



INTERNATIONAL UNION OF GEOLOGICAL SCIENCES (IUGS)

Reporting Form for IUGS Commission on Geoscience Education, Training and Technology Transfer (IUGS-COGE) - 2015 -

Overall objectives

The IUGS Commission on Geoscience Education, Training and Technology Transfer (COGE) was established in 2004 to examine and develop programs to assist developed and developing countries to maintain, expand or introduce better Earth Science education, outreach and technology transfer within their countries.

The main objectives defined and approved by the IUGS are:

- Identify gaps in education, training and technology transfer both conceptually and geographically.
- Together with other relevant bodies in or outside the IUGS family, develop strategies for the coordination of existing, and the development of new, programmes in geoscience education, training and technology transfer based on the identified gaps.
- Produce a 5-year Action Plan together with an annual plan of action including budget.
- Organise meetings, conferences and workshops for geoscience educators and to disseminate information on new trends and topics in the field of geosciences.
- Develop specific programmes on the continuation and coordination of training courses, especially through generation of teaching materials and provision of training courses.
- Encourage publication of handbooks or textbooks at an international level to help bridge recognised gaps in the training of, and education for, geoscientists.
- Facilitate the harmonisation of geoscience presentation with different cultures in order to enhance the development of ethics in geoscience education.
- Assist in the distribution of geoscience teaching materials, including books, videos, equipment, etc.

Relate goals to overall IUGS scientific objectives

The IUGS aims to promote development of the Earth sciences through the support of broad-based scientific studies relevant to the entire Earth system; to apply the results of these and other studies to preserving Earth's natural environment, using all natural resources wisely and improving the prosperity of nations and the quality of human life; and to strengthen public awareness of geology and advance geological education in the widest sense. The scientific work of the IUGS is carried out primarily by Commissions, Task Groups, Initiatives, and Joint Programs.

The IUGS-Commission on Geoscience Education Training and Technology Transfer (IUGS-COGE) is the key tool of IUGS for developing geoeducational activities. The main goals of the commission follow the IUGS scientific guidelines, in accordance with its main role for fostering geoscience education and developing geoscience education and awareness for the benefit of society.

Structure and organization

IUGS-COGE Commissioners

- Jesús Martínez-Frías, *Chair*, Spanish National Research Council, CSIC –Spain
- Chris King, *Vice Chair*, Keele University – United Kingdom
- Jennifer Nocerino, *Secretary/Treasurer*, Geological Society of America – USA
- Gary Lewis, *Former Chair and IUGS Strategic Planning Committee*, GEOetc – USA
- Ochir Gerel, *Former IUGS Vice President and IUGS Strategic Planning Committee*
Mongolian University of Science & Technology – Mongolia
- Chan-Jong Kim, Seoul National University – South Korea
- Greg McNamara, Geological Society of Australia – Australia
- Alan Morgan, Waterloo University – Canada
- Ian Clarke, University of Adelaide – Australia
- Adriana Niz, University of Catamarca – Argentina
- Kmar Ben Ismail-Lattrache, University of Tunis El Manar – Tunisia
- Yamina Bourgeois, Cadi Ayyad University – Morocco
- Elyvin Nkhonjera, Community Economic Improvement Project, YES – Malawi
- R. Shankar, Mangalore University – India
- Miguel Cano, Bicol University– Philippines
- Ashvin Wickramasooriya, South Eastern University of Sri Lanka – Sri Lanka

Interaction with other International organizations and projects

During 2015, IUGS-COGE developed fruitful interactions with the following international organizations (all of them IUGS affiliated associations and societies), and IUGS commissions and task groups:

- Geological Society of Africa (GSAf)
- Earth Science Matters Foundation (ESM)
- YES (African Group)
- International Union of Geodesy and Geophysics (IUGG)
- The International Association for Geoscience Diversity (IAGD)
- International Association for Geoethics (IAGETH)
- International Geoscience Education Organization (IGEO)
- European Federation of Geologists (EFG)
- Association of Geoscientists for International Development (AGID)

These interactions have involved the implementation of geoeducational activities which are developed by two or even three partners (e.g. IUGS-COGE-GSAf-ESM).

Chief products and accomplishments 2015

In the framework of the [IUGS-COGE GEO-ERA](#) (Geoscience Education Roadmap for Africa) project, which was promoted by our Commission in 2012, in cooperation with the Geological Society of Africa (GSAf) as main partner, and the Earth Science Matters Foundation, a [specific Survey](#) about Geoscience Education in Africa was made and launched in June/2015.

« *The Geoscience Education Roadmap for Africa (GEO-ERA) aims to provide the entire African continent with a roadmap to advance the target of geoscience education, training and technology transfer. GEO-ERA works under a multi-institutional framework taking into account the significant previous work carried out by other institutions (e.g. UNESCO Earth Science Education Initiative in Africa). GEO-ERA will provide a common framework for understanding basic theoretical and practical geoscientific issues, from a multidisciplinary point of view and with a*



geoethical approach, taking into account that Africa is one but also that the different countries and regions require tailor-made analyses. GEO-ERA will be developed by Africans. GEO-ERA will increase the currently still scarce visibility of the contributions linking Geoscience Education and Africa through a set of concrete actions and the publication of thematic contributions in prestigious journals (i.e. Science, Nature, Journal of African Earth Sciences, Episodes) ». (IUGS-COGE GEO-ERA).

Information and links to the survey were published in the IUGS-COGE website, GSAf website and in the GSAf Newsletter ([Nr.6](#)). Likewise, the survey was also widely distributed using the facebook site of the commission. Some YES members (African group) also assisted in the making and diffusion of the Survey. Some preliminary results of the survey were presented during the invited talk of the IUGS-COGE Chair in the « *Conference on Future of Earth-Space Science and Education (Future ESSE)* », which was organized by the IUGG in the ICTP, Trieste, Italy (2-6 November 2015). It is important to highlight the noteworthy participation in this Conference of the President of the IUGS and other top representatives of ICSU GeoUNions and international societies and associations. The survey will be active and running until 31 July 2016.

Over the past four years, the IUGS-COGE has collaborated with the International Association for Geoscience Diversity (IAGD) to provide a combined booth in the exhibit hall at the Geological Society of America Annual Meetings. An increase in events and activities over the years has provided an increase in people visiting the collaborative exhibit space. All of these events successfully highlight the need for increased awareness of what the IAGD-IUGS-COGE collaboration has been working to achieve: access and inclusion to geoscience instructional environments for individuals with disabilities.

The promotion of IAGD and IUGS-COGE resources showcase the need for enhanced accessibility to geoscience education and workforce development for students and practitioners with disabilities. Members of the IAGD maintain the collaborative booth for all four days of the GSA Annual Meeting, holding many discussions with students and geoscientists alike, which results in an expansion of the membership network across the United States and through many countries of those in attendance. Through this collaborative project, the IAGD/IUGS-COGE exhibit space has enhanced awareness of accessible opportunities and the need to foster programs and activities that focus on full academic inclusion.

The IAGD network continues to build membership on a global scale. The Geoscience community is becoming even more cognizant of the importance of promoting effective geoscience instructional practices. Even more, as a result of collaborations like the IAGD/IUGS-COGE partnership over the past three years, the Geoscience community is becoming increasingly aware of the need to promote accessible and inclusive accommodations for students and geoscientists with diverse physical and cognitive abilities. Countries including India, Spain, Canada and the UK are becoming more involved in the IAGD network and promoting the awareness of inclusive geoscience instructional strategies, which should also be attributed to this collaboration between the IUGS-COGE and the IAGD. The IAGD continues to be very grateful for the collaborative support of the IUGS-COGE. This partnership at the Geological Society of America Annual Meeting provides an excellent opportunity to promote the international efforts of accessible geoscience education. This partnership will undoubtedly pave the way for the future of workforce development in the geosciences, for students otherwise marginalized by the inaccessibility of a traditionally and physically rigorous scientific discipline.

This collaborative effort has been again settled on at the 2015 GSA meeting in Baltimore, Maryland, USA. It is expected to continue promoting shared resources, inclusive instructional workshops, and field-based learning opportunities to raise awareness of accessible geoscience education on a global stage.

Regarding the products and accomplishments in relation with the IAGETH, as indicated in the last annual report, this association was approved in 2013 as a new affiliated organization to IUGS. Since January 2013, the IUGS-COGE Chair is the President of IAGETH and was responsible for the presentation of its candidanship to IUGS in Paris. As it was indicated in the previous IUGS-COGE report, *“this new independent, international association will be extremely important in strengthening the links between geoscience education and geoethics, to be applied to many geoscientific activities”*. In accordance with one of the foundational goals of our commission: *“Facilitate the harmonisation of geoscience presentation with different cultures in order to enhance the development of ethics in geoscience education”*, this is the procedural line of cooperation that we are following linking geoeducation and geoethics in many different activities, including, among others, inter-institutional partnership, invited talks, seminars, training and capacity building activities and many other initiatives.

The cooperation with the European Federation of Geologists (EFG) was mainly focused on the international project that this organization is currently coordinating about raw materials (INTRAW project). INTRAW brings together an international consortium of 15 partners with extensive experience in research, innovation, education, industry, trade and international networking across the entire raw materials value chain. As part of the European Commission’s Horizon 2020 Programme for Research & Innovation, the 36-month project INTRAW was launched in February 2015 to foster international cooperation on raw materials. The EU-funded INTRAW project was set up to map and develop new cooperation opportunities related to raw materials between the EU and other technologically advanced countries, such as Australia, Canada, Japan, South Africa and the United States. The outcome of the mapping and knowledge transfer activities that are conducted in the first two years of the project will be used as a baseline to set up and launch the European Union’s International Observatory for Raw Materials as a permanent raw materials knowledge management body ([INTRAW, 20015](#)). The IUGS-COGE chair was appointed as expert in one of the three INTRAW Panels: “Research & Innovation”, “*Education & Outreach*” and “Industry & Trade” and was invited to attend the first workshop, which was held in Bled (Slovenia, 15-16 September 2015).

With regards to the fruitful cooperation with the International Geoscience Education Organization (IGEO), it is important to note that several IUGS-COGE commissioners actively took part in the 7th GeoSciEd Conference – 2014, September 5-9, 2014 at the University of Hyderabad, India (Prof. R. Shankar was one of the Organising Secretaries), and in the 8th International Earth Science Olympiad IESO 2014 – Spain.

Finally, following the line of past years, our Commission has also continued its relationship with AGID. The IUGS-COGE Chair is the National Coordinator of AGID in Spain and member of the AGID working group of geoethics. Two specific AGID-related websites (in which the IUGS logo appears) are hosted in the Spanish Thematic Network of Earth and Planetary Sciences (TIERRA).

In addition to the IUGS-COGE official website (www.iugs.com), many activities of our commission are also distributed using facebook (<https://www.facebook.com/IUGSCOGE>), displaying more than 1,460 “Likes” so far. Both sites are managed by our webmaster Greg McNamara.

Publications

- King, C. (2015) The International Geoscience School Syllabus and Its Development. *Episodes* 38-1, 57-74.
- Martínez-Frías, J. (2015) Geoscience education, training and technology transfer. *Proceedings of the Conference on Future of Earth-Space Science and Education (Future ESSE) | (smr 2722)*, Theme : Future geoscience and education in the developing world 2-6 November 2015, Trieste, Italy
- Martínez-Frías, J. (2015) *Geosciences and Future Earth*. Geosciences. Special Issue. MDPI (in progress)

**The IUGS-COGE Chair was invited at the end of the last year to join the Editorial Board of the journal Episodes. His incorporation was effective in 2015.*

Plans for 2016

As defined above, the activities of the Commission are progressing well, and we plan to continue accomplishing the:

- a) main objectives of the commission;
- b) ongoing, fruitful cooperation with different societies and associations and
- c) IUGS-COGE five-year plan approved by the IUGS.

Some of these initiatives and collaborations will be specifically focused on the progress of the GEO-ERA project and with regards to the 35th International Geological Congress (35IGC, 27 August – 4 September 2016, Cape Town), in which several IUGS-COGE members will act as Theme Champions of the Theme: Geoscience Education and Public Communication.

Budget

Funds from the IUGS for COGE are administered by the COGE Secretary/Treasurer and are held at the Geological Society of America (GSA). In 2015 IUGS/COGE received \$1485 from the IUGS. Additionally, \$1613 remained from 2014 which brought the total to \$3098. These funds were used in the following way:

- \$1000 Website administration and updates for 2015
- \$745 IAGD/IUGS-COGE Joint Booth fee at the 2015 GSA Annual Meeting
- \$330 IAGD/IUGS-COGE Joint Booth furnishings at the 2015 GSA Annual Meeting
- \$285 IAGD/IUGS-COGE Joint Booth copies at the 2015 GSA Annual Meeting
- \$340 phone fees

TOTAL Spent \$2700



Budget request with justification for 2016 (only applicable to low income affiliates)

▪ Website administration and updates for 2016	1000
▪ IAGD/IUGS-COGE Joint Booth fee, 2016 GSA Annual Meeting	745
▪ IAGD/IUGS-COGE Joint Booth furnishings, 2016 GSA Annual Meeting	330
▪ IAGD/IUGS-COGE Joint Booth copies, 2016 GSA Annual Meeting	285
▪ IUGS-COGE GEO-ERA collaborations	1000
▪ phone fees	340
▪ TOTAL	\$3,700

REQUEST TOTAL **\$3,700**

Jesús Martínez-Frías
Chair, IUGS-COGE