IAMG Newsletter

Official Newsletter of the International Association for Mathematical Geosciences

Contents

<>

IAMG meets again at 37th IGC in Busan, South Korea

August 25 – 31, 2024

IAMG members have submitted four sessions in theme 41 Mathematical and Computational Methods for the Geosciences

• AI-driven mineral prospectivity mapping (Renguang Zuo, John Carranza)

• Geostatistical prediction and simulation for complex geological settings (Peter Dowd, Gerald v.d. Boogaart)

• Compositional data in geosciences: Methods and applications (Solveig Pospiech, Karel Hron)

• Geometallurgy (Raimon Tolosana-Delgado, Nick Cook, Megan Becker, Nathan Fox)

We will have a general assembly and an awards ceremony with invited talks from the 2024 IAMG awardees. Please submit your proposal to the lectures and awards committee until October 31, 2023.

Abstract submission will open: September 4, 2023

Abstract submission will close: Feburary 16, 2024

For more information visit:

http://www.igc2024korea.org/2024/english/main/index_en.asp

<>

Congratulations to the winners of the 2023 IAMG Awards! The details are below.

The winners will be presenting in the plenary sessions at IAMG2023, along with Prof. Jennifer McKinley, the 2023 Distinguished Lecturer, and Prof. Xavier Emery, the 2023 Georges Matheron Lecturer.

I'm looking forward to seeing many of you in Trondheim in August!

Katie Silversides

<>

Announcement of the 2023 IAMG Awards

Prof. Pieter Vermeesch from the University College London, UK is the recipient of the 2023 Felix Chayes Prize.

Dr. Shaunna Morrison from the Earth and Planets Laboratory, Carnegie Institution for Science, USA and Dr. Behnam Sadeghi from Australian Resource Research Centre, CSIRO, Australia are the recipients of the 2023 Andrei Borisovich Vistelius Award.

Ms. Sofia Nerantzaki from the University of Saskatchewan, Canada is the recipient of the 2023 Founders Scholarship. Congratulations to all the awardees!

Xiaogang (Marshall) Ma

<>

Prof. Pieter Vermeesch

Dr. Shaunna Morrison

Dr. Behnam Sadeghi

Ms. Sofia Nerantzaki

IAMG is on LinkedIn, Twitter and Facebook!

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

International Association for Mathematical Geosciences

IAMG Office (official address)

611 Pennsylvania Av, SE #440
Washington, DC 20003-4303, USA

E-mail: support@iamgmembers.org

Tel. Messages: +1-832-380-8833
Fax: +1-800-983-1346

Website: IAMG.org

Officers of the Executive Committee

President: **Peter Dowd**
School of Civil, Environmental and Mining Engineering,
University of Adelaide, Australia, Tel. 618 8313 4543,
Email: peter.dowd@adelaide.edu.au

Vice President: **Christien Thiart**
University of Cape Town, Department of Statistical Sciences,
Rondebosch, South Africa, Tel: 27-21-650-3223,
Email: christien.thiart[at]uct.ac.za

Secretary General: **Juliana Leung**
School of Mining & Petroleum Engineering,
Dept. of Civil & Environmental Engineering, University of Alberta
Tel. (780) 492-3338
Email: juliana2@ualberta.ca

Treasurer: **Madalyn Blondes**
USGS Eastern Energy Resources Science Center USA
Tel: +1 703-648-6509,
Email: mblondesIAMG@gmail.com

Other Voting Council Members

Past President: **Jennifer McKinley**
School of Geography, Archaeology and Palaeoecology,
Queen's University, Belfast, UK
Tel: 44 (0)28 90973827
Email: j.mckinley[at]qub.ac.uk

Special IGC Councilor: **Jonggeun Choe**
Department of Energy Resources Engineering,
Seoul National University (SNU), Korea, Tel: 880-8081
Email: johnchoe@snu.ac.kr

Editors

Mathematical Geosciences   **Roussos Dimitrakopoulos**
  Department of Mining, Metals and Materials Engineering,
  McGill University, Montreal H3A 2A7, Canada
  Tel: +1 514 398-4986, E-mail: roussos.dimitrakopoulos@mcgill.ca

Computers & Geosciences   **Pauline Collon**
  University of Lorraine National Graduate School of Geology,
  Vandœuvre-les-Nancy, France
  Tel: +33 3 72 74 45 23, E-mail: pauline.collon@univ-lorraine.fr

  University of Wyoming, Laramie,   **Dario Grana**
  Wyoming, USA,
  Tel: +1 307-223-2079, dgrana@uwyo.edu

  Edith Cowan University,   **Ute Mueller**
  Joondalup, WA, Australia
  Tel: +61863045272, Email: u.mueller@ecu.edu.au

Natural Resources Research   **John Carranza**
  University of KwaZulu-Natal,
  Durban, South Africa
  Email: ejmcarranza@gmail.com

Applied Computing and Geosciences   **Boyan Brodaric**
  Natural Resources Canada Earth Sciences,
  Ottawa, Ontario, Canada
  Email: Brodaric@gsc.nrcan.gc.ca

IAMG Newsletter and Website   **Katherine Silversides**
  DARE Centre,
  University of Sydney, NSW, Australia
  E-mail: newsletter@iamg.org

Councilors

Jie Zhao
School of the Earth Sciences and Resources, China University of
Geosciences, Beijing (CUGB) Tel: +(86) 135-2070-9895
Email: zhaojie@cugb.edu.cn

Renguang Zuo
State key Laboratory of Geological Processes and Mineral
Resources (GPMR), China University of Geosciences (CUG),
Wuhan 430074, China, Tel:+86-13667264536
Email: zrguang@cug.edu.cn; zrguang1981@126.com

Pauline Collon
University of Lorraine National Graduate School of Geology,
Vandœuvre-les-Nancy, France Tel: +33 3 72 74 45 23,
E-mail: pauline.collon@univ-lorraine.fr

Alessandra Menafoglio
MOX - Dept. of Mathematics, Politecnico di Milano, Piazza
Leonardo da Vinci, Milan – Italy, Tel: +39 02 2399 4642
Email: alessandra.menafoglio@polimi.it

Natalie Caciagli
Barrick Gold Corp and Mineral Exploration Research Centre at
Laurentian, University, Canada.

Karel Hron
Palacky University, Olomouc,
Czech Republic, Tel: +39 02 2399 4642
Email: hronk@seznam.cz

Committee Chairs

Awards Committee: **Xiaogang "Marshall" Ma**
Department of Computer Science, University of Idaho,
Moscow, United States,
Tel: +1.208.885.6592, E-mail: max[at]uidaho.edu

Curriculum Quality Committee: **Julián Ortiz**
Department of Mining Engineering, Queen's University
Kingston, Canada
Tel: 613-533-2910, Email: julian.ortiz@queensu.ca

Lectures Committee: **Christien Thiart**
University of Cape Town, Department of Statistical Sciences,
South Africa, Tel: 27-21-650-3223,
E-mail: christien.thiart@uct.ac.za

Meetings Committee: **Regina van den Boogaart**
Balthasar-Rößler-Str. Freiberg
Email: support@iamgmembers.org

Outreach Committee: **Eric Grunsky**
Dept. of Earth and Environmental Sciences,
University of Waterloo
E-mail: egrunsky@gmail.com

Publications Committee: **Jaime Gómez Hernández**
Univ. Politecnica de Valencia, Departamento de Ingeniería
Hidráulica, Valencia, Spain, Tel: 963879614 (Ext.:79614)
E-mail: jgomez[at]upv.es

Students Affairs Committee: **Ute Mueller**
Edith Cowan University,
Joondalup, WA, Australia
Tel: +61863045272, E-mail: u.mueller@ecu.edu.au

Archivist

Graeme F. Bonham-Carter
110 Aaron Merrick Drive, Merrickville, ON K0G 1N0, Canada
Tel: +1 (613) 269-7980
E-mail: Graeme.bc1[at]gmail.com

PRESIDENT'S FORUM

Dear IAMG Members,

Preparations for the 2023 IAMG Conference in Trondheim are well underway, and I look forward to seeing increased numbers of members attending in person now that the World Health Organisation has declared that COVID-19 is no longer a global health emergency. More information is available in the Conference section of the IAMG website (https://iamg.org/conferences/).

The 37th International Geological Congress (IGC 2024) will be held from 25th – 31st August 2024 in Busan, Republic of Korea. Subject to confirmation, the Congress will include a session on Mathematical and Computational Methods for the Geosciences that will include a theme on "Geostatistical prediction and simulation for complex geological settings". The IAMG2024 General Assembly and the IAMG Award Presentations will also be held during the Congress.

Discussions are underway for the IAMG 2025 and IAMG 2026 conferences and Council expects to report on the outcomes of these discussions in the next few weeks.

Those of you who were present at the IAMG 2022 meeting in Nancy may recall the suggestion in one of the discussion sessions that the IAMG consider supporting co-sponsored sessions at other association meetings to help build better connections with other Earth Sciences associations. Council is now considering IAMG co-sponsored sessions at meetings of European associations that are relevant to the IAMG. It would be expected that any such arrangement with another association would be reciprocated by that association co-sponsoring a session at an IAMG conference.

My term of office finishes in August 2024 prior to which there will be an election for the next President, the Vice-President, the Secretary-General, the Treasurer, six Ordinary Council members and a representative from the host country for the next International Geological Congress. The Council will appoint a Nominating Commission to draw up a list of candidates for these eleven elected Council positions. The IAMG by-laws require the Commission to comprise the non-voting current President (or any current Council member who is not running for election) and five independent voting members who are not current Council members and who do not intend to run for Council positions. You can find more details of the process in the Statutes and Bylaws on the IAMG website (https://iamg.org/statutes-and-bylaws/).

I end this letter in my usual way by encouraging you to submit suggestions for engaging our members and promoting the mathematical geosciences.

Yours sincerely,

Professor Peter Dowd, FREng, FTSE

President, International Association for Mathematical Geosciences

<>

Distinguished Lecturer Updates

Distinguished Lecturer 2023
Jennifer McKinley

There was no better place for my year as the 2023 IAMG Distinguished lecturer to start than in Scotland, UK, with two invitations and warm welcomes from colleagues, Zeinab Smillie, University of Stirling (1st February) and Vasily Demyanov at Heriot Watt University (2nd February). It was great to be able to describe my recent research on 'Environmental Geochemistry and Compositional Data Analysis: Exploring the effects of environmental factors on health' at the University of Stirling. I really appreciated being able to join the stimulating discussion afterwards with a very active and engaged group of PhD students and researchers and to hear about their exciting research agenda - representing a rich vein of fresh thinking for future IAMG talks and papers!

It was a pleasant surprise too that my visit to Heriot Watt University coincided with a visit by fellow IAMG colleague Guillaume Caumon, as external examiner for a viva voce. During my DL presentation on this occasion, I was pleased to be able to describe my role within the IUGS Initiative on Forensic Geology (IFG) and give a flavour of the use and challenges of spatial data analysis and compositional data analysis in forensic geoscience. I'm honoured to serve as the IAMG DL for 2023 and look forward to upcoming DL presentations to the IAMG Student Chapter in TU Bergakademie Freiberg, Germany (22nd June) and as part of the Open Seminar on Compositional data Analysis, University of Girona (6th July). I'm also very excited for the DL keynote opportunity at IAMG2023 in Trondheim, Norway (5-12th August).

Looking forward, I hope to combine the IAMG DL role and my current position as President and Chair of the Governing Council of the IUGS Deep Time Digital Earth (DDE) Programme. Upcoming opportunities include two accepted DDE deep-time themed sessions at the Geological Society of America (GSA) meeting in Pittsburgh, Pennsylvania and the DDE International Scientific workshop planned for 26-29th November in Hangzhou City, China. I'm also keen to explore is an invitation to the Jackson School of Geosciences at the University of Texas Austin later this year.

<>

Jennifer McKinley presenting at Heriot Watt University

Zeinab Smillie and Jennifer McKinley at University of Stirling

Vasily Demyanov, Jennifer McKinley and Zeinab Smillie

IAMG2023

The 22st annual conference of the IAMG
August 05 - 12, 2023, Trondheim, Norway

Dear fellow (mathematical) geoscientists,

Thank you for your contributions to IAMG2023! It is inspiring to receive, read and evaluate the large number of interesting abstracts. After setting up the detailed program with interesting keynotes and your contributions, we are confident that the conference will be very interesting.

We have taken the initiative to a panel debate during the conference that will focus on how Big data and AI and ML algorithms challenge and enrich geostatistical and Bayesian formalism. The panel will debate how "Deep-Geostatistics" can lead to more accurate, reliable, and scalable models, and if pitfalls can be mitigated. Further we have taken the initiative to a special issue of Mathematical Geosciences that will be dedicated to this topic. A call for papers for the special issue will be announced at the IAMG23 August 2023.

During the conference we will also try to increase the contact between students, prospective PhD- and PD-candidates and potential employers. We will do this by organizing a speed networking event, where (dependent on the number of participants) you as participant will be given a (relatively short) timeslot to network. This would include to exchanged business cards and contact information and exchange ideas on how mathematical geosciences should and could contribute to solve our societal challenges.

Looking forward to seeing you in Trondheim!
Your IAMG2023 organizing team

NTNU

Program Overview

05. - 06. Aug.	07. Aug.	08. Aug.	09. Aug.	10. Aug.	11. - 12. Aug.
Short Courses Registration City Tour Ice Breaker	**Plenary session** J. McKinley	**Plenary session** M. Pyrcz	**Plenary session** I. Berre	**Plenary session** A. Bardossy	Short Courses Field Trips
	Coffee Break				
	Parallel Scientific Sessions				
	Lunch Break				
	Plenary session P. Vermeesch	**Plenary session** B. Sadeghi	**Plenary session** S. Morrison	**Plenary session** X. Emery	
	Parallel Scientific Sessions				
	Coffee Break				
	Council	**Poster Sessions**		**Closing + Panel Disc.**	
		Speed networking	**General Assembley**	**Speed networking**	
			Conference Dinner		

Keynote Speakers

Prof. Inga Berre, University of Bergen: Modeling of coupled processes in fractured geothermal systems
Prof. Michael Pyrcz, The University of Texas at Austin: Data Analytics and Machine Learning for Geostatistics
Prof. András Bárdossy, University of Stuttgart: Non linear and non Gaussian geostatistical models using Copulas

IAMG Awardees

Prof. Pieter Vermeesch, University College London - Felix Chayes Prize 2023
Geochronology as a compositional data problem
Dr. Shaunna Morrison, Carnegie Institution for Science - A. B. Vistelius Research Award 2023
Harnessing the complexity of minerals: Data-driven exploration of evolving earth and planetary systems
Dr. Behnam Sadeghi, CSIRO / Carnegie Institution for Science - A. B. Vistelius Research Award 2023
Decision-making for follow-up mineral exploration based on spatial uncertainty of geochemical data
Prof. Jennifer McKinley, Queen's University Belfast - Distinguished Lecturer 2023
Spatial Analytics for Geoforensics and Geohealth
Prof. Xavier Emery, Universidad de Chile - Georges Matheron Lecturer 2023
A journey into covariance models for spatial data

Social Program

The icebreaker will take place in Cafe Two Towers, close to the Nidarosdomen Cathedral and the city center. As part of the icebreaker there will be an organ concert in the cathedral. Before the icebreaker we are offering a city tour where you will learn about Trondheim, its history and development.
The conference dinner will be hosted at Scandic Nidelven beautifully located on the banks of the Nidelven river; close to the city center and Solsiden with its vibrant nightlife.

Field Trips

+ **Løkken mine** 333 years of mining – waking up from the dead?
  This one-day excursion will take you down into the museums mine and you will see WMS-localities.
+ **Island of Leka** – from pillow lavas to mantel rocks

  This two-day field trip is intended to give an overview of the geology of the island of Leka, an ophiolite complex in the central Norwegian Caledonides renowned for its well-preserved mantle section and exposed Moho.
+ **Bergtat**t – water filled (active) limestone / marble mine
  This two-day excursion will take you to an active open pit limestone / marble operation, one of the world's largest processing plants for ground calcium carbonate and an underground adventure.

Short Courses

+ Introduction to the analysis of compositional data (Aug.6) **V. Pawlowsky-Glahn, J. J. Egozcue**
+ Compositional Statistics for Geochemistry (Aug.7) **S. Pospich, K. G. v. d. Boogaart**
+ Geoscientific data analysis and mineral prospectivity mapping   **J. Torppa, B. Chudasama**
  using open-source geospatial applications (GisSOM and QGIS) (Aug. 6+7)
+ From data preprocessing to precision: best data management **A. Sapronova**
  practices for data-driven modeling in geoengineering (Aug.7)
+ Applied geochemestry and analytics training course (Aug.7) **P. Sadikin, B. Sadeghi**
+ Round geology, square geostatistics, and how to make them fit (Aug.11)**J.Skauvold, I.Aarnes, R.Hauge**

IAMG Journal Reports

Mathematical Geosciences Special Issues

Published:

Data-Driven Discovery in Geosciences: Opportunities and Challenges, published March 2023. Special editors: Guoxiong Chen, Qiuming Cheng, Steve Puetz

Geographically Optimal Similarity - Yongze Song

Revealing Geochemical Patterns Associated with Mineralization Using t-Distributed Stochastic Neighbor Embedding and Random Forest - Zixian Shi, Renguang Zuo, Yihui Xiong, Siquan Sun, Bao Zhou

Robust Optimal Well Control using an Adaptive Multigrid Reinforcement Learning Framework - Atish Dixit, Ahmed H. Elsheikh

Ensemble and Self-supervised Learning for Improved Classification of Seismic Signals from the Åknes Rockslope - Daesoo Lee, Erlend Aune, Nadège Langet, Jo Eidsvik

Random Noise Attenuation by Self-supervised Learning from Single Seismic Data - Xiaojing Wang, Yuhan Sui, Wei Wang, Jianwei Ma

Construction and Application of a Knowledge Graph for Iron Deposits Using Text Mining Analytics and a Deep Learning Algorithm - Qinjun Qiu, Kai Ma, Hairong Lv, Liufeng Tao, Zhong Xie

https://link.springer.com/journal/11004/volumes-and-issues/55-3

In Progress:

• Geostatistics Applied to Environmental Applications

https://www.springer.com/journal/11004/updates/23193416

• Machine Learning-based Mapping for Mineral Exploration

https://www.springer.com/journal/11004/updates/20307900

<>

Journal Statistics

Mathematical Geosciences:

• 2021 ISI Impact factor: 2.508
• 5-Year Impact Factor: 2.841
• Ave. review time: 19 days (submission to first decision 2021)

Computers & Geosciences:

• 2021 ISI Impact Factor: 5.168
• 5-Year Impact Factor: 4.532
• Ave. review time: 7 weeks (submission to first decision 2021)
• 15.2 weeks (submission to final decision 2021)

Natural Resources Research:

• 2021 ISI Impact Factor: 5.609
• 5-Year Impact Factor: 5.534
• Ave. review time: 7 days (submission to first decision 2021)

<>

Member News

Nominations for the 2024 Georges Matheron Lecturer and the 2025 IAMG Distinguished Lecturer are due on October 31, 2023

The Association invites all members to submit nominations for the 2024 Georges Matheron Lecturer and the 2025 IAMG Distinguished Lecturer.

Please note the Deadline for all awards: 31 October 2023.

For details about prerequisites for nominations please see the IAMG web site (https://iamg.org/awards-and-honours/) There is also a list of past recipients and their laudations on the web site. Please have a look at it before sending your nominations!

The documents which should accompany a proposal are:

• A nomination letter/email (preferably by one of your colleagues)

• A short statement summarizing the relevant qualifications of the nominee

• A curriculum vitae of the nominee, or link to webpage.

Nobody gets an award without a nomination, so please support your colleague when you believe he/she deserves an award by submitting a nomination. Nominations can be submitted by a single person or by a group.

The Laudations written over the last few years and published in Mathematical Geosciences are a good source of inspiration on how to write a nomination. Nominations for the awards can be submitted via e-mail to christien.thiart@uct.ac.za

<>

Nominations for three IAMG awards are due on October 31, 2023

The Association invites all members to submit nominations for the Founders Scholarship, the John Cedric Griffiths Teaching Award and the William Christian Krumbein Medal. Please note the Deadline: October 31, 2023.

For details about prerequisites for nominations please see the IAMG web site https://iamg.org/awards-and-honours/. There is also a list of past recipients and their laudations on the web site. Please have a look at it before sending your nominations! The (informal) documents which should accompany a proposal are:

• A short statement summarizing the relevant qualifications of the nominee

• A curriculum vitae of the nominee

Nobody gets an award without a nomination, so please support your colleague when you believe he/she deserves an award by submitting a nomination. Nominations can be submitted by a single person or by a group. The laudations written over the last few years and published in Mathematical Geosciences are a good source of inspiration on how to write a nomination.

Nominations can be submitted via e-mail <max@uidaho.edu> or sent to:

Xiaogang (Marshall) Ma - Chair, IAMG Awards Committee Department of Computer Science, University of Idaho
875 Perimeter Drive MS 1010, Moscow, ID 83844-1010, USA

Nominations for other Awards may be submitted at any time.

<>

ERASMUS Opportunities in Freiberg

The University Bergakademie Freiberg in Germany maintains a large network to enable exchange on all scientific levels, also in IAMG related topics. Therefore several agreements with partner Universities across Europe under the Erasmus + mobility programme have been developed and are in place. If you are interested in an exchange, please visit following website: https://blogs.hrz.tu-freiberg.de/iuz/erasmus-from-partner-universities/

For more information, please feel welcome to contact me under Joerg.Benndorf@mabb.tu-freiberg.de

<>

<>

Prof Qiuming Cheng won the "Outstanding Contribution Award of Big Data Science and Technology Communication in 2022"

Professor Qiuming Cheng, former president of IAMG and past president of IUGS received "the Outstanding Contribution Award on Big Data Science and Technology Communication in 2022". The award was bestowed jointly by China Science and Technology Journalism Society, Hunan Provincial Association for Science and Technology, and Hengyang Municipal People's Government, and undertaken by China Science and Technology News Network.

With the rapid development of big data around the world, the new generation of information technology represented by big data and AI is playing an increasingly powerful role in the dissemination and application of science and technology. To encourage the integrated development, trans-field expansion and cross-regional cooperation for application of big data and AI technology, the China Science and Technology Journalism Society sponsored by the China Association for Science and Technology launched a call for "Outstanding Contribution Award for Big Data Science and Technology Communication Award" in the field of data science and technology across the country. Professor Cheng and one other member of China Academy of Sciences and five members of China Academy of Engineering were elected.

Professor Cheng was awarded for his outstanding contribution for promoting mathematical geosciences and data-driven earth science development, and disseminating the transformation of the research paradigm of geoscience in the era of big data.

Professor Cheng was elected as the president of the International Association for Mathematical Geosciences (IAMG) in 2012. In order to better adapt to the main geosciences, he has been promoting transformation of MG from traditional mathematical geology to mathematical geosciences. After being elected as the president of the International Union of Geological Sciences (IUGS) in 2016, he actively guided cross-field cooperation on major global basic geoscience issues and needs for sustainable development, and promoted the application of transformative digital technologies such as big data and AI in the field of solid earth sciences. He initialized the Deep-time Digital Earth (DDE), the first IUGS big science program with a vision of harmonizing earth evolution data and mission of sharing earth science knowledge. The main purpose of DDE is to encourage international collaboration on big data and AI in earth science innovation. DDE has been supported by IUGS national committees including several Geological Surveys and dozens of IUGS affiliated members of international associations including IAMG.

Professor Cheng actively advocates the concept of science as a global public good and open science. He encouraged Chinese communities and international organizations to make efforts to enhance data-driven earth science innovation, support the United Nations sustainable development goals, and strengthen exchanges in the construction of global scientific and technological systems.

Chen Jing, Hu Xiaowan

<>

Gathering in Zhuhai to Discuss Data-driven Earth Sciences Development

What will happen when earth science meets big data and artificial intelligence? More than 850 experts and scholars gathered at Sun Yat-sen University (SYSU)'s Zhuhai campus from April 15 to 17 to witness the establishment of a new Committee of Data-driven Earth Science Development (DDESD), Geological Society of China, and its first National Academic Symposium.

"Describing the Earth in Data"

Professor Qiuming Cheng is the initiator who serves the first Chairman of DDESD. He said

that modern earth system science research should link the lithosphere, hydrosphere, atmosphere, biosphere, and other major layers of the Earth and develop them crosswise. What's more, "data is the important "thread" that connects these major layers", Cheng further explained.

The initial proponents for DDESD are key experts and scholars in the fields of geology, geochemistry, geophysics, oceanography, geography, remote sensing, ecology, and global change, as well as in the field of mathematical geosciences, information technology and data science. The purpose of the new group was to promote exchanges and cooperation in facilitation of application of big data and AI in earth system science, including "finally express the earth in data or making a digital earth" so nudging the integration of the research of different layers of the earth. Professor Chunsheng Chen, Charman of Sun Yat-sen University, said that the university will work with DDESD to drive the deep integration of earth sciences with big data and cloud computing.

"In the past, geoscience studies usually started with an existing question or hypothesis to uncover an unknown answer" Cheng said, now the converged applications of big data and artificial intelligence are suggested to shift geoscience research towards "finding unknown answers from undiscovered questions". "Big data and artificial intelligence may play an essential role in geological disaster monitoring and warning."

"This conference should face the international frontier, strengthen technological innovation, improve the theoretical research and application level of earth informatization and intelligence, also enhance the international collaboration." At the inaugural meeting of DDESD, Professor Lixin Zhu, vice president and executive deputy Secretary-General of the Geological Society of China.

Building an international community in the field of cutting-edge academic system is also one of the purposes for DDESD. The conference invited the president of the International Union of Geological Sciences and presidents of the Geological Societies of Australia and South Korea to participate in the discussion.

DDESD is going to actively carry out domestic and foreign exchanges and cooperation in scientific and technological innovation in the coming years. It will closely collaborate with various organizations such as the International Union of Geological Sciences, the IUGS Deep-time Digital Earth big science program, International Association for Mathematical Geosciences and the UNESCO Chair on Deep-time Digital Earth and Mineral Resources. It hopes that DDESD will grow up to become a new international group facilitating transformation of earth science research.

Talking about the future activities, Cheng said that a proposal has been prepared for hosting the IAMG annual meeting in collaboration with DDESD on Data-driven Earth Science Discovery to be held in the same venue. The organizational experiences gained from the symposium of DDESD will be very valuable for hosting large international conferences in Zhuhai, China. More information can be found at www.ddemr.org

Tao Hong (SYSU), Han-Neng Liu (Nanfang Daily), Junyi Wang (CUGB)

中国地质学会数据驱动与地学发展专业委员会成立暨首届全国学术研讨会
INAUGURAL CEREMONY AND FIRST SYMPOSIUM OF DATA-DRIVEN EARTH SCIENCE DEVELOPMENT (DDESD)
—2023.4.14-4.17—

International Association for Mathematical Geosciences (IAMG)

c/o IAMG Office
Balthasar-Rößler-Str. 58
09599 Freiberg
Germany

McGill COSMO
Stochastic Mine Planning Laboratory

POST-DOCTORAL RESEARCH FELLOW POSITIONS IN Geostatistics and Stochastic Simulations

Post-doctoral research fellow positions are available at the COSMO research group at 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 needed to create value across the entire mining-mineral value chain. The related industrial environment requires particular focus on 'high-order' and 'multi-point' spatial mathematical models of geological uncertainty, which generate inputs for optimization frameworks and other applications. Research is funded by the National Sciences and Engineering Research Council of Canada (NSERC) and a consortium of major mining companies: AngloGold Ashanti, BHP, De Beers/AngloAmerican, IAMGOLD, Kinross Gold, Newmont, and Vale.

Job description

Successful candidates will work on several of the related research areas:

- New data-driven, high-order stochastic simulations
- High-order data analytics, related deep learning methods
- High-order simulation of multiple categorical variables
- Joint high-order simulation of multiple corelated variables
- Construction of data-based continuous training images
- Applications in modelling mining deposits or environmental problems or other areas as per the interests of the applicant.
- A commitment to – and in accordance with circumstances, a track record in – equity, diversity, and inclusiveness (EDI) is preferred.

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. The position based in the Department of Mining and Materials Engineering at McGill University, in close collaboration with related research groups such as GERAD, IVADO and McGill's CIM.

Building future career opportunities

Post-doctoral research fellows from our lab develop major career opportunities; for example, our last three moved on to BHP principal scientist (geostatistics and computing), DeepMind research engineer, and faculty at University 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, reservoir engineering or a related discipline. They should have excellent programming skills (C/C++) and a suitable academic record given the job description above, as well as a suitable publications record.

Terms and conditions

This research fellow position is a full-time employed position for one year with possible extension. Salary is commensurate to qualifications.

Application

The position is available immediately. 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.