

INTERNATIONAL ASSOCIATION FOR MATHEMATICAL GEOSCIENCES

Annual Report to the International Union of Geological Sciences – January 2023

1. Overall objectives

The mission of the International Association for Mathematical Geosciences (IAMG) is to promote the advancement of mathematics, statistics and informatics in the geosciences worldwide. The primary role of the IAMG is to further the development of methods and disseminate the results of new research in its fields of interest with outreach within the geoscience, mathematics and geoinformatics communities. This includes sponsoring students and young scientists by means of research and travel grants.

2. Relate goals to overall IUGS scientific objectives

Through its four scientific journals, the annual IAMG meeting and many other projects, including travel by its Distinguished Lecturers, the IAMG aims to further the quantification of three-dimensional geoscientific mapping, numerical time-scale development, geological process modelling, spatial and spatiotemporal modelling and estimation. Its contributions to predictive geology include the areas of natural disasters, the delineation of mineral, hydrocarbon and water deposits in the crust of the Earth. Mathematical and geometrical estimates are accompanied by estimates of their uncertainty.

3. Structure and organization

The IAMG is governed by a Council consisting of its Executive Committee (President, Vice-President, Secretary General and Treasurer), the immediate Past President, six Ordinary Council Members, a special IGC Councillor, and seven non-voting members comprising Editors-in-Chief and Co-Editors-in-Chief of its publications. It has seven standing committees for Awards, Curriculum Quality, Lectures, Meetings, Outreach, Publications and Student Affairs, and various commissions for shorter-term activities.

4. Interaction with other international organizations and projects

Currently, IAMG membership represents 63 countries across the globe. The IAMG is affiliated with IUGS, IUGG, EAGE and ISI. It is a Scientific International Partner of the Earth Science Matters Foundation (ESM). IAMG has five Student Chapters. In addition, the IAMG financially supported the GISTAM 2022 conference. The immediate Past President of the IAMG (Jennifer McKinley) is a member of the IUGS Executive Council for the period 2020-2024.

IAMG continues to collaborate with other international associations, including the International Union of Geological Sciences (IUGS), International Union of Geodesy and Geophysics (IUGG), American Geophysical Union (AGU), European Geoscience Union (EGU), European Association of Geoscientists and Engineers (EAGE), Earth Science Matters (ESM), Southern African Institute of Mining and Metallurgy (SAIMM), International Association for Young Earth Scientists (YES), Joint Statistical Meetings (JSM), Future Earth Coasts (former LIOCZ), the Geological Society of London (GSL), the

Royal Irish Academy (RIA), the China Union of State Key Laboratories in Solid Earth Sciences, the UNESCO International Centre for Global-scale Geochemistry (ICGG) and the Chinese Academy of Geosciences.

The IAMG continues to be involved in the Global Deep Time Digital Earth initiative (DDE), the first IUGS-recognized Big Science Programme officially launched during the 73rd IUGS Executive Council Meeting held in Beijing (February 2019). Currently, the IAMG is contributing \$10,000 USD per year to this project. This involvement further strengthens the IAMG relationship with IUGS and other associations. The current IAMG President, Professor Peter Dowd, has agreed to take on the role of the IAMG representative for the DDE.

Preparations are underway for the 37th IGC (IGC2024), which will take place in the Bexco Conference Centre, Busan, South Korea. As an affiliated association, the IAMG is an active contributor to the IGC conferences and is represented by the IAMG IGC Councilor, Dr. Jonggeun Choe (South Korea).

5. Chief products

The IAMG publishes four scientific journals (*Mathematical Geosciences*, *Computers and Geosciences*, *Natural Resources Research*, and *Applied Computing and Geosciences*) in partnership with Elsevier and Springer. Annually IAMG publishes two newsletters and the proceedings of its annual meeting on CD and/or book-form. It sponsors the publication of books, including those in the IAMG Monograph Series, in partnership with Oxford University Press. IAMG maintains one primary public website: <http://www.iamg.org>, which contains general information, including Statutes and By-Laws and Minutes of General Assemblies and IAMG Council meetings.

Mathematical Geosciences published 62 articles in eight issues in 2022. Issue 3 was a special issue on Geostatistics and Machine Learning. The 2021-2022 impact factor is 2.508.

Computers and Geosciences published 176 papers in the 12 issues in 2022. The 2021-22 impact factor is 5.168. There were no special issues in 2022.

Natural Resources Research published 170 papers in six issues in 2022. The 2021-22 impact factor is 5.609. There was one special issue in 2022 on Developments in Quantitative Assessment and Modeling of Mineral Resource Potential.

Applied Computing and Geosciences is a relatively new, on-line only, open-access journal published by Elsevier and focused on all aspects of computing in geosciences. As the first issue was published in 2018, it does not yet have any published metrics. A total of 28 papers in four issues were published in 2022.

The Encyclopaedia of Mathematical Geosciences is a living reference work published by Springer as part of the book series Encyclopaedia of Earth Sciences Series (EESS). It is

edited by Professor B. S. Daya Sagar, Professor Qiuming, Professor Jennifer McKinley, and Professor Frits Agterberg.

Student and post-doctoral research are financially supported by research and travel grants including the *Mathematical Geosciences*, *Computers & Geosciences* and *Natural Resources Research scholarships*. In 2022, payments of 2,500 USD, 1,000 Euros, and 2,000 USD were made to the student chapters in China University of Geosciences at Wuhan (China), Nancy (France), and Sun Yat-Sen University (China), respectively. No travel grants were awarded in 2022 because of COVID-19.

Financial support is also provided in the form of professional awards and recognition. In particular, the Krumbein Medal, Chayes Prize, Griffiths Teaching Award, Vistelius Award, Georges Matheron Lecturer Award and the IAMG Distinguished Lecturer. The awards determined in 2022 for awards in 2023 are:

- 1) The Felix Chayes Prize for Excellence in Research in Mathematical Petrology is awarded to Professor Vermeesch, Department of Earth Sciences, University College London.
- 2) Andrei Borisovich Vistelius Award for a female scientist is awarded to Dr. Shaunna Morrison, Carnegie Institution for Science, Earth and Planets Laboratory, USA.
- 3) Andrei Borisovich Vistelius Award for a male scientist is awarded to Dr. Behnam Sadeghi, University of New South Wales, Australia.
- 4) The Founders Scholarship is awarded annually to an outstanding student or post-graduate scientist. The award for 2023 is to Dr. Sofia Nerantzaki, a Research Fellow at the University of Saskatchewan, Canada.
- 5) The Georges Matheron Lecturer is awarded to Professor Xavier Emery, University of Santiago, Chile.
- 6) The Distinguished Lecturer is awarded to Professor Michael Pyrcz, University of Texas at Austin, USA.

More detailed information on the IAMG and its activities is available on the IAMG website (<http://www.iamg.org>).

6. Chief accomplishments in 2022 and plans for 2023

The 21st annual IAMG Conference was held in Nancy (France) in August-September 2022. The 22nd annual IAMG conference will be held in Trondheim (Norway) in August 2023. IAMG launched a new website in 2022.

7. Specify how any IUGS Allocation for 2022 was used

No IUGS Allocation was requested for 2022.

8. Budget request with justification for 2022 (only applicable to low income affiliates)

No IUGS Allocation was requested for 2022.

9. Does your website have a link to IUGS?

YES.

<https://iamg.org/links-and-datasets.html>