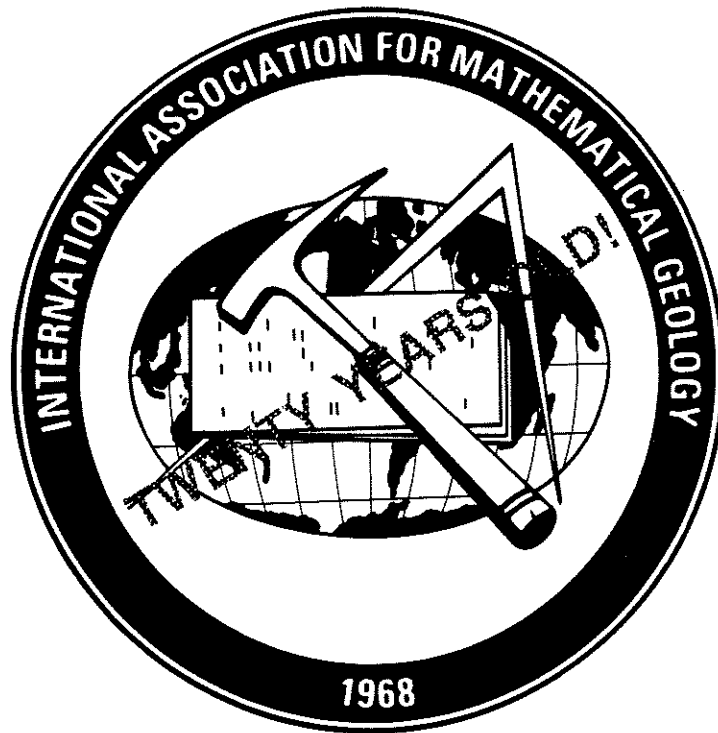


INTERNATIONAL ASSOCIATION
FOR MATHEMATICAL GEOLOGY



NEWSLETTER

NOVEMBER 1989 ISSUE NO. 39

EDITOR

JAMES R. CARR

INTERNATIONAL ASSOCIATION FOR MATHEMATICAL GEOLOGY
Council Members & Officers, 1989-1992

Council Members

Peter I. Brooker
Department of Geology and
Geophysics
University of Adelaide
Adelaide S.A. 5000,
AUSTRALIA

John M. Cubitt
Geochem Group Limited
Chester Street
Chester
CH4 8RD
ENGLAND

Chang-Jo Chung
Geological Survey of Canada
601 Booth Street
Ottawa, Ontario K1A 0E8
CANADA

Alain Marechal
PETROSYSTEMS
1, rue Leon Migaux
91302 Massy Cedex
FRANCE

Ricardo A. Olea
Kansas Geological Survey
1930 Constant Avenue, Campus West
Lawrence, Kansas 66047-2598 USA

Kim H. Esbensen
Norwegian Computing Center
Postbox 114 - Blindern
N-0314 Oslo 3,
NORWAY

Niichi Nishiwaki-Nakajima
Faculty of Social Research
Nara University
1500 Misasagi-cho
Nara City, 606,
JAPAN

[Councillor for Special Projects, XXIX
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West Virginia Geological Survey
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Morgantown, West Virginia 26505 USA

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K Rybnickum 17
Praha 10 - Strasnice
CZECHOSLOVAKIA

Western Treasurer: John O. Kork
Building 25, MS 937
Denver Federal Center
Denver, Colorado 80225 USA

Editors

Math Geology Robert Ehrlich
Department of Geology
University of South Carolina
Columbia, South Carolina 29208 USA

Computers &
Geosciences Daniel F. Merriam
Stratigraphic Studies Group,
Box 153
Wichita State University
Wichita, Kansas 67208 USA

Newsletter James R. Carr
Department of Geological Sciences
Mackey School of Mines
University of Nevada at Reno
Reno, Nevada 89557 USA

TIM WHITTEN RECEIVES KRUMBEIN MEDAL



Tim Whitten (left) receives the Krumbein Medal from IAMG President John Davis (right).

The William Christian Krumbein Medal was awarded to E. H. Timothy Whitten in a ceremony at the 28th International Geological Congress in Washington, D. C. IAMG President John Davis presented the medal during the General Assembly of the International Association for Mathematical Geology on the evening of July 12, 1989. Tim Whitten, Professor of Geology, Provost, and Academic Vice President at Michigan Technological University, is the 13th recipient of the premier award of the Association. He joins an illustrious list of geoscientists who have been honored by the Association for their contributions to mathematical geology and their service to the IAMG.

Tim has published more than 80 professional articles, most of which touch on some aspect of mathematical geology. His early use of trend surface analysis to model compositional variations in granite massifs was a pioneering contribution to igneous and metamorphic petrology. This research extended into the quantitative description of complex structures, which culminated in his textbook, "Structural Geology of Folded Rocks (Rand McNally-Wiley, 1966). In another pioneering effort, Tim produced a series of computer programs for applications in geology as part of ONR research conducted under the leadership of Bill Krumbein at Northwestern University. In addition to his continuing work on igneous terranes, Tim's recent contributions include applications of mathematics and statistics to geodynamics, resource assessment, and surficial processes.

Among the mathematical and statistical procedures included in Tim's research are surface modeling by regression analysis, splines, Fourier analysis, and kriging; use of directional statistics; markov analysis; and multivariate classification. In recent years, he has written numerous syntheses and review articles on mathematical geology and the application of mathematics to specific areas in the earth sciences.

Tim was born in 1927 in Essex, England, and attended King's College, University of London, where he received his BSc with Honours in 1948. He received the PhD from the University of London in 1952 for his work on the plutonic rocks of Donegal, Ireland, and was awarded the DSc in 1968. From 1948 until 1958, he was a Lecturer in geology at London, but in 1956 he crossed the Atlantic for a visiting faculty appointment at the University of California at Berkeley. While there, he ventured to Evanston, Illinois, to meet the famous Prof. Bill Krumbein of Northwestern University. A two-day whirlwind visit, which Tim recalls as a blur of American football games and cocktail parties, culminated in an appointment as Associate Professor of Geology at Northwestern in 1958. Tim remained there for over 20 years, leaving in 1981 to become Academic Vice President at Michigan Tech. In 1988, he became Provost of that institution.

Tim has served the International Association for Mathematical Geology extensively over the years, as an officer and member of the Council. He was Secretary-General of the IAMG from 1976-1980, President from 1980-1984, and Past-President from 1984 to the present year. In addition, he is a Fellow of the Geological Society of London, the Geological Society of America, and the American Association for the Advancement of Science. He also is a Life Member of the English-Speaking Union, and a Commodore of the Onigaming Yacht Club.

Because of his many contributions to mathematical geology, to the geological profession, and to our Association, the IAMG is pleased to award Tim Whitten with the Krumbein Medal, the highest honor the Association can bestow. It is especially fitting that the medal be given to a person who was professionally associated with Bill Krumbein for many years, and in fact chaired the committee that established the award and commissioned the striking of the medal. The awarding of the medal is another link between two individuals, Bill Krumbein and Tim Whitten, whose names are already closely identified in mathematical geology.

1987 PRESIDENT'S PRIZE AWARDED

The International Association for Mathematical Geology is pleased to announce the 1987 President's Prize winner, Dr. James R. Carr of the University of Nevada, Reno (USA). His recent work has focused on applications of fractals to the description of rock surface roughness, on the development of computer programs for universal kriging and correspondence analysis, and on improvement of equation solution efficiency in cokriging. Carr was selected for the award by a committee chaired by Dr. Margaret Armstrong, Centre de Geostatistique, Fontainebleau, France.

Dr. Carr was born in 1957 in Fairfield, California. He began his career as a student in geological engineering at the University of Nevada-Reno, completing a B.S. degree in 1979. Later, he earned an M.S. degree in geological engineering at the University of Arizona in 1981; his thesis applied Landsat data to monitoring change at Arizona open pit copper mines. In 1983, Dr. Carr completed a Ph. D. degree in geological engineering at the University of Arizona; his dissertation applied geostatistics to the spatial analysis of earthquake ground motion.

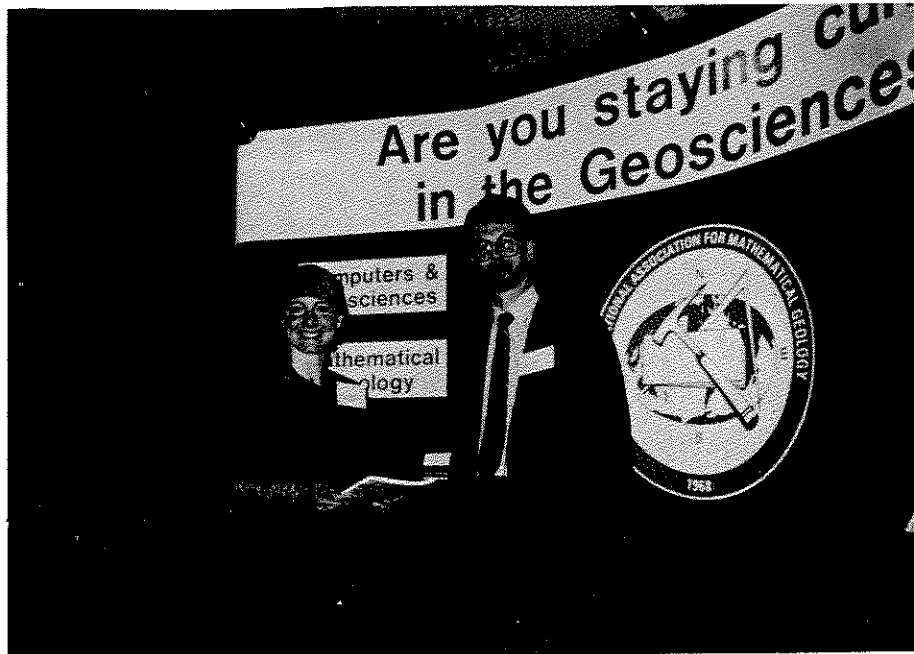
Dr. Carr was attracted to the Earth Sciences because he has been a mineral collector since the age of eight. His award includes a book; Carr has selected Michael Hohn's "Geostatistics and Petroleum Geology" for his award.

1988 PRESIDENT'S PRIZE

Nominations are now requested for the 1988 President's Prize. This award is made to an individual, 35 years of age or younger, who has made a significant application of mathematics to the science of geology. Please send nominations to Chang-Jo Chung, Chair, Committee for 1988 President's Prize, Geological Survey of Canada, 601 Booth Street, Ottawa, Ontario K1A 0E8, CANADA.

18TH GEOCHAUTAUQUA A SUCCESS

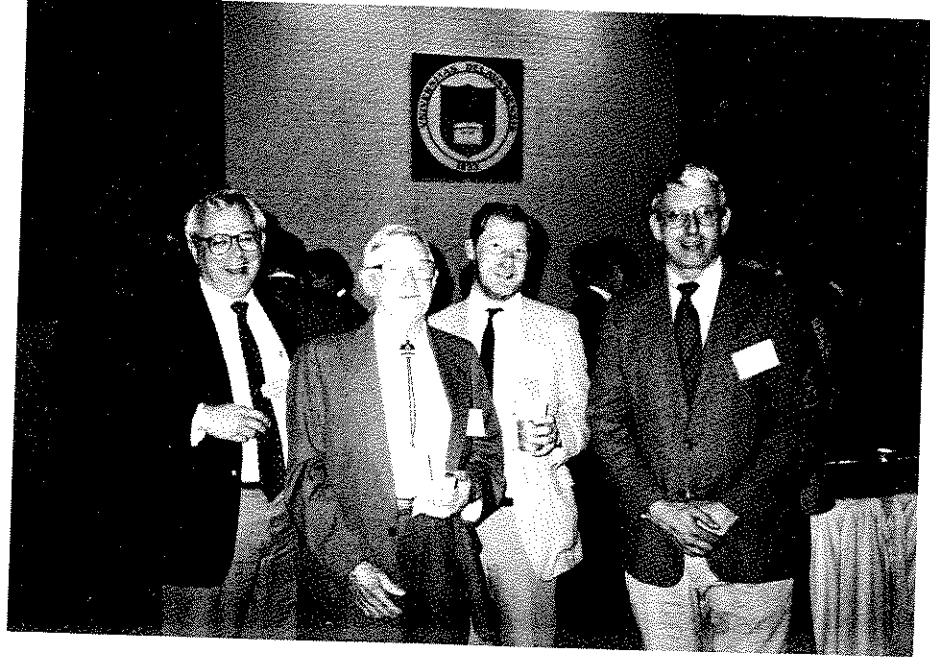
The 18th Geochautauqua was held in October, 1989 in Newark, Delaware. Issue No. 40 of this Newsletter will include a synopsis of this meeting. For now, a few glimpses are presented below.



1. Michael Hohn, Secretary General, (right) welcomes Pamela Barnes (left) as a new IAMG member.



2. Convener Jack Schuenemeyer (second from right) and Judy Schuenemeyer (left), relaxing with participants Dan Gill (second from left) and John Grace (right) at reception preceding 18th Geochautauqua.



3. John Griffiths (second from left) with former students Dave Menzie (left), Don Singer (second from right), and Larry Drew (right) during reception.



4. Larry Drew, the after dinner speaker, wondering what to say next.



5. Dave Menzie, moderator (left) of panel discussion on mineral resource assessment with panelists (from left to right) Rod Eggert, Don Singer, Steve Plotkin, John Griffiths, Frits Agterberg, and Terry Offield (not shown).

DISCOUNT FOR AMERICAN GEOPHYSICAL UNION PUBLICATIONS

The American Geophysical Union has extended an offer to IAMG members of a 20% discount on short course volumes from the 28th International Geological Congress. In order to receive the discount, IAMG members must indicate their affiliation at the time an order is placed. The following is a list of these short course volumes:

1. Volcanic Hazards (1989), R. I. Tilling (ed.)
softbound; 128 p.
List price: \$23 (U.S.)
2. Coastal Land Loss (1989), O. H. Pilkey (ed.)
softbound; 80 p.
List price: \$13 (U.S.)
3. Brines and Evaporites (1989), P. Sonnenfeld and J. P. Perthuisot (eds.); softbound, 136 p.
List price: \$21 (U.S.)
4. Carbonate Sedimentology and Petrology (1989);
P. A. Scholle (ed.); softbound, 168 p.
List price: \$24 (U.S.)
5. Skeletal Biomineralization: Patterns, Processes, and
Evolutionary Trends (1989), J. G. Carter (ed.).
softbound; 2 volumes; price to be announced later.
6. Balanced Geological Cross Sections (1989), N. B. Woodward
(ed.); softbound; 144 p.
List price: \$23 (U.S.)
7. Metamorphic Pressure-Temperature-Time Paths (1989);
F. S. Spear and S. M. Peacock (eds.); softbound; 112 p.
List Price: \$18 (U.S.)
8. Fundamentals of Geostatistics in Five Lessons (1989);
A. G. Journel (ed.); softbound; 48 p.
List Price: \$11 (U.S.)
9. Glacial-Marine Sedimentation (1989); J. B. Anderson and
B. F. Molnia (eds.); softbound; 136 p.
List Price: \$22 (U.S.)
10. Digital Geologic and Geographic Information Systems
(1989); J. N. Van Driel and J. C. Davis (eds.)
softbound; 72 p. ; List Price: \$13 (U. S.)

To order, please remit the list price of each publication, less 20%, to: AGU - Customer Service, 2000 Florida Ave., N. W., Washington, D. C. 20009.

UPCOMING MEETINGS

1. Society for Industrial and Applied Mathematics (SIAM) will hold its next meeting, the International Conference of Industrial and Applied Mathematics, July 8 through 12, 1991 (ICIAM '91), in Washington, D. C. (USA). For further information, please send your name, mailing address, phone number and fax number, and your primary mathematical interest area to SIAM, 3600 University City Science Center, Philadelphia, PA 19104-2688.

Note: the address given above for SIAM is new, as of August 1, 1989. Once again, the address is:

SIAM
3600 University City Science Center
Philadelphia, PA 19104-2688

phone: (215) 382-9800
FAX: (215) 386-7999
Telex: 446715

siam@wharton.upenn.edu

2. Second National Conference, Geographic Information Systems, GIS for the 90s, Ottawa Congress Centre, Ottawa, Canada.

Meeting will be held March 5 to 9, 1990 at the Ottawa Congress Centre. For further information, please contact: GIS National Conference '90, Canada Centre for Mapping, 615 Booth Street, Ottawa, Ontario, K1A 0E9, Canada.

3. SEPM to Sponsor a Session on Fractals:

The SEPM Computer Technology Group and the Computer Applications Committee are sponsoring a session on fractals to be held in San Francisco, California next June. Details of the meeting are yet to be worked out but the session probably will be held on Sunday, June 3, 1990. Dan Merriam of Wichita State University and Jen Fang of the University of Alabama are arranging the meeting, which will concentrate on practical applications in sedimentary geology and petroleum exploration.

4. Short Course on Quantitative Stratigraphy:

This course offers detailed instructions in the theory and use of quantitative bio- and lithostratigraphy and sedimentary basin history modeling. Emphasis will be placed on recent developments in sedimentation models, well-log correlation, probabilistic and deterministic biostratigraphy, geodynamic models for hydrocarbon exploration, and reliability of geological time scales. The fee is \$600.

This course will be held Monday, 30 April to Friday, 4 May, 1990 at the Texaco Building, 400 Poydras Boulevard, New Orleans, Louisiana, USA. For further information, please contact the course director: Dr. F. P. Agterberg, Geological Survey of Canada, 601 Booth Street, Ottawa, Ontario, K1A 0E8, Canada (Tel: 613-996-2374).

5. Symposium, Workshop, and Alpine Field Excursion:

THREE DIMENSIONAL COMPUTER GRAPHICS IN MODELING GEOLOGIC STRUCTURES AND SIMULATING GEOLOGIC PROCESSES.

October 8 - 14, 1990, Freiburg, West Germany; Lucerne and Zermatt, Switzerland; Sponsored by the Geological Institute of the University of Freiburg and COGEO DATA, International Association for Mathematical Geology.

Theme: the meeting will focus on the role of three-dimensional computer graphics in geology and geophysics, with emphasis on modeling and visualizing complex geologic structures. Stress also will be placed on use of dynamic graphic displays in two- and three-dimensional simulation models of geologic processes, including fluid flow and evolution of sedimentary basins.

Further information: please contact: Prof. Reinhard Pflug, Geologisches Institut der Universitaet, Albertstrasse 23-B, D-7800 Freiburg i.Br., West Germany. Please see questionnaire at the back of this newsletter.

6. International Workshop on Statistical Prediction of Mineral Resources (IWSPMR).

First Announcement and Call for papers; to be held on 20-25 October, 1990, at the China University of Geosciences (Wuhan), People's Republic of China;

Final date for receipt of abstract: November 30, 1989. Please see the preliminary registration form at the back of this newsletter.

TRENDS IN TOPICS OF ARTICLES IN MATHEMATICAL GEOLOGY

by C. John Mann

An interesting aspect and secondary result of preparing a cumulative index of the first 20 years of MATHEMATICAL GEOLOGY is that it provides a rough, preliminary indication of trends in subject matter. Many trends seem to be predictable intuitively, whereas others are not and are surprising.

No guidelines can be given as to how accurate these apparent trends are because they are based largely upon: 1) keywords identified by authors of the papers; 2) indexes prepared by four different editors of MATHEMATICAL GEOLOGY during the first twenty years of IAMG; and 3) rapid counts of references that are inferred to indicate papers containing various aspects of these topics (i.e., although duplication was avoided when identifiable, careful checking of individual papers was not undertaken to insure that duplications were avoided and that the reference cited was a valid indication of use of that topic or method in the paper). However poor or good these trends are, they were interesting to me and perhaps will be to you also.

Articles and notes containing aspects of regionalized variables (geostatistics, kriging, variograms, etc.) first appeared in Vol. 2 and since have had an exponential increase, doubling approximately every five years. Similarly, spatial analysis (non-regionalized variables) first appeared in Vol. 3 and is increasing rapidly with a doubling interval of perhaps seven years. Fractals first appeared in Vol. 12 and seem to be increasing exponentially also with a doubling interval of 4 to 5 years.

Other topics which have been published less frequently but which nonetheless show definite increasing frequency are analyses involving aspects of: simulation (Vol. 1: volume of first appearance), non-parametric (Vol. 2), error (Vol. 3), Monte Carlo (Vol. 4), non-linear (Vol. 5), splines (Vol. 5), bias (Vol. 7), fuzziness (Vol. 9), uncertainty (Vol. 11), sensitivity (Vol. 11), robustness (Vol. 12), and hazards (Vol. 15).

Topics which appear to have peaked during the first twenty years and are now declining are: classification (Vols. 6 and 7: volume of peak), factor analysis (Vol. 7), cluster analysis (Vol. 8), resources (Vol. 11), probability (Vol. 15), and computers (Vol. 16). Of course, the last two topics may be in a temporary slump only, a feature that appears commonly among several histograms.

Those which have declined more or less linearly include autocorrelation, computer programs, cycles, discriminant analysis, dendrograms, and principle components. Only trend analysis, including trend surfaces, appears to have had an exponential decline with a diminishment of $1/2$ every 6-7 years. Thus, this note is written about a subject of dwindling interest!

Two topics, sampling (Vol. 3, first appearance) and sets (Vol. 6), appear to demonstrate no substantial increase or decrease, although annual frequency has fluctuated.

Several topics had trends which were unexpected. Markov-Markovian (Vol. 1, first appearance) and regression analysis (Vol. 1) are both concave upward; they declined during the first 10-12 years and subsequently have increased. Histograms (Vol. 2) were rare in the first nine volumes but since have become frequent with an exponential increase roughly doubling every 3-4 years. Distribution (Vol. 1) rose approximately linearly during the first 17 volumes when it clearly was mentioned most commonly. Now, it appears to have leveled or may be starting a temporary or long decline. Distribution is now being pressed by regionalized variables for the topic most commonly appearing in papers.

A puzzle is why multivariate analysis (Vol. 3, first appearance) has shown a considerable increase whereas principle components, factor, cluster, classification and discriminant analyses have all been declining. Is this an artifact of referencing, that multivariate analysis is a more inclusive term, or that older multivariate forms of analysis are being replaced by newer forms?

Anyway, I enjoyed studying these trends and thought you might also. If any readers are sufficiently interested, I can send you my rough histogrammic plots. Then you can play with them yourself by fitting either by 'eyeball' or calculator regressions to each category and reaching your own conclusions.

[Editor's Note]:

Dr. C. John Mann, Department of Geology, University of Illinois-Urbana, served as editor of MATHEMATICAL GEOLOGY beginning with Volume 16 and finishing with Volume 21. I wish to take this opportunity to sincerely thank John for the service he provided as editor. Really, all I can do with words is understate my feelings. I feel I am a better writer today because of the help John gave in editing my manuscripts. I thank you again, John.

I also wish to take the time to welcome the new editor of MATHEMATICAL GEOLOGY, Dr. Robert Ehrlich, Department of Geology, University of South Carolina, Columbia, South Carolina 29208 (USA). Dr. Ehrlich served as Deputy Editor under C. John Mann.

FORTHCOMING ARTICLES IN COMPUTERS AND GEOSCIENCES

Vol. 15, No. 8 (1989)

MAPWD: an interactive mapping tool for accessing geo-referenced data sets, by M. A. Friedl, K. C. McGwire, and J. L. Star

EQQYAC: program for determining geothermal reservoir chemical equilibrium, by R. M Barragan and D. Nieva

NORMOD: a program for modal norm calculation and evaluation of other component transformations, by A. Sebastian

Gray Scale Maps with a Personal Computer, by J. M. Romo

Two FORTRAN-77 function subprograms to calculate gravity anomalies of bodies of finite and infinite strike length with the density contrast differing with depth, by P. Rama Rao and I. V. Radhakrishna Murthy

Interactive (SEDPACK) simulation of clastic and carbonate sediments in shelf to basin settings, by J. Strobel, R. Cammon, C. G. St. C. Kindall, G. Biswas, and J. Bezdek

Spatial indexing of geological models using linear octrees, by S. P. Dunstan and A. J. B. Mill

A numerical routine for the seasonal evolution of open-ocean water column temperature for use in biogeochemical studies, by C. Ho and J. Marra

SCHMIDTMAC, a program to display and analyze directional data, by A. Pecher

SHORT NOTES:

Fast hill shading with cast shadows, by C. Ware

COUNT: a BASIC program supporting effective point-counting, by R. Marschallinger

Vol. 16, No. 1 (1990)

Calculation of phase equilibrium in mineral-melt systems, by J. W. Weaver and C. H. Langmuir

A penalty function method for computing chemical equilibria, by D. J. Kirkner and H. W. Reeves

Computer controlled settling tube analyses, calculations, and presentation of granulometric data, by E. Azmon and D. Elazar

Vol. 16, No. 1 (continued)

A new method for plate reconstructions: the use of gridded data,
by J. Verhoef, K. H. Usow, and W. R. Foest

An interactive FORTRAN program for cross-correlation of signals
on a PC with CGA graphics: an application in marine
geoacoustics, by R. V. Amenta

Conversion of contoured topography to digital-terrain data, by G.
Cole, S. MacInnes, and J. Miller

Optical mineralogy using SIMPLIS, by G. W. Dagger

BOOK REVIEWS

Vol. 16, No. 2 (1990)

MARKOV: a BASIC program for numerical analysis of sequential
data on the microcomputer, by R. D. LeFever

GOLDCALC - A FORTRAN program for estimating the number and size
of gold particles in geological samples, by D. R. Green

On graphically representing the confidence region for an unknown
rotation in three dimensions, by M. S. Hanna and T. Chang

C programs for displaying shaded three-dimensional objects on a
PC, by E. Savazzi

UVKRIG: a FORTRAN-77 program for universal kriging, by J. R.
Carr

FORTTRAN program for automatic terrain correction of gravity
measurements, by H. R. Ballina Lopez

Computer-based system for exploration, optimization, and reserve
estimation at the Bakhar Field, South Apsheron, Azerbaijan
SSR, by M. T. Abasov, I. S. Djafarov, and G. E. Askerov

COGS CONTRIBUTION:

Computer Assisted paleocurrent determination from trough
cross-stratification, by J. H. Trexler and P. H. Cashman

SHORT NOTES:

Applying corrections to digitized data while digitizing magnetic
charts, by T. Suresh

BITERCLA: GW-BASIC program to plot classification diagrams, by
R. Benito Garcia and J. Martinez Frias

Vol. 16, No. 3 (1990)

The density difference and generalized programs for two- and three-dimensional gravity modeling, by I. V. Radhakrishna Murthy, P. Rama Rao, and S. Jagannadha Rao

CORSPOND: a portable FORTRAN-77 program for correspondence analysis, by J. R. Carr

EMP-AMPH - A hypercard program to determine the name of an amphibole from electron microprobe analysis according to the International Mineralogical Association scheme, by A. Mogessie, R. Tessadri, and C. B. Veltman

A prototype multidatabase system for soil databases, by Vassiliki J. Kollias and Anastasios G. Malliris

A versatile Turbo-Pascal program for optimization of magnetic anomalies caused by two-dimensional dike prism or slope models, by Isaac M. Marobhe

SHORT NOTES

Running phase analysis - a method for cycle searching in long series, by Adam Walanus

AMPHAX: A FORTRAN program for calculating the lower hemisphere stereographic projections of the crystallographic axes of clinoamphibole from universal stage measurements, by R. J. Cumbest

A FORTRAN-77 subroutine for determining the fractional area of rectangular grid blocks within a polygon, by Clayton Deutsch

A FORTRAN program to calculate seismic anisotropy from the lattice preferred orientation of minerals, by David Mainprice

Note: Future editions of this newsletter will include forthcoming articles in Mathematical Geology, and perhaps other journals of interest to readers related to mathematical geology.

SIXTH GENERAL ASSEMBLY OF THE INTERNATIONAL ASSOCIATION FOR
MATHEMATICAL GEOLOGY, WASHINGTON, D. C. (USA), JULY 12, 1989

Attached below are minutes from the Sixth General Assembly of the International Association for Mathematical Geology. These minutes are compiled and submitted by IAMG President, Dr. Richard McCammon:

Call to Order/Count Members Present: Davis

Over 30 geomathematicians, statisticians, and other scientists from 13 countries (Australia, Austria, Canada, Czechoslovakia, England, France, India, Japan, P.R.C., Spain, U.S.A., U.S.S.R., and West Germany) were present at the VI General Assembly of the International Association for Mathematical Geology, held in conjunction with the XXVIII International Geological Congress in Washington, D.C., U.S.A., July 9-19, 1989. The Assembly convened at 7:00 p.m., July 12, in the Burnham Room, Grand Hyatt Hotel, following a reception that was held at 5:30 p.m. in Constitution C/D/E, Grand Hyatt Hotel. Presiding at the meeting was IAMG President J. C. Davis (U.S.A.). IAMG Officers and Council Members in attendance included Past President E.H.T. Whitten (U.S.A.), Secretary General R. B. McCammon (U.S.A.), Western Treasurer M. E. Hohn (U.S.A.), Eastern Treasurer V. Nemeč (Czechoslovakia) and Councillors J. Cubitt (England), C. J. Mann (U.S.A.), and D. F. Merriam (U.S.A.).

President's Report on the Past Five Years: Davis

Following the call to order and the count of members present, President Davis began his report by recognizing the presence of A. B. Vistelius (U.S.S.R.), the first President of IAMG, and the 1980 recipient of the Krumbein Medal, and who was the special guest of IAMG during the XXVIII International Geological Congress.

The solution to the problem of controlled currencies remains unsolved. Monetary restrictions in Eastern bloc countries hamper distribution of IAMG publications and communications. It had been hoped that a way to circumvent this problem was to publish special volumes produced through the Office of the Eastern Treasurer and sold through the Office of the Western Treasurer, providing funds to offset subscription costs for IAMG members within the jurisdiction of the Eastern Treasurer. The projected first special volume, a multilingual "Glossary of Mathematical Geology", planned for publication in Sofia by the Bulgarian Academy of Sciences has not yet been completed. Efforts will continue, however, in trying to solve the currency problem.

The assets of IAMG have nearly doubled during the past five years. In large part, this has been due to the efforts of the Eastern and Western Treasurers in managing the accounts so as to yield returns on our current investments. It should be noted that the membership dues each year are keyed to the subscriptions of the publishers so that the increase in the assets are from outside income, mainly royalty payments and our annual subvention from IUGS, and the interest that accrues from our investments. Details of the accounts are covered in the reports to be presented later by the Eastern and Western Treasurer.

On January 26, 1989, IAMG, after long negotiation, signed a Memorandum of Agreement with Pergamon Press that includes royalty payments on subscriptions to *Computers & Geosciences* similar to the arrangement we have with Plenum Publishing for subscriptions to *Mathematical Geology*. The Journal will continue to be published as before, that is, eight issues per year, with each issue approximately 150 pages in length. Both journals are flourishing, each having special issues and a steady influx of publishable manuscripts.

On October 14, 1984, IAMG signed an Agreement with Oxford University Press to publish a series of monographs on mathematical geology. The editors of the series are R. B. McCammon (U.S.A.), C. J. Mann (U.S.A.), and T. A. Jones (U.S.A.). The publisher agrees to pay a royalty to IAMG for all copies sold. Arrangements have been made also to offer the monographs at a discount to IAMG members. The first monograph was published in 1987 entitled "Use and Abuse of Statistical Methods in the Earth Sciences" edited by W. B. Size (U.S.A.). A contract for the second monograph in the series was signed on March 1, 1989 and is entitled "Oil and Gas Forecasting: Reflections of a Petroleum Geologist" by L. J. Drew (U.S.A.).

During the past five years, there were 25 meetings held in 12 different countries (Australia, Canada, Czechoslovakia, England, Ecuador, Finland, France, Italy, Poland, P.R.C., U.S.A., and the U.S.S.R.) in which IAMG either sponsored or co-sponsored. The co-sponsors included ARPEL, Bernoulli Society World Congress, CODATA, COGEOLOGICAL SOCIETY OF LONDON, Geological Survey of Canada, Hornicka Pribram ve Vede Technica, International Geostatistical Group, International Sedimentological Congress, MGUS, NATO, and UNESCO. The meetings covered a wide range of topics that included mathematical geology, geostatistics, energy and mineral resource estimation,

mining geology, quantitative stratigraphy, and statistical applications in the geosciences.

In April 1989, the Committee on Geostatistics of IAMG chaired by R. A. Olea (U.S.A.) and includes as members M. Armstrong (France), G. Christakos (U.S.A.), I. Clark (England), M. David (Canada), A. G. Journel (U.S.A.), D. G. Krige (U.S.A.), and G. M. Laslett (Australia) completed a draft of a Geostatistics glossary and multilingual dictionary with definitions in English and equivalent terms in 7 languages. The glossary meets a long-felt need in a multidisciplinary field such as Geostatistics which has generated its own notation and borrowed from some older fields as well. The multilingual dictionary was included in order to expand its usage and overcome in part the inconvenience it might present for some users the fact that English was the language chosen to prepare the glossary. It is anticipated that the manuscript will be submitted for publication sometime in late 1989 or early 1990.

The association has been concerned in recent years with the growth and activities of other organizations that overlay in varying degree with our interests and activities. In particular, we have noted the rise in interest in the publications of COGS, the activities of COGEOGATA, and the meetings of both the North American Regional Geostatistics Group and the International Geostatistical Association. It is in our interest to coordinate with these groups as closely as possible in the future.

Secretary General's Report: McCammon

Membership in IAMG rose modestly in the period between 1984 and 1988 increasing from 550 in 1984 to 571 in 1988. The number of countries represented increased from 44 in 1984 to 50 in 1988. The increase in both cases can be traced to the booths we sponsor at our meetings, our efforts to attract new members from countries not formerly represented, and the interest that is generated by the International Geological Congress. We continue to receive inquiries about IAMG from individuals worldwide and encourage groups of individuals from a country to form regional organizations.

Krumbein medalists were named in each of the years from 1985 to 1988. The Krumbein Medal was awarded in 1985 to Felix Chayes (U.S.A.), in 1986 to John Harbaugh (U.S.A.), in 1987 to John Davis (U.S.A.), and in 1988 to Michel David (Canada). The contributions that were made by each of these individuals have been described in the IAMG newsletter and in *Math Geology*.

The President's Prize was awarded in each of the years from 1985 to 1987. The President's Prize is awarded to an individual 35 years or younger for an original and outstanding contribution to the application of mathematics to the geological sciences. The Prize was awarded in 1985 to G. Verly (U.S.A.), in 1986 to Marek Kacewicz (Poland), and in 1987 to James Carr (U.S.A.).

Best Paper Awards are made each year for Math Geology and Computers & Geosciences. The Best Paper is awarded by a committee made up of the Editor and Associate Editors of each of the journals. For Math Geology, the Best Paper in 1985 was awarded to N. I. Fisher (Australia), J. F. Huntington (Australia), D. R. Jackett (Australia), M. E. Willcox (Australia), and J. W. Creasey (Australia) for their paper entitled "Spatial Analysis of Two-Dimensional Orientation Data", and in 1986 to I. C. Lemmer (South Africa) for the paper entitled "Mononodal Indicator Variography--Part I: Theory, Part II: Application to a Computer-Simulated Deposit." Best Paper Awards for 1987 and 1988 are still being considered. For Computers & Geosciences, the Best Paper in 1985 was awarded to J. R. Carr (U.S.A.), D. E. Myers (U.S.A.), and C. E. Glass (U.S.A.) for their paper entitled "Cokriging--A computer Program", in 1986 to T. M. Burgess (England) and R. Webster (England) for their paper entitled "A Computer Program for Evaluating Risks in Constructing Choropleth Maps by Point Sampling among Transects."

Treasurers' Reports: West: Hohn; East: Nemeč

Copies of the most recent complete Financial Statement of the IAMG prepared by Western Treasurer Hohn for the period January 1, 1988 to December 31, 1988, were distributed to participants of the General Assembly. Because the Association operates on a calendar year, final figures for 1989 were (and are yet) not available. Hohn pointed out that the membership dues this year covered the journal subscriptions and expenses such as convention booth rentals, advertisements, and symposia support (\$25,876 compared to \$25,483). Additional income was in the form of Royalties, IUGS allocation, and interest and dividends on current investments (\$15,153). Excess of income (\$15,546 during this period) is invested in financial instruments such as money-market certificates, stocks, and government-backed securities. For the period 1984-1988, although the income from membership dues actually decreased by 0.53 percent (\$26,014 to \$25,876) and expenses decreased by 12.4 percent (\$29,097 to \$25,483), the assets increased 85 percent (\$51,042 to \$94,432). This was due largely to the increase in our royalty

payments and return on our investments. On the basis of journal interests and nationally, Hohn reported that the membership has remained constant over the past five years. The ratio of subscribers selecting Computers & Geosciences to those selecting Math Geology has remained between 0.76 to 0.78, even in 1985, the period following Pergamon's problems in delivering Computers & Geosciences on time. Similarly, the percentage of members from countries other than the U.S.S. has ranged between 56 percent and 58 percent.

Eastern Treasurer Nemec reported 5,134 Kcs in the bank in Prague, Czechoslovakia. In addition, there was a grant from Geindustria Prague of 5,000 Kcs used to pay for membership fees for the period from 1984 to 1989. The problem of currency restrictions is still a problem without a solution.

Editors' Reports

Journal of the International Association for Mathematical Geology Editor Mann (U.S.A.) reported that during the period 1985 to 1989 (v. 17-21), papers written by 534 authors representing 32 countries were published. The number of manuscripts received has increased steadily over the past decade. The acceptance rate has varied annually between 50 percent and 75 percent during this decade. Each volume of the Journal is now 1,000 pages. A new department, Teacher's Aide, was initiated during 1984 and is being directed by Margaret Armstrong (France). In addition to regular papers, special issues were devoted to 4 IAMG sponsored meetings: the 12th Geochautauqua, "Think Deep: Computer Methods and the Subsurface" (v. 17, no. 4); 27th IGC, "Conceptual Mathematical Models" (v. 19, no. 7); MGUS-87 Conference, "Emerging Concepts" (v. 20, nos. 4, 5, 6, 8); and "Quantitative Methods for Predicting and Resource Evaluation of Mineral, Oil and Gas Deposits" (v. 21, no. 6).

Journal of Computers & Geosciences Editor Merriam (U.S.A.) reported that during 1988, 88 papers were submitted for consideration for publication; 22 (25 percent) were rejected or referred to other journals. This was a slight decrease in submissions from 1987 (96 manuscripts) with a lower rejection rate (19 percent). For comparative purposes, in 1986, 65 manuscripts were submitted with a 35 percent rejection rate; and in 1985, 74 manuscripts with a 31 percent rejection rate. The size of the journal has increased from 356 pages in volume 1 to 964 pages in volume 14. The journal became a bimonthly in 1985. Volume 14, no. 6 was a special issue, "Bibliography of Computer Applications in the Earth Sciences, 1948-1970".

Old Business

President Davis noted that, for the first time that anyone could remember, there were no proposed changes either to the Statutes or the By-Laws of the Association. There was no old business.

New Business

1. Hernani Chaves (Brasil) asked if IAMG would consider publishing books in other than the English language. He expressed the view that a great number of individuals would benefit by having publications written in other languages. Secretary General McCammon responded by stating that such projects could come under the Monograph Series. The critical factor would be whether the current Publisher, Oxford University Press, could be persuaded to undertake such a task. This is a matter that could be pursued given that some specific material for such a book was submitted.
2. Chaves asked also if the software that is published in Computers & Geosciences is available on diskettes. Editor Merriam responded by saying that most of the computer program listings that appear in the Journal are available from COGS. He suggested that anyone wanting a particular program get in touch with them.
3. The question was again raised whether IAMG had a student rate. President Davis responded by saying that through the years, this same question has been raised in view of the fact that many scientific organizations have such rates. Davis pointed out that IAMG has one of the lowest membership dues of scientific organizations already largely because IAMG is made up of volunteer officers which keep the cost down and the fact that arrangements with the publishers make the publications of IAMG available to its members at greatly reduced prices.
4. President Davis announced that the William Christian Krumbein Medalist for 1988 is Dr. E. H. Timothy Whitten, Provost, Michigan Technological University, Houghton, Michigan (U.S.A.). Dr. Whitten is a past President of IAMG. He is the thirteenth recipient of the Medal. The William Christian Krumbein Medal is the highest award given by the Association. Dr. Whitten has a long and distinguished career in mathematical geology and has made significant contributions to the science, service to the profession, and support of the Association. A biography and full account of Dr. Whitten's contributions will appear in a future issue of Math Geology.

5. The final piece of new business was to nominate Dr. Niichi Nishiwaki-Nakajima (Japan) for the position of Councillor for Special Projects, XXIX International Geological Congress, to be held in Kyoto, Japan in 1992. Dr. Nishiwaki-Nakajima was elected by unanimous vote. As the Councillor for Special Projects, Dr. Nishiwaki-Nakajima will represent IAMG on the Japanese National Committee of Geology, the organizers of the XXIX International Geological Congress, and will be responsible for arranging the symposia organized by IAMG.

Results of Elections--IAMG Officers and Council

The final item of the agenda for the IAMG VI General Assembly was the announcement by outgoing President Davis of the election results for the upcoming term of office. The slate put forward by the nominating committee appointed in mid-1988 listed two candidates each for President, Vice-President, and Secretary-General, one candidate each for Western Treasurer and Eastern Treasurer, and ten candidates for Ordinary Members of Council. Mail ballots had been distributed to all IAMG members in good standing in early March. There were no additional nominations from the floor of the General Assembly. The results of the election are as follows: President, Richard McCammon; Vice-President, J. Aitchison; Secretary-General, Michael Hohn; Western Treasurer, John Kork; Eastern Treasurer, Vaclav Nemeč; Ordinary Members of Council, Peter Brooker, Chang-Jo Chung, John Cubitt, Kim Esbensen, Alain Marechal, and Ricardo Olea. Complete names and addresses of IAMG Council Members and Officers for the term of office beginning July 1989 and concluding at the close of the VII General Assembly at the XXIX International Geological Congress are appended.

Initial Questionnaire

Three-Dimensional Computer Graphics in Modeling Geologic Structures and Simulating Geologic Processes

October 8 - 14, 1990

Name: _____
Organization: _____
Address: _____

I will attend the session in Freiburg, October 8 - 11

- Yes
- Probably

I will participate in the field excursion in Switzerland, October 12 - 14

- Yes
- Probably
- No

My spouse will accompany me on the field excursion

- Yes
- Probably
- No

I can offer a formal presentation during the sessions in Freiburg

- Yes
- Probably
- No

If the response is yes, or probably, the presentation will consist of

- An oral presentation
- A poster session
- Either an oral presentation or poster session

with the tentative title of _____

Please return to

Prof. Reinhard Pflug
Geologisches Institut der Universitaet
Albertstrasse 23-B
D-7800 Freiburg i.Br.
West Germany

by August 1, 1989

PRELIMINARY REGISTRATION FORM

IWSPMR '90

Wuhan, China, October 20-25, 1990

(Please mark if appropriate)

- I intend to attend the Workshop
- I intend to submit a paper
- I wish to receive further information
- I have the following comments and suggestions:

FROM:

Full name

Mailing address

Organization

Position

Telex

TO:

IWSPMR '90 Secretariat
Research Section of Mathematical Geology
China University of Geosciences
Wuhan, Hubei Province
The People's Republic of China

IN CLOSING: AN EDITORIAL

Until recently, this newsletter was compiled by John C. Davis and Jo Anne DeGraffenreid of the Kansas Geological Survey. A grant from the Kansas Geological Survey covered the expense of producing this newsletter. The quality of this production was, to say the very least, professional. It is with this recognition that I realize I am trying to fill very big shoes.

This first newsletter under my direction is a departure from the style used in the past. I have chosen to follow a style similar to that used for the Geological Information Group Newsletter (a publication of the United Kingdom affiliate of the International Association for Mathematical Geology). This style is easier for me to implement.

I remember how excited I was when informed about my Best Paper Award for 1985. After being notified by mail, I couldn't wait for the next IAMG newsletter to report this award. I made a big assumption in this thinking: that there inevitably would be a next issue of the newsletter. Of course, I did not consider what is required to produce a newsletter; how much work is required to publish each issue. Now that I am involved, I realize the service John and Jo Anne provided IAMG. Big shoes, indeed!

James R. Carr
Mackay School of Mines
University of Nevada-Reno