IAMG Newsletter

No. 95 December 2017

Official Newsletter of the International Association for Mathematical Geosciences

Contents

Congratulations!

The Awards Committee has selected:

Professor Roussos Dimitrakopoulos as the winner of the William Christian Krumbein Medal

Associate Professor Ute Mueller as the recipient of the John Cedric Griffiths Teaching Award.

Let me start my first column by acknowledging the wonderful job that Harald Poelchau has done in editing this newsletter for an incredible 22 years. Thank you Harald for your enthusiasm, dedication and hard work! And my personal thanks also to Harald for his invaluable help and advice as I try to fill his shoes!

I enjoyed meeting some of the IAMG members at IAMG2017 in Perth earlier this year. Thanks to the organizing committee for an excellent, well run conference, in such a beautiful location.

From the Editor

If I haven't yet met you, let me introduce myself.

My name is Katie Silversides. I enjoy travelling, camping, 4WDriving, cycling, gardening and reading. I completed my undergraduate and PhD studies at the University of Sydney. I currently work in the Rio Tinto Centre for Mine Automation, Australian Centre for Field Robotics, the University of Sydney. My work has mainly focused on the banded iron formation (BIF) hosted iron ore deposits of Western Australia's Hammersley region.

I research methods of providing quick, automated or semi-automated processing of the geological or geophysical data to allow objective, fast processing of new drill holes and faster ore boundary identification and mining model updates. I have used a range of data sources, including geophysical downhole logging, geochemical assays, 'measure while drilling' metrics from drill rigs and reflectance spectroscopy. In processing this data I have applied techniques including Gaussian processes, dynamic time warping, continuous wavelet transforms and several linear unmixing techniques.

Have you noticed that the IAMG is now on Twitter? We also have a new Facebook page and our LinkedIn group has been updated. Please like, follow and support us on social media.

Thank you to everyone who has contributed articles to this newsletter. Please keep them coming in!

Next year will be a big year as we celebrate 50 years since the founding of IAMG. The annual conference will be held in Olomouc, Czech Republic, not far from where the first meeting took place. Keep the date free, 4-8 September – more details are on page 10. Looking forward to seeing you there.

Katie Silversides
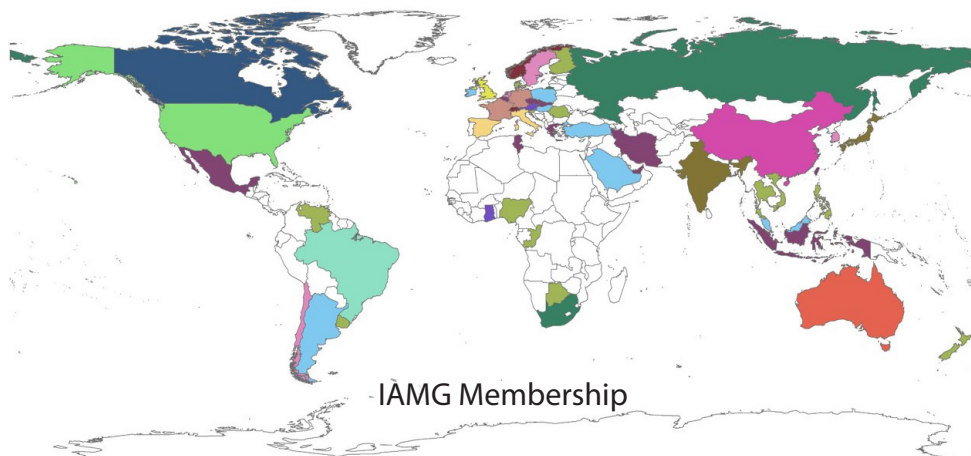
IAMG is on Twitter and Facebook!

Join the conversation using @IAMG_Math_Geo for news, journal and conference updates.

IAMG Membership

The mission of the IAMG is to promote, worldwide, the advancement of mathematics, statistics and informatics in the Geosciences

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Historian: Vacant

PRESIDENT'S FORUM

I'm finishing my President's address as I return from two weeks visiting IAMG members and student chapters across China, supported by the generous hospitality of the IAMG community and Global Call Research Funding. I was accompanied by Secretary General, Eric Grunsky and colleagues from Queen's University Belfast and Geological Survey Northern Ireland. It has been so rewarding to hear more about the research excellence of IAMG members in China University of Geosciences (Beijing), Jilin University (Changchun), China University of Geosciences Wuhan, The Institute of Technology, Chengdu and Sun Yat-Sen University in both the Zhuhai and Guangzhou campus. Presentations by IAMG Chapters in China University of Geosciences Wuhan and Sun Yat-Sen University were particularly inspiring. One of the things that I was keen to impress on the student chapters was that they are part of a diverse and inclusive global scientific community and network. Currently IAMG membership represents 55 countries across the globe.

The opportunity to hear from very engaged student and early career IAMG members was extremely helpful and Eric and I have many suggestions to discuss with the Executive and Council. Encouraging and developing our students and early career researchers is extremely important. An excellent example of this was the workshop on developing early career scientists organized in collaboration with the Young Earth Scientists (YES) at IAMG2017 in Fremantle, Perth, Western Australia. The IAMG recognizes the importance of YES and we continue to work with the Earth Science Matters Foundation (ESMF) to develop this relationship. I also look forward to opportunities to visit all of the current IAMG student chapters and to support the development of others. An amazing highlight during our visit was the opportunity to acknowledge a life time commitment to the IAMG with an Honorary Lifetime Membership award to Prof. Frits Agterberg at the celebration of his 81th birthday. It was fitting that Frits was able to celebrate this with his friends and IAMG family in China.

IAMG2017 was a very successful event and an excellent example of IAMG members and sponsors presenting innovative mathematical geoscience and developing new networks and research. The Organizing Committee, chaired by Oktay Erten, did tremendous work in organizing the conference. I would like to thank all of those who organized workshop and courses, chaired sessions and participated in the conference. It was a particular pleasure for me to meet so many IAMG sponsors at IAMG2017. Thank you again for making IAMG2017 such a success and I hope that, as we look towards IAMG18, this will be the start of long lasting and fruitful partnerships.

Abstract submission is open for IAMG2018, which will be held in Olomouc (Czech Republic), 2-8 September 2018 with an organized trip to Praha (Prague) to commemorate the 50th anniversary of IAMG's genesis. The local organizing team, Karel Hron, Ondřej Bábek and Eva Fišerová, working with David Collins, as Treasurer and Regina van den Boogaart, in the IAMG Office have worked extremely hard and IAMG2018 promises to be a memorable and fitting 50th anniversary celebration. Thanks also to the Chair of the Meetings Committee, Helmut Schaeben and Executive Vice President Raimon Tolosana-Delgado for liaising with the local organizing committee to ensure the success of IAMG2018. I would like to acknowledge the commitment of editors Prof B.S. Daya Sagar, Qiuming Cheng and Frits Agterberg, in ensuring that all will be in place for the launch of The Golden Anniversary book: "Handbook of Mathematical Geosciences: Fifty Years of IAMG" published by Springer. Join us to celebrate the history and future of the IAMG. Check out the web site http://www.iamg2018.org/ for details on registration and abstract submissions.

I am delighted to congratulate Professor Roussos Dimitrakopoulos as the Krumbein medalist and Associate Professor Ute Mueller as the recipient of the John Cedric Griffiths Teaching Award. The IAMG2018 keynotes and the Matheron Lecturer will be announced soon. The 2017 IAMG Distinguished Lecturer, Professor Clayton Deutsch, continues to raise awareness of the IAMG through his lecture series and Dr Grégoire Mariéthoz will commence his 2018 IAMG Distinguished Lecture series in January.

IAMG2017 was also a great opportunity to welcome Katherine (Katie) Silversides as our new IAMG website and newsletter editor. Thanks, Katie, for also taking on the role of reviewing the IAMG's social media presence and for creating our new IAMG Twitter account which is attracting followers. Sincere thanks to David Collins, our Treasurer, and Regina van den Boogaart, our diligent IAMG Office Manager, for collaborating so effectively with the conference organizers to make our IAMG conferences so successful.

Plans are already in place for IAMG2019 which will be held in Pennsylvania State University (USA). The Chair of the Local Organizing committee is IAMG member, Professor Sanjay Srinivasan, John and Willie Leone Family Chair, Department of Energy and Mineral Engineering.

Co-operation with other organizations professionally concerned with applications of mathematics and statistics to the biological sciences, earth sciences, engineering, environmental sciences, and planetary sciences remains a key aim of our association. IAMG, as a sponsoring partner of the First Conference on Resources for Future Generations (RFG 2018) in Vancouver, 16–21 June 2018, exemplifies this. Eric Grunsky, IAMG Secretary General, is thanked for his excellent work in organizing sessions and workshops at this meeting. The IAMG has also agreed to sponsor geoENV2018, which will take place 2-6 July 2018 in Belfast (Northern Ireland). The three keynote speakers are confirmed as Professor Peter Diggle, Lancaster University, UK, Dr Oy Leuangthong RSK, Toronto, Canada and the 2018 IAMG Distinguished Lecturer, Dr Grégoire Mariéthoz.

The IAMG remains committed to supporting early career scientists and to encouraging women in science. As a reflection of this, the IAMG Council has recently confirmed motions to modify the Vistelius Award to include both a female and a male recipient and to set up a Founders Scholarship for early career researchers. Both the male and female Vistelius Awards and the Founders Scholarship will be effective for the 2018 awards and I encourage you as members to nominate our excellent early career researchers for these awards and opportunities. The lack of female IAMG award winners and keynote speakers over the last several IAMG conferences has been noted by both IAMG members and potential sponsors. After substantial discussions within the Executive Council, a proposal was presented to Council to set up a new IAMG Commission to look into the opportunities for future development of women in mathematical geosciences. June Hill has agreed to chair this commission and to report back to the Council at IAMG2018.

There is excellent news for our three IAMG journals, Mathematical Geosciences (MG), Computer and Geosciences (C&G) and Natural Resources Research (NRR), which continue to increase in quantity, quality, and citations. I would like to thank all of the EICs and the associate Editors for their hard work and dedication. The IAMG continues to grow new collaborative partnerships with academia, industry and governmental agencies worldwide, which nurture cutting edge research and generate fresh opportunities to advance the role of mathematics, statistics and informatics. As an IUGS affiliated organization, this is an exciting time for the IAMG to strengthen that relationship and work with IAMG Past President Qiuming Cheng in his role as the IUGS President. I am personally delighted to have been recently invited to become a member of the European Association of Geoscientists and Engineers (EAGE) Women in Geoscience and Engineering (WGE) and keen to strengthen relations between the IAMG and EAGE.

I remain committed to serving the IAMG community to ensure that, through you, mathematical geoscience continues to play an integral role in addressing critical global issues. Thank you for all your support and continued contributions to the IAMG.

Jenny McKinley

IAMG2017

IAMG2017 was held in Fremantle, Western Australia, 4-7 September 2017. There were 214 delegates representing more than 30 countries. More than half the delegates were from international destinations, which is a fantastic achievement considering the high costs of travel and difficulties of getting travel funding. The organising committee would particularly like to thank the scientific committee for their hard work in assessing abstracts as well as all the delegates for travelling to Fremantle to participate in the conference and associated workshops. The inaugural student 3 minute talk competition had only 4 entries, but they were each of such high standard that we decided to award them all prizes. Congratulations to Justin Montgomery (First prize), Olga Moreva, Giada Bufarale and Andrew Gunn.

June Hill

Organising committee: Lauren Detez (Arinex event management), Oktay Erten (OC, WASM), Ute Mueller (OC, Edith Cowan University), June Hill (OC, CSIRO), Eric Grunsky (OC, IAMG Secretary General), Jennifer McKinley (IAMG President), Patrice Duffy (Arinex event management) [Missing OC member is Mark Jessell (UWA)].

Student Competition: Jennifer McKinley (IAMG President) and Ute Mueller (OC, Edith Cowan University) with student prize winners: Andrew Gunn, Giada Bufarale, Olga Moreva and Justin Montgomery.
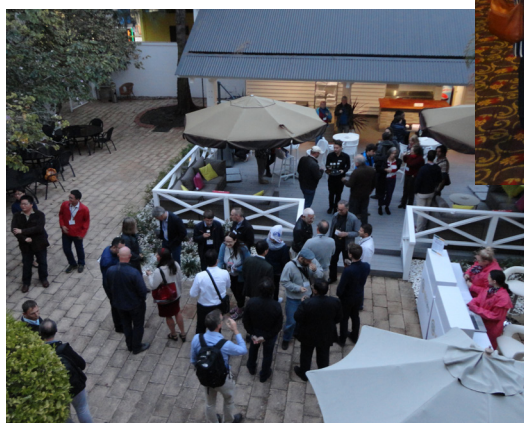
Member News

Harald and Dorothee Poelchau

This year in September I met Harald Poelchau, former editor of this Newsletter, in Berlin. He was invited speaker at a ceremony in honour of his parents Harald and Dorothee Poelchau. A memorial stele was unveiled which shows a portrait of the couple and a short history of their lives during the Third Reich. Harald's father was prison chaplain in Berlin and had to be witness to as many as 1000 executions of prisoners, many of them political opponents from Germany, The Netherlands, Norway and other occupied countries - finally the Resistance Fighters of the 20th July against Hitler. At the same time he was member of the Kreisauer Kreis, a resistance group against the regime. He and his wife kept contact between the prisoners and their families. They gave help and accommodation to the victims of persecution and Jews at the risk of their own lives. In 1972 Yad Vashem recognized Harald and Dorothee Poelchau as Righteous Among the Nations.

In Berlin a street, a Metro station and a school bear the name Poelchau. During the unveiling ceremony several speakers and youngsters of the Poelchau school emphasized the model character of courage, trust, cultivation of friendship and humanity of this couple. It was a demonstration against hate speech, racism and intolerance. Therefore this ceremony is worth to be mentioned in this Newsletter.

As editor Harald P. Jr. would never have accepted this contribution. Therefore it has to be published now.

Heinz Burger

Dorothee and Harald Poelchau
Source: Yad Vashem

Harald Poelchau Jr. in front of the memorial stele

Geoinformatics and Geo-Data Science at GSA 2017

In the geoinformatics sessions at Geological Society of America's 2017 Annual Meeting (Seattle, WA), a interesting topic discussed by several presenters was the comparison between 'geoinformatics' and 'geo-data science'. The focus was not whether geoinformatics should be renamed geo-data science. Instead, it was about how to leverage the methods and technologies in data science to advance geoscience research. During the business meeting of the GSA Geoinformatics Division, the new officer voting result was announced. I will serve as vice-chair for the division for 2018 and as chair for 2019. GSA 2018 and 2019 will take place in Indianapolis, IN and Phoenix, AZ, respectively. I will help solicit geoinformatics sessions for those meetings, and will welcome collaborations and contributions from the IAMG community.

Xiaogang (Marshall) Ma

The Computers & Geosciences best paper 2016 award winners are:

Stream Kriging: Incremental and recursive ordinary Kriging over spatiotemporal data streams
Xu Zhong, Allison Kealy & Matt Duckham
(http://www.sciencedirect.com/science/article/pii/S0098300416300620)

GlaRe, a GIS tool to reconstruct the 3D surface of palaeoglaciers
Ramón Pellitero, Brice R. Rea, Matteo Spagnolo, Jostein Bakke, Susan Ivy-Ochs, Craig R. Frew, Philip Hughes, Adriano Ribolini, Sven Lukas & Hans Renssen
(http://www.sciencedirect.com/science/article/pii/S0098300416301558)

Wolfgang Berger 1937-2017 †

Fellow student, fieldwork companion, advisor, colleague and friend: Wolf died in August after a long productive life in research and teaching at Scripps Institution of Oceanography. Although not a member of IAMG, he started early on using statistics to deal with large data sets from research cruises and sample analyses and applying mathematics for modeling geologic and oceanographic problems. He was well known for his groundbreaking research on ocean history and sedimentation and the selective preservation of calcareous fossils on the deep-sea floor, which had wide-ranging implications and ramifications for the understanding of the carbon cycle in the sea, and its link into climate variations. In recent years, he explored the mechanisms of sea-level change and modulation of climate by variations in Earth's orbital dynamics.

He will be sorely missed by many of us who knew him and appreciated him and his work.

Harald S. Poelchau

see also: https://scripps.ucsd.edu/news/obituary-notice-wolf-berger-pioneer-paleoceanography

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Prof. Frits Agterberg, Honorary IAMG Life Member

It was an honour and a pleasure to award Prof Frits Agterberg honorary life membership of the IAMG in recognition of his outstanding services to the Association and the profession. It was especially fitting to celebrate this honour with Frits on the occasion of his 81th birthday which he was able to spend with long standing friends and colleagues in China.

Jenny McKinley,

Prof Frits Agterberg celebrates his Honorary IAMG Life Member Award with Prof Qiuming Chang, Prof Guangheng Yan and Dr Jennifer McKinley.

Prof Frits Agterberg presents at the 2017 International Workshop on Frontiers of Mathematical Geosciences in Beijing.

Prof Frits Agterberg with Prof Zhao Pengda and Dr Jennifer McKinley

The Geoscience Information Society (GSIS) honors Encyclopedia of Marine Geosciences as the 2017 winner of the Mary B. Ansari Best Geoscience Research Resource Award
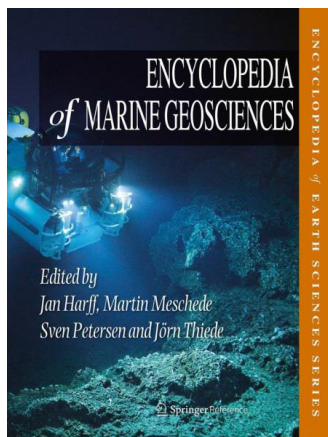
Globally growing demand of the modern society for energy and mineral resources, reliable future projection of climate processes and the protection of coasts to mitigate the threats of disasters and hazards did foster the rapid development of marine geosciences during the last century. Beyond the "classical" research fields in marine geology in current time more general concepts have been evolved integrating marine geophysics, hydrography, marine biology, climatology, ecology and environmental geosciences. As a consequence of this development the knowledge in marine geosciences has grown exponentially during the last decades to the extent that it was difficult to keep track. Aiming to comprise the current knowledge in marine geosciences and to cover their theoretical, applied, and technical aspects Jan Harff (University of Szczecin, Poland), Martin Meschede (University of Greifswald, Germany), Sven Petersen (GEOMAR Helmholtz Centre for Ocean Research Kiel, Germany) and Jörn Thiede (Saint Petersburg State University, Russia) edited the Encyclopedia of Marine Geosciences that was published in 2016 by Springer Reference (Harff et al. 2016). 182 specialists from all over the world have been contributed to the 195 entries presented as texts, most of them completed with figures, tables and charts. The lexicographically ordered entries can be generally allocated to five main topics: general overview, plate tectonics, magmatism, deep sea, and ocean margins.

Because of its comprehensive concept ranging from fundamental to applied aspects, the encyclopedia addresses a broad scale of users in the field of marine sciences and techniques, from students and scholars in academia to engineers and decision makers in industry and politics.

The Geoscience Information Society (GSIS) honored the Encyclopedia of Marine Geosciences during the GSA Annual Conference 2017 in Seattle. GSIS is a member society of the American Geosciences Institute (AGI) and an associated society of the Geological Society of America (GSA). GSIS connects scientists, librarians, editors, cartographers, educators and information professionals in the geosciences from all over the world, encouraging the continuous exchange of information in this research field.

Jan Harff

Harff, J., Meschede, M., Petersen, S., Thiede, J.,(eds.), 2016. Encyclopedia of Marine Geosciences.- Dordrecht et al.: Springer, 961 p. (http://www.springer.com/de/book/9789400762374)

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Yuan Gao a visiting researcher at Queen's University Belfast
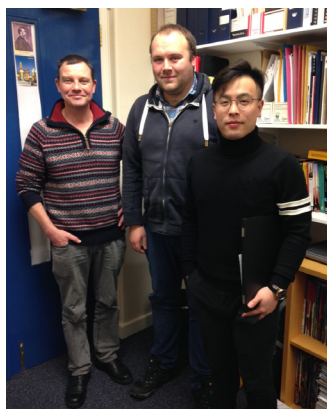
Chair of University of Geosciences, Wuhan IAMG Student Chapter Yuan Gao in conversation with Brian Johnston, 2017 IAMG travel award recipient, and Dr Mark Cooper, Chief Geologist at Geological Survey Northern Ireland.

We are really pleased to welcome PhD student Yuan Gao as a visiting researcher in the School of Natural and Built Environment at Queen's University Belfast.

Jennifer McKinley

Distinguished Lecturer Reports

Clayton Deutsch 2017 Distinguished Lecturer

Clayton gave nine talks this year as distinguished lecturer: Johannesburg, Kuala Lumpur, Calgary, Wyoming, Perth, Fremantle, Chile, Beijing and Lima. All talks were related to the nature of geological variability and the inevitable uncertainty that arises in presence of sparse sampling. The quantification of joint uncertainty in high dimensional spatial problems requires multiple realizations. Managing all realizations through decision making is problematic. Theory, implementation details and the practice of creating and managing realizations were shown. Active uncertainty management versus passive observation of uncertainty was emphasized.

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## Gregoire Mariethoz - 2018 Distinguished Lecturer

Upcoming talks:

- University Pierre et Marie Curie, Paris, France, 23 February 2018. Title : Data expansion: using analogues to improve remote sensing and climate datasets
- Shanxi University , School of Computer and Information Technology, China, 2-5 February 2018. Title: New statistical models for representing spatial and temporal variability
- geoENV 2018 conference in Belfast, UK, keynote speech, 4-5 July 2018. Title: Multiple-point geostatistics applications for Earth Observation

For more information on the DL program see
iamg.org/special-lectures/current-distinguished-lecturer.html

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Student Chapter News
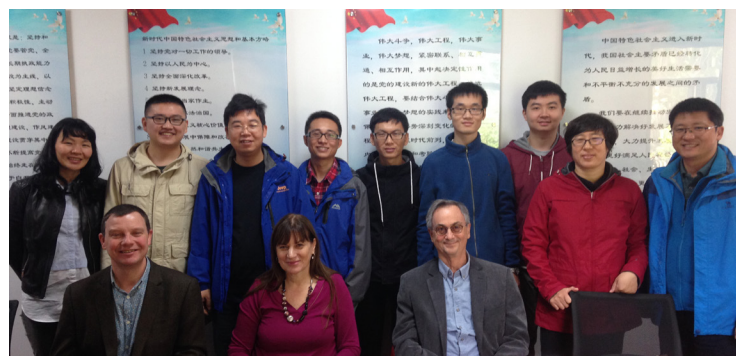
Jennifer McKinley and Eric Grunsky with the SYSU student chapter

Jennifer McKinley and Eric Grunsky with the Wuhan student chapter

IAMG Journal Report

Computers & Geosciences

After four years serving as Editor-in-Chief, Edzer Pebesma has decided to step down at the end of this year. He has done a wonderful job developing the journal and helping it become what it is today. Edzer will be replaced by Derek Karssenberg from Utrecht University who has topics of expertise that somewhat overlap those of Edzer. We welcome Derek to the journal and wish him success in this role.

Another main change in the Editorial Board of Computers & Geosciences is the increase in the number of Associate Editors that has been going on in the last year, which now allows the journal to cover a much-needed expertise in the wide range of topics that are the focus of the journal. The work of the Associate Editors is invaluable for handling the steeply rising number of submissions that are received (over 1000 submitted manuscripts in 2017).

Beside the changes to the Editorial Board, some new elements have been added to the submission guidelines, the most notable being: 1) for each software-related submission, authors will have to provide a software availability section (this will ensure that only open-source software is published); and 2) a compulsory authorship statement, which briefly details the contribution of each author in multi-authored papers. These changes are detailed in the editorial which was published in October.

Gregoire Mariethoz

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Mathematical Geosciences

Call for a Special Issue of Mathematical Geosciences: Geomathematics Today and Tomorrow - A Tribute to Daniel Francis Merriam

Contributions are invited to a special issue that will be a tribute to Dan Merriam, who founded the journal "Mathematical Geosciences" (formerly "Mathematical Geology"). The title of the special issue is intentionally broad, as we welcome papers on a broad range of topics: Modern topics of computational mathematics aimed at solving geoscience problems and/or including theoretical advances in geomathematics are especially welcome. Classic topics such as spatial analyses of mineral and petroleum exploration are equally invited. Advances in theoretical and applied geostatistics, compositional data analysis, fractals and multi-fractals, image analysis and classication, geophysical and sedimentary processes, forward and inverse modeling of geophysical processes are all fields for which we expect contributions.

Time Line:

• Submission: November 1, 2017 | March 1, 2018

• Return of reviews: May 1, 2018

• Submission of final papers: August 1, 2018

• Publication: Fall 2018

The dates in the timeline are to be understood cum grano salis (with a grain of salt), to accommodate different writing styles: To facilitate rapid publication of papers, each paper will be reviewed as it comes in and published online as soon as the final version is accepted (i.e. easily long before the end dates in this time line).

Other authors may prefer to use the entire time frame given in the time line.

Suggestions and questions are welcome and should be addressed primarily to the guest editor of the special issue.

Ute Herzfeld, University of Colorado Boulder, Guest Editor, Special Issue (ute.herzfeld@colorado.edu)

Roussos Dimitrakopoulos, McGill University, Chief Editor, Mathematical Geosciences (roussos.dimitrakopoulos@mcgill.ca)

IAMG Journal Contents

Natural Resources Research

NRR - Volume 26, Issue 3, June 2017

Loss Distribution Model for Metal Discovery Probabilities — Alberto E. Patiño Douce

Pareto-Lognormal Modeling of Known and Unknown Metal Resources. II. Method Refinement and Further Applications — Frits Agterberg

Geostatistical Modeling with Histogram Uncertainty: Confirmation of a Correct Approach — Mehdi Rezvandehy, Clayton V. Deutsch

Kalman Filtering-Based Approach for Project Valuation of an Iron Ore Mining Project Through Spot Price and Long-Term Commitment Contracts — Mathieu Sauvageau, Mustafa Kumral

Spatiotemporal Analysis of Changes in Lode Mining Claims Around the McDermitt Caldera, Northern Nevada and Southern Oregon — J. A. Coyan, M. L. Zientek, M. J. Mihalasky P.

Preliminary Study of the Carbon Sequestration and Enhanced Coal Bed Methane Production Potential of Subbituminous to High-Volatile Bituminous Coals of the Healy Creek Formation, Nenana Basin, Interior Alaska — Nilesh C. Dixit, Mohabbat Ahmadi, Catherine L. Hanks, Obadare Awoleke

Production Decline Curves of Tight Oil Wells in Eagle Ford Shale — Henrik Wachtmeister, Linnea Lund, Kjell Aleklett, Mikael Höök

NRR - Volume 26, Issue 4, October 2017

Natural Resources Research Publications on Geochemical Anomaly and Mineral Potential Mapping, and Introduction to the Special Issue of Papers in These Fields — Emmanuel John M. Carranza

Geochemical Mineral Exploration: Should We Use Enrichment Factors or Log-Ratios? — Emmanuel John M. Carranza

Analysis of Zoning Pattern of Geochemical Indicators for Targeting of Porphyry-Cu Mineralization: A Pixel-Based Mapping Approach — Mahyar Yousefi

Enhancement and Mapping of Weak Multivariate Stream Sediment Geochemical Anomalies in Ahar Area, NW Iran — Mohammad Parsa, Abbas Maghsoudi, Emmanuel John M. Carranza, Mahyar Yousefi

Machine Learning of Mineralization-Related Geochemical Anomalies: A Review of Potential Methods — Renguang Zuo

Mineral Systems Analysis and Artificial Neural Network Modeling of Chromite Prospectivity in the Western Limb of the Bushveld Complex, South Africa — Abera Tessema

Random Forest-Based Prospectivity Modelling of Greenfield Terrains Using Sparse Deposit Data: An Example from the Tanami Region, Western Australia — Siddharth Hariharan, Siddhesh Tirodkar, Alok Porwal, Avik Bhattacharya, Aurore Joly

Predictive Mapping of Prospectivity in the Gurupi Orogenic Gold Belt, North–Northeast Brazil: An Example of District-Scale Mineral System Approach to Exploration Targeting — Leandro Duarte Campos, Sulsiene Machado de Souza, Diogo Alves de SordiFelipe Mattos TavaresEvandro Luiz KleinElem Cristina dos Santos Lopes

Knowledge-Driven Prospectivity Mapping for Granite-Related Polymetallic Sn–F–(REE) mineralization, Bushveld Igneous Complex,

Journal Statistics

Mathematical Geosciences:

2016 ISI Impact factor: 2.022 (SJR = 1.083)

5-Year Impact Factor: 2.067 (SNIP =1.566)

Ave. review time: 61 days (submission to first decision)

Computers & Geosciences:

2016 ISI Impact Factor: 2.533 (SJR=1.083)

5-Year Impact Factor: 2.818 (SNIP=1.736)

Ave. review time: 12.6 weeks (submission to final decision 2016)

Natural Resources Research:

2016 SJR = 0.567

2016 SNIP: 0.830

Ave. review time: 21 days (submission to first decision 2016)

South Africa — Litshedzani Mutele, Alazar Billay, John Paul Hunt

Mineral Potential Mapping Via TOPSIS with Hybrid AHP–Shannon Entropy Weighting of Evidence: A Case Study for Porphyry-Cu, Farmahin Area, Markazi Province, Iran — Faranak Feizi, Amirabbas Karbalaei-Ramezanali, Hosein Tusi

Optimizing a Knowledge-driven Prospectivity Model for Gold Deposits Within Peräpohja Belt, Northern Finland — V. Nykänen, T. Niiranen, F. Molnár, I. Lahti, K. Korhonen, N. Cook, P. Skyttä

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Mathematical Geosciences

MG - Volume 49, Issue 5, July 2017

Gaussian Process Emulators for Computer Experiments with Inequality Constraints — Hassan Maatouk, Xavier Bay

Geostatistical Seismic Inversion with Direct Sequential Simulation and Co-simulation with Multi-local Distribution Functions — Rúben Nunes, Amílcar Soares, Leonardo Azevedo, Pedro Pereira

Forward Coupled Modeling and Assessment of Gravity Anomalies Caused by Pumping Tests in Unconfined Aquifers Under Unsteady-State Conditions — Andrés González-Quirós, José Paulino Fernández-Álvarez

Fast and Accurate Approximation to Kriging Using Common Data Neighborhoods — Maria Vigsnes, Odd Kolbjørnsen, Vera Louise Hauge, Pål Dahle, Petter Abrahamsen

A Surface Model for Aeolian Dune Topography — Travis Swanson, David Mohrig, Gary Kocurek, Man Liang

A Numerical Framework for Wall Dissolution Modeling — Aleksander Grm, Tomaž Šuštar, Tomaž Rodič, Franci Gabrovšek

Review of Hierarchical Modeling and Analysis for Spatial Data by Banerjee, S., Carlin, B. P., and Gelfand, A. E. — Samuel Soubeyrand

MG - Volume 49, Issue 6, August 2017

A New Data-Space Inversion Procedure for Efficient Uncertainty Quantification in Subsurface Flow Problems — Wenyue Sun, Louis J. Durlofsky

Machine Learning Based Predictive Modeling of Debris Flow Probability Following Wildfire in the Intermountain Western United States — Ashley N. Kern, Priscilla Addison, Thomas Oommen, Sean E. SalazarRichard A. Coffman

Probabilistic Analysis of Suture Lines Developed in Ammonites: The Jurassic Examples of Hildocerataceae and Hammatocerataceae — Andrea Di Cencio, Serena Doria

High-Performance Parallel Solver for Integral Equations of Electromagnetics Based on Galerkin Method — Mikhail Kruglyakov, Lidia Bloshanskaya

Correlation Between Compositional Parts Based on Symmetric Balances — Petra Kynčlová, Karel Hron, Peter Filzmoser

Weighted Pivot Coordinates for Compositional Data and Their Application to Geochemical Mapping — Karel Hron, Peter Filzmoser, Patrice de Caritat, Eva Fišerova, Alžběta Gardlo

A. Baddeley, E. Rubak, R. Turner: Spatial Point Patterns: Methodology and Applications with R — Edith Gabriel

MG - Volume 49, Issue 7, October 2017

Least-Squares Wavelet Analysis of Unequally Spaced and Non-stationary Time Series and Its Applications — Ebrahim Ghaderpour, Spiros D. Pagiatakis

A Fast Approximation for Seismic Inverse Modeling: Adaptive Spatial Resampling — Cheolkyun Jeong, Tapan Mukerji, Gregoire Mariethoz

Process-Driven Direction-Dependent Asymmetry: Identification and Quantification of Directional Dependence in Spatial Fields — András Bárdossy, Sebastian Hörning

A Quantitative Insight into the Dependence Dynamics of the Kilauea and Mauna Loa Volcanoes, Hawaii — Chih-Hsiang Ho, Moinak Bhaduri

Numerical Analysis of Fluvial Landscapes — David Cattan, Björn Birnir

D. W. Vasaco and A. Datta-Gupta: Subsurface Fluid Flow and Imaging—With Applications for Hydrology, Reservoir Engineering and Geophysics — A. Dassargues

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Computers & Geosciences

C&G - Volume 104, July 2017

A MATLAB based 3D modeling and inversion code for MT data — Arun Singh, Rahul Dehiya, Pravin K. Gupta, M. Israil

Impact of mineralogical heterogeneity on reactive transport modelling — Min Liu, Mehdi Shabaninejad, Peyman Mostaghimi

A framework for interactive visual analysis of heterogeneous marine data in an integrated problem solving environment — Shuai Liu, Ge Chen, Shifeng Yao, Fenglin Tian, Wei Liu

Seismic traveltime inversion based on tomographic equation without integral terms — Guangnan Huang, Bing Zhou, Hongxing Li, David C. Nobes

A training image evaluation and selection method based on minimum data event distance for multiple-point geostatistics — Wenjie Feng, Shenghe Wu, Yanshu Yin, Jiajia Zhang, Ke Zhang

Matching pursuit parallel decomposition of seismic data — Chuanhui Li, Fanchang Zhang

Analysis of training sample selection strategies for regression-based quantitative landslide susceptibility mapping methods — Arzu Erener, A. Abdullah Sivas, A. Sevtap Selcuk-Kestel, H. Sebnem Düzgün

Ensemble predictive model for more accurate soil organic carbon spectroscopic estimation — Radim Vašát, Radka Kodešová, Luboš Borůvka

Software for determining the direction of movement, shear and normal stresses of a fault under a determined stress state — Alejandra Álvarez del Castillo, Susana Alicia Alaniz-Álvarez, Angel Francisco Nieto-Samaniego, Shunshan Xu, Gil Humberto Ochoa-González, Luis Germán Velasquillo-Martínez

RINGMesh: A programming library for developing mesh-based geomodeling applications — Jeanne Pellerin, Arnaud Botella, François Bonneau, Antoine Mazuyer, Benjamin Chauvin, Bruno Lévy, Guillaume Caumon

PyRQA—Conducting recurrence quantification analysis on very long time series efficiently — Tobias Rawald, Mike Sips, Norbert Marwan

Extending R packages to support 64-bit compiled code: An illustration with spam64 and GIMMS NDVI3g data — Florian Gerber, Kaspar Mösinger, Reinhard Furrer

Correlation confidence limits for unevenly sampled data — Jason Roberts, Mark Curran, Samuel Poynter, Andrew Moy, Tas van Ommen, Tessa Vance, Carly Tozer, Felicity S. Graham, Duncan A. Young, Christopher Plummer, Joel Pedro, Donald Blankenship, Martin Siegert

Visual exploration and analysis of ionospheric scintillation monitoring data: The ISMR Query Tool — Bruno César Vani, Milton Hirokazu Shimabukuro, João Francisco Galera Monico

SwathProfiler and NProfiler: Two new ArcGIS Add-ins for the automatic extraction of swath and normalized river profiles — J.V. Pérez-Peña, M. Al-Awabdeh, J.M. Azañón, J.P. Galve, G. Booth-Rea, D. Notti

Antarctic Mapping Tools for Matlab — Chad A. Greene, David E. Gwyther, Donald D. Blankenship

Slicken 1.0: Program for calculating the orientation of shear on reactivated faults — Hong Xu, Shunshan Xu, Ángel F. Nieto-Samaniego, Susana A. Alaniz-Álvarez

Spatio-ecological complexity measures in GRASS GIS — Duccio Rocchini, Vaclav Petras, Anna Petrasova, Yann Chemin, Carlo Ricotta, Alessandro Frigeri, Martin Landa, Matteo Marcantonio, Lucy Bastin, Markus Metz, Luca Delucchi, Markus Neteler

C&G - Volume 105, August 2017

An efficient regularization method for a large scale ill-posed geothermal problem — Fredrik Berntsson, Chen Lin, Tao Xu, Dennis Wokiyi

Reconstructing daily clear-sky land surface temperature for cloudy regions from MODIS data — Liang Sun, Zhongxin Chen, Feng Gao, Martha Anderson, Lisheng Song, Limin Wang, Bo Hu, Yun Yang

Fast hyperbolic Radon transform represented as convolutions in log-polar coordinates — Viktor V. Nikitin, Fredrik Andersson, Marcus Carlsson, Anton A. Duchkov

Computational time reduction for sequential batch solutions in GNSS precise point positioning technique — Angel Martín Furones, Ana Belén Anquela Julián, Alejandro Dimas-Pages, Fernando Cos-Gayón

StackSplit - a plugin for multi-event shear wave splitting analyses in SplitLab — Michael Grund

Bayesian inference of spectral induced polarization parameters for laboratory complex resistivity measurements of rocks and soils — Charles L. Bérubé, Michel Chouteau, Pejman Shamsipour, Randolph J. Enkin, Gema R. Olivo

A 3D forward stratigraphic model of fluvial meander-bend evolution for prediction of point-bar lithofacies architecture — Na Yan, Nigel P. Mountney, Luca Colombera, Robert M. Dorrell

Large Crater Clustering tool — Jason Laura, James A. Skinner Jr., Marc A. Hunter

Fractal generator for efficient production of random planar patterns and symbols in digital mapping — Qiyu Chen, Gang Liu, Xiaogang Ma, Xinchuan Li, Zhenwen He

A geophone wireless sensor network for investigating glacier stick-slip motion — Kirk Martinez, Jane K. Hart, Philip J. Basford, Graeme M. Bragg, Tyler Ward, David S. Young

Gaussian process emulators for quantifying uncertainty in image spreading predictions in heterogeneous media — Liang Tian, Richard Wilkinson, Zhibing Yang, Henry Power, Fritjof Fagerlund, Auli Niemi

JMorph: Software for performing rapid morphometric measurements on digital images of fossil assemblages — Peter G. Lelièvre, Melissa Grey

GPU based contouring method on grid DEM data — Liheng Tan, Gang Wan, Feng Li, Xiaohui Chen, Wenlong Du

A new method for geochemical anomaly separation based on the distribution patterns of singularity indices — Yue Liu, Kefa Zhou, Qiuming Cheng

Performance prediction of finite-difference solvers for different computer architectures — Mathias Louboutin, Michael Lange, Felix J. Herrmann, Navjot Kukreja, Gerard Gorman

Stochastic simulation of channelized sedimentary bodies using a constrained L-system — Guillaume Rongier, Pauline Collon, Philippe Renard

C&G - Volume 106, September 2017

Modelling the interaction of aeolian and fluvial processes with a combined cellular model of sand dunes and river systems — Baoli Liu, Tom J. Coulthard

Unsupervised feature learning for autonomous rock image classification — Lei Shu, Kenneth McIsaac, Gordon R. Osinski, Raymond Francis

Stochastic simulation by image quilting of process-based geological models — Júlio Hoffimann, Céline Scheidt, Adrian Barfod, Jef Caers

Porosity estimation by semi-supervised learning with sparsely available labeled samples — Luiz Alberto Lima, Nico Görnitz, Luiz Eduardo Varella, Marley Vellasco, Klaus-Robert Müller, Shinichi Nakajima

Conference News

Springer Handbook of Mathematical Geosciences: Fifty Years of IAMG

"The Handbook of Mathematical Geosciences: Fifty Years of IAMG", scheduled for release during the 2018 IAMG Conference to be held 2-8 September 2018 in Olomouc and Prague (Czech Republic), motivates readers including professional geomathematicians, undergraduate and post-graduate students to learn about the fifty years of contributions by award-winning mathematical geoscientists. This book showcasing the success of the IAMG celebrating its fifty years of existence will be a compilation of chapters written by mathematical geoscientists who are instrumental in shaping the IAMG. Forty five chapters—subdivided into five categories: Theory; General Applications; Exploration and Resource Estimation; Reviews; and Reminiscences—are in the process of being finalized for inclusion in the Handbook of Mathematical Geosciences: Fifty Years of IAMG. Manuscripts revised and submitted by the authors are being sent to the Springer Publishers during November / December 2017. The book will be Open Access so that IAMG members as well as all other scientists will be able to freely read its electronic version. This Handbook of Mathematical Geosciences: Fifty Years of IAMG is dedicated to the Founding Fathers of IAMG, Daniel F. Merriam and Richard A. Reyment. The Foreword for the book is written by Professor Zhao Pengda. The editors of this book are B. S. Daya Sagar (Indian Statistical Institute), Qiuming Cheng (China University of Geosciences Beijing) and Frits Agterberg (Geological Survey of Canada).

B. S. Daya Sagar

INTERNATIONAL ASSOCIATION FOR MATHEMATICAL GEOSCIENCES

19th Annual Conference

IAMG 2018

2-8 SEPTEMBER | OLOMOUC | CZECH REPUBLIC

50TH ANNIVERSARY OF IAMG

„APPLICATIONS OF MATHEMATICS, STATISTICS, COMPUTER SCIENCE AND INFORMATICS IN SOLVING PROBLEMS OF GEOSCIENCES ARE WELCOME!"

www.iamg2018.org

IAMG2018: International Association for Mathematical Geosciences 50th Anniversary Meeting

REGISTRATION IS OPEN

19th Annual Conference of the International Association for Mathematical Geosciences (IAMG2018) on the occasion of the 50th anniversary of the Association

4-8 September 2018, Olomouc, Czech Republic

http://www.iamg2018.org/

Leading topic of the Conference: "Tools for Data Analysis in Geosciences"

Keynote Speakers:

- Guillaume Caumon, Université de Lorraine - GeoRessources, France.

- Mark Engle, United States Geological Survey.

Important dates:

Abstract submission:	31 January 2018
Early bird registration:	31 March 2018
Short courses:	2-3 September 2018
Conference:	4-7 September 2018
Field trips:	7-8 September 2018
Social event in Prague (50th anniversary):	8 September 2018

List of short courses is provided at http://www.iamg2018.org/index.php/short-courses/.

On the occasion of IAMG2018, special issues are planned for all three IAMG journals, Mathematical Geosciences (Springer), Computers & Geosciences (Elsevier) and Natural Resources Research (Springer), covering topics of the IAMG2018 conference. The latter two calls are exclusively for IAMG2018 participants, deadline for submissions: October 31, 2018. More information at http://www.iamg2018.org/index.php/special-issues/.

Submit an abstract and register at

http://www.iamg2018.org/index.php/abstract-submission/

http://www.iamg2018.org/index.php/registration/

Participants are encouraged to take part also in interesting and low cost field trips (http://www.iamg2018.org/index.php/field-trips/) as well as a social event in Prague (http://www.iamg2018.org/index.php/social-event-in-prague/) to visit places that were crucial in establishing the IAMG. Long standing and founding IAMG members will talk about the tumultuous summer of 1968... Join us for this memorable event!

For further information please contact: iamg2018@iamgmembers.org

Faculty of Science

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Upcoming Meetings

2018

2018 Ocean Sciences Meeting (OSM), co-sponsored by the AGU, ASLO, and TOS, 11–16 Feb, Portland, Oregon. https://osm.agu.org/2018/

International Conference on Geographical Information Systems Theory, Applications and Management GISTAM2018, 17-19 March, Portugal

NKCRI: 2018 Sinkhole Conference, Shepherdstown, WV, 2–6 Apr. www.sinkholeconference.com/

8th International geological and geophysical conference and exhibition 'Saint Petersburg 2018', 9-12 Apr, Saint Petersburg, Russia. https://events.eage.org/2018/

EAGE-HAGI 1st Asia Pacific Meeting on Near Surface Geoscience & Engineering, 11-12 Apr, Yogyakarta, Indonesia. https://events.eage.org/2018/

AAPG 2018 Annual Convention & Exhibition. Salt Lake City, Utah, USA. 20 - 23 May 2018. http://www.aapg.org/

80th EAGE Conference & Exhibition 2018, 11-14 June, Copenhagen, Denmark. https://events.eage.org/2018

3rd International Conference on Natural Science and Applied Mathematics, 15-18 June 2018, Prague, Czech Republic. http://www.icnsam.org/

RFG 2018 Resources for Future Generations by International Union of Geological Sciences (IUGS), Vancouver, Canada, 16-21 June 2018. Info at http://RFG2018.org. IAMG is one of a dozen Partners supporting this conference.

CoDaCourse, 2-6 July 2018, Girona. http://www.compositionaldata.com/codacourses.php

GeoENV2018, Belfast, U.K., 3–7 July 2018. http://geoenvia.org/2016/08/geoenv-2018-in-belfast

5th GeoChina International Conference, 23-25 July 2018, HangZhou, China. http://geochina2018.geoconf.org/

2018 Joint Statistical Meetings, 28 July-2 Aug, Vancouver. http://ww2.amstat.org/meetings/jsm/2018/

Joint Statistical Meeting, Vancouver, BC, Canada, 28 July - 2 Aug 2018. http://www.amstat.org/meetings/jsm.cfm

IAMG2018 50th Anniversary Meeting, Olomouc and Prague, Czech Republic, 2 - 8 Sept. 2018

16th European Conference on the Mathematics of Oil Recovery, ECMOR XVI, 3 - 6 Sept 2018, Barcelona. https://events.eage.org/2018/ECMORXVI

Near Surface Geoscience Conference & Exhibition 2018, 9-13 Sept, Porto, Portugal

SIAM Conference on Mathematics of Planet Earth (MPE18), 13–15 Sept, Philadelphia, USA. http://www.siam.org/meetings/mpe18/

Seismic Characterisation of Carbonate Platforms and Reservoirs, The Geological Society 10-11 Oct 2018. https://www.geolsoc.org.uk/carbonateplatforms18

The AAPG 2018 International Conference & Exhibition, 4-7 Nov, Cape Town, South Africa. http://capetown2018.iceevent.org/

2018 GSA Annual Meeting, 4-7 Nov. Indianapolis, Indiana, USA. http://www.geosociety.org/GSA/Events/Annual_Meeting/GSA/Events/gsa2018.aspx

AGU 2018 Fall Meeting, 10-14 Dec 2018, Washington, D. C. https://fallmeeting.agu.org

2019

AAPG 2019 Annual Convention & Exhibition, 19-22 May, San Antonio, Texas, United States

IAMG2019, 10-16 Aug, Pennsylvania, U. S. A.

62nd ISI World Statistics Congress, International Statistical Institute, Kuala Lumpur, Malaysia, 18-23 Aug 2019.

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A Strange Cocktail or a Great Conversation? Defining the Resources for Future Generations 2018 Audience.

What happens when you bring industry, government, First Nations representatives, policy-makers academics, scientists, and members of civil society together? It may sound like a strange mixer, but Resources for Future Generations 2018 (RFG2018) recognizes that in order to have a meaningful conversation about the use of earth's resources in the future, all the voices must be in the room.

In order to enrich the conversation, RFG2018 has unveiled what looks to be a robust, comprehensive list of sessions structured around their six central themes: The Earth, Water, Minerals, Energy, Resources and Society, and Education and Knowledge. You can review a full list of Theme Sessions at the following link: http://ow.ly/teFv30g7HP8

Call for Abstracts to RFG2018 sessions is now open. Abstracts will be accepted until January 15, 2018, and we encourage you to add your voice to this event. Visit rfg2018.org for details

JUNE 16-21, 2018
VANCOUVER, BC

EXPLORE

RFG 2018 SESSIONS

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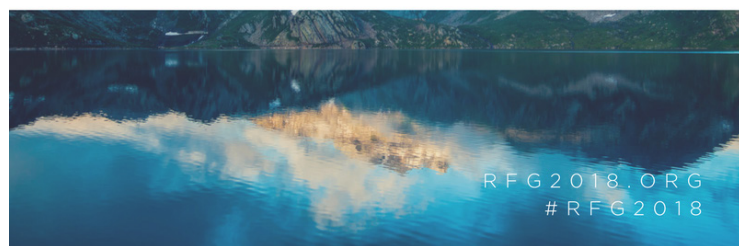
Ninth International Conference on Advances in Pattern Recognition (ICAPR 2017) December 27-30, 2017

Government of India has passed a resolution declaring June 29th "National Statistic Day". This is to commemorate the birth date in 1893 of world-famous mathematical statistician Professor P.C. Mahalanobis. In celebration of the 125th Birth Anniversary of Professor P. C. Mahalanobis, Professor Daya Sagar is organizing Ninth International Conference on Advances in Pattern Recognition (ICAPR-2017) during 27-30 December 2017 at the Indian Statistical Institute-Bangalore Centre. More details about this Conference could be seen at: http://www.isical.ac.in/~icapr17

B. S. Daya Sagar

International Association for Mathematical Geosciences (IAMG)
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POST-DOCTORAL RESEARCH FELLOW POSITIONS IN
Geostatistics and Stochastic Simulations

Post-doctoral positions are available at the COSMO Stochastic Mine Planning Lab, McGill University (http://cosmo.mcgill.ca). COSMO is a collaborative laboratory dedicated to the development of new orebody modelling and optimization frameworks for production planning creating value across the mining-mineral value chain. The related industrial environment requires particular focus on 'high-order' & 'multi-point' mathematical models of geological uncertainty, which generate inputs for various applications. Research is funded by the National Sciences and Engineering Research Council of Canada and a consortium of major mining companies: AngloGold Ashanti, Barrick Gold, BHP, DeBeers, Kinross Gold, Newmont Mining, Vale.

Job description: Successful candidates will work on one (or more) of related research areas:
- New data-driven, high-order and multi-point simulations
- High-order data analytics, related deep learning methods
- Construction of data-based continuous training images
- Applications in modelling mining deposits

Candidates will have the opportunity to apply their developments at sites worldwide, test newly developed methods on real-life applications and gain substantial experience with advanced digital technologies in industrial environments. In conjunction with their research, candidates are expected to interact with graduate students and industry professionals, and be involved in diverse projects led by the COSMO Laboratory, including global knowledge mobilization activities.

Building future career opportunities: Post-doctoral fellows from COSMO develop major career opportunities; our last 3 moved on to BHP principal ascientist (geostatistics), DeepMind research engineer, faculty at Univ. of Calgary.

Requirements: Candidates are required to have completed (or being close to completion) a PhD in areas including: Applied mathematics, computer science, image processing, mining engineering or a related discipline. They should have excellent programming skills (C/C++) and a suitable academic and publications record.

Application: The application procedure will remain open until the position is filled. If interested, please contact Roussos Dimitrakopoulos at E-mail: roussos.dimitrakopoulos@mcgill.ca or tel. 514 398-4986, and forward a detailed CV, including a list of publications, research interests, and the names of three referees.