, T. Hewett, M. Blunt and M. Thiele

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The internal energy of a PV = RT gas: a Univariate or multivariable function — G.B. Stracher and A.G. Guy

Comparison of methods of rock-microscopic grain-size determination and quantitative analysis — A. Járai, M. Kózák, and Péter Rózsa

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Conditional spectral simulation with phase identification — T. Yao

Geological controls of variograms in a complex carbonate reservoir, Eastern Province, Saudi Arabia — A. Sahin, S.G. Ghori, A.Z. Ali, H.F. El-Sahn, H.M. Hassan, and A. Al-Sanounali

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The second-order stationary universal kriging model revisited — E. Pardo-Iguzqiuza and P. A. Dowd

Closed form solutions of the turning bands equation — Tilmann Gneiting

An empirical method for optimal robust regional-residual separation of geophysical data — Paul Wessel

Statistical properties of ideal rock textures: Relationship between crystal size distribution and spatial correlation of minerals — Ritsuo Morishita

Bayesian maximum entropy analysis and mapping: A farewell to kriging estimators? — George Christakos and Xinyang Li

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A spatial-temporal/3-D model for volcanic hazard assessment: Application to the Yucca Mountain region, Nevada — C.-H. Ho and E. I. Smith

Accounting for estimation optimality criteria in simulated annealing — P. Goovaerts

Fractal analysis of the complexity of United States coastlines — J. Jiang and R. E. Plotnick Sedimentation rates, observation span and the problem of spurious correlation — W. Schlager, D. Marsal, P. A. G. van der Geest and A. Sprenger

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A note on extension variances — J. Chadoeuf, C. Moran, and M. Goulard

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A particle tracking model for non-Fickian subsurface diffusion — P. S. Addison, B. Qu, A. S. Ndumu, and I. C. Pyrah

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Three-dimensional interpolation and lithofacies analysis of granular composition data for earthquake-engineering characterization of shallow soil — K. Koike, Y. Shiraishi, E. Vardeja, and K. Fujimura

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Computers & Geosciences

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PET: petrological elementary tools for Mathematica — E. Dachs

An improved program for the calculation of high resolution Fourier coefficients used for shape analysis — D.D. Nelson, W.E. Full

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ORE DEPOSIT Studies and EXPLORATION MODELS, int'l. symposium, Tasmania, Australia, **15-26 June 1998**. Jessica Tyler, Centre for Ore Deposit Research, GPO Box 252-79, Hobart Tasmania, Australia 7001. Fax: (03) 6226 7662. E-mail: Jessica.Tyler@utas.edu.au

WETTABILITY and its effect on oil recovery, Trondheim, Norway, **22-24 June 1998**. Ole Torsæter, Dept. of Petroleum Engineering and Applied Geophysics, NTNU, N-7034 Trondheim, Norway, ph. +47-73594941, fax: +47-73944472

Risk, Resources, and Reward in the MINING INDUSTRY, seminar, Dundee, Scotland, **22-26 June 1998**. Centre for Energy, Petroleum and Mineral Law and Policy. University of Dundee, Dundee, DD1 4HN, Scotland, United Kingdom. Fax: 44 (0) 1382 322578. E-mail: cpmlp@dundee.ac.uk. WWW: http://www.dundee.ac.uk/petroleumlaw/

Processes of CRUSTAL DIFFERENTIATION, Verbania, Italy, by Geological Society of America, **4-11 July 1998**. Tracy Rushmer, Department of Geology, University of Vermont, Burlington, Vt. 05405. Phone: 802/656-8136. Fax: 802/656-0045. E-mail: trushmer@zoo.uvm.edu

EURO CARBON '98, Strasbourg, France, **5-10 July 1998**. G. Collin. Fax: 33 69 756 4201

EUROCK '98 Rock Mechanics in Petroleum Engineering, int'l. conf., Trondheim, Norway, **8-10 July 1998**. Society of Petroleum Engineers, P.O. Box 833836, Richardson, Texas 75083-3836. Phone: 972/952-9393. Fax: 972/952-9328. E-mail: spedal@spelink.spe.org. WWW: http://www.spe.org

Joint STATISTICAL Meetings, Dallas, Texas, **9 - 13 August 1998**. Sponsored by ASA, ENAR, and WNAR. ASA, 1429 Duke St., Alexandria, VA 22314-3402, USA.
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METALLOGENY and Geodynamics of the NORTH ASIAN CRATON and Framing Orogenic Belts with Field Excursion to Southern Lake Baikal and Zun-Kholba Lode Gold Deposit, int'l conf., Russian Academy of Sciences, Irkutsk, **20-28 Aug. 1998**. Tatiana Bounaeva, Institute of Geochemistry, Russian Academy of Sciences, P.B. 4019, Irkutsk 664033 Russia. Fax: 3952-46-40-50. E-mail: tabun@igc.irkutsk.su

The Role of Mantle-Rooted Structural Discontinuities in the CONCENTRATION OF METALS a 3-Dimensional Approach, int'l workshop, Victoria, Australia, **24-26 Aug. 1998 .** IGCP and the International Association on the Genesis of Ore Deposits. Ingrid Campbell, Whitehorse Geoscience Pty.Ltd., Suite 6, 560 Lonsdale St., Melbourne, Victoria 3000, Australia. Fax: 61 39 602 3827. E-mail: whitehorse@baltel.com.au

CLAY MINERALOGY and PETROLOGY, conf. and workshop, Brno, Czech Republic, Int'l Geological Correlation Programme Project No. 405, **6-10 Sept. 1998**. Petr Sulovsky, Dept. of Mineralogy, Petrology and Geochemistry, Faculty of Science, Masaryk University, Kotlarska 2, CZ 611 37 Brno, Czech Republic.
Fax: 420 541211214, E-mail: clays@sci.muni.cz, http://www.sci.muni.cz/~sulovsky/15clays.html

EUFIT '98, Aachen, Germany, **7 - 10 September 1998**. ELITE-Foundation , EUFIT, Promenade 9, D-52076 Aachen, Germany, Phone: +49 2408 6969, Fax: +49 2408 94582, E-Mail:eufit@MITGmbH.de, http://www.mitgmbh.de

EARLY WARNING SYSTEMS (EWC98) for the Reduction of Natural Disasters, conf., Potsdam, Germany, **7-11 Sept. 1998**. E-mail: ewc98@gfz- potsdam.de

ECMOR VI - 6th European Conf. on the Mathematics of Oil Recovery, Peebles (near Edinburgh), Scottland, **8-11 Sept. 1998**. EAGE Business Office, PO Box 298, 3700 AG Zeist, The Netherlands, Tel: +31 30 6956997, Fax: +31 30 6962640, e-mail: ecmor@eage.nl

Unmask the Depths, int'l expo, New Orleans, LA., SOCIETY OF EXPLORATION GEOPHYSICISTS, **13-18 Sept. 1998.** Bob Lewis, 8801 S. Yale Tulsa, OK 74137 USA, Phone: 918-497-5500; Fax 918-497-5557, E-mail blewis@seg.org, http://seg.org/seg98/

International Association of Hydrogeologists Congress: Physical, Chemical, and Biological Aspects of STREAM-AQUIFER INTERRELATIONS, Las Vegas, Nev., **13-19 Sept. 1998.** John Van Brahana, U.S. Geological Survey, 114 Ozark Hall, University of Arkansas, Fayetteville, 72701. Phone: 501/575-2570

GEOCOMPUTATION, int'l conf., Bristol, United Kingdom., **17-19 Sept. 1998**. Dr. S. Brooks or Dr. W. Macmillan. Fax: 44 (0) 117 928 7878. E-mail: geocomp-conf@bristol.ac.uk

FLUID FLOW in CARBONATES: Interdisciplinary Approaches, conf., Door County, Wisconsin, **20-24 Sept. 1998**. Judy Tarpley, SEPM, 1731 E. 71st St., Tulsa, Okla. 74136-5108. Phone: 918/493-3361 ext. 22., Fax: 918/493-2093, E-mail: cemeet@galstar.com

Continued on page 18

IAMG sponsored SYMPOSIA to be held in the 31st IGC, year 2000 in Rio de Janeiro.

Special Symposia

J. Basin Analysis

J-1 Basin analysis, principles and methods — Ian Lerche and Jorge C. Della Favera

J-7 Integration of Quantitative Paleobathymetry and Biostratigraphy in Basin Studies [IAMG/ CQS] — Felix Gradstein (Norway), A.Gary (Canada), and PETROBRAS

General Symposia

22. Mathematical Geology, Two Centuries of Quantification in Geology

22-1. Quantitative methods in the earth sciences — Daniel F Merrian (USA), Vera Pawlowsky-Glahn (Spain), Hernani Chaves (Brazil)

22-2. Appraisal of mineral and energetic resources — Dick McCammon and Larry Drew

22-3. Cyclic sedimentation — Frits Agterberg, Walter Schwarzacher and Hernani Chaves

22-4. Uses and future of IGBA Data data banks — A.T. Al-Mishwt (Kuwait)

22-5. Geographic Information Systems in the Earth Sciences — Graeme Bonham-Carter

22-6. Mathematical characteristics of geological bodies and quantitative prediction of geological hazards and mineral resources —

22-7. Mathematical simulation of geological processes and computer-graphic techniques—

22-8. New theories and methods of mathematical geology and their applications —

22-9. Mathematical and statistical data analysis in geology — Hohn, M. Ed. (U.S.A.);

23. Geostatistical applications in exploration of energy and mineral resources

23.1 - Statistical evaluation of the potential of an area to contain deposits (and reservoirs ?)

23.2 - Geostatistical evaluation of mining ore bodies according to their geology — Alain Galli and Margaret Armstrong and Armando Remacre

23.3 - Stochastic geological models of oil reservoirs — Alain Galli, Margaret Armstrong and Claudio Bettini

23.4 - Economic and technical analysis of mining and oil resources — Alain Galli and Margaret Armstrong

Hernani A. F. Chaves < hernani@uerj.br> is the Special IAMG Councilor in charge of organizing the IAMG sponsored symposia at the International Geological Congress in Rio de Janeiro. He is still looking for volunteers to convene special sessions. You can contact him at:

Prof. Hernani Chaves
Chairman Scientific Program Committee 31st IGC
Av. Pasteur, 404
URCA - Rio de Janeiro - RJ - Brasil
CEP22290-240
fax: (055-21) 295-8094
e-mail: hernani@31igc.org

The Scientific Program will be displayed on the home page at http://www.31igc.org/

8th Congress of the Int'l Association of ENGINEERING GEOLOGY and the ENVIRONMENT, Vancouver, BC, Canada, **21-25 September 199**8. 8th Congress IAEG, c/o Venue West Conference Services LTd., 645-375 Water Street, Vancouver, BC, Canada V6B 5C6, Tel: (01) 604 681 5226, Fax: (01) 604 681 2503, e-mail: congress@venuewest.com, http://www.bchydro.bc.ca/iaeg/

4th Int'l Symposium on Application of Mathematical Methods and Computer Technologies in GEOCHEMISTRY and ENVIRONMENTAL PROTECTION, Kiev, Ukraine, (previous symposia were held in Lvov: 1992, 1994, 1996) **22-25 September 1998**.
Dr. B. A. Gorlitsky, 34a,Palladin Ave, Kiev-142, 252680 Ukraine. Fax: +380 44 4440060. E-mail: gnc-r@mail.kar.net

International Symposium on NEURAL COMPUTATION. Vienna, Austria,.**23-25 Sept. 1998**. (Artificial Neural Network Theory, Tools, Applications.) Contact: Hans Ryffel: Phone: (403)387 3546. Fax: (403) 387 4329. http://www.compusmart.ab.ca/nc98.htm

Society of Petroleum Engineers, ann. conf., New Orleans, LA, **27-30 Sept. 1998**. Dan Lipsher, SPE, P.O. Box 833836, Richardson, Texas 75083-3836. Phone: 972/952-9306. E-mail: dlipsher@spelink.spe.org, http://www.spe.org/events/98atce/

7th Int'l Symposium on Application of Mathematical Methods and Computers in MINING, GEOLOGY and METALLURGY, Sophia, Bulgaria, **October1998**. The VIIth Int'l Symposium AMC-MGM, University of Mining and Geology, Studentski grad Hristo Botev, Sophia 1156, Bulgaria. Fax: +3592 9624685.

The Geologic Record of NATURAL DISASTERS, conf. **4-8 Oct. 1998**. Judy Tarpley, SEPM, 1731 E. 71st St., Tulsa, Okla. 74136-5108, Phone: 918/493- 3361 ext. 22, Fax: 918/493-2093, E-mail: cemeet@galstar.com

IAMG'98, Ischia, Italy, **4-9 October 1998**. Antonella Buccianti, Dept. Earth Sciences, University of Florence, Via La Pira, 4 50121-Firenze Italy, phone: +39-55-275 7496, fax: +39-55-284571, e-mail: buccianti@cesit1.unifi.it

Int'l Conf. on Computer Simulation in RISK ANALYSIS and HAZARD MITIGATION, Valencia, Spain, **7-9 Oct. 1998**. Paula Doughty-Young, RISK ANALYSIS `98 Conference Secretariat, Wessex Institute of Technology, Ashurst Lodge, Ashurst, Southampton SO40 7AA UK, Fax: (44) (1703) 292 853, E-mail: paula@wessex.ac.uk

International Section on GEOETHICS, Pribram, Czech Republic, **12-14 October 1998**. Václav Nemec, K rybníckum 17, 100 00 Praha 10 - Strasnice, Czech Republic, ph. (+420306) 7811801, fax (+420306) 23169, e-mail: nemcoval@vse.cz

Conference on FOSSIL RESOURCES, Rapid City, SD, **13-16 Oct. 1998**. Rachel Benton, Badlands National Park, P.O. Box 6, Interior, S.D. 57750. Phone: 605/433-5361

Symp. on VOLUME VISUALIZATION by IEEE Computer Society and ACM/SIGGRAPH, with IEEE Visualization '98, Research Triangle Park, North Carolina, **19-20 October 1998**. Bill Lorensen, GE Corporate R&D, One Research Circle, Bldg KW, Room C215, Niskayuna, NY 12309, E-mail: lorensen@crd.ge.com, http://WWW.ERC.MsState.Edu/conferences/volvis98/

4th Canadian Conference on Computer Applications in the MINERAL INDUSTRY, Saskatchewan, Canada, **19-21 October 1998**, University of Saskatchewan, Fax: +1 306 966 8593, e-mail: stead@pangea.usask.ca

FRACTAL 98 "Complexity and Fractals in the Sciences", 5th Int'l Multidisciplinary Conf., Valletta, Malta, **25 - 28 October 1998.** Dr. Miroslav M. Novak, School of Physics, Kingston Univ., Surrey KT1 2EE, UK. Tel: 44 181 5477481; Fax: 44 181 547 7562; E-mail: novak@kingston.ac.uk; htt-p://www.kingston.ac.uk/fractal

GEOLOGICAL SOCIETY OF AMERICA, ann. mtg., Toronto, Canada, **26-29 Oct. 1998**. Becky Martin, GSA Meetings Dept, 9140, Boulder, CO 80301-9140, Phone: 303/447-2020, ext. 164, Fax: 303/447-1133

Theme session 13 at the Toronto meeting of the GSA looks for contributions on the "use of the Internet and Multimedia approaches in the creation of learning environments". Any additions will be appreciated. Contact John C. Butler at email : jbutler@uh.edu

AAPG, int'l mtg., Rio de Janeiro, **8-11 Nov. 1998**.
AAPG Conventions Dept., P.O. Box 979, Tulsa, Okla. 74101-0979, Phone: 918/560-2679, Fax: 918/560- 2684, http://www.geobyte.com/rioabst.html

GAS RESEARCH, int'l conf., San Diego, Calif., **8-12 Nov. 1998**. Gas Research Institute, 8600 West Bryn Mawr Ave., Chicago, IL 60631-3562, Ph: 773/399-8300, Fax: 773/399- 8170, E-mail: igrc@gri.org

4th International Conference on the GEOLOGY of the MIDDLE EAST, Beirut, Lebanon, **9-12 November 1998**, Dr. Hustapha Mroueh, Lebanese National Geological Committee, P. O. Box 11-8281, Beirut, Lebanon, Tel: (961) 1 862665, (961) 1 860262, Fax: (961) 1 822639, e-mail: ngc@cnrs.edu.lb

AMERICAN GEOPHYSICAL UNION, ann. mtg., San Francisco, Calif., **6-10 Dec. 1998.** AGU, Meetings Dept., 2000 Florida Ave., Washington, D.C. Phone: 202/462-6900. Fax: 202/328- 0566. E-mail: meetinginfo@kosmos.agu.org. WWW: http://www.agu.org

The 2nd International NON-RENEWABLE ENERGY SOURCES Congress. Tehran, Iran, **12-17 Dec. 1998**. Contact: Dr. G.A. Mansoori. Phone: (312) 996-5592. Fax: (312) 996-0808. Mansoori@UIC.edu, http://www.uic.edu/~mansoori/INRESC.98_html

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE Ann. Meeting and Science Innovation Exposition. Anaheim, CA, USA, **21-26 Jan. 1999**. 1200 New York Ave., NW, Washington, D.C. 20005, Tel.: 202-326-6400, http://www.aaas.org

Glacial-Interglacial Sealevel Changes in Four Dimensions: QUATERNARY SEA LEVEL, Climate Change and Crustal Dynamics, Albufeira, Portugal, **13 - 18 February 1999.** Conv. A. Dawson (Coventry). Josip Hendekovic, European Conf., Telephone +33 3 88 76 71 35; fax +33 3 88 36 69 87

Society for MINING, METALLURGY, AND EXPLORATION, ann. mtg., Denver, Colo., **1-4 Mar. 1999.** SME, 8307 Shaffer Parkway, P.O. Box 625002, Littleton, CO 80162-5002. Phone: 303/973-9550. E-mail: smenet@aol.com

AMERICAN ASSOCIATION OF PETROLEUM GEOLOGISTS, ann. mtg., San Antonio, Texas, **10-14 Apr. 1999**. AAPG Conventions Dept., P.O. Box 979, Tulsa, Okla. 74101-0979, Phone: 918/560-2679. Fax: 918/560-2684, http://www.geobyte.com/meetings.html

GEOVISION 99, Symp. on IMAGING APPLICATIONS IN GEOLOGY, Liège, Belgium, **6-7 MAY 1999**. Sart Tilman, Université de Liège, Département de Géologie (B19), B-4000 Liège - BELGIUM, Tel : +32-4-366 22 16, Fax : +32-4-366 28 17, Email : fcheslet@ulg.ac.be, http:/www.lgih.ulg.ac.be/geovision

Fifth SIAM Conference on Mathematical and Computational Issues in the Geosciences (GS99) San Antonio, Texas , **24-27 March 1999**. Clint N. Dawson, Chair, University of Texas, Austin. E-mail: meetings@siam.org, http://www.siam.org/meetings/gs99/index.htm

JOINT STATISTICAL MEETINGS, Baltimore, Maryland, **8 - 12 August 1999**. Sponsored by ASA, ENAR, IMS and WNAR, ASA, 1429 Duke St., Alexandria, VA 22314-3402, USA, Tel: 703 6841221; Fax:703 6842037; E-mail: meetings@asa.mhs.compuserve.com

IAMG'99, Trondheim, Norway, **August 8-13, 1999**. Richard Sinding-Larsen, Conference Secretariat IAMG '99, Department of Geology and Mineral Resource Engineering, 7034 Trondheim, Norway, Phone: 47 73 594837, Fax: 47 73 594814, e-mail: richard.sinding-larsen@geo.ntnu.no

International STATISTICAL Institute, 52nd Biennial Session, Helsinki, Finland, **11 - 18 August 1999**. ISI Office, Prinses Beatrixlaan 428, P.O. Box 950, 2270 AZ Voorburg, The Netherlands. Tel: 31 70 3375737; Fax: 31 70 3860025; E-mail: isi@cs.vu.nl

At the International Statistical Institute, 52nd Biennial Session, Helsinki, Finland, **11 - 18 August 1999**, the IAMG has been invited to convene a special session on statistical aspects of geology. Carol Gotway Crawford is the convenor and is looking for **suggestions** for 3 invited speakers and 1 or 2 discussants. She can be contacted at the e-dress: cdg7@cdc.gov

19th International Meeting on ORGANIC GEOCHEMISTRY, Istanbul, Turkey, **6-10 September 1999**. Conference Chairman Prof. Dr. M. Namik Yalçin, Tübitak MAM. Conference Secretary Mr. Cengiz Soylu,TPAO Arastirma Merkezi, Mustafa Kem al Mah. 06520 Esentepe, Ankara, Turkey, Tel: (+90-312) 284 34 90, Fax: (+ 90-312) 284 34 91, E-mail: ogc99@petrol.tpao.gov.tr, http://www.nemrut.mam.gov.tr/eaog99/eaog99.html

AMERICAN ASSOCIATION OF PETROLEUM GEOLOGISTS, int'l. mtg., Birmingham, England, **12-15 Sept. 1999**. AAPG Conventions Dept., P.O. Box 979, Tulsa, Okla. 74101-0979, Phone: 918/560-2679. Fax: 918/560-2684, http://www.geobyte.com/meetings.html

The Mining Pribram Symp. 1999 - International section on MATHEMATICAL METHODS IN GEOLOGY, Prague, Czech Republic, **4-8 October 1999**. Co-organized by the Regional Center of the IAMG in Prague. Václav Nemec, K rybníckum 17, 100 00 Praha 10 - Strasnice, Czech Republic. Fax: (+420306) 23169, E-mail: nemcoval@vse.cz

Int'l Conference on TEXTURES AND PHYSICAL PROPERTIES OF ROCKS, Goettingen, Germany, **13-15 October 1999**. Dr. Bernd Leiss, Institute of Geology and Dynamics of the Lithosphere, Goldschmidtstr. 3, D-37077 Goettingen, E-mail: bleiss1@gwdg.de, http://www.gwdg.de/~bleiss1/tppr.html

GEOLOGICAL SOCIETY OF AMERICA, ann. mtg., Denver, Colo., **25-28 Oct. 1999.** Becky Martin, GSA Meetings Department, Box 9140, Boulder, Colo. 80301-9140. Phone: 303/447-2020, ext. 164. Fax: 303/447-1133

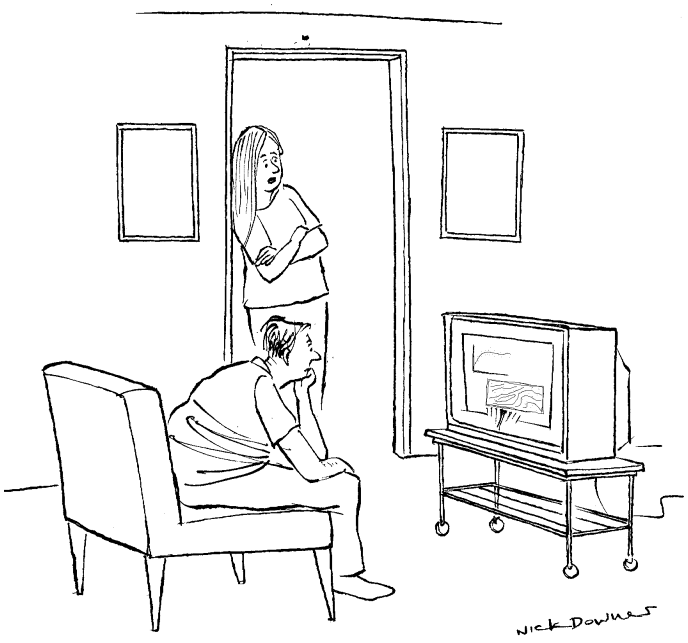
AMERICAN ASSOCIATION OF PETROLEUM GEOLOGISTS, ann. mtg., New Orleans, La., **16-19 Apr. 2000.** AAPG, 1444 So. Boulder Ave., P.O. Box 979, Tulsa, Okla. 74101-0979. Phone: 918/560-2639. Fax: 918/560-2626

SALT SYMPOSIUM, The Hague, The Netherlands, **7-11 May 2000**. Secretariat Organizing Committee 8th World Salt Symposium, PO Box 25, 7550 GC Hengelo Ov, The Netherlands. Phone: 31 74 2443908. Fax: 31 74 2443272. E-mail: Salt.2000@inter.NL.net

GEOLOGY AND ORE DEPOSITS 2000: The Great Basin and Beyond, symposium, Reno and Sparks, Nev., **15-18 May 2000.** Geological Society of Nevada, Nevada Bureau of Mines and Geology, et al. Geological Society of Nevada, P.O. Box 12021, Reno, Nev. 89510-2021. Phone: 702/323-3500. Fax: 702/323-3599

31st Int'l GEOLOGICAL CONGRESS - Geology and Sustainable Development: challenges for the Third Millennium, Rio de Janeiro, Brazil, **6-17 August 2000**. IGC Secretariat Bureau, Av. Pasteur, 404, Anexo 31 ICG, Urca, Rio de Janeiro - RJ - CEP 22.290-240, Brazil, Tel. (0055-21) 295-5847, Fax: (0055-21) 295-8094, E-mail: 31igc@cristal.cprm.gov.br *(see p. xx for more info)*

GEOLOGICAL SOCIETY OF AMERICA, ann. mtg., Reno, Nev., **13-16 Nov. 2000.** GSA Meetings, Box 9140, Boulder, Colo. 80301-9140. Phone: 303/447- 2020, ext. 164. Fax: 303/447-1133



"I didn't even know there was an 'all geostatistics' cable channel."
after American Scientist (1998)

IAMG Collaborates with Statistical Organizations

This year, IAMG will be co-sponsoring (with the American Statistical Association's Section on Statistics and the Environment) an invited paper session at the Joint Statistical Meetings to be held August 9-13, 1998 in Dallas, Texas, USA. Suggestions from IAMG Council members resulted in the invited paper session titled "Advances in Geostatistics," which will feature the following presentations:
"Geostatistical Estimation Applied to Highly Skewed Data," by Isobel Clark, Geostokos Limited;
"Conditional Simulation of Random Sets," by Christian Lantujoul, Centre de Géostatistique;
"Incorporating Model Uncertainty in Geostatistical Methods of Risk Analysis," by Peter A. Dowd, University of Leeds.
Michael Ed. Hohn, West Virginia Geological and Economic Survey, will serve as discussant.

The abstracts for these papers, as well as other information pertaining to the Joint Statistical Meetings, can be found on the Internet at http://web.amstat.org/jsmprog98/ or http://www.amstat.org/meetings/jsm/1998/. The American Statistical Association's web page has more general information: http://www.amstat.org

In addition to this session, IAMG has received an invitation from the International Statistical Institute (ISI) to organize an invited paper session for their 52nd Biennial Session, August 10-18, 1999 in Helsinki, Finland. The ISI is an international scientific society whose elected membership unites statisticians from a variety of backgrounds and disciplines. IAMG has been affiliated with the ISI since its inception, but collaboration between the two organizations has dwindled over the past six years. Consequently, I am pleased that IAMG is once again connected to the ISI and that IAMG members will have increased opportunities to participate in ISI meetings. The development of this session is currently in progress, and details about the session will be available through IAMG's web page.

I am interested in any suggestions you might have concerning increased collaboration between IAMG and statistical organizations. In particular, I am very open to suggestions concerning session themes and speakers, outreach programs and workshops, and joint training opportunities. I also welcome and encourage your participation in these efforts.

Carol A. Gotway Crawford, Vice President, IAMG

Good news from last year's meeting in Barcelona!

Careful planning and aggressive campaigning for funds at the local level by Chair **Vera Pawlowsky** have resulted in a final surplus of close to two million pesetas, the equivalent of about $13,000.

Vera's original planning agreement with the previous Council reads: "*IAMG will get 5% of the loan plus grant or 25% of the surplus, whichever is less. The rest of the surplus, or the whole surplus if it is less than $500, will remain at the disposition of the local organizing committee."* However, Vera never asked for any kind of financial support from the Association — no grants no loans. Hence, according to the agreement, the Association's share of the surplus should be zero.

One reason Vera organized IAMG'97 was her desire to work for a greater IAMG. She is grateful for the assistance and participation from scores of members who were instrumental in the technical and financial success of the Barcelona conference. As a collective token of appreciation and a contribution to future Association's activities, Vera has decided to donate to the IAMG half a million pesetas, which she has transferred to Treasurer Tetzlaff along with a detailed final financial statement.

On behalf of the Association, president Olea has expressed to Vera and her organizing committee deepest appreciation for the efficient organization of the conference and the generous donation.

IAMG receives IUGS Grant

IAMG Secretary General **Tom Jones** informs us of good news from the International Union of Geological Sciences. The Secretary General of the IUGS, Dr. Attilio C. Boriani, wrote to inform us that the IUGS is granting US$1,000 to the IAMG. The purpose of the grant is to support participation at the IAMG'98 meeting of scientists from developing countries.

This is somewhat of a feather in the IAMG cap, as the IUGS does not grant funds widely. We received US$1,000 in 1995, but were turned down in other years. This grant is a reflection of successful IAMG activities, especially as we stressed the successful IAMG'97 meeting in our annual report to the IUGS.

Job Advertisement: **Petroleum Geostatistician**

The Department of Petroleum Engineering of Stanford University invites applications for a position in the tenure track professoriate at the Assistant Professor level starting in 1998. Although there is considerable flexibility in the starting date, the candidate should be available no later than March 1999.

We seek a scholar with broad interdisciplinary research activities in the area of petroleum geostatistics,geology, and reservoir characterization . The candidate will have strong numerical skills including geostatistical data analysis and stochastic modeling of geological heterogeneities. (S)he will also have expertise in fluid flow modeling and simulation. Applicants must have a Ph.D. degree. While the primary focus of this search is to find an outstanding candidate at the Assistant Professor level, exceptional Associate Professor level candidates will also be considered.

Send curriculum vitae, names and addresses (with e-mail) of three references, a statement of teaching and research interests and no more than three reprints from refereed journals by August 15, 1998 to:

Professor Khalid Aziz
Chair, Search Committee
Department of Petroleum Engineering
Stanford University
Stanford, California 94305-2220
U.S.A.

Further information about the Petroleum Engineering Department is available at:
http://ekofisk.stanford.edu/
Stanford University has a strong commitment to the principle of diversity. In that spirit, we particularly encourage applications from women, members of ethnic minorities, and individuals with disabilities.

International Association for Mathematical Geology
c/o Dr. Harald S. Poelchau
Forschungszentrum Jülich ICG-4
D-52425 Jülich
Germany

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PRIORITAIRE