



GEOSTATISTICAL ASSOCIATION OF AUSTRALASIA

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IN BRIEF

Another year has come around with all of its attendant duties and changes.

The GAA has a busy time ahead over the next few months with events such as the annual social outing, the AGM and organised talks. A listing is given below. Some dates are not yet finalised.

GAA talk: Bill Turner	Feb 23
GAA talk: Dr. Will Featherstone	March 16
GAA Boat Cruise/Dinner Dance	March 19
GAA AGM	April 22/29
AGM talk by Mark Murphy (Anaconda Nickel)	

One change relates to one of the editors. Other contacts remain the same. The new email address for Michael is "mhumphreys@srk.com"

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GAA Annual Social Event

Captain Cook Dinner Dance Cruise

Friday 19th March

\$25.00 per head Maximum 70 people Unlimited free drinks

Departs Barrack St Jetty 6.30p.m. Returns 10.30p.m.

3 Course meal Disc jockey

Final numbers and payment required before March 16



Back to the Immediate Future

an article by GAA president Louis Voortman

The year that lies behind us saw changes in the minerals industry related to the 'Asian crisis' and the worldwide economic upheaval in metals markets. Many of us felt the results of these changes rather directly, and as a result some of us even lost their job. Many also worried about the immediate future and about job security. Obviously, during this difficult period, we all have had to concentrate more than ever on working effectively, leaving precious little free time.

This had to have an effect on GAA as our work is done by volunteers, in whatever spare time they have. In addition, a less buoyant minerals market does not offer the same opportunities for further development of geostatistical techniques, testing of new ideas and implementation of more advanced methods. Whether we like it or not, we have to face the prospect that the year ahead of us, will also be a 'taxing' year. I sincerely hope that the New Year will see us remaining as open minded and helpful as possible to colleagues and competitors alike.

1998 was a very important year for GAA. The second year of a new organisation is usually a difficult one and while the newness is wearing off, we have to work together to keep the momentum going. It is therefore heartening to see that GAA's first technical symposium 'Beyond Ordinary Kriging' held on the 31 October, was well received. I regret that I could not be present on the day, but I was told by many that the event had been a great success. Of course this was due for a large part to the handful of individuals who did all the work. If our organisation wants to remain successful in the years to come, we need strong cooperation and dedication from our Committee Members and our Ordinary Members. Without the wholehearted cooperation and the full commitment of everyone who has promised to take responsibility for a job, we cannot succeed. To be honest, I have to remark that this needs to be improved upon.

I hope our organisation will continue to grow and prosper in 1999. It is my opinion that the GAA needs to offer an informal platform

for critically discussing and assessing the tools of our trade. It needs to be a forum for the further development of geostatistical methods, as the mining industry will be continuously looking at optimising its operations. GAA can contribute by developing, implementing, and rigorously testing new ideas. The joint Symposium on Conditional Simulation between the Bryan Research Centre in Brisbane and the GAA, planned for the end of 1999, is therefore a very important event!!

I would like to emphasise the importance of discussions on the use of statistical and geostatistical methods, the usefulness of computers for handling large amounts of data and computer graphics for the modelling and visualisation of complex geological structures. Please keep reading the AusIMM and AIG publications in which such important issues have been addressed during 1998.

I am happy to see that people with widely different views are given the opportunity to air these. For example, the letters by H.D. Swain to the AusIMM during 1998 correctly emphasised the critical importance of obtaining a good understanding of the geology. The letters by A. Waltho and M. Smith to the AusIMM rightly emphasise the importance of the quality of the input data. I hope that the GAA will promote the proper and practical use of statistical and geostatistical methods. And I hope that we never cease to listen to our end-users, never forget to carry out extensive tests using real data and always report fully and honestly on the results of all tests and reconciliation exercises.

My theme for this year was "Beware of bad information". I know from experience that geostatistical methods, when applied correctly, greatly assist the resource geologist and mining engineer. I also know that the tools of our trade, if incorrectly used, can do a lot of damage and discredit our science.

During 1998 the GAA established a good

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**International Association of Mathematical Geology (IAMG) Conference 1998
5-9 October, Ischia, Italy**

report by Lyn Bloom, Edith Cowan University Academic

This (annual) conference was held at the Hotel Continental Terme on the Island of Ischia in the Gulf of Naples. It had some 220 participants from all over the world. The majority of these came from Europe but there were also large contingents from North America and Asia. The conference sections included *Applications of geostatistical estimation and simulation*, *Multivariate statistics in the earth sciences* and *Fractals and nonlinear dynamics*.

The papers and posters session were held on the first three days, with the final two days devoted to Fieldtrips and Workshops. The Fieldtrips were to Capri and Sarno and the Workshops were on the following topics:

Spatio-temporal analysis of natural systems
(G Christakos)

New methods and concepts in mathematical geology (F Agterberg and Q Cheng)

Geostatistical simulation in geology (M Armstrong and A Galli)

In addition, during the week an excursion to Naples was organized for people accompanying the conference participants. The IAMG Awards were presented at a ceremony held immediately before the conference dinner. Antonella Buccanti (from the University of Florence) did the bulk of the conference organisation and did a wonderful job in this respect.

At the conference I presented the following paper, with co-author Danny Kentwell, a former ECU Postgraduate Research Student now working at SRK Consulting.

Kentwell, D J and Bloom, L M, *Ore/Waste Block Misclassification: A comparison of fractal simulations and kriging methods*

The next meeting (IAMG99) will be held in Norway from 6 -11 August 1999.

The photo below shows Lyn Bloom (first from left) at the conference dinner. Also present are (left to right) Carol Gotway Parker (Vice- President of IAMG) and her husband Jim, together with Alain Galli and Margaret Armstrong, (both from Fontainebleau).





Second European Conference on Geostatistics for Environmental Applications (geoENV) Conference 1998 16-20 November, Valencia, Spain
report by Lyn Bloom, Edith Cowan University Academic

This (biennial) conference was held at the Polytechnic University of Valencia and was a really wonderful conference to attend. It had some 100 participants from all over the world, with the largest numbers from Europe and the United States. The list of participants reads like a Who's-Who of environmental geostatistics, and included Andre Journal (Stanford), Noel Cressie (Ohio), Amilcar Soares (Lisbon), Hans Wackernagel (Fontainebleau), Pierre Goovaerts (Michigan), Richard Webster (Rothamsted) and Margaret Oliver (Reading), to mention just a few. The conference sections were *Air Pollution, Climatology, Ecology, Hydrogeology, Soil and Theoretical Geostatistics*. Eduardo Cassiraga from Valencia did the bulk of the conference organisation and did a wonderful job in this respect.

The first two days were devoted to a Workshop on Environmental Geostatistics

while the conference proper was on the last three days. The conference dinner was held at a monastery on the outskirts of Valencia and the entertainment consisted of a magic show by a team of Spanish Magicians, led by the conference chairman Jaime Gomez. One aspect I found hard to cope with was the timing of meals, with lunch at 2.30pm and dinner at 10.00pm.

At the conference I presented the following paper, co-authored by Danny Kentwell, a former ECU Postgraduate Research Student now working at SRK Consulting.

Bloom, L M and Kentwell, D J, *A geostatistical analysis of cropped and uncropped soil from the Jimperding Brook Catchment of Western Australia*.

The next meeting will be held in France in the year 2000.

International Geostatistics Congress, Cape Town 2000

The sixth International Congress on Geostatistics will take place in Cape Town, 10-14 April 2000. Geostatistics originated in South Africa and specifically on the Witwatersrand goldfields due to the pioneering work of Professors Herbert Sichel and Danie Krige. Herbert Sichel is credited with the first significant use of mathematical statistics for mineral evaluation on the South African gold mines and worked extensively on problems associated with gold and diamonds until his death in 1995. Danie Krige's work in 1951 and 1952 triggered the interest of overseas researchers, particularly Professor Matheron, who in the 1960's, developed Krige's concepts into the framework for the theory of geostatistics as applied to regionalised variables. Although the country's historical contribution to geostatistics has mainly been in mining, other applications of geostatistics, especially in environmental geostatistics are gaining ground. The aim of the conference is to bring together those interested in theory

and application of geostatistics in mining, environmental, petroleum and all other applications together. It will be an opportunity for discussion of new and potential developments and will provide a forum for showcasing case studies and new developments. Academia and practitioners alike, will benefit from attending this conference.

In addition to the technical program, the conference organisers are planning a full social program which could include a visit to the Victoria and Albert Waterfront, a boating trip around Cape Town harbour, and a South African wine tasting in addition to the conference banquet. A program for accompanying persons will also be available. The first International Congress was held in Rome in 1975. Further congresses were held at Lake Tahoe, USA in 1983, in Avignon, France in 1988 and in Troia, Portugal in 1992. The last congress was held in Wollongong, Australia in 1996. It is only apt that the mother country of the subject see the

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Back to the Immediate Future

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working relationship with the AMF and we appreciate their offer to assist us in promoting our Association to a wide circle of earth scientists. In a recent AMF publication about 'minerals exploration and other scientific business' by Ross Fardon (attached to the AusIMM September bulletin) it was stated that: "Good systems are there to serve and free people, more than to control them". The article reminds us of the role of accountability and commitment, and explains the importance of true teamwork. I believe that this publication provides useful hints on how we should operate as professional scientists in the mining world and I recommend you read this publication with

the GAA in mind.

Also, with the increasing popularity of company mergers, I would like to repeat an important remark I read in a publication by a professional journalist (Paul Chadwick in The Walkley Magazine 1999 Yearbook): "It is a terrible mistake to think that dominance equals eminence".

May we continue in 1999 on the excellent path we followed in 1998, and may we keep Chadwick's words in our minds to carry out, first and foremost, a truly professional job.

Best wishes for the New Year to all of you.

ECU Geostatistics Moves to Joondalup

The Edith Cowan University Geostatistics Teaching and Research Group has been relocated to the recently formed School of Engineering and Mathematics on the University's Joondalup Campus. Currently the group comprises Dr Lyn Bloom (Senior Lecturer and Coordinator), Dr Ute Mueller (Lecturer), Dr Bielin Shi (Postdoctoral Research Fellow), together with postgraduate research students Tuyet Tran, Marek Janas, Donna Hill and Bernard Roberts. However, although the *Postgraduate Certificate in Geostatistics* course will now be based at Joondalup, some Units will continue to be offered at the Mount Lawley Campus.

Units available in First Semester 1999 (which starts on 22 February) are *MAT4106 Introduction to Geostatistics* (Joondalup; Thursday mornings) and *MAT5105 Spatial Modelling and GIS* (Mount Lawley, Thursday evenings).

Inquiries should be directed to either Lyn or Ute as follows:

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Dr Ute Mueller:

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GAA in Kalgoorlie

The Kalgoorlie branch of GAA is organising a get together on Thursday April 22nd at the usual venue, poolside at The Railway Hotel, and is interested in hearing from anyone who would like to contribute by way of a presentation. The topic is open, but attendees have registered strong interest in sampling issues and grade estimation techniques for open pits. If you have any interesting issues or findings please share them with us. Failing any contributions, members will be subjected to Resource Estimation Practices at KCGM!!!!

Alan Miller now represents the Kalgoorlie branch of GAA with the imminent departure of Donna Kelly to the Big Smoke in Perth. Alan holds the position as Senior Resource Evaluation Geologist at KCGM. He can be contacted by email amiller@kalgold.com.au or phone 90 221853.



Talk by Bill Turner, Director Anvil Mining NL <i>February 23</i>		Other Talks to Come
<p>During the pre-feasibility and feasibility study stage of a minerals project, the quantity and quality of the drill hole data is of critical importance. At Dikulushi, incomplete information of a number of historic diamond drill holes was available with regard to the original sampling, logging and analysis of the drill holes. A number of diamond drill holes were subsequently drilled by Anvil Mining and this necessitated a comparison with the older drill hole data.</p>	<p>The talk concentrates on the evaluation of the deposit from a point of view of the mining company. The role of the statistical analysis and the due diligence study comparing the different drilling stages will be discussed. Emphasis will be placed on the kind of information that the company needs and what the role should be of the statistical or geostatistical analysis.</p> <p>Time: 5.30pm for 6.00pm Venue: Room 13.226/228 Edith Cowan University, Mt Lawley Campus</p>	<p>Other talks to the GAA are being organised with Dr. Will Featherstone (Curtin) on DGPS/GPS developments in surveying on March 16, and Mark Murphy (Anaconda) on nickel estimation at the GAA AGM on April 22.</p>
Nominations for GAA Office Bearers		
<p>The election of new office bearers for the GAA is coming up at the AGM on April 22. Nominations for Vice president, Treasurer, Secretary are invited. We have had a high proportion of consultants on the Exec. Committee in the first two years and would greatly appreciate a broader range and greater representativity of industry personnel. All those interested in nominating (or being nominated) please contact the current secretary.</p>		
Conditional Simulation		
<p>Expressions of interest for attendance or presenting papers are invited for a Conditional Simulation Symposium to be conducted in Perth, possibly over two days. The symposium is planned by the GAA in conjunction with the Bryan Research Centre. The suggested dates at present are for the end of October 1999. Probable overseas attendees at this point in time include Andre Journel, George Verly and Jeff Caers.</p>		
ANY REQUESTS FOR GEOSTATS ARTICLES?		
<p>If so, please pass these on to the editors or the secretary.</p>		
GAA Membership		
<p>There are four types of Membership:</p> <ul style="list-style-type: none"> • Ordinary Membership (full voting rights) • Associate Membership (no voting rights) • Student Membership (no voting rights) • Corporate Membership (by invitation of the Executive Committee) <p>Membership forms are</p>	<p>available by email from: Ian Glacken, GAA Secretary, PO Box 1719, West Perth, WA, 6872:email iglacken@snowdenau.com</p> <p><i>Some membership payments are still outstanding for 1998. The new membership year is approaching fast and it would be appreciated if outstanding dues could be paid.</i></p>	
Cape Town 2000 <i>cont'd from page 4</i>		
<p>science into the next century. The organising committee invites the Geostatistical community to the 6th International Geostatistical Congress in Cape Town, South Africa. The Geogress Website, with on line registration can be visited at www.geostats2000.co.za</p> <p>Call For Papers You are cordially invited to submit an abstract for GEOSTATISTICS 2000 Congress that will take place</p>	<p>from 10-14 April 2000. Our program is planned to cover a broad spectrum of interests and authors are invited to submit papers, within the following criteria, on theory and applications of:</p> <ul style="list-style-type: none"> * Conditional simulation * Mining, Soil Science, Environmental Hydrological Geotechnical, Petroleum, * Agricultural and Health Science. <p>Your 300 word abstract is requested by 31 March 1999.</p>	