

INTERNATIONAL ASSOCIATION FOR MATHEMATICAL GEOSCIENCES

Annual Report to the International Union of Geological Sciences for 2014

1. Overall objectives

The mission of the International Association for Mathematical Geosciences (IAMG) is to promote, worldwide, the advancement of mathematics, statistics and informatics in the geosciences. The main duty of the IAMG is to further method development and disseminate 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

By means of its three 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 and geological process modelling. Its contributions to predictive geology are concerned with natural disasters as well as the delineation of mineral, hydrocarbon and water deposits in the crust of the Earth. The 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, Executive Vice President, Secretary General and Treasurer), two Vice Presidents, Past President, four Ordinary Council Members, special IGC Councilor, three Editors-in-Chief, and Newsletter/Website Editor. It has seven standing committees for Awards, Curriculum Quality, Lectures, Meetings, Outreach, Publications and Student Affairs, respectively, and various commissions for shorter term concerns.

4. Interaction with other International organizations and projects

The IAMG is Scientific International Partner of the Earth Science Matters Foundation (ESM). IAMG maintains a joint booth with ESM and the International Lithosphere Program that in 2014 was exhibited at the First International Conference on Politics, Economy and Culture in Tehran, Iran; and at CAG25 and the third YES Congress in Dar es Salaam, Tanzania 2014. Additionally, the IAMG annually has a booth and co-organizes sessions at the AGU Fall Meeting in San Francisco, U.S.A. Booth space has been reserved. The IAMG Executive Vice President is Communications Officer for the IUGS Initiative on Forensic Geosciences (IUGS-IFG).

At the IUGS Executive Meeting in Goa, India, February 8-11, 2014, IAMG President Qiuming Cheng reported on the main activities of IAMG in 2013 including our annual meeting, student activities and interactions with other associations, and gave highlights of scientific progress. He introduced several large-scale (continental to global) projects in the areas of mineral resources and energy assessments conducted during the past few

years. IAMG contributions to Society include not only theories and methodologies, but also computer techniques and case studies as well as training of Highly Qualified Personnel. Theories invented and techniques developed by IAMG members are commonly applied in mathematical geoscience as well as in other fields of the geosciences. These techniques include but are not limited to basin simulation and application in oil/gas exploration, 2D to 3D GIS techniques and applications, new models for modeling singularity for geodynamics, new models and methods for mineral and other resource appraisals, new geostatistical and statistical analysis including multiple point geostatistics, image regeneration and compositional data analysis. IAMG has been and will be closely collaborating with IUGS and other organizations to promote and to support the new initiative of resourcing future generations.

5. Chief products

The IAMG publishes three scientific journals (Mathematical Geosciences, Computers & Geosciences and Natural Resources Research) in partnership with Elsevier and Springer. In 2014, about 400 scientific articles were published in these three journals. Annually IAMG publishes two newsletters and the proceedings of its annual meeting. It sponsors the publication of books including those in the IAMG Monograph Series in partnership with Oxford. IAMG maintains two websites: <http://www.iamg.org> is publicly available and contains general information including Statutes & By-Laws and Minutes of General Assemblies as well as Council meetings; the other website is for members only. Student and postdoctoral research is financially supported by research and travel grants including the new Mathematical Geosciences, Computers & Geosciences and Natural Resources Research scholarships first granted to nine recipients in 2013. Seven such journal-named research scholarships were awarded in 2014. More detailed information on the IAMG and its chief products is available on the recently updated IAMG brochure that is available on the IAMG website (<http://www.iamg.org>).

6. Chief accomplishments in 2014 and plans for 2015

In addition to scientific papers the three IAMG journals (Mathematical Geosciences; Computers & Geosciences; and Natural Resources Research) published various short notes, book reviews and other information such as laudations for IAMG Award winners. The 16th Annual IAMG Conference held at Jawaharlal Nehru University, Delhi, India, 17-20 October, 2014, had 365 abstracts submitted. Unfortunately, a relatively large number of scientists who had been scheduled to present papers were refused entry visa by the Indian government. This included nearly 40 IAMG members from China. The IAMG2014 Proceedings are available as CD-RW. They also were published in book-form by Capital Publishing Company in New Delhi (Jahardhana Raju, Editor).

IAMG has co-sponsored the GEOMAP Workshop in Olomouc, Czech Republic, 17-20 June, 2014, and organized a Statistical Analysis of Compositional Data session at the Joint Statistical Meetings, Boston, U.S.A., 2-7 August, 2014. IAMG also co-sponsored the workshop on Frontiers of Mathematical Geosciences held at the Geological Survey of China, October 8-10, 2014 (110 participants). The annual IAMG China Section meeting on Mathematical Geology and Geoinformatics was held in Xuzhou, China, October 10-12, 2014 (130 participants). During 2014 student and postdoctorate research and

activities were financially supported by \$ 37,500 US mainly for research and travel grants.

Plans for 2015 include holding the 17th Annual IAMG Conference in Freiberg, Germany. IAMG will co-sponsor the Sixth International Workshop on Compositional Data Analysis to be held in Girona, Spain, 1–5 June 2015. IAMG also will cosponsor a geostatistical conference to be organized by the Southern African Institute of Mining and Metallurgy in honor of Danie Krige in Johannesburg 2-4 September 2015. The IAMG President is planning to participate in the IUGS Executive Meeting to be held in Vancouver, Canada, 27-29 January, 2015. Many IAMG members are engaged in the development of new methods for prediction of probable places of occurrence and quantities of mineral and fuel resources, on which topic the IUGS has published a white paper in October 2014.

7. Specify how any IUGS Allocation for 2014 was used

No IUGS Allocation for 2014 was requested.

8. Budget request with justification for 2015 (only applicable to low income affiliates)

No IUGS Allocation for 2015 is requested.

9. Does your website have a link to IUGS?

YES.