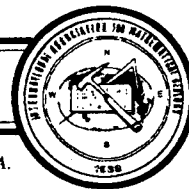


IAMG NEWS LETTER NO. 38



The IAMG News Letter is made possible by a grant from the Kansas Geological Survey, The University of Kansas. Published at Lawrence, Kansas 66046-2598 USA.
Newsletter Editors: John C. Davis and Jo Anne DeGraffenreid. Written contributions are warmly welcomed!

Michel David Receives Krumbein Medal

Those of you who regularly read *Mathematical Geology* have undoubtedly noticed the sometimes intemperate controversy that has raged in its pages during the last few years. It seems all members of our discipline belong to one of three schools of thought: Those who practice and strongly advocate geostatistics, those who are violently (and vocally) opposed to geostatistics, and the silent majority, who wonder what all of the shouting is about.

Over the past twelve years, the International Association for Mathematical Geology has recognized many members of the non-shouting third group, and has bestowed its highest honor on distinguished geoscientists who have worked on a great variety of problems, using a vast arsenal of techniques. In recent years the Association has also acknowledged the growing contributions made to all areas of the earth sciences by the geostatisticians by recognizing two of the foremost leaders in this area, **Georges Matheron** and **Danny Krige**.

The International Association for Mathematical Geology has now recognized the accomplishments of a third eminent geostatistician, **Michel David**, Professor at l'Ecole Polytechnique de Montreal and President of Geostat Systems International. The presentation of the twelfth William Christian Krumbein Medal was made to Michel in Canada during the Ottawa colloquium on "Statistical Applications in the Earth Sciences" in November, 1988. Michel has made his contributions through patient example and quiet, persuasive demonstration. In addition to being a highly regarded scientist, he has been an advocate of calm practicality, and a voice of clarity and reason.

Unlike many of us who have been content to dispense our wisdom and advice from within our academic or governmental sanctuaries, Michel has ventured into the cold, cruel world of commerce to practice what he preaches. So, it is not only for his scientific articles and scholarly books that the Association awards him the Krumbein medal. It is also for his practical applications of geostatistical theory, scientific judgement, and common sense

Michel David was born in France and received his first degree from l'Ecole des Mines de Nancy in 1967, as a mining engineer. He worked in France, Canada, Mauretania, and South Africa, on coal, iron, and gold deposits. He later received his Ph.D. from the University of Montreal, where he became a member of the faculty of the Department of Mineral Engineering. In 1975, he was Visiting Professor at Colorado School of Mines. He directed the Mineral Exploration Research Institute in Montreal from 1976 to 1981.

Michel has authored or coauthored over 100 articles on geostatistics and other topics in mathematical geology. In 1977 his book, *Geostatistical Ore Reserve Estimation*, which was the first comprehensive treatment of geostatistics to appear in English, was published. His new book,

Handbook of Applied Advanced Geostatistical Ore Reserve Estimation, has just appeared (see the special offer elsewhere in this issue).

Michel David was one of the organizers of the 1st and 2nd Geostatistics Congresses in Frascati, Italy, in 1975, and Lake Tahoe, Nevada, in 1983. He has been active as a consultant and has served more than 100 companies worldwide. To further this practical aspect of his work, he founded Geostat Systems International and holds the office of Corporate President. The company began in Denver, Colorado, in 1979 and opened its Montreal quarters in 1981.

Although no longer actively teaching, his legacy of students, textbooks, scientific articles, and industrial trainees continues to contribute to the growth of geostatistics. The International Association for Mathematical Geology is pleased to honor Dr. Michel David for his many accomplishments.



Plans to Expand Computers & Geosciences in 1989

According to Editor-in-Chief **Dan Merriam**, so many good papers have been received by *C&G*



Michel David (right) accepts Krumbein Medal from IAMG President John Davis.

during the year that the decision has been made to go to eight issues in 1989. All issues of Volume 14 (1988) have gone to press and Volume 15, no. 1 is on its way.

Several special issues will appear in 1989, including a bibliography of computer geology from beginnings to 1970, papers from the Il Ciocco NATO/ASI meeting in 1986, and proceedings of the British Geographers Quantitative Methods Study Group on "Fractals and the Geosciences," held in 1987. An index of the first fifteen volumes of *C&G* will also be prepared next year.

Certain issues of Volume 15 (1989) will include a COGS-sponsored section on microcomputers. **Doug Peters** of COGS (Computer-Oriented Geological Society) will be responsible. The special feature "Computer Corner" will be reintiated, if all goes well; and **Graeme Bonham-Carter** of the Geological Survey of Canada will be heading up a new book-review section.

Dan reports that all is going well and *C&G*'s future looks rosy, with steps taken to reduce the unacceptable length of time required for the *C&G* review process, the addition of a part-time secretary to help with journal administration, and a larger, revitalized and reorganized international group comprising the editorial board.

IAMG Journal Prices

Are the Association's journals too expensive? This is a complaint sometimes heard by the officers and editors, but is it true? Although the IAMG is a non-profit organization and has no paid staff, its journals are published by commercial printing houses that are in business to make profits. Presumably the sales of *Mathematical Geology* and *Computers & Geosciences* contribute to the financial well-being of Plenum and Pergamon Press, but are the publishers charging IAMG members an excessive amount for what they produce for the Association?

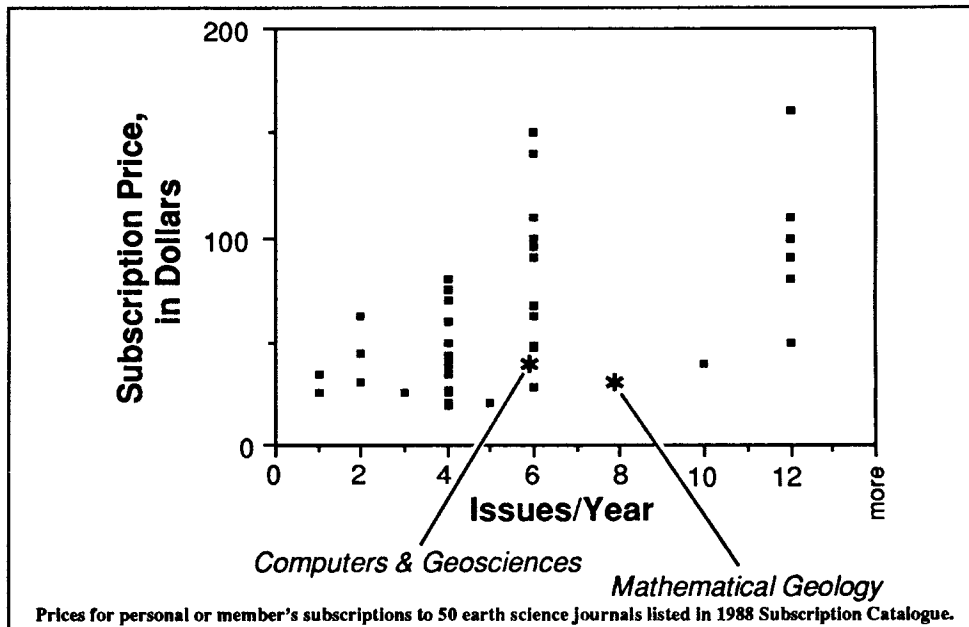
Recently published figures on the subscription rates of scientific journals suggest that those issued by the IAMG are a real bargain for the membership. (Although more meaningful comparisons might be based on costs per page, counts of the pages in different journals were not included in the report. Instead, the accompanying graph shows the costs of different geoscience periodicals per issue, and assumes that most journal issues are about the same size. The mechanics of magazine production suggest that this is approximately correct, and that most publications tend to average about 150 pages per issue.) In addition, subscriptions for all earth-science and related journals are lower than subscription prices in many other fields, particularly medicine and engineering. So, when you get your 1989 membership dues notice in the mail, remember that it's really a bargain!

Nominating Committee

Members of the Nominating Committee of the International Association for Mathematical Geology have been chosen. This important committee is responsible for selecting a slate of candidates for election to the posts of Officers and Council Members of the IAMG for the period 1989-1992. The new officers and councillors will serve the Association through the 29th International Geological Congress.

The Nominating Committee consists of five members selected from among the membership of the Association, with the President serving as non-voting Chairman. The duties of the Committee are to choose a slate of highly qualified persons who agree to serve as officers of the Association if elected. In response to the expressed wishes of the membership, multiple candidates are now listed for most offices, although this practice is not explicitly required by IAMG Statutes and By-Laws. The slate of candidates will be presented to the membership in time for a mail ballot prior to the General Assembly at the 28th IGC in Washington, D.C., in July.

The duties of officers and councillors are listed in the IAMG Statutes and By-Laws; the current version of these is published in *Mathematical Geology* Vol. 17, no. 6. Nominations are needed for President, Vice President, Secretary-General, Western Treasurer, Eastern Treasurer, and six Councillors. The Secretary-General, Treasurers, and Councillors may be re-elected for a second consecutive term. Nominations must reflect the national distribution specified in By-Law 7.



Names and addresses of Nominating Committee members are given below. Every member of the Association is urged to contact one of these persons, or any current officer, with suggestions. The future health and well-being of the Association will depend to a large extent on the performance of the new officers and council. Help select those who will assume responsibility for the Association for the next term!

Dr. Frits P. Agterberg
Geological Survey of Canada
601 Booth Street
Ottawa, Ontario K1A 0E8
CANADA

Dr. Heinz Burger
Institut für Geologie—Mathematische Geologie
Freie Universität Berlin
Malteserstraße 74-100 (Haus D)
D-1000 Berlin 46
WEST GERMANY

Dr. Zhou Di
Ocean Structure Section
South China Sea Institute of Oceanology
No. 164 West Xingang Road
Guangzhou, Guangdong
PEOPLES REPUBLIC OF CHINA

Prof. R.W. Lemaitre
Dept. of Geology
University of Melbourne
Parkville, Victoria 3052
AUSTRALIA

Dr. John H. Doveton
Kansas Geological Survey
1930 Constant Avenue
Lawrence, Kansas 66046
USA

Treasurer's Report

The IAMG continued to do well in 1987, with year-end assets up over the previous year. Although paid-up membership has leveled off at about 540 individuals, the outlay for subscriptions and the newsletter is only a little more than we take in as dues. The difference is largely the result of costs we incur in processing some foreign checks.

Income from royalties and investment income is used to support activities such as the Geostatistics Congress in Avignon, France, in 1988. Our support of national interest groups and societies in mathematical geology could be expanded.

The financial picture for 1988 looks even more favorable if we begin to receive royalties from Pergamon Press for *Computers & Geosciences*.

Looking to the future, 1989 brings the International Geological Congress, and we will be supporting some travel. We could perhaps afford to do more. I have reserved IGC exhibit space for the IAMG; our financial position would allow us to improve our display and attract new members.

Michael Ed. Hohn
IAMG Western Treasurer
June 9, 1988

ACOGS Software Catalog

The October 8, 1988, issue of *Arizona COGS Software Catalog* offers public-domain software

**International Association for Mathematical Geology
Statement of Income and Expenses**

for the Period 1 January 1987 to 31 December 1987

Income:

Membership dues	\$20,152.01
Royalties	7,945.00
Mailing list	304.00
IUGS allocation	500.00
Interest on checking acct.	1,292.17
Dividends on Hutton Gov't Securities	4,161.27
GNMA dividends and interest	<u>1,126.52</u>

TOTAL INCOME \$35,480.97

Expenses:

Journal subscriptions	\$20,281.50
*Newsletter	346.54
Printing	110.25
Postage	257.26
Convention booth rentals	1,317.97
Supplies	125.48
Prize	91.85
Geostat. Congress	<u>1,400.00</u>

TOTAL EXPENSES \$23,930.85

EXCESS OF INCOME OVER EXPENSES \$11,550.12

BALANCE SHEET
on 31 December 1987

Assets:

GNMA	
Trust Series: 65.699 @ \$20.27	\$ 1,331.72
Series J: 1208 units @ .47482	573.58
Series E: 9410 units @ .16807	1,581.54
Hutton Gov't Securities Fund	46,750.05
Checking account	<u>28,491.60</u>

TOTAL ASSETS \$78,728.49

Liabilities and Equity:

Membership equity \$78,728.49

TOTAL LIABILITIES AND EQUITY \$78,728.49

Increase from 31 December 1986 \$10,861.84
(Corrected beg. balance of \$67,866.65)

Witnessed in accord with IAMG Statutes, Article 17...

*Mailing expense for non-U.S. postage.

(ACOGS...)

and shareware (all copied from original diskettes obtained from the software publishers to avoid viruses associated with software downloaded from bulletin boards or other contaminated sources); a variety of geologic programs including STATPAC, ALLMAP, MICRO WBD-II, GEOSTRUCTURES, GS-DRAW, GS-MAP, and GS-MRDS; commercial packages at discounted, members' prices from Golden Soft, Geotech Computer Systems, MicroInnovations, RheoLogic Software; and other programs including the PROCOMM communications program, PC-WRITE word processor and CHIWRITE scientific word processor for IBM-PC and RED RYDER, a comm package which permits the use of a Macintosh as a VAX terminal.

ACOGS—Arizona Computer Oriented Geological Society—is comprised of geologists, hydrologists, geophysicists, archaeologists, geologic engineers, etc. and meets the 4th Wednesday of the month. Two short courses have been held to date and more are in planning. ACOGS' monthly newsletter contains 4-6 pp. (the Sept. '88 issue has a remarkable *MacGyver*-style recipe for remote computing!). Annual individual dues in U.S. funds are \$15 (USA), \$20 (Canada), and \$25 (other international); corporate sponsors (\$50 USA, \$70 Canada, \$90 other international) receive multiple copies of the newsletter and are listed each month. The right to purchase software and to receive discounts on advertising in the newsletter is enjoyed by both corporate and individual members. Information: Arizona COGS, P.O. Box 44247, Tucson, AZ 85733-4247 USA.

IAMG Best Paper Awards

C&G

Best Paper Award for an article published in *Computers & Geosciences* for the year 1986 has been announced by C&G Editor D. F. Merriam. Winners of the 1986 award are T.M. Burgess and R. Webster for their contribution entitled "A Computer Program for Evaluating Risks in Constructing Choropleth Maps by Point Sampling among Transects" (*Computers & Geosciences*, V. 12, no. 2, p. 107-127).

MATH GEOL

Best Paper Award for an article published in *Mathematical Geology* for the year 1986 has been announced by C. John Mann, Editor. Winner of the 1986 award is I. C. Lemmer for his contribution entitled "Mononodal Indicator Variography—Part I: Theory" (*Mathematical Geology*, V. 18, no. 7, p. 589-604).

IAMG Best Paper winners receive a Certificate of Award and a year's subscription to the journal in which their article appeared.



Third International Geostatistics Congress

The Third International Geostatistics Congress was held in Avignon, France, on September 4-9, 1988. The driving force behind the event was the Centre de Géostatistique in Fontainebleau, France, and in particular Dr. Margaret Armstrong. Previous congresses were held in Lake Tahoe, USA, in 1983; and Rome, Italy, in 1975.

Avignon is a medium-sized town located 450 miles (700 km) south-southeast of Paris and only 30 miles (50 km) from the Mediterranean. It provided a delightful setting for the Congress. Meetings were held in a corner of the Pope's Palace that has been remodeled into a convention center. The palace, on a bluff dominating the Rhône river valley, was built between 1334 and 1352 to host the head of the Catholic Church, who had moved to Avignon from the Vatican in 1309.

The 174 participants represented 26 different countries at the Congress. Nations with the largest delegations of geostatisticians were France with 62; USA with 19; and West Germany with 11. Preferential routes of migration shown by geostatisticians would modify this distribution if national origin were based upon place of birth rather than place of employment. Universities and research institutes outnumbered industry as employers.

Technical presentations included two plenary sessions on Monday and Thursday mornings, with the remainder of the time between 9

(Continued)

(Third International Geostatistics...)

a.m. and 5 p.m. devoted to two parallel sessions. Being France, there were 2-hour breaks for lunch. Ninety-five papers were scheduled and in fact most of the speakers did show up. The topics of main interest were implied in the titles of the sessions, which included four on theory; three each on case studies and mining; two each on hydrology and oil and gas; and individual sessions devoted to soil science and oceanography. Speakers were allowed 20 minutes for presentation and 10 minutes to answer questions from the audience. The papers were bound in three volumes that were provided to each participant. Formal proceedings will be published and distributed next year.

Social events included a reception on Sunday evening and a farewell wine and cheese tasting provided by the Côtes du Rhône winegrowers on Friday evening. The social high point, however, came Thursday evening with a banquet held at a countryside restaurant housed in a 1790 farmstead. The event lasted until midnight and included an eight course meal as well as the ordaining of Profs. G. Matheron, D. Krige, and J.L. Mallet as "professional" wine tasters. Daily tours of the French countryside were provided during the week to members of families of the participants.

Prior to and during the Congress there were efforts to establish the first world organization devoted exclusively to geostatistics. On the eve of the Congress an announcement in the European newsletter *De Geostatisticis* read: "When preparing this third issue, which has now an international audience of over 500 people, the question was raised whether to take a step forward and to create a formal structure which would open new possibilities of communication in the world of Geostatistics—beyond a simple newsletter. After an inquiry within the Editorial Team, it was decided to propose the creation of an International Geostatistical Association during the Third International Congress in Avignon." This proposal was submitted for discussion on Monday evening and approved by a majority of the participants present at the assembly after several hours of debate. Participants were invited to nominate candidates for officers of the new society. Prof. Marco Alfaro, Centro de Investigación Minera y Metalúrgica, Chile, ran unopposed for Secretary, while two nominations were made for each of the other three positions. Prof. G. Matheron was an overwhelming choice for President. Prof. R. Barnes, University of Minnesota, USA, was elected Vice-President and Dr. R. Bruno, Università di Roma La Sapienza, Italy, was elected Treasurer. A council, with geographical representation, completes the formal organization. Details of the new society were left to the officers, who gathered for a short meeting on Friday. They named the new organization the **International Geostatistics Association** and

gave themselves the task of preparing statutes and by-laws. The newly elected officers decided to start an international newsletter, but refrained from founding a new journal. Ideally, the cost of the newsletter as well as any other administrative expenses will be financed with donations from institutions rather than by reader subscriptions. The officers will serve until the next international geostatistical congress.

The Fourth International Geostatistics Congress will be held under the aegis of the International Geostatistics Association in Portugal in 1992. For more information write to either G. Matheron, Centre de Géostatistique, 35 Rue Saint-Honoré, 77305 Fontainebleau, FRANCE or F. Muge, I.S.T.—Av. Rovisco Pais, 1096 Lisboa Codex, PORTUGAL.

R.A. Olea, Chairman
IAMG Geostatistics Committee

FDC [Federal Digital Cartography] newsletter

The *FDC newsletter*, a publication of the (U.S.) Federal Interagency Coordinating Committee on Digital Cartography is published several times a year. It contains brief articles about the collection, storage, exchange, and application of digital cartographic data and serves as a forum for exchange of information on Federal digital cartographic activities for people who work with, use, or have interest in digital cartographic data. Items in the Summer 1988 (No. 8) issue include articles describing the USGS/Department of Census 1:100,000-scale DLG data "TIGER File," three new soil geographic data bases established by the Soil Conservation Service, the Western Oregon Digital Data Base, and GIS applications in the Tennessee Valley Authority. Copies and free subscriptions to the *FDC newsletter* are available upon request from FDC Subscriptions, 516 National Center, U.S. Geological Survey, Reston, VA 22092. Back issues of the newsletter and other FICCDC publications are also available.

Baku Conference Cancelled

Word was received in July from Dr. R. Volkov, Executive Secretary of the USSR National Committee of Geologists, that organizational difficulties precluded the convening of the IAMG conference planned for Baku in 1988.

Postdoc and Senior Research Awards Available at JPL

Opportunities for Postdoctoral and Senior Research Awards exist at the Jet Propulsion Laboratory in Pasadena, California (USA) for a

wide range of research topics. Of immediate interest to JPL is the offering of a Resident Research Award in the area of cartographic analysis research, topics of which include: development of automated techniques for spatial data fusion and modeling applications; GIS computer integration of image, graphics, and tabular data; development of raster and vector algorithms; concurrent processing and neural net models, etc.

For information about JPL research awards in cartographic analysis research, contact Dr. Nevin A. Bryant, Group Supervisor, Cartographic Applications Group, Image Processing Applications and Development Section, Jet Propulsion Laboratory, California Institute of Technology, 4800 Oak Grove Drive, Pasadena, CA 91109 (tel. 818-354-7236).

De Geostatisticis/Geostatistics

Geostatistics, published quarterly by the North American Council on Geostatistics, boasts 405 subscribers in more than 200 cities in 32 countries. Appearing in the Winter 1988 issue is a new column designed to present new and ongoing research projects in academia and without, where much of the interesting and challenging research is being carried on. Subscriptions are free to active professionals in the field. For information, contact *Geostatistics* editor Randal Barnes c/o Civil and Mineral Engineering, University of Minnesota, 500 Pillsbury Drive S.E., Minneapolis, MN 55455 USA.

De Geostatisticis, published under auspices of Centre de Géostatistique de l'Ecole des Mines de Paris, reports a tremendous success in European countries and elsewhere, with an international audience of over 500 people. The fourth issue will include advertisements to help finance the newsletter. Interested companies, consultants, publishers, and the like are invited to take advantage of the opportunity. Articles, book reviews, announcements, and other copy for future issues should be submitted to the Editorial Team of *De Geostatisticis*, c/o E.N.S.M.P., 35 Rue Saint-Honoré, 77305 Fontainebleau, France.

A New Book, A Deserved Honor, and A Special Offer!

Publishers are always pleased when one of their authors is given a prestigious award, because it confirms their good judgement and reflects well on their entire list of books. This fall, Michel David received the William Christian Krumbein Medal from the IAMG, and coincidentally published *Handbook of Applied Advanced Geostatistical Ore Reserve Estimation*, the long-awaited successor volume to his acclaimed *Geostatistical Ore Reserve Estimation*. Both books

are issued by Elsevier Scientific Publishing Company, Amsterdam.

As an expression of its pleasure in the award of the Krumbein Medal to Prof. David, Elsevier is offering personal copies of *Handbook of Applied Advanced Geostatistical Ore Reserve Estimation* to members of the IAMG at a reduced price, for a limited time. A special announcement from the publisher, with ordering instructions, appears below.

An Editorial—Too Many Meetings?

Although times are undoubtedly tough in the earth sciences, including mathematical geology, and the membership of professional societies is declining (although less so in the IAMG than elsewhere), the incidence of meetings, conferences, symposiums, and congresses seems to be going up! 1988 was marked by special sessions on mathematical geology at the annual meetings of several major societies, by a series of invitation-only technical meetings on specific topics in mathematical geology, and by several international conferences. In just October and November, four meetings were held that dealt with the specific combination of geomathematics and geochemistry or mineral exploration.

Even if travel funds were freely available, the most peripatetic of us would suffer from terminal jet-lag if we attempted to participate in them all. We must choose which of the

alternative meetings we will attend, basing our decisions on the topics, the lists of participants, and the costs. It is inevitable that some meetings will suffer a low attendance because of the competition. The danger is that a poor level of participation one year will stigmatize a particular meeting, and will jeopardize its success in subsequent years.

The solution? Better coordination between convenors of proposed meetings, and a willingness to postpone or reschedule sessions to avoid conflicts. The consolidation of proposed meetings that cover similar topics is also highly desirable. The IAMG, which acts as a cosponsor of many geomathematical conferences, can help, but only if informed and involved early in the planning stages. This is especially crucial for international meetings, that typically require several years of advance planning and preparation.

The International Geologic Congress so dominates the geomathematical scene next year that few other conferences are planned, at least as far as we know! However, the meetings race will resume in 1990 unless convenors take steps now to bring some organization into the chaos.

John C. Davis
IAMG President

Best Wishes Dept.

Along with his 1988 dues, L.A. Aroian included a message with a request that it be forwarded to his colleagues via *Math Geol.* For

C&G subscribers who may have missed it, it's worth repeating!

"Dr. Leo A. Aroian retired from Union College [Schenectady, NY] for the 2nd time at age 80. He expects to continue further researches in spatial time series."

Books and Publications:

Statistical Models for Optimizing Mineral Exploration, T.K. Wignall and J. de Geoffroy, Plenum Publishing Corporation, 1987, 444 pp., U.S.\$ 75.00 (U.S.\$ 90.00 outside USA and Canada). This volume is devoted to the description and application of various types of computerized geomathematical models that underlie the optimization of the mineral exploration sequence. Six main types of base and precious metal deposits are used as examples, as well as other mineral resources such as uranium, petroleum and aluminum. Geographic coverage includes North and South America, Scandinavia, the European Mediterranean region, Asia and Australasia. Computer listings of all programs are included in six appendices. [Don't forget—IAMG members may purchase any of Plenum's book publications from Plenum's New York office (Plenum Publ. Corp., 233 Spring Street, New York, NY 10013 USA) at a 25% discount from list price!]

Probability and Statistics in Geodesy and Geophysics, L. Kubáčková, L. Kubáček and J. Kukuča, Elsevier Science Publishers, Amsterdam, 1987, 432 pp., U.S.\$ 139.50/Dfl. 265.00, ISBN 0-444-98945-5. This book acquaints the reader with mathematical methods in use at present, including those being developed and applied in advanced geodetic and geophysical centers; the first chapter is designed to benefit readers new to

(Continued)

HANDBOOK OF APPLIED ADVANCED GEOSTATISTICAL ORE RESERVE ESTIMATION

by M. David, Montreal University Campus, Que., Canada
Developments in Geomathematics, 6: 1988 232 pages ISBN 0-444-42918-2

Some 20 years after the publication of the first textbook on theoretical geostatistics and, after hundreds of practical studies, it is worth looking at how geostatistics has evolved to become the practical tool it was intended to be. This book describes advances which have practical applications in ore reserve estimation. It covers problems commonly encountered in the practice of orebody modelling when data do not conform to early theoretical models. It offers solutions to problems like irregularly distributed samples of irregular sizes, shows how to get the best variogram and how to model it. It covers the problem of the grade tonnage curve which varies with block size and proposes ways to compute estimation variances for an entire deposit or in the presence of a cut-off. Actual case studies are used throughout. Every student of geostatistics should read this book; every professional geostatistician will find it indispensable. The extensive table of contents can be used as a reference when looking for the solution to practical problems and the numerous figures give clear descriptions of all the solutions proposed. The bibliography (updated to 1987) contains everything significant in the field.

Contents: 1. Distribution Related Problems. 2. Variogram Related Problems. 3. Block Variances. 4. Estimation Variance. 5. Kriging. 6. Recoverable Reserves. 7. Applied Simulation. 8. Classification of Ore Reserves. 9. Check Samples and Duplicates. References.

This discount is valid for all prepaid orders received in Amsterdam before 1st May 1989. Send orders to V. Chapman at

SPECIAL 30% DISCOUNT for Members of the International Association for Mathematical Geology!

Non-member price: US\$ 68.50/Dfl. 130.00
Member price: US\$ 48.00/Dfl. 91.00

I am a member of the International Association for Mathematical Geology and wish to order the *Handbook of Applied Advanced Geostatistical Ore Reserve Estimation*, by M. David, at the special price of US\$ 48.00/Dfl. 91.00.

Payment enclosed. Charge my credit card:

Access MasterCard Am. Express

VISA

Card Number _____

Expiry Date _____

Signature _____

Name _____

Address _____

ELSEVIER SCIENCE PUBLISHERS
P.O. Box 330, 1000 AH Amsterdam,
The Netherlands.

COGEODATA in the News—Resource Exploration Meeting at Helsinki

The July 21-23, 1988, COGEODATA Symposium, *Computer Applications in Resource Exploration: Prediction and Assessment for Petroleum, Metals and Nonmetal*, was very successful. Sixteen countries were represented at the COGEODATA/IAMG meeting, which was sponsored by the Geological Survey of Finland and held at the Helsinki University of Technology in Espoo (Helsinki). COGEODATA Chairman Prof. G. Gaál of the Geological Survey of Finland was symposium organizer and local host to the 75 attendees. The 38 papers presented, on topics including trend analysis, classification and correlation techniques, geostatistics, image analysis, expert systems/AI, and inventories, will appear in 1989 in a proceedings volume to be published by Pergamon Press.

COGEODATA executive members on hand in addition to Chairman Gaál included G. Gabert (FRG), IUGS Sec.-Gen. R. Sinding-Larsen (Norway), P. Leymarie (France), J. Hruška (CSSR), and R. Kogan (USSR), representing D. Rodionov. Also present for the Executive Meeting were COGEODATA Regional Representative J. Harff (GDR) and guests D. Gill (Israel), D. Harris (USA), H. Kürzl (Austria), D. Merriam (USA), and W. Zolotarev (USSR). A topic of discussion was the establishment of additional COGEODATA National Commissions in East Europe (groups exist at present in the GDR and CSSR) and in Asia and North America. It was determined that for the time being no regional representation could be formed in Africa or Australia. Establishment of a new COGEODATA Working Group on "computer applications in environmental geology" was also discussed.

ED. NOTE: For IAMG newcomers and those whose short-term memory misdirects acronyms, COGEODATA is the Commission on Storage, Automatic Processing, and Retrieval of Geological Data of the International Union of Geological Sciences (IUGS) [not to be confused with CODATA (Committee on Data for Science and Technology), a Scientific Committee of the International Council of Scientific Unions (ICSU), which is the parent body of IUGS]. The IAMG, by the way, is an Affiliated Organization of the IUGS. Current IUGS President is U. Cordani (Brasil); R. Sinding-Larsen is Secretary General, as noted above, and J. Reinemund (USA) is Treasurer.

Geostatistics in ASCE

The American Society of Civil Engineers (ASCE), in general, and the Groundwater Committee of the Hydraulic Division, in particular, have begun to visualize the potential of Geostatistics to better solve a number of problems of common occurrence in the profession. ASCE has recently funded a 2-year task force to: (1) Prepare a general review paper on the application of geostatistical techniques in groundwater hydrology. The paper will be submitted no later than

Fall 1989 for publication in the ASCE *Journal of Hydraulics*. (2) Organize a session on Geostatistics at the ASCE national meeting to be held in New Orleans (USA) in August 1989. The session will have two parts. Opening papers will be tutorial in nature and presentations for the second part will be on applications to real-life problems. It is intended that all presentations be made by invited speakers.

The ASCE Task Committee on Geostatistical Techniques in Geohydrology had its first meeting December 9, 1988 at Stanford University. Prof. Shahrokh Rouhani, from the Georgia Institute of Technology and currently on annual leave at Fontainebleau (France), is Chairman. Committee members are A.P. Georgakakos, Georgia Tech; M. Heidari, Kansas Geological Survey; P.K. Kitanidis, Stanford Univ.; H.A. Loaiciga, Wright State Univ.; R.A. Olea, Kansas Geological Survey; and S.R. Yates, U.S. Dept. of Agriculture.

Time to Get Candid or "Dear Kids . . ."

The last *IAMG News Letter* contained a pledge for renewed vigor on the part of the newsletter staff. I [JAD] promised to increase the frequency of newsletter publication, conditional on a little input from the IAMG member readers. I see the task of *News Letter* editor as just that—editor. Not sole creator (perpetrator?). And not "mother": You turn that stereo down, clean that desk up, and get busy on your *News Letter* assignment...RIGHT NOW!!

My pleas for help are evidently too cute to be taken seriously. Since *IAMG News Letter* 37's appearance many months ago, exactly two unsolicited bits of information other than committee reports have been received. Dan Merriam, a two-hours' drive away in Wichita, sent details on the COGEODATA meeting in Helsinki and Ricardo Olea, whose office is up the hall, handed me the piece on the ASCE task force; Ricardo also graciously provided the article on the Avignon Congress upon request. Of course, his life is in my hands when it's my turn to make coffee!

A poor newsletter is a sorry thing. It's just a couple of expensive postage stamps affixed to several ounces of solid waste. The format and appearance of our Association's newsletter may improve with every sporadic issue, but it seems that the content deteriorates. No matter how much desktop-publishing prowess is brought to bear, we can't produce anything that amounts to something out of nothing. Don't you guys have things you want to tell each other? Or things you want to ask? What are you working on? Why? Are you out there?

The *IAMG News Letter* since inception some 15 years ago has been published at its present

address. Maybe it's time for a change! As an IAMG member you eventually get a newsletter of sorts, but I think you deserve and should expect more. I don't see how that's going to happen, though, without reader response. I envy the geostatisticians their *Geostatistics* and *De Geostatisticis*, but have little hope of emulating their success at present. We don't seem to have the organizational support and the enthusiastic network of energetic young researchers *De Geo* draws upon, nor do I have the clout of the indefatigable *Geostatistics* editor, who can threaten his close-knit clan with excommunication.

The *IAMG News Letter* has been a recent topic of discussion among officers, councillors, and interested others (me, for instance). Everyone says we should publish more often (and I say to myself sullenly, being a bit wounded, "Publish what?"). I think I would be sorry to see the *News Letter* leave Kansas and the Survey. It's kind of a tradition; and during the last couple of years we've developed an excellent production facility, hardware- and softwarewise (including a brand new LaserWriter® IIINTX with a 40 MB hard disk). All we need is news! I also worry about finding someone to seize the less-than-taut reins. The *News Letter* really is little else than a labor of love at present. Would a new editor be willing or able to keep it alive with no input from IAMG members? This blurb began "The last *IAMG News Letter*..."; I hope the phrase is not prophetic.

(Books...)

the subject. Contents: Introduction. 1. Mathematical Preliminaries. 2. Estimation Theory. 3. Testing of Hypothesis. 4. Systematic Influences and Their Elimination. 5. Design of Experiments. 6. Linear Theory of Random Functions. 7. Problems of the Linear Estimation Theory and the Theory of Random Functions with an Estimated Covariance Matrix. References. Subject Index.

Proceedings—International Workshop on GIS—Beijing '87, IGU Commission on Geographical Data Sensing and Processing/Chinese Academy of Sciences, 1987, 500+ pp., in English, U.S.\$ 45.00 (including airmail postage) from Yuan Xiansheng, Laboratory of Resource & Environment Information Systems, Institute of Geography, Chinese Academy of Sciences, Building 917, Datun Road, Anwai, Beijing, People's Republic of China. Over 500 pages of technical and descriptive papers provide the first unified examination of GIS activities in the PRC.

Statistical Analysis of Spherical Data, N.I. Fisher, T. Lewis and B.H. Embleton, Cambridge University Press, 1987, 300 pp., cloth, U.S.\$ 65.00. Described as the first comprehensive, yet clearly presented account of statistical methods used for analyzing spherical data. Aimed at a wide range of readers from undergraduates to researchers. Priority has been given to providing a manual for the working scientist. Many line diagrams and tables.

Bibliography and Index of Quantitative Biostratigraphy, F.C. Thomas, F.M. Gradstein and C.M. Griffiths,

Committee on Quantitative Stratigraphy of the International Commission on Stratigraphy, 1988, 58 pp. This compilation (*Geological Survey of Canada Contribution No. 52787*) attempts to list in one place the more important books and articles on the use of quantitative biostratigraphic methods to solve stratigraphic problems. The 637 published references are numbered and listed alphabetically by principal author. An index of subjects (seriation methods, ranking and scaling biozonations, unitary association methods, etc.) is also provided. The authors request that errors and omissions be reported to them at Atlantic Geoscience Centre, Bedford Institute of Oceanography, P.O. Box 1006, Dartmouth, Nova Scotia, B2Y 4A2, Canada.

Geostatistical, Sensitivity, and Uncertainty Methods for Ground-Water Flow and Radionuclide Transport Modeling, B.E. Buxton (ed.), Battelle Press, 1988, 680 pp., hardcover, U.S.\$ 75.00 + \$3.50 shipping/handling prepaid from Battelle Press, 505 King Avenue, Columbus, Ohio 43201 USA. Proceedings volume for Sept. 1987 U.S. Dept. of Energy and Atomic Energy of Canada Ltd. conference; 31 papers on statistical methods in nuclear repository performance plans for waste disposal programs, sensitivity and uncertainty methods for large computer codes, stochastic hydrology, statistical methods for modeling flow and transport in fractured media, geostatistical methods, etc. Includes list of participants.

Preliminary Inventory of Automated Geo-Data Bases of Europe, Asia and Africa, J. Hruška (compiler), INTERGEO, Prague, 1988, 64 pp. This bibliography and review, a project of the COGEO DATA Working Group on Data Sources and Data Integration, contains a representative selection of all important works and developments in geological data bases in most countries of Europe and Asia during the past decade. Copies available from: Dr. Jiří Hruška, Chairman, COGEO DATA Working Group 4, INTERGEO, Olbrachtova 3, 146 00 PRAHA 4 Krč, Czechoslovakia.

Geostatistics and Petroleum Geology, Michael Edward Hohn, Van Nostrand Reinhold, New York, 1988, 264 pp., hardcover, U.S.\$ 32.95. Sixth contribution to the series *Computer Methods in the Geosciences*, edited by D.F. Merriam. Standard subjects of geostatistics are explored and discussed—the semivariogram, kriging, cokriging, nonlinear and parametric estimation, conditional simulation. The book is intended for the working geologist using oil and gas data to draw maps of reserves, distinguish between favorable and unfavorable drilling areas, compute success ratios, discover regional trends, site wells, etc. Case studies represent extracts from on-going research.

Geomathematics and Geostatistics Analysis Applied to Space and Time Dependent Data, B. Namysłowska-Wilczynska and J.J. Royer (editors), Sciences de la Terre, *Série Informatique Géologique* No. 27, 1988, 494 pp. in 2 vols., 211 figs., 470 FF (U.S. 78.50 approx.). Specially issued papers from the CODATA Conference "Geomathematics and Geostatistics Applied to Space and Time Dependent Data" designed to present state-of-the-art advances in the analysis and interpretation of geoscience data and held at the Technical University of Wrocław, Poland, June 1-6, 1987. Vol. 1 includes 14 papers dealing with three main topics: Utilization of Satellite Data, Structures and Processing; Use of Geostatistics for Appraisal of Energy Resources and Hydrology; Use of Geomathematics in Engineering Geology. Vol. 2, with 17 papers on four main topics, addresses: Application of Geosta-

tistics Models to the Evaluation of Mineral Deposits; Use of Geostatistics for Resources Appraisal with Particular Attention to Strata Bound Type Deposits; Data Processing of Oil Exploration and Environmental Data; Prediction of Mineral Resources Deposits Structures Using Geological and Geochemical Data.

Advances in Geophysical Data Processing, Vol. 3—Artificial Intelligence and Expert Systems in Petroleum Exploration, Marwan Simaan and Fred Aminzadeh (editors), JAI Press Inc., Greenwich, Connecticut, Spring 1989, xxx pp., U.S.\$ 31.75 (approx.), ISBN 0-89232-620-4. Contents include: "A Practical View of Expert Systems for Oil Exploration: Integration of Multiple Knowledge Sources," F. Aminzadeh et al.; "Expert Systems and Quantitative Interpretation of Seismic Data," P.L. Briggs; "An Intelligent Front End for Seismic Data Processing," W.M. Bashore et al.; "The Nature of Geologic Representation Language and Consequent Constraints on Machine Interpretation," C.M. Griffiths; "Control Schemes for Seis: A Rule Based System for Interpretation of a Seismic Section Based on Texture," Z. Zhang and M. Simaan; "Heuristically Constrained Estimation for Intelligent Signal Processing," R.F. Popoli and J.M. Mendel; "The Application of Pattern Recognition to Seismic Signal Interpretation," Z. Bian et al.; "Heuristic Event Tracking Linked to Linear Discriminant Analysis," A. Geerlings; "An Expert System for Well-to-Well Log Correlation," D.J. Lineman et al.; "An Expert System for the Correlation of Geophysical Well Logs," R.A. Olea and J.C. Davis.

Heard About Town

Hobby chef **John Davis** treated himself to a new nut grater while Christmas shopping last weekend. He was reportedly dissatisfied with the lognormal distribution of particle sizes produced by his old chopper and hopes the new experimental device will improve the quality of his next batch of pecan tassies.

A well-attended colloquium convened by **Frits Agterberg** and **G. Bonham-Carter** of the Geological Survey of Canada (details in next *News Letter*) was held recently in Ottawa. The question on everyone's lips following **R.B. McCammon's** after-dinner address, supposedly entitled *Why Models Sometimes Actually Work*, seems to be: "Is it true that mathematical geologists have fewer neurons than other scientists?" The *News Letter* might be the perfect forum for a discussion of this topic!

Upcoming Meetings:

QUANTITATIVE STRATIGRAPHY FOR GEOLOGICAL BASIN ANALYSIS—Sponsored by Committee on Quantitative Stratigraphy and Department of Earth Sciences, Free University, Amsterdam. Amsterdam, The Netherlands, Feb. 13-17, 1989. Registration: C.M. Griffiths, Continental Shelf Institute, P.O. Box 1883, 4001 Trondheim, Norway. Lodging: Jan Van Hinte, Earth Science Dept., Free University, De Boelelaan 1095, 1007 MC Amsterdam, The Netherlands.

APCOM '89—21st International Symposium on the Application of Computers and Operations Research in the Mineral Industry. Las Vegas, Nevada (USA), Feb. 28 - March 3, 1989. General Chairman: Alfred Weiss, Mineral Systems International, P.O. Box 2562, Stamford, CT 06906 USA.

SIGNALS & SYSTEMS—International conferences on methodology and applications of modern signal and data processing and system analysis and synthesis. Organized by AMSE—Intern. Assoc. for Advancement of Modelling and Simulation Techniques in Enterprises: Miami, Florida (USA), March 7-9, 1989; Brighton (UK), July 12-14, 1989; Ilorin (Nigeria), Aug. 16-18, 1989; Dalian (China), Sept. 18-20, 1989; Al-Ain (United Arab Emirates), Jan. 15-17, 1990. Deadline for submission of papers (English preferable) 3 months prior to meeting. Indicate interest in organizing or chairing session. Correspondence to: AMSE, 16 Avenue de Grange Blanche, 69160 Tassin-la-Demi-Lune, France.

GEOLOGY '89—First Cuban Geological Congress. Havana, Cuba, March 29-31, 1989. The Cuban Geological Society welcomes researchers from the Caribbean and throughout the world. Abstracts of no more than 250 words (Spanish or English) should be received no later than Jan. 31, 1989. GEOLOGY '89 is dedicated to the exchange of information on all aspects of geology in Cuban and surrounding areas. All communications should be addressed to: Geología '89, Palacio de las Convenciones, Calle 146 e/ 11 y 13, Playa, Habana, Cuba.

HOUSTON GEOTECH '89—Exploration, Exploitation, Engineering, Environmental: Professional Applications Using Computer Based Tools. Houston, Texas (USA), March 30 - April 3, 1989. Contact: Stephen G. Starr, 7171 Harwin Drive, Suite 314, Houston, TX 77036 USA.

AAPG ANNUAL CONVENTION—74th Annual Convention of the American Association of Petroleum Geologists, San Antonio, TX (USA), April 23-26, 1989. Don F. Tobin, Gen. Chm. Registration: AAPG Convention Department, P.O. Box 979, Tulsa, OK 74101 USA.

BEIJING '89 INTERNATIONAL SYMPOSIUM ON EXPLORATION GEOPHYSICS—SEG and Union of Chinese Exploration Geophysics (UCEG) joint meeting. Beijing, PRC, June 19-23, 1989. SEG member abstracts of 1500 words to: Kun Hua Chen, Chairman, SEG International Affairs Committee, P.O. Box 599, Denver, CO 80201 USA. Chinese geophysicists should send abstracts to Huang Xude, 31 Que Yuan Road, Beijing, Peoples Republic of China.

28th INTERNATIONAL GEOLOGICAL CONGRESS. Washington, D.C. (USA), July 9-19, 1989. Inquiries and general correspondence: Bruce B. Hanshaw, Sec. General, 28th IGC, P.O. Box 1001, Hemdon, VA 22070 USA.

SIAM—Society for Industrial and Applied Mathematics: Conference on *Mathematics of Geophysical Sciences*, Houston, Texas (USA), Sept. 18-21, 1989; Conference on *Applied Geometry* with one-day short course on *Interactive Computer Graphics*, Tempe, Arizona (USA), Nov. 6-10, 1989; Conference on *Applied Probability in Science and Engineering*, New

(Continued)

Public-Domain Geo-EAS System Software Available from EPA

The U.S. Environmental Protection Agency's Geo-EAS (Geostatistical Environmental Assessment Software) System is a collection of interactive software tools for performing two-dimensional geostatistical analyses of spatially distributed data. Programs are provided for data file management, data transformations, univariate statistics, variogram analysis, cross validation, kriging, contour mapping, post plots, and line/scatter graphs. Features such as hierarchical menus, informative messages, full-screen data entry, parameter files, and graphical displays are used to provide a high degree of interactivity, allowing users to easily alter parameters and recalculate results. Designed to run under DOS on an IBM PC, XT, AT, PS2 or compatible computer, Geo-EAS is entirely in the public domain in its executable form and can be obtained by sending the appropriate number of preformatted diskettes to the EPA Environmental Monitoring Systems Laboratory (EMSL) in Las Vegas, Nevada. The system was designed in cooperation with the Applied Earth Sciences Department of Stanford University. Programming was done by Computer Sciences Corporation of Las Vegas. Programs use a simple ASCII file structure for data input and are controlled interactively through menu screens which permit the user to select options and enter control parameters. Users should have some familiarity with

personal computers and DOS commands such as DIR, CCD, COPY, etc. and know how to insert and use diskettes. EDLIN or another ASCII file text editor will often be needed for initial formatting of Geo-EAS data files.

Executable files and example data sets take approximately 3 megabytes of storage and require several diskettes, depending on the diskette type: 5 1/4" 1.2MB, 3 diskettes; 5 1/4" 360KB, 9 diskettes; 3 1/2" 1.44MB, 3 diskettes; 3 1/2" 722KB, 6 diskettes. To obtain a free copy of Geo-EAS, send pre-formatted diskettes to: Evan J. Englund (Geo-EAS), USEPA EMSL-LV, EAD, P.O. Box 93478, Las Vegas, NV 89193-3478 USA.

ED. NOTE: A preliminary evaluation of the Geo-EAS software suggests that it is equivalent in capabilities and features to many extremely expensive commercial geostatistical packages, and is far easier to use than most. The menu-driven, interactive format, coupled with the ability to "step through" operations makes the program ideal for teaching. Although written specifically for environmental applications, the software will be equally useful for many other purposes, including petroleum exploration and reservoir characterization, mine evaluation, and mapping of hydrologic data. And you certainly can't argue with the price!

(Upcoming...)

Orleans, Louisiana (USA), **March 5-7, 1990**. Information regarding meetings, conferences, workshops, and short courses: SIAM Conference Coordinator, 1400 Architects Building, 117 S. 17th St., Philadelphia, PA 19103 USA.

RIO '89—XIII International Geochemical Exploration Symposium - II Brazilian Geochemical Congress. Rio de Janeiro, Brazil, **Oct. 1-6, 1989**. For the XIII IGE, extended abstracts up to 1000 words or complete papers (in English) must be submitted by May 1, 1989; complete papers in English or Portuguese are required for the Congress. Five days of technical sessions and workshops with several pre- and post-symposium excursions. Workshops include "Design and Interpretation of Geochemical Surveys including Advances in Statistical Methods" and "Microcomputer Applications in Geochemistry." Address for Correspondence: "Rio '89" (XIII IGES-II CGBq), A/C CPRM-LAMIN, Av. Pasteur, 404-Urca, CEP 22292—Rio de Janeiro, RJ, Brazil.

18th GEOCHAUTAUQUA—Mineral Resource Assessment, cosponsored by IAMG/MGUS. Newark, Delaware (USA), **Oct. 13-14, 1989**. Contact: John H. Schuenemeyer, Dept. of Mathematical Sciences, 501 Ewing Hall, University of Delaware, Newark, DE 19711 USA.

CSSR Scientific and Technical Society MINING PRIBRAM—Silver Anniversary Symposium. International Section on Mathematical Methods in Geology, cosponsored by IAMG. Píbram, Czechoslovakia, **Oct. 16-20, 1989**. Focus of the Section will be on application of mathematical methods, computers and techniques of interrelated disciplines to geological exploration, mineral resources assessment, exploitation models of solid mineral deposits based on geological models, applied geochemistry and problems of education in mathematical geology. Convener: Václav Němec, GEOINDUSTRIA, Geologická 2, 152 00 Praha 5-Barrandov, Czechoslovakia.

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