

IAMG

No. 55 December 1997

Newsletter

Official Newsletter of the International Association for Mathematical Geology

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IAMG'97 as Teleconference

This issue of the IAMG Newsletter contains several items about this year's Annual IAMG Conference in Barcelona, as well as reports on other meetings of interest. And our meeting calendar is full again (p.15). We have commented before on the difficulty of keeping up with travel to meetings; therefore, it seemed especially appropriate when IAMG'97 made a start in the direction of becoming a teleconference.

From the Editor
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Due to urgent business at his institute in Warnemünde, session co-chairman **Jan Harff** could not personally attend his session on the Darss Sill Data in Barcelona. No problem — CIMNE set up an internet connection from Barcelona to Rostock and Harff was *virtually* present and able to moderate long distance together with his *in situ* co-chairman **John Davis**. In fact, the first paper was also given by a geographically divided team. W. Lemke spoke from

Urgently needed: Nominations for IAMG Awards !!!

Nominations are needed by **February 15, 1998**, for all four awards that are to be presented at the forthcoming annual meeting of the IAMG on the Island of Ischia, Gulf of Naples, Italy, from October 5 to 9, 1998. Each nomination should be accompanied by a statement outlining the nominee's qualifications for the award, as well as a short resume containing significant factual details. Nominations, statements, and resumes should be sent to the CHAIRMAN OF THE IAMG AWARDS COMMITTEE

John W. Harbaugh

Department of Geological Sciences
Stanford University, Stanford
CA 94305-2115, USA

or transmitted by email to harbaugh@pangea.stanford.edu. Other members of the Awards Committee are John C. Davis, John M. Cubitt, Vera Pawlowsky, and Heinz Burger.

See descriptions of the awards and necessary qualifications of candidates on page 2.

Another sighting ?

As for Eigen - I saw a piece of an old movie on TV the other day as part of an ad for Pontiac. It showed what I am sure was Eigen in a winter trek at the end of the single file line followed closely by a large and hungry polar bear. The last scene shows the bear closing in on Eigen who had fallen in the snow - this may be the clip that started the rumor that he was eaten on one of his polar expeditions, but as you know, that was not true. I will check that for you and let you know.

Dan Merriam



Warnemünde, projected on a large screen in Barcelona, while F. Tauber changed the overhead slides in Barcelona and pointed to the features on the graphs. The quality of transmission was ok, but was somewhat reminiscent of the sequences from the Mir space station (no, not upside down scientists) with occasional odd noises and jerky movements.

Especially relaxing during the second talk, given by **Zhou Di**, was to see on the screen the group in Warnemünde drinking coffee with rum (or what was that bottle on the conference table? Well — perhaps it was just a bottle of wine), and to hear their conversational comments, because the mike was still open. After several papers the connection was severed and the meeting continued locally. The demonstration showed that IAMG with the help of CIMNE is a high tech organization well poised for the 21st century, and that urgent business doesn't have to keep a scientist away from a meeting.

Harald S. Poelchau

International Association for Mathematical Geology

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MAJOR CHANGES IN IAMG'S HONORS AND AWARDS

The IAMG has revised its system of honors and awards. There are four awards, each to be presented every two years. The **William Christian Krumbein Medal** remains as the IAMG's highest award, and will be presented in even years beginning in 1998. The **Felix Chayes Prize** for Excellence in Research in Mathematical Petrology is a new award, and will be presented initially in 1998, followed afterwards by presentation in odd years. The Chayes Prize will provide a cash prize each time it is awarded. The **John Cedric Griffiths Teaching Award** is also new, and will be presented in even years beginning in 1998. Finally, the **Andrei Borisovich Vistelius Research Award**, formerly known as the **President's Prize**, will be presented in odd years, although it too will be presented in 1998 before assuming an odd-year schedule in 1999.

All awards will be presented at annual meetings of the IAMG, with travel expenses of recipients paid. Each recipient is expected to attend the IAMG annual meeting as a keynote speaker when an award is presented. Except for the Krumbein Medal, membership in the IAMG is not an essential condition, although membership is encouraged for prospective recipients.

Recipients for all awards will be selected by a newly established IAMG standing committee, the Awards Committee, which will be composed of five members of the Association (John W. Harbaugh, chairman, John C. Davis, John M. Cubitt, Vera Pawlowsky, and Heinz Burger, and the President as member ex officio). The

Committee will publicize awards, seek nominations, and select recipients. Committee members generally will be appointed for terms of four years, although initially terms that differ from four years will be established to ensure a regular progression of members to and from the committee.

Contrasts between awards:

The **Krumbein Medal** is awarded to senior scientists for career achievement, which includes distinction in application of mathematics, computing, or informatics in the Earth sciences, service to the IAMG, and support to professions involved in the Earth sciences. There is no stipulated preference for fields of application within the Earth sciences. The Krumbein Medals honors William Christian Krumbein, who died in 1979.

The **Chayes Prize** honors Felix Chayes, who died in 1993, and will be given to recipients of exceptional potential and proven research ability, with focus on outstanding contributions to statistical petrology or related applications of mathematics or informatics to petrology. Prospective recipients should be at least in mid-career.

The **Griffiths Teaching Award** will be presented to honor outstanding teaching, with preference for teaching that involves application of mathematics, computing, or informatics to the Earth's nonrenewable natural resources or to sedimentary geology. Age, IAMG membership, or academic status are not conditions for the award, so that teachers in universities, colleges,

PRESIDENT'S FORUM

The 1996-2000 Council has completed its first year in office partly learning the intricacies of how to run the Association, and in the process it has found that some provisions require corrective action for which I would like to have your endorsement.

Despite continuous review of the Statutes and By-Laws in our Constitution at every General Assembly but one (Mathematical Geology, vol. 29, no. 4, p. 604-612), the Council came upon two instances in which the entrenched practices, although reasonable, were illegal according to the Statutes. In the dilemma between continuing to ignore the law or amend it to bring it to reality, the Council in both cases decided to change the Statutes.

Early on, the Council discovered that the members of the Association have to make all nominations to committees or commissions (Article 4), a cumbersome and slow procedure to advertise and implement that stands against the spirit of Article 12 entrusting the Council to run the Association between General Assemblies. Such provision is also contrary to the long standing practice of letting the Council appoint the chairperson of any committee or commission and allowing the chairpersons to select their collaborators in consultation with the Council.

Also illegal according to the Statutes is the practice of more than a decade to pay an accounting firm to review our books once a year. According to Articles 17 and 18, the correct procedure is to commission two IAMG members, the International Union of Geological Sciences (IUGS), or the International Statistical Institute (ISI) to audit the accounts. Auditing is a complex and demanding procedure that a few geomathematicians may have been able to perform during the early years of the Association when it had a few thousand Swiss Francs on its accounts. After passing the one third of a million dollars mark, inspecting our books is a more serious and demanding endeavor better done by qualified professionals. Again, instead of paying a blind eye to the Constitution, the Council recommended to amend the Statutes to upgrade the law to the new realities.

Of related but different nature are the problems that the Council came across trying to implement the expanded system of awards approved by the General Assembly last year. The Council appointed 1985 Krumbein Medalist John Harbaugh to evaluate the system of awards and propose enhancements if necessary. Regular members of the Awards Commission were Frits Agterberg (Canada), Graeme Bonham-Carter (Canada), Hernani Chaves (Brazil), Carol Gotway Crawford (USA), John Cubitt (UK), Ghislain de Marsily (France), Olivier Dubrule

(UK), Thomas Jones (USA), Richard McCammon (USA), Vera Pawlowsky (Spain), and Timothy Whitten (UK). The essence of the awards system is in Section IV, Articles 14 through 17 of the By-Laws. The main findings of the Awards Commission were:

1. Four annual awards are too many for a professional organization that in the last decade has had 500-600 regular members. Instead of revoking the two new awards in honor of Felix Chayes and John Griffiths, the Commission proposed to compensate the doubling in the number of awards by reducing the frequency of presentation of all four of them from annual to biennial, thus preserving the tradition since 1981 to present two awards per year.
2. About a year ago, the widow of Felix Chayes and his sister, Mrs. Natalie C. Tenney, donated \$65,000 to endow an IAMG award in his honor. None of the other awards has any endowment. The traditional higher prestige of the Krumbein Medal was considered compromised and its prestige eroded by having two other medals, especially if one of them was endowed. The Harbaugh Commission, with the approval of the Chayes family, decided to keep the Krumbein Medal as the only medal. The Chayes Medal and the Griffiths Medal have never been cast or awarded.
3. The Awards Commission considered that the doubling in the number of awards demanded a more stable and centralized Awards Committee to replace different selection commissions choosing the winner of each award.

Last November the Council approved all these recommendations. Besides amending By-Laws 14-17, the Harbaugh Commission produced descriptions and guidelines for every award, which will help to increase the harmony and consistency of the system. For more details I invite you to read John Harbaugh's article starting in page 2.

According to Article 24 in the Statutes and 19 in the By-Laws, the Constitution of the IAMG can be amended only by the General Assembly. Consequently, the Council has decided to schedule a General Assembly at our next Conference to be held in Italy, October 4-9, 1998. Considering that the presentation of awards is already behind schedule, counting on the membership support for the recommendations produced by the Awards Commission and backed by the Council, the Council has decided to work simultaneously on the selection of award winners for 1996 and 1997 and the amendments to the Constitution. In the winter, in preparation for the General Assembly, you will receive a mail ballot from Secretary General Thomas Jones with details about the amendments mentioned here and a few other minor changes. I ask for your support for all these amendments.

Ricardo Olea

high schools, preparatory schools, elementary schools, and in private educational practice may be considered. The award honors John Griffiths, who died in 1992.

The **Vistelius Research Award** is presented to young scientists for promising contributions in research in the application of mathematics, computing, or informatics in the Earth sciences. There is no preference for specific fields of application, but a recipient should be 35 or less at the end of the calendar year for

which he or she has been selected for the award. The award honors Andrei Borisovich Vistelius, who died in 1995.

Nominations are needed now for all four awards — deadline is **15 February 1998**. Please see the call for nominations on the front page.

John W. Harbaugh
Chairman
IAMG Awards Committee

IAMG '98 Ischia Island, Italy

4-9 October 1998

The 1998 Annual Conference of the International Association
for Mathematical Geology

GIAST (Gruppo di Informatica Applicata alle Scienze della Terra)

This international conference will focus primarily on the mathematical and statistical analysis of **Time-Space Systems in Geology and Environmental Sciences**. Other topics relevant to mathematical geology will also be included. The conference is sponsored by the International Association for Mathematical Geology (IAMG) and by the Consiglio Nazionale delle Ricerche (C.N.R., Italy); it will consist of five days devoted to technical sessions, tutorial workshops and excursions in areas of scientific and tourist interest. A full program for accompanying guests and a conference banquet are also planned.

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Antonella Buccianti, Dipartimento di Scienze della Terra,
Università di Firenze, Italy

Marino Grimaldi, Dipartimento di Geofisica e Vulcanologia,
Università di Napoli "Federico II", Italy

Giuseppe Nardi, Dipartimento di Scienze della Terra,
Università di Napoli "Federico II", Italy

Nicola Pelosi, Istituto di Ricerche "Geomare Sud",
C.N.R., Napoli, Italy

Roberto Potenza, C.S.G.A.Q, CNR, Milano, Italy

International Scientific Committee

Frederik P. Agterberg, Energy, Mines and Resources, G.S., Canada

George Christakos, University of North Carolina, USA

Nina Gorelikova, Institute for Geology of Ore Deposits, Russian
Academy of Sciences, Moscow, Russia

Dan Merriam, Kansas Geological Survey, USA

Vera Pawlowsky-Glahn, Universitat Politècnica de Catalunya,
Barcelona, Spain

Hans Wackernagel, Centre de Géostatistique, Fontainebleau, France

ISCHIA

Ischia, the largest island in the Gulf of Naples, has six villages with a total of about 45,000 inhabitants. Known as the Green Island, due to the typically lush vegetation that covers it entirely throughout the year, the island is of volcanic origin and is characterised by the presence of a phillipsite and analcime-rich tuff, called green tuff because of the presence of glauconite. Ischia owes its fame and its advanced economic-social development to the riches that lie under its surface. It is full of thermal-radioactive springs which for centuries have provided health and physical beauty in a setting that is still ecologically intact. The hot springs of Ischia have been renowned since ancient times. They are already mentioned by Homer in the Iliad and by Virgil in the Aeneid, as also by Pliny and Strabo.

Ischia is also famous for its ideal climate, its pleasant countryside, its crystal-clear sea and for its genuine foods and delicious wine, made from grapes grown in zeolitic soil on the slopes of volcanic Mount Epomeo (787 m). Ischia is an ideal starting point for post-conference vacation trips to Capri, Pozzuoli and Phlegraean Fields, downtown Naples (with its old Greek and Roman structures), Pompeii, Herculaneum, Vesuvius, Sorrento, Amalfi and Paestum.

The island of Ischia constitutes, with the Phlegraean Fields and the Somma-Vesuvius, the classical active volcanic area of the Quaternary Potassic Roman Province in central-southern Italy. This volcanism is related to the Plio-Quaternary tectonic evolution of the western margins of the Apennine chain. Ischia delimits the north-western part of the Gulf of Naples, together with the island of Procida and the Capo Miseno Peninsula. The island has an area of 46.4 km² and is entirely composed of volcanic and epivolcanic rocks. Its morphology is mainly characterised by non-equilibrium features, due both to the

very recent volcanic activity and to complex tectonic history. The island was settled by the Greeks in the 8th century B.C. and still bears witness to its past: the necropolis of Lacco Ameno, the Aragonese castle, the old harbour town at Ischia Ponte, the church of Soccorso di Forio.

The conference has been scheduled during the off-season with few tourists on the island and favourable weather conditions (Mediterranean climate).

The conference site will be Hotel Continental Terme, a first-class hotel located in a park covering 30,000 m², with 250 rooms and 5 suites. The hotel is only 100 meters away from the sports centre and stadium and lies behind the famous pine forest of Ischia, an ideal place for long walks. A minibus service links the hotel to the beach where water sports facilities are available. The Hotel Continental Terme is equipped with the most advanced facilities for conferences, seminars and conventions. Other hotels and restaurants are located in the immediate vicinity of the conference site.

How to get there

The island is connected to the Gulf of Naples by means of ferry-boats and hydrofoils. Capodichino airport of Naples serves both domestic and international (European) flights. Connections by intercity trains are available from Milan, Rome and Florence. Bus and taxi allow to reach the port of Naples from the Central Station of Naples as well as from the airport. Visitors arriving from countries other than Europe should fly to Rome or Milan and then take a domestic flight or an intercity train to Naples.

TECHNICAL PROGRAM

The IAMG'98 conference will start Sunday, October 4, at 6 p.m. with an official reception followed by three days of plenary and parallel technical sessions. The conference will be divided in several morning and afternoon sessions, opened by keynote lectures given by invited speakers. Tentatively, selected topics of the conference are:

1. Time-space systems in the earth sciences;
2. Compositional data analysis;
3. Geostatistics;
4. Numerical modelling and simulation;
5. Multivariate analysis;
6. Prediction and prevention of geological hazards;
7. Mathematical advancements in geophysics;
8. Engineering geology;
9. Image analysis;
10. Numerical volcanology;
11. Advanced topics in mathematical geology;
12. Multidisciplinary data integration.

The last two days of the conference will be devoted to three one day tutorial workshops and to geological excursions. The topics of the tutorial workshops will be:

1. Stochastic space/time analysis and estimation (G. Christakos);
2. Fundamentals of geostatistics (V. Pawlowsky-Glahn);
3. New methods and concepts in mathematical geology (F. Agterberg).

CALL FOR PAPERS

Contributions will be accepted for oral, poster or software presentation after review by at least two referees. The Organising Committee considers the posters and software presentations as important as oral presentations, and no difference will be made in the publication of both types of contribution in the proceedings volume (see below). Poster exhibitors will attend their posters for one hour to discuss their findings in detail with interested parties. We expect that this format will allow the maximum interaction between participants at the conference.

Abstracts

Interested contributors for oral, poster or software presentations should submit a one-page abstract of 200 to 400 words in English without figures or references **before 31 January 1998**. Contributions will be selected by peer review of the submitted abstracts by at least two referees. Only the extended abstracts of accepted contributions will be published. Notification of acceptance together with instructions for the camera-ready manuscript (maximum of four pages) will be mailed on 31 March 1998. The final, camera-ready copy will be due before **30 May 1998**. Participants at the conference will receive a volume of extended abstracts. Following the conference, authors of selected

papers will be invited to present an article to be published in a special volume.

Please note:

- Each registered participant will be allowed to present a maximum of two papers.
- Only papers of participants registered before **June 1, 1998** will be included in the proceedings volume.
- Only contributions with at least one author or co-author registered before September 1 will be included in the final programme.
- The official language of the conference will be English: no facilities for translation will be available.

Submissions

Please send a copy of your abstract by regular mail, fax or electronic mail in ASCII or RTF format to the following address:

Dr. Antonella Buccianti
IAMG'98 - Conference Secretariat
Dipartimento di Scienze della Terra
Università di Firenze
Via la Pira 4
I-50121 Firenze, ITALY
 phone: +39-55-2757496, fax.: +39-55-284571
 e-mail: buccianti@cesit1.unifi.it
 www.unina.it/dgv/IAMG98.html

IMPORTANT: Information will be sent only to those who have sent the pre-registration form to the Conference Secretariat (see address above)

For information about accommodation contact directly:

Centro Congressi
 Hotel Continental Terme
 Via M. Mazzella, 74 - 80077 ISCHIA (NAPOLI), ITALY
 Phone: +39-81-991588
 Fax: +39-81-982929
 E-mail: LEOHOTEL@POINTEL.IT
<http://www.ischia.it/continental/terme/termeuk.htm>

Call for Papers for Individual Technical Sessions

Compositional data analysis

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 organising a technical session during IAMG'98 on the same subject. In accordance with the wishes of the organisers 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. For additional information please contact the conference secretariat or the conveners at the following addresses:
John Aitchison, Rosemount, Carrick Castle, Lochgoilhead, PA24 8AF Argyll, Scotland, e-mail: John.Aitchison@btinternet.com
Vera Pawlowsky-Glahn, Universitat Politècnica de Catalunya, Departament de Matemàtica Aplicada III, ETS de Ing. de Caminos, Canales y Puertos, c/ Grán Capitán, s/n, E-08034 Barcelona, SPAIN, e-mail: pawlowsky@etsecpb.upc.es

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Multivariate statistics in the earth sciences

The annual meeting of the IAMG in '97 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. For additional information you may also contact the convener of the session at the following address:
Dr. Heinz Burger, - Geoinformatik -, Malteser Str. 74-100, 12249 Berlin, Germany, fax +49-30-775 2075, e-mail: hburger@zedat.fu-berlin.de

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Investigation and Modeling of Subsurface Flow and Contaminant Transport with emphasis on the estimation of the uncertainty of the predictions

Groundwater resources are increasingly at stake at the end of this second millenium: increasing water demand, need for increased recharge or reinfiltration of waste-water, 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 of 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 send an abstract focused on the theoretical and/or practical aspect of uncertainty estimation in groundwater flow and transport, in the following areas (or others):

- 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 sources and non-point sources contaminants

For additional information please contact the conference secretariat or the conveners at the following addresses:
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Marine Geology

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 technical 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.

For additional information please contact the conference secretariat or the conveners at the following addresses:
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IAMG Journal Report

Michael Ed. Hohn effectively has taken over as Editor-in-Chief of *Mathematical Geology* replacing **Daniel F. Merriam**. Although the change will not show on the cover of the journal until next year, in order to speed up the review process and save postage forwarding the manuscripts from Kansas to West Virginia, please spread the word that all manuscripts should be mailed to him instead of Dan Merriam (address on p.2).

Daniel F. Merriam will succeed **Richard B. McCammon** as Editor-in-Chief of *Nonrenewable Resources*. Dan's nomination by the Publication Committee was unanimous and has been approved by the IAMG Council. Dick will continue to look after editing current issues of the journal until the end of 1998. Preparation of a journal is a systematic process with a lag of several months between submission of a manuscript and its acceptance for publication. Dick McCammon already has vol. 6 no. 4 in press and has plans for all issues of volume 7 (1998). He will continue in front of *Nonrenewable Resources* until the last issue of volume 7 goes to press.

Jo Anne DeGraffenreid is the new Editor of the *IAMG Monograph Series* in *Mathematical Geology* published by Oxford University Press. She has taken over from **Richard B. McCammon** who stepped down from this position. Jo Anne has extensive publishing experience including being the IAMG Newsletter editor from 1985 to 1989. She is a member of the Association of Earth Science Editors and the Geoscience Information Society. Formerly she was Editor for the Kansas Geological Survey, which is willing to support her new activities as editor for the IAMG as a service to the profession. If you would like to publish a monograph or know of someone interested in doing it, please contact Jo Anne at <MsDeG@kgs.ukans.edu>.

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IAMG'97 in Barcelona - Report

Barcelona for a conference? A wonderful choice — provided there is some time on the side to experience the sights and sounds of this great city. And there was: the organizers — foremost Vera Pawlowsky-Glahn of the Dept. of Applied Mathematics III at the Universitat Politècnica de Catalunya (UPC) and Barbara Schmitt of the International Center Center for Numerical Methods in Engineering (CIMNE) — had arranged the meeting around the big local holiday Dia de la Mercè so that there was plenty of opportunity and time to take it all in.

That doesn't mean that the meeting itself wasn't worth attending. No, it was full of interesting technical sessions (14 all together) with a number of good presentations among the 195 contributions. The meetings were arranged in three parallel sessions in three neighboring buildings near the center of the modern campus of UPC which lies on the hillside near the northwest edge of the city. One of the lecture halls was equipped for telecommunications and teleconferencing (see front page) and at the reception/registration visitors were allowed to use networked computers to check on their e-mail or call up internet web sites.

The Third Annual Conference of the IAMG took place from 18-27 September and starting with several short courses and workshops and followed by a technical excursion into the Pyrenees (see p. 10). Wednesday the 24th, the actual holiday, was kept free for the conference participants to enjoy the festivities. And on Thursday evening there was a gala banquet at the old University of Barcelona. At that occasion the awards were presented to the award winners Aitchison, Deutsch and Cheng.

The main theme of the conference was "Statistical analysis of compositional data in the earth sciences" in honor of Karl Pearson who published the first paper on this subject 100 years ago. The topic was highlighted with a keynote lecture by John Aitchison (the winner of the 1995 Krumbein medal) to close out the first day before the ice breaker reception. This theme, compositional data, was enlarged with a collection of papers dealing with various analyses of the Darss Sill data set from the Baltic, and with a session on petrophysical data.

However, compositional data was not the only subject. There was a strong contingent of geostatistical papers, and several sessions on various quantitative, numerical and computer methods. "Concepts in fashion", such as fractals, neural nets and lacunarity analysis were addressed in another session, and fields like marine geology, environmental, or engineering geology, etc. were covered as well. Overall there was something for everybody's taste and interest.

Not only was the meeting well organized but the registrants were greeted with a heavy two volume set of Abstracts and Proceedings (1130 pages) printed at UPC — a first in the history of this meeting. In addition, there were various goodies to make note taking easier, contained in two cotton bags decorated with the specially designed logo (shown on this page) for the Barcelona Conference. (For those not able to attend the meeting, the proceedings are available to

purchase for \$150 from: CIMNE, UPC - Campus Norte, ed. C1, Gran Capitàn s/n, E-08034 Barcelona, Spain, Tel. +34 3 401 6037, Fax: +34 3 401 6517, e-mail: cimne@etsecpcb.upc.es)

The only thing I would criticize of the otherwise well organized meeting was the poster exhibition: there was plenty of well lit wall space but there was no free time set aside for posters (the discussion time was at the same time as the technical sessions). The facilities, next to the registration area, were not well visited because the coffee break took people to another building. One has to admit, however, that many posters were repeats or extensions of papers in the technical sessions.

The conference was capped off with a series of three invited keynote lectures featuring two winners of the IAMG President's Prize (now renamed Vistelius Award), Clayton Deutsch (1994) and Qiuming Cheng (1995), and György Bãrdossy. These lectures and the closing ceremony took place in the neo-romanesque chapel in the old park-like part of the UPC campus where the lectures during first years of the University used to be given. Co-chairman and IAMG president Ricardo Olea thanked the organizers and participants and announced the statistical results of the meeting: 234 attendees, of whom 95% presented papers or posters, from 30 different countries — a truly international meeting.

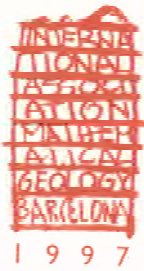
Council Meeting and Defenestration

The first live meeting of the 1996-2000 IAMG council, open to the public and attended by 7 council members, the editors, some committee chairmen and several interested IAMG members, took place on Tuesday evening during the IAMG conference. Discussed were, among other items, the move to Ottawa of the website managed by webmaster Eric Grunky, the question of making the membership list available, and the new award system. Treasurer Tetzlaff reported on the financial status of the Association which looks positive. In

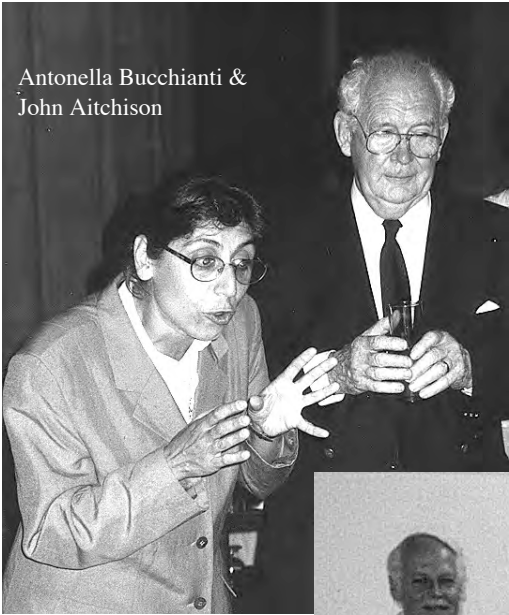
addition, there was discussion on the financial oversight and possible ways to reduce the overwhelming workload of the treasurer's office.



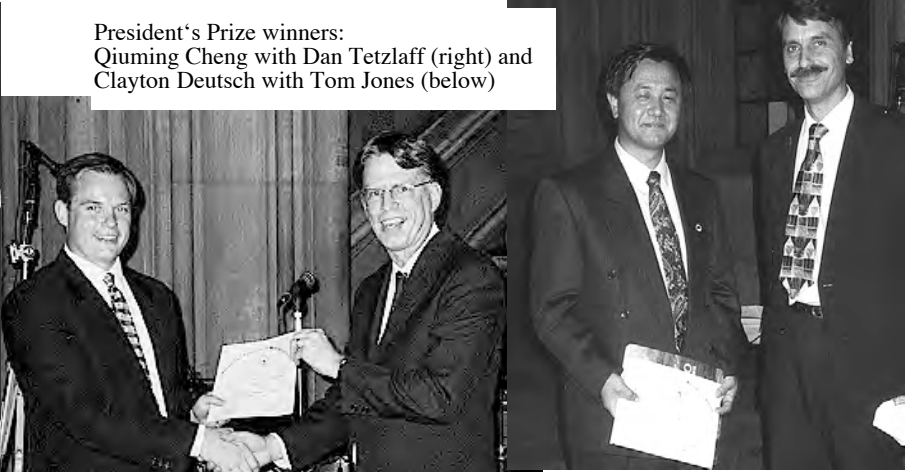
The discussions were often heated and drawn out so long that the meeting lasted well past 10 pm. When the remaining participants (see photo p. 8) finally adjourned, the doors of the building were locked. Instead of calling for help, the group decided on the easy way out and jumped one by one out of a lower floor window (see photo). Fortunately, this was not observed by any of the campus guards.



Antonella Bucchianti & John Aitchison



President's Prize winners:
Qiuming Cheng with Dan Tetzlaff (right) and Clayton Deutsch with Tom Jones (below)



General Chairperson Vera Pawlowsky



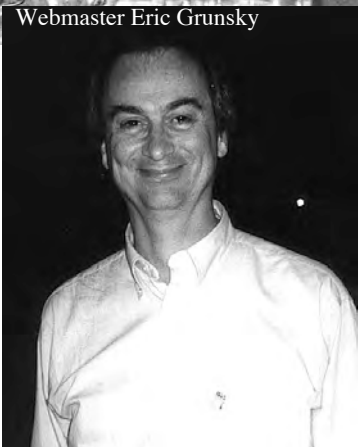
Council Meeting: Frits Agterberg, Tom Jones, Tetsuya Shoji, Cedric Griffiths, Dan Tetzlaff, Ricardo Olea, John Tipper, Graeme Bonham-Carter, John Davis, Micheal Hohn, Ute Hertzfeld (l. to r.)

Scenes from the IAMG'97 Conference

Old friends: John Davis & Dan Merriam



Webmaster Eric Grunsky



Walther and June Schwarzacher and Andrea Fabbri



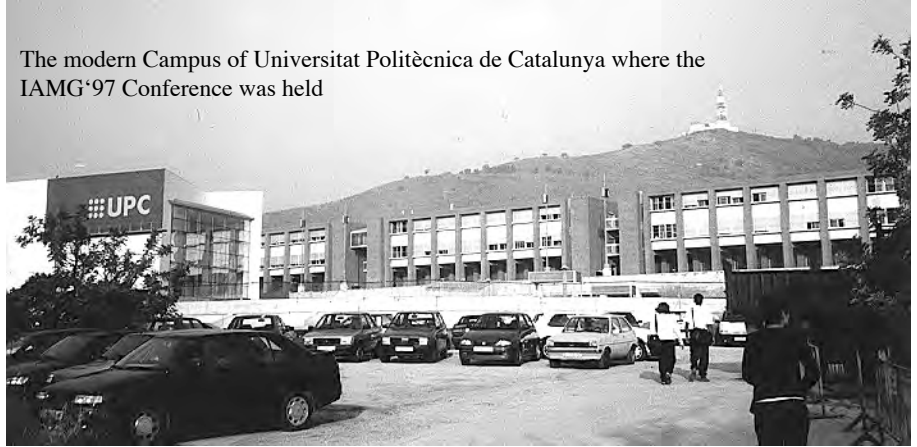
The Chapel, site of the keynote lectures and opening ceremony
Oldest building on campus



Poster Session



The modern Campus of Universitat Politècnica de Catalunya where the IAMG'97 Conference was held



Some of the



Frits Agterberg & Susanna Sirotinskaya



Graeme Bonham-Carter & Eric Grunsky



John Doveton & Dan Tetzlaff



Carme Hervada & Hannes Thiergärtner

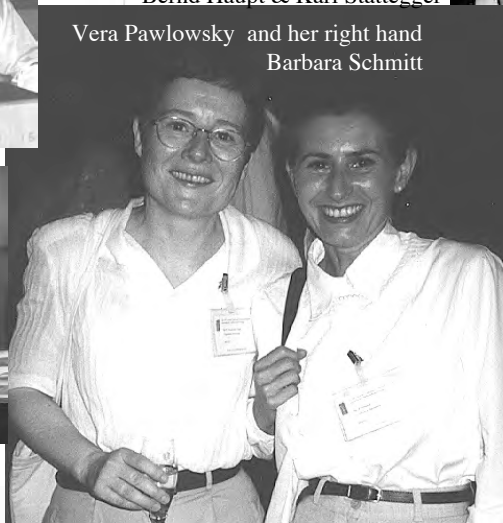


Bernd Haupt & Karl Stattegger



Vera Pawlowsky & Zhou Di

Vera Pawlowsky and her right hand
Barbara Schmitt



Hans Wackernagel & Ana Fernández-Militino



Heinz Burger & Juan José Egozcue-Rubi



Pierre Goovaerts & Jaime Gómez-Hernández



Tom Hewitt



Allan Gutjahr

IAMG'97 Field Trip Report

Technical Excursion from Barcelona to Andorra

Under the leadership of Jordi Corominas, professor at the Dept. de Ingeniera del Terreno (UPC), a small but select group of eleven IAMG'97 participants went on a field trip though northeastern Spain to the small state of Andorra in the Pyrenees to view the regional geology and especially the geomorphology of landslides and other geological hazards such as flooding.

The group met early at 7am near the UPC Campus but had to wait almost an hour for the bus because of some misunderstanding. The trip went via Montserrat and then followed the route along the Llobregat River into the foothills of the Pyrenees.

There, finally we stopped for a long awaited and hoped-for breakfast of typical Catalan foods: various sausages, cheeses, good country bread, coffee and red wine.

Thus restored, we were driven into the Pyrenees through steeply dipping Tertiary and Cretaceous rocks along one of the strike valleys to the town of La Seu d'Urgell, seat of the Bishop of Urgell, one of the co-princes and protectors of Andorra. From there it took only a short but very scenic ride to Andorra and the location of several land slides and rock falls. Jordi Corominas explained



The members of the Andorra field trip: H. S. Poelchau, Mrs. & Mr. R. Olea, V. Swalova, K.-J. Roehlig, M. Sophocleous, G. C. Bohling, J. Corominas, M. E. Hohn, T. Hakamata, Mrs. & Mr. P.J. Lee (l. to r.)



the history of slides and flooding and the measures taken to prevent future disasters such as check dams, debris track and risk mapping, or simply relocation of entire villages. In the narrow valleys of Andorra the latter is almost impossible.

After a good lunch in a nice restaurant by the Valira River the group had some time to explore the old town of Andorra la Vella with its breathtaking views of the high surrounding mountains and

the low tax shopping paradise that attracts loads of tourists. The return trip included a stop at another hazard site, the Pont de Bar landslide on the Segre River. The participants arrived after dark back in Barcelona, tired but glad to have had such an informative and scenic field trip.

Final numbers of IAMG'97

Number of workshops held: 9
 Number of attendees at the workshops: 55
 (not including organisers nor lecturers)

Attendees to IAMG'97:

registrations before June 1: 150

- a) participants IAMG members 54
- b) participants non members 46
- c) students/retired sc. IAMG members 11
- d) students/retired sc. non members 22
- e) accompanying persons 17

registrations after June 1: 43

- a) participants IAMG members 7
- b) participants non members 17
- c) students/retired sc. IAMG members 3
- d) students/retired sc. non members 8
- e) accompanying persons 8

registrations from former SU, China, etc.: 12

- a) participants IAMG members 8
- b) participants non members 2
- c) students/retired sc. IAMG members 1
- d) students/retired sc. non members 1

organization: 19

- a) chair 1
- b) vice-chair 1
- c) scientific committee 6
- d) local committee 4
- e) secretary 1
- f) student helpers 6

Invited persons 10
 (invitations to social events to the chancellor, director of CIMNE, dean, ...)

Overall Total 234

cont'd from page 6

Louvari, AA Kiratzi

pp. 859-867 — Massively parallel strategies for local spatial interpolation — MP Armstrong, RJ Marciano

pp. 869-882 — Simulation of reactive geochemical transport in groundwater using a semi-analytical screening model — WW McNab Jr

pp. 883-888 — VERTEXVIEW: an interactive program to analyze and plot petrological phase diagrams — D Castelli, JAD Connolly, G Franceschi

pp. 889-895 — Software for multi-scale image analysis: the normalized optimized anisotropic wavelet coefficient method — J Darrozes, P Gaillot, M De Saint-Blanquat, JL Bouchez

pp. 897-907 — Bioterm - a program for evaluating and plotting microprobe analyses of biotite from barren and mineralized magmatic suites — F Yavuz, T Oztas

pp. 909-913 — A Pascal program for the Kalman learning algorithm in multilayer neural networks — Y Huang

pp. 915-916 — Another node on the internet -- anon — P Browning, JC Butler

Conference Reports:

5th INTERNATIONAL GEOSTATISTICS CONGRESS

Two hundred and twenty geostatisticians and scientists involved in spatial statistics met in Wollongong, New South Wales, Australia 22-27 September, 1996 to participate in the Fifth International Geostatistics Congress. This is the first time, the world geostatistical community has gathered in the Southern Hemisphere. Seventy-five percent of the delegates were from outside the continent of Australia, with the largest delegations from USA, France, Portugal, Norway and South Africa. The Congress featured a keynote speaker on each of the five days to provide extended discussions in both theory and applications. To accommodate the increasing interest in geostatistics, opportunity for poster sessions were provided at Wollongong '96. The Congress also sponsored two day courses in geostatistics for mining and environmental applications at the weekend prior to the Congress. The courses were provided to help the Congress participants with limited exposure to geostatistics appreciate better the Congress presentations in their fields. Despite the strong mining industry in Australia, application papers in petroleum, environmental, agricultural and other topics dominated the proceedings. The Congress volumes are available from Kluwer Academic Publishers, PO Box 17, 3300 AA Dordrecht, The Netherlands.

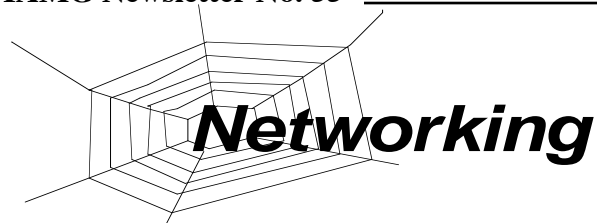
The participants of Wollongong '96 voted for Cape Town, South Africa to hold the 6th International Geostatistics Congress in the year 2000. Below are the unedited reflections on Wollongong '96 by 90 of the delegates who completed and returned Wollongong '96 evaluation forms. Comments about the congress included some of the normal complaints but gave overall praise to the organization. There seemed to be agreement about the poor quality of overhead illustrations, often illegible. Apparently, there were also some fights between various factions, and complaints that the Stanford school was overrepresented. The best comment: "Please do not distribute pens that click to delegates".

Ernest Baafi

Fourth SIAM Conference on Mathematical and Computational Issues in the Geosciences

On June 16-19, 1997, The Fourth SIAM (Society for Industrial and Applied Mathematics) Conference on Mathematical and Computational Issues in the Geosciences took place at the Sheraton Old-Town Hotel in Albuquerque, New Mexico. This conference was sponsored by The SIAM Activity Group on Geosciences and the organizing committee was chaired by Professor Clint Dawson of the University of Texas at Austin. Previous conferences were in Houston, Texas in 1989 and 1993 and San Antonio, Texas in 1995.

cont'd on p. 13



COMPUTERS & GEOSCIENCES NOW ONLINE

<http://www.elsevier.nl/locate/cgonline>

Computers & Geosciences, the IAMG journal devoted to all aspects of computing in the geosciences, is now available online. This service offers pre- and post-publication contents lists, abstracts and/or full text articles (in both HTML and PDF format) for all papers published in the journal since 1995.

Full access to the online journal is now available free to IAMG subscribers to the journal Computers & Geosciences until the end of 1998. Registered users will be able to use the Computers & Geosciences Online service to browse at leisure through the contents and abstracts of the latest issues of Computers & Geosciences. For more in-depth research, the search facility allows for free text searching over titles, authors and abstracts of the articles, over all issues listed.

For non-subscribers, a free online demonstration is available at

<http://www.elsevier.nl/locate/cgonline>. This provides sample issues, complete with abstracts, full text articles and full functionality. Sample issues will be updated frequently.

The nature of the journal, and the interest of its readers and authors in the Internet have made Computers & Geosciences an obvious journal to make available online. It brings to its readers information about, and now access to, databases, data structures, computer graphics, numerical methods and simulation models. Program code relating to articles published in the journal is also available online via the IAMG site:

<http://www.iamg.org/iamg.html>.

IAMG FTP site Update

Source code files of programs published in Computers & Geosciences can be downloaded from the association's FTP site "iamg.org" in directory "/gsc/CG/CG", or from the searchable web page: <http://www.nrcan.gc.ca/gsc/iamg/cghome.html> which is linked to the IAMG web site <http://www.iamg.org/>. The following lists the new uploads of vol. 23 (1997). The programs are listed by vol., issue number and article number (of each issue). All of the new files (except 1-11 - only DOS) are available in DOS .zip and UNIX .tar formats.

23 1-1, 5, 6, 7, 8, 11; 2-1, 2, 3, 5, 8, 9; 3-1, 2, 6, 8, 9, 10, 11; 6-4, 7, 10; 7-2, 3, 4, 5, 6, 7



Developments in Petrophysics, M. A. Lovell & P.K. Harvey (ed.), Geol. Society Special Publ. No. 122, 408 pp. hardback, May 1997, US\$ 125, ISBN 1-987799-81-0

Principles of Applied Reservoir Simulation by John R. Fanchi, Gulf Publishing Co., 290 pp., GBP55.00

Petrophysics: Theory & Practice of Measuring Reservoir Rock & Fluid Properties, by Djebber Tiab & Erle C. Donaldson, Gulf Publishing Co., 608 pp., GBP39.00

Diagenetic Models and Their Solution: Modeling Transport and Reaction in Aquatic Sediments by B.P. Boudreau (Dalhousie University, Halifax, Nova Scotia), 1997/414 pp., Hardcover \$98.00, ISBN 3-540-61125-8, Springer-Verlag, New York

The study of sedimentary chemistry and its associated processes is becoming increasingly mathematical. There is a growing desire to gain a quantitative understanding of the reasons for the natural chemical changes observed in sediments as they are buried. Past works on the subject have not emphasized the steps necessary to develop transport-reaction (diagenetic) models or methods for their solution. In this volume, Boudreau presents a detailed account of model formulation by explaining numerous useful solution techniques.

Applied Multivariate Statistics in Geohydrology and Related Sciences by C.E. Brown (Reston, Virginia), 1997/Approx. 250 pp., Hardcover \$72.95 (tentative), ISBN 3-540-61827-9, Springer-Verlag, New York

In this volume Brown provides all the background necessary to apply modern multivariate statistical techniques in geohydrology and biostatistics. He has organized the book into comprehensive categories that cover procedures for studying interrelations among objects and samples as well as the interrelations of variables. In addition, Brown identifies techniques that require multivariate normal data and those that do not. This volume is ideal for use as a valuable library reference, guide for a graduate seminar, or a textbook.

Geosciences and Water Resources: Environmental Data

Modeling, edited by C. Bardinet (University of Paris); J.-J. Royer (University of Nancy, Vandoeuvre-Lès-Nancy), 1997. Approx. 320 pp., Hardcover \$117.00, ISBN 3-540-61947-X, Springer-Verlag, New York

This volume contains up-to-date information related to geosciences and water resources. It examines both theoretical and applied aspects, focusing on water in ecosystems, global atmospheric evolution, space and earth remote sensing, regional environmental changes, accessing geoenvironmental data and ecotoxicological issues.

Multiphase Flow and Transport Processes in the Subsurface by R. Helmig (University of Stuttgart, Germany), Translated from the German by P. Schulz, 1997. Approx. 380 pp., Hardcover \$84.95, ISBN 3-540-62703-0, Springer-Verlag, New York

One important precondition for modeling multiphase flow and transport processes in the hydrosystem "subsurface" is the general formulation of a model. The objective of this book is to present a consistent, easily accessible formulation of the fundamental phenomena and concepts, to give a uniform description of mathematical and numerical modeling, and to show the latest developments in the field of simulation of multiphase processes, especially in porous and heterogeneous media. Some general aspects which affect the selection of the relevant processes and the corresponding parameters as well as the mathematical and numerical model concepts are discussed in detail.

The book provides a systematic overview of hydro-system modeling and its application to the modeling of subsurface flow and transport processes.

Simulating Oil Entrapment in Clastic Sequences by Johannes Wendebourg and John W. Harbaugh, 1997, Pergamon Press, 260 pages, hardbound NLG 247.00 US\$ 152.50, ISBN: 0-08-042431-7

Deformation and Progressive Failure in Geomechanics, Proceedings from the International Symposium on Deformation and Progressive Failure in Geomechanics, (IS-NAGOYA '97), Nagoya, Japan, 4-7 October 1997, edited by, Akira Asaoka (Nagoya University), Toshihisa Adachi (Kyoto University) and Fusao Oka (Gifu University), 1997, Pergamon Press, 952 pages, hardbound NLG 365.00, US\$ 225.00, ISBN: 0-08-042838-X

Data Analysis Methods in Physical Oceanography by William J. Emery (Colorado Center for Astrodynamics Research, University of Colorado) and Richard E. Thomson (Institute of Ocean Sciences, British Columbia), 1997, Pergamon Press, 400 pages, hardbound, NLG 177.00, US\$ 112.00, ISBN: 0-08-031434-1

Data Analysis Methods in Physical Oceanography provides a comprehensive and practical compilation of the essential information and analysis techniques required for the advanced processing and interpretation of digital spatio-temporal data in physical oceanography as well as in other branches of the geophysical sciences.

This book assumes a fundamental understanding of calculus and is directed primarily towards scientists and engineers in industry, government and universities, including graduate and advanced undergraduate students. It provides a valuable compendium of the fundamental data processing tools required by the marine scientist. The book begins with a detailed discussion of the instruments used to collect oceanographic data and the limitations of the resulting data. Data presentation and display methods are reviewed in chapter two. The remaining three chapters supply detailed information on a broad range of statistical and deterministic data analysis methods ranging from established methods such as Analysis of Variance methods and Principal Component Analysis, to more recent data analysis techniques such as Wavelet Transforms and Fractals. Each technique is illustrated by a worked example and a large number of references are given for the reader who may want to dig deeper into the subject. No other book of this type exists that brings together in one volume information on the measurement systems, data editing, data reduction/processing and analysis and interpretation. At present this information is scattered among numerous texts, reference books, primary publications, technical reports and other "gray" literature such as data reports.

New Journal

Mathematische Geologie - an integrative journal publishing contributions on the advanced application of mathematical methods (e. g. mathematical statistics, modelling, classification, graphical analyses and representations, use of geographical information systems, computer simulation, expert systems, fuzzy technologies) in the entire field of geological sciences (i. e. regional and historical geology, tectonics, geology of mineral deposits, hydrogeology, environmental geology, mineralogy, geochemistry, petrology, lithology, palaeontology, geophysics etc.).

The periodical is devoted to the application and use of mathematical approaches supporting the solution of geological problems, to the search for new geological fields of successful mathematical applications, and to the development of new mathematical methods and models. *Mathematische Geologie* should be classified as part of the geosciences and not as a mathematical subject. The journal is directed at all geoscientists. With respect to various problems concerned with the practical use of mathematical methods, the periodical will supplement other journals. Consequently, the discussion of more practical solutions and examples will predominate, whereas basic mathematical considerations will be subordinated.

The periodical *Mathematische Geologie* will publish single contributions on special problems in the form of thematic issues and also monographs. Those mathematical or computer-oriented papers which are treated thoroughly in associated scientific fields such as geography or geophysics shall only be published marginally in this periodical.

Contributions will be published in the German, English, or French language. Papers in English are preferred. Contributors who are interested in publishing their contributions unpublished up to now are asked to contact the publisher or the editor before sending in manuscripts.

Editor: **Hannes Thiergärtner**.

Editorial board: Jürgen Kullmann, Tübingen; Joachim Menz, Freiberg (Saxony); Reinhard Pflug, Freiburg; Agemar Siehl, Bonn; Heinrich Siemes, Aachen; Wolf Dietrich Skala, Berlin

Publication of the first volume: Oktober 1996:

Umweltinformationssysteme und Datenverarbeitung in der erdgeschichtlichen Analyse. - Edited by H. Thiergärtner. 80 pages, carton. Price 24 DM. ISSN 1431-8016

<http://www.sik.de/cpv/>

Conference Reports cont'd from p. 11

This conference had over 250 presentations and posters covering the wide range of subjects discussed below. While many of the presentations and attendees were from the United States, there was good representation from the international community as well.

The conference was organized around invited presentations by internationally recognized experts, minisymposia, contributed presentations and poster sessions. The major focus areas were Atmospheric Dynamics, Flow and Contaminant Transport in Porous Media, Geophysics, Geostatistics, Ocean Hydrodynamics, Oil Reservoir Modeling, Optimal Control in Ground Water Remediation, Parallel Computation, Parameter Estimation and History Matching and Scaling in Porous Media. There were nine invited presentations on the areas above, each of 45 minutes length. These were plenary sessions that occurred at the beginning of the morning and afternoon.

The invited presentations on flow and transport in heterogeneous media were:

1. & 2. Professor John Cushman (Purdue University) and David Sharp (Los Alamos Laboratory) each with a plenary session on problems of scale in heterogeneous media;
3. Dr. Louis Durlafsky (Chevron Petroleum Technology Company) on effective coarse scale descriptions of multi phase displacement;
4. Professor Gedeon Dagan (Tel Aviv University) on the significance of effective properties in flow and transport for heterogeneous porous media;
5. Professor Hans Van Duijn (Center for Mathematics and Computer Science, The Netherlands) on uniqueness conditions in a hyperbolic model for oil recovery by steam drive;
6. Professor Christine Shoemaker (Cornell University) on applications of optimization in groundwater remediation.

Switching from porous media, talks by

7. Dr. Rick Luettich (Institute of Marine Sciences, University of North Carolina) on modeling ocean hydrodynamics using finite elements;
8. Professor Guy Chavent (INRIA, France) on inversion of reflection in seismic data for velocities;
9. Dr. Joseph Tibbia (National Center for Atmospheric Research) on statistical dynamic methods in atmospheric prediction;

which concluded the plenary session presentations.

A unique feature of these SIAM conferences is the

minisymposia. These are a series of lectures organized by the conference committee and by other proposers. Each consists of four 30 minute lectures on a single topic by speakers invited by the organizer. Because these sessions are highly focused they are a high point of the conferences and include good discussions of basic issues. The only difficulty is that it is often difficult to choose between parallel sessions. There were 37 minisymposia at this conference featuring the main areas mentioned in the introduction; they ran in parallel with each other and contributed papers.

One of the liveliest minisymposia this year was one on Bayesian versus Frequentist Methods of Inference. The presentations provoked both discussion and debate on the interpretation of statistics. What was stimulating was the emphasis on philosophical and fundamental issues in the use of statistics. While there was certainly no final resolution, the strengths and limits of each approach and the fact that how to make inductive inferences is a nontrivial philosophical issue made this an invigorating symposium.

In addition to the minisymposia there were 16 sessions of contributed papers as well as a poster session. The contributed papers were 20 minutes in length and related to the main topic areas again. The weakest part of the conference was the poster session — it did not compare well with similar sessions at (for example) the AGU or Gordon conferences.

When compared with IAMG conferences, these meetings are more narrowly focused with not as much statistical content. There was a fairly strong emphasis on numerical models but the interface with practitioners and interpretation of results was not slighted. As always, the discussions outside the formal presentations were a key ingredient for success.

The two key components of invited plenary sessions and focused minisymposia are what attracted many people to the conference. In fact, the conference was extended by a half day to accommodate the excellent response. The area of poster sessions could be strengthened — the mathematical community does not seem as used to that format as other societies. Overall, this was an excellent conference with over 300 participants. The location also attracted very active participation from the two national laboratories (Sandia and Los Alamos) in New Mexico; both have key interests in geoscience and the environment. Widening the venue to locations outside of the Southwest will make this conference even more popular.

Alan Gutjahr

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The International Section "MATHEMATICAL METHODS IN GEOLOGY" of the **MINING PRIBRAM SYMPOSIUM 1997** was held jointly with the Vth Int'l Symp. on applying Mathematical Methods and Computers in Geology, Mining and Metallurgy in Prague, October 6 - 10, 1997. The Regional Center of the IAMG in Prague was a co-sponsor of the meeting, and a grant of the IAMG allowed us to cover registration fees and some local expenses for 14 active participants from 7 countries.

Altogether about 100 specialists from 15 countries of Europe, Asia and Africa took part in the meeting held at the usual KRYSTAL center (where also the IAMG jubilee meeting in 1993 was organized). Altogether 73 papers and 9 communications (+posters) were presented whereas in the Proceedings volumes 140 complete papers and 50 abstracts or short papers (up to 2 pp.) are published.

About additional 45 persons were expected who mostly cancelled their arrival in the last days before the beginning and in some cases simply did not arrive without any excuse (only 9 of them were prepaid). The lack of responsibility was characteristic especially for some people from Egypt, Yugoslavia and Russia. The only possible solution for any future organizer is to strictly ask any potential author to prepay the registration fee well in advance. Unfortunately also two persons who accepted the invitation on the basis of the IAMG grant did not appear without any excuse which made it impossible to invite other needed persons. Ethics need to be cultivated.

The program consisted of altogether 10 thematic circles

concerning the application of mathematical methods and computers in:

- Solid Mineral Deposits
- Oil and Gas Fields
- Geoinformatics
- Environmental Problems
- Hydrogeology
- Tectonics
- Geophysics
- Petrology and Mineralogy
- Technical Mining Problems

Other Problems (economics, geology, technology/metallurgy/production)

The participants had the possibility to take part in a social party followed by a concert of several outstanding singers. Also a one-day excursion to the North Bohemia brown coal district was highly interesting and appreciated by 75 participants.

In the final general discussion the high level of the meeting was appreciated by many participants. Several of them also appreciated the fact that the "Pibram" forum has been in recent years the only occasion for them to continue in contacts with colleagues from the former USSR or other "Eastern" countries. The actual situation in these countries does not give any real chance for organizing really international representative meetings in the field of mathematical geology (as well as in many other disciplines) and the international meetings in Western countries are too expensive and therefore inaccessible for a larger number of Eastern participants.

Vaclav Nemeč

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#5: "Computers in Geology – 25 Years of Progress" edited by John J. Davis and Ute Herzfeld.....	\$ 38.50

NOTE: Monograph #1 is no longer available

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4th Int'l Conf. on CASE HISTORIES IN GEOTECHNICAL ENGINEERING. University of Missouri-Rolla. St. Louis, MO, USA. **8-14 March 1998**. (Case histories, Foundations, Earth Dams, Deep Excavations, Engineering Vibrations, Earthquake Engineering). Contact: Continuing Education. Phone: 573-341-6061. Fax: 573-341-4992 or Shamsher Prakash. Phone: (573) 341-4489. Fax: (573) 341-4729.

WATER ROCK INTERACTION-9, Taupo, New Zealand. **30 March-4 April 1998**. B.W. Robinson, Secretary General. Phone: +64 737 48211. Fax: +64 73748199. E-mail: wri-9@gns.cri.nz. <http://ruamoko.gns.cri.nz/wri-9>

International SEDIMENTOLOGICAL CONGRESS, Alicante, Spain, **13-17 April 1998**. Departamento de Ciencias de la Tierra y Medio Ambiente, Facultad de Ciencias, Campus de San Vicente de Raspeig, Universidad de Alicante, Apt. 99, 03080 Alicante, Spain. E-mail: ctierra@vm.cpd.ua.es

EGS98 XXIII General Assembly, Nice, France, **20 - 24 April 1998**. EGS Office, Max-Planck-Str. 13, 37191 Katlenburg-Lindau, Germany, Tel: +49-5556-1440, Fax: +49-5556-4709, E-mail: egs@crnicus.org, <http://www.copernicus.org/EGS/EGS.html> (Note especially Symposium EGS3: Modelling techniques and joint inversion in Earth sciences, Convener: Prof. Dr. Hans-Jürgen Götze)

Pre-Variscan Terrane Analysis of GONDWANAN EUROPE, Dresden, Germany, **29 April-4 May 1998**. Bernd D. Erdtmann, TU Berlin, Institut für Angewandte Geologie II, Ernst-Reuther-Platz 1, Sekr. EB10, D-10587 Berlin, Germany. Fax: 49 30 314 21107. E-mail: erdt0936@mailszrz.zrz.tu-berlin.de

Int'l Conf. on GIS for EARTH SCIENCE APPLICATIONS, Ljubljana, Slovenia, **17-21 May 1998**. Sponsored by the Geological Survey - Institute for Geology, Geotechnics and Geophysics (IGGG). Mr. Franc Zepic, Secretariat of ICGESA Conference, c/o Institute for Geology, Geotechnics and Geophysics (IGGG), Dimiceva 14, 1000 Ljubljana, Slovenia, Tel: (int) 386-61 1682 461, Fax: (int) 386-61 1682 557, E-mail: fzopic@i-ggg.si

IASTED Int'l Conf. on MODELLING and SIMULATION, Pittsburgh, **13-16 May 1998**. IASTED Secretariat, 1811 W. Katella ave, Suite 101, Anaheim, CA 92804, USA, Tel. 1-800-995-2161/714-778-3230, fax: 714-778-5463, E-mail: iasted@cadvision.com, <http://www.iasted.com>

Linking SPATIAL and TEMPORAL SCALES in PALEOECOLOGY and ECOLOGY, Annapolis, Maryland, by Geological Society of America, **14-18 May 1998**. Andrew Cohen, Department of Geosciences, University of Arizona, Tucson, Ariz. 85721. Phone: 520/621-4691. Fax: 520/621-2672. E-mail: acohen@geo.arizona.edu

AAPG Annual Meeting (held with Rocky Mountain Section), Salt Lake City, UT, **17-20 May 1998**. AAPG Conventions Dept., P.O. Box 979, Tulsa, OK 74101-0979, Phone: 918/560-2679, Fax: 918/560-2684, <http://www.geobyte.com/slcmtg.html>

Learning from the Past: GLOBAL PALEOCLIMATIC CHANGES, intl. conf., Irbid, Jordan, **18-21 May 1998**. Ali Jawad Ali, UNESCO Chair, Faculty of Science, Yarmouk University, Irbid 21163 Jordan. Fax: 962 2247 983. E-mail: ajawad@yucc.yu.edu.jo

OCEANIC FRONTS and Related Phenomena, symposium, St. Petersburg, Russia, **18-22 May 1998**. Dr. Andrei Zatsepin or Dr. Alexander Ostrovskii, Shirshov Institute of Oceanology, Moscow, Fax. +7 095 124 59 87, e-mail: zatsepin@glas.apc.org

Int'l Conf. on the EARTH'S THERMAL FIELD and Related Research Methods, Moscow, **19-21 May 1998**. Prof. Yu. Popov, Moscow State Geol. Prospecting academy, Miklukho-Maklai St.23, 117873 Moscow, Russia, e-mail: yupopov@mgga-sec.msk.ru

Short course on Recent Developments in QUANTITATIVE and

SEQUENCE STRATIGRAPHY, Geological Survey of Denmark and Greenland, Copenhagen, co-sponsored by the Committee of Quantitative Stratigraphy of the International Commission on Stratigraphy, **25-29 May 1998**. Mrs Hanne Soerensen, GEUS, Thoravej 8, DK-2400 Copenhagen NV, Denmark. Phone +45 38 142000; Fax +45 38 142050; e-mail: geus@geus.dk

EASTERN SNOW Conference, Jackson, N.H., by Mt. Washington Observatory and others, **3-5 June 1998**. R. Brown, 2121 TransCanada Highway, Dorval, QC, Canada H9P 1J3. Phone: 514/421-4772. Fax: 514/421-4768. E-mail: ross.brown@ec.gc.ca

EAGE (European Association of Geoscientists & Engineers) Ann. Conf., Leipzig, Germany, **8-12 June 1998**. EAGE Business Office, Laan van Vollenhove 3039, PO Box 298, 3700 AG Zeist, The Netherlands, Tel: +31 30 6962655, Fax +31 30 6962640, E-mail EAGE@pobox.ruu.nl

International Conference on PERMAFROST, Yellowknife, N.W.T., Canada, **23-27 June 1998**. J.A. Heginbottom, Geological Survey of Canada, 601 Booth St., Ottawa, Ontario K1A 0E8, Canada. Phone: 613/992-7813, Fax: 613/992-2468, E-mail: permafrost.conference@gsc.emr.ca, URL:http://www.nrcan.gc.ca/gsc/permaf_e.html

Joint STATISTICAL Meetings, Dallas, Texas, **9 - 13 August 1998**. Sponsored by ASA, ENAR, and WNAR. ASA, 1429 Duke St., Alexandria, VA 22314-3402, USA. Tel: 703 6841221; FAX:703

6842037; E-mail: meetings@asa.mhs.compuserve.com CLAY MINERALOGY and PETROLOGY, conf. and workshop, Brno, Czech Republic, by Int'l Geological Correlation Programme Project No. 405, **30 August-4 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

4th Int'l Symposium on Applying Mathematical Methods and Computers for Solving Problems of GEOCHEMISTRY and ENVIRONMENT PROTECTION, Kiev, Ukraine, (previous symposia were held in Lvov:1992, 1994, 1996) **September 1998**. Dr.Svetlana Sukhorebraya, 34a,Palladin Ave, Kiev-142, 252680 Ukraine. Fax: +380 44 4440060. E-mail: CENTER@radgeo.freenet.kiev.ua

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

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

8th Congress of the International Association of ENGINEERING GEOLOGY and the ENVIRONMENT, Vancouver, British Columbia, Canada, **21-25 September 1998**. 8th Congress IAEG, c/o Venue West Conference Services LTd., 645-375 Water Street, Vancouver, British Columbia, Canada V6B 5C6, Tel: (01) 604 681 5226, Fax: (01) 604 681 2503, e-mail: congress@venuewest.com, <http://www.bchydro.bc.ca/iaeg/>

7th Int'l Symposium on Application of Mathematical Methods and Computers in MINING, GEOLOGY and METALLURGY, Sophia, Bulgaria, **October 1998**. 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 - see p. 4 for further details.

Int'l Conf. on Computer Simulation in RISK ANALYSIS and

cont'd on p. 16

Meetings - cont'd from p. 15

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 rybníku^am 17, 100 00 Praha 10 - Strahov, Czech Republic, ph. 00420 (2) 7811801, fax 00420 (306) 23169, e-mail: nemcoval@vse.cz

Symp. on VOLUME VISUALIZATION by IEEE Computer Society and ACM/SIGGRAPH, in conjunction with IEEE Visualization '98, Research Triangle Park, North Carolina, **19-20 October 1998**. Bill Lorensen, GE Corporate Research and Development, One Research Circle, Bldg KW, Room C215, Niskayuna, NY 12309, Email: 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

Geological Society of America, ann. mtg., Toronto, Canada, **26-29 Oct. 1998**. Becky Martin, GSA Meetings Department, Box 9140, Boulder, Colo. 80301-9140, Phone: 303/447-2020, ext. 164, Fax: 303/447-1133

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, Ill. 60631-3562, Phone: 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 Association of Petroleum Geologists, ann. mtg., San Antonio, Texas, **11-14 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>

International STATISTICAL Institute, 52nd Biennial Session, Helsinki, Finland, **11 - 18 August 1999**. ISI Permanent 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

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 SYMPOSIUM 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 rybníku^am 17, 100 00 Praha 10 - Strahov, Czech Republic. Fax: (+420306) 23169, E-mail: nemcoval@vse.cz

31 st Int'l GEOLOGICAL CONGRESS - Geology and Sustainable Development: challenges for the Third Millennium, Rio de Janeiro, Brazil, **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

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