



The International Union of Geological Sciences Commission on Geoscience Education (IUGS-COGE)

Summary Report – August 2016 to September 2020

Current Commissioners

Chris King, Chair, Keele University – United Kingdom
Ian Clark, Secretary/Treasurer, University of South Australia - Australia
Greg McNamara, Webmaster, Geological Society of Australia – Australia
Yamina Bourgeois, Cadi Ayyad University – Morocco
Miguel Cano, Bicol University – Philippines
Ochir Gerel, Former IUGS VP, Mongolian University of Science & Technology – Mongolia
Roberto Greco, Campinas University – Brazil
Gary Lewis, Former Chair, President GEOect – USA
Jesús Martínez-Frías, Former Chair, Spanish National Research Council – Spain
R. Shankar, Mangalore University – India
Young-Shin Park, Chosun University – South Korea
Clara Vasconcelos, University of Porto – Portugal.
Ashvin Wickramasooriya, University of Peradeniya – Sri Lanka

Overall objectives

The IUGS Commission on Geoscience Education (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 and outreach within their country.

The main objectives defined and approved by the IUGS are as follows.

- Identify gaps in education 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, based on the identified gaps.
- 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 publications 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 (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.

I IUGS Strategy for Enhancing Geoscience Education

1. The IUGS *'Strategy for enhancing geoscience education'* worldwide was developed during 2018 and published as part of the IUGS-COGE Annual Report in early 2019.
2. The IUGS *'Strategy for enhancing geoscience education – 2020 update'* was published in December 2019 as part of the IUGS-COGE Annual Report for 2020.
3. The Commission on Geoscience contribution to the IUGS 2019 Annual Report was based on the *'Strategy for enhancing geoscience education – 2020 update'*, further updated (pages 39 – 41).

II IUGS/IGEO Field Officer Initiative

1. Two field officers were trained and appointed in March 2019 (for India and Morocco). Three further Field Officers (for Chile, Malaysia and Togo) had been invited for training in April 2020, but the training was postponed due to the coronavirus pandemic.
2. A report on the initiative, *'Report on the international Geoscience Education Field Officer Programme: first year of operation, May 2019-April 2020 – the pilot year'* was published in May 2020. This showed that workshops were presented by the four EGU Field Officers and the two IUGS/IGEO Field Officers to 379 individuals in 15 cities through 21 workshops, before 12 workshops had to be cancelled due to coronavirus. The evaluation feedback was excellent – 4.79 on a 1 (low) to 5 (high) scale.

III Collaborations with other organisations

1. **International Geological Congress (IGC)**. The COGE Chair organised the Geoscience Education and Public Communication theme for the 35IGC in Cape Town in 2016 and co-organised the Science in Society theme for 36IGS in Delhi in March 2020 (the last sadly postponed due to the coronavirus pandemic).
2. **International Geoscience Education Organisation (IGEO)** in:
 - a. Identifying and supporting IUGS/IGEO Field Officers.
 - b. Developing a Latin American chapter of IGEO, see <https://laigeo.cloudaccess.host/>
 - c. Developing a European Chapter of IGEO and appointing two co-Chairs with the support of **Association des Professeurs de Biologie et de Géologie** (French association for Earth Science teachers – APBG) in France, **Associação Portuguesa de Professores de Biologia e Geologia** – (Portuguese association for Earth science teachers – APPBG) in Portugal, **Asociación Española para la Enseñanza de las Ciencias de la Tierra** (Spanish Association for the Teaching of Earth Sciences - AEPECT) in Spain, **Earth Science Teachers' Association (ESTA)** in the UK, Earth science section of the **Associazione Nazionale Insegnanti di Scienze Naturali** (National Association of Natural Sciences Teachers - ANISN) in Italy, Association of Geography teachers in Flanders (**Vereniging Leraars Aardrijkskunde**) and the working group of teacher educators in geography in Belgium (**Werkgroep Didactiek Aardrijkskunde**). A follow up online meeting between the European Chapter Chairs and the IGEO Senior Officers is planned for 12th September 2020.
 - d. Supporting the **UNESCO International Geoscience and Geoparks Programme, Regional Office for Science in Latin America and the Caribbean (UNESCO Montevideo)** in conducting

- and publishing an international survey of Earth science education and developing an academic paper from that publication (submitted)
- e. Publishing and endorsing the international online textbook '*Exploring geoscience*'.
 - f. Publishing a new **Earthlearningidea** every two weeks.
 - g. Support for the '*My Earth science educator story*' initiative – which has published 70 stories.
 - h. Support for the **International Earth Science Olympiad (IESO)** initiative – sadly the IESO for 2020 was cancelled due to the coronavirus pandemic.
3. **European Geosciences Union (EGU)** in:
 - a. Training IUGS/IGEO Field Officers.
 - b. Publicising and running Geoscience Information for Teachers (GIFT) workshops for teachers in Vienna in 2019 (Plate tectonics and Earth's structure), 2018 (Major events that shaped the Earth), 2017 (The Mediterranean), in Cape Town, 2017 (Atmosphere, Oceans and Earth's magnetism) and 2016 (Mineral resources-natural hazards) and Mexico, 2016 (Natural hazards, disaster risks and societal implications) . Sadly the 2020 Vienna GIFT workshop (Water in the solar system) was rolled over to 2021 and the 36IGC GIFT (Mountains, water and the Environment) planned for Delhi in 2020 was cancelled, both due to the coronavirus pandemic. The first EGU PanAmerican capacity-building GIFT workshop (Major events that shaped the Earth), planned for Merida, Mexico in 2020 was also rolled over until 2021 due to the pandemic.
 - c. Publishing and endorsing the international online textbook '*Exploring geoscience*'.
 4. **The TROP-ICSU project on climate change education**
 - a. The project aimed at 'integrating climate studies with the core curriculum' across the world is an initiative of the **International Council for Science (ICSU)** (now the **International Science Council**) has developed a website with a wide range of tools to aid teachers to teach climate education across a range of subject areas. Its first phase ended in late 2019.
 5. **Arabian Geosciences Union (ArabGU), the African Association of Women in Geosciences (AAWG) and the African Geoparks Network (AGN)**
 - a. The COGE Chair contributed to the joint congress of these organisations in March 2018.
 6. **Geological Society of Africa (GSAf)**
 - a. The COGE Chair contributed to the 26th Colloquium of African Geology, Ibadan, Nigeria, November 2016.

IV Publications

1. Publishing and endorsing the international online textbook '*Exploring geoscience*'.
2. Publishing a new activity on the **Earthlearningidea** website every two weeks. The Earthlearningidea website was originally developed for the International Year of Planet Earth (IYPE) in 2008. By the September 2020, 347 activities in English had been published, with more

than 1100 translations into 12 different languages and more than 4.8 million pdf downloads across 204 countries (averaging more than 43,000 per month).

3. Publications by commissioners in journals and magazines totalling at least 73 publications: 7 in 2020, 19 in 2019; 23 in 2018; 14 in 2017; 10 in 2016.

V COGE business

1. The COGE Chair attended IUGS executive committee meetings in Paris, 2017, Potsdam, 2018, Beijing, 2019 and Busan, 2020.
2. The COGE membership was revised in 2017 and late 2019.
3. The COGE website has been maintained, despite some downtime linked with unavailable paperwork concerned with the domain name.
4. The COGE Chair attended the Resources for Future Generations (RFG) conference in Vancouver in June 2018 and the VIII GeoSciEd conference in July 2018 and contributed to the APPBG conference in Portugal in 2019.
5. The COGE Chair conducted workshops for teachers in Canada and South Africa in 2016, Austria and South Africa in 2017, Austria, Rwanda, Morocco, Canada and Brazil in 2018, Austria in 2019 and would have presented workshops in India (x 2) and Austria in 2020 had coronavirus not intervened (a contribution to one Indian workshop in 2020 was made virtually).

Chris King, on behalf of the members of the Commission on Geoscience Education, September 2020.