

INTERNATIONAL UNION OF GEOLOGICAL SCIENCES (IUGS)

Reporting Form for IUGS Commission on Geoscience Education, Training and Technology Transfer (IUGS-COGE) - 2016 -

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

- Chris King, *Chair*, Keele University – United Kingdom
- Ian Clark, *Secretary/Treasurer*, University of South Australia – Australia
- Greg McNamara, *Webmaster*, Geological Society of Australia – Australia

- Jesús Martínez-Frías, *Former Chair*, Spanish National Research Council, CSIC –Spain
- Gary Lewis, *Former Chair and IUGS Strategic Planning Committee* – USA
- Ochir Gerel, *Former IUGS Vice President and IUGS Strategic Planning Committee* Mongolian University of Science & Technology – Mongolia
- Adriana Niz, University of Catamarca – Argentina
- Yamina Bourgeoini, 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
- Jaroslav Dostal, Saint Mary's University in Halifax – Canada
- Young-Shin Park, Chosun University – South Korea
- Lola Pereira, Universidad de Salamanca – Spain

Interaction with other International organizations and projects

During 2016, 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 2016

1. Organisation of IUGS-COGE

The Chair of IUGS-COGE passed from Jesús Martínez-Frías to Chris King at the International Geological Congress in Cape Town in late August 2016.

Following this handover, existing Commission members were invited to become the new Secretary/Treasurer of the Commission to take over from retiring Jennifer Nocerino. Following discussion with interested parties, the new Secretary/Treasurer of the Commission is Ian Clark.

All existing commission members were contacted and asked if they wished to continue and, if not, who they would nominate in their place. As a result of this consultation:

- the following members signalled their retirement from the Commission: Jennifer Nocerino, Chan-Jong Kim – they are greatly thanked for their involvement
- the following Commission members proved impossible to contact and so were withdrawn: Alan Morgan, Kmar Ben Ismail-Lattrache
- the following new Commission members were appointed: Jaroslav Dostal, Young-Shin Park, Lola Pereira – they were warmly welcomed to the Commission

2. Contribution to the International Geological Congress, Cape Town, 2016

The IGC Theme of Geoscience Education and Public Communication was managed by the COGE Chair and comprised 63 oral abstracts, 18 posters and a plenary session.

A workshop was run by the International Geoscience Education Organisation (IGEO) supported by IUGS-



COGE, to develop an international geoscience textbook to support the International Geoscience Syllabus previously published in 2014/15 by IGEO with the support of IUGS-COGE.

A second workshop was run by IGEO supported by IUGS-COGE, to discuss the proposed IPGG/UNESCO – IGEO Geoscience Education Survey.

3. The international geoscience education textbook

Following the Cape Town workshop, the textbook is currently being written with the strong support of IUGS-COGE and IGEO members. The brief developed for the textbook is as follows:

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A geoscience textbook should be devised to provide a scientifically accurate and accessible resource to reach as wide an audience as possible. The textbook should be made available in a range of different versions (prepared as below) and be published online and made widely available through the IGEO website and other linked websites.

A first version should be written in English, using photographs drawn from across the globe and examples of interesting geoscience phenomena (presented in separate boxes) – this will be the ‘international version’. This version should be taken by colleagues around the world and ‘regionalised’ by adding photographs and examples from their own region. It should also be translated into different languages. In this way, versions appropriate for different countries, regions, states and even cities will be developed.

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The international version should be completed in Spring 2017, after which a range of IUGS-COGE and IGEO members and others have agreed to regionalise the textbook and translate the wording, where necessary.

The only expense in producing this range of textbooks is for the redrawing of c120 diagrams. The diagrams need redrawing to address any copyright issues, to remove the labels in English, so that they can be replaced by the translators in their own languages, and to use similar line thicknesses and palette throughout.

4. The IPGG/UNESCO – IGEO Geoscience Education Survey

The survey comprising 110 questions focussed on school-level education will run in early 2017, managed by UNESCO. The survey will run in nearly all Latin American and Caribbean countries following a UNESCO ‘Call for experts’ in those Latin American and Caribbean countries that currently do not have IGEO or COGE members. In addition it will run in 39 other countries that have active IUGS-COGE or IGEO members willing to facilitate the survey. The data collected will be collated by the UNESCO South American office in Uruguay, coordinated by Maria Frick.

5. Earthlearningidea

The Earthlearningidea website, supported by IUGS-COGE and IGEO continues to publish a new Earth science teaching idea in English every two weeks. As of December 2016, it has 250 activities in English with nearly 700 translations into 10 other languages (Spanish, Catalan, Norwegian, Italian, German, Portuguese, Polish, Slovak, South Korean and Tamil). 50 more activities in English are in the pipeline. The activities are being downloaded at a rate of more than 50,000 per month, with than 2.85 million downloads in all. The Earthlearningidea blog has been accessed in more than 10,000 towns and cities and 199 countries across the world.

6. The International Year of Earth science educator stories

This self-proclaimed ‘international year’ by IUGS-COGE and IGEO began in January 2016 and so far, (December, 2016) 51 stories have been published on the IGEO website (http://www.igeoscienced.org/?page_id=396) with another five in the pipeline and more promised. The stories of 1000 words each are aimed giving encouragement and guidance to the next generation



of Earth science educators. More stories are welcome, and will be published on an *ad hoc* basis from January 2017 onwards.

7. Contribution to the 26th Colloquium of African Geology, Ibadan, Nigeria, November 2016

The Chair of IUGS-COGE made a keynote presentation to the Colloquium and also made best use of the networking opportunities available.

8. Electronic communication

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

1. King, C. (2016) *Fostering deep understanding through the use of geoscience investigations, models and thought experiments – the Earth Science Education Unit and Earthlearningidea*. In *Geoscience education: trends and approaches*, Ed. Vasconcelos, C. Springer. In press
2. Kennett, P., King, C. & Devon, E. (2016) Earthlearningidea—two million and counting: bringing Earth science ideas to teachers across the world. *Geology Today*, 32. 6.
3. King, C., Kennett, P., & Devon, E. (2016) Earthlearningidea: a global web-based resource of geoscience teaching ideas – an analysis. International Geological Congress Abstracts, 35; 35th International Geological Congress, Cape Town, South Africa. Pub: IGC.
4. King, C. (2016) Our ‘International year of Earth science educator stories’ project. International Geological Congress Abstracts, 35; 35th International Geological Congress, Cape Town, South Africa. Pub: IGC.
5. King, C. (2016) Launch of the ‘Sand on a sill’ international collaborative project. International Geological Congress Abstracts, 35; 35th International Geological Congress, Cape Town, South Africa. Pub: IGC.
6. Martínez-Frías, J. (2016) Geoeducation and Geoethics: two crucial disciplines for Sustainable Earth. Sustainable Earth 2016. 23-24 June, 2016, Plymouth (UK).

Plans for 2017

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.

Focus in 2017 in particular will be on:

- development of the international geoscience education textbook
- implementation of the IPGG/UNESCO – IGEO Geoscience Education Survey
- continued progress of the Earthlearningidea and ‘My Earth science educator story’ initiatives

Budget

Funds from the IUGS for COGE are administered by the COGE Secretary/Treasurer and are currently held at the Geological Society of America (GSA) through December 2016. Starting in January 2017 they will reside at the University of Adelaide in Australia.

In 2016, IUGS/COGE received \$1985 from the IUGS. Additionally, \$398 remained from 2015 which brought the total funds to \$2383. These funds were used in the following way:

- \$600 IAGD/IUGS-COGE Joint Booth fee at the 2016 GSA Annual Meeting
- \$31 IAGD/IUGS-COGE Joint Booth copies at the 2015 GSA Annual Meeting
- \$225 website/phone fees



TOTAL Spent \$856, **funds remaining \$1527**

At this time, \$1527 of the IUGS COGE funds remains to help offset costs in 2017. These funds will be transferred to the new COGE Secretary/Treasurer at the University of Adelaide in Australia.

Budget request with justification for 2017 (only applicable to low income affiliates)

• Website administration and updates for 2017	\$1000
• IUGS-COGE GEO-ERA collaborations	\$1000
• Redrawing of c120 diagrams for the international textbook; the diagrams need redrawing to address any copyright issues, to remove the labels in English, so that they can be replaced by the translators in their own languages, and to use similar line thicknesses and palette throughout	\$1200
• attendance of one member of COGE at IUGS Executive Committee meeting	\$500
• phone fees	\$340
REQUEST TOTAL	<u>\$4,040</u>

Chris King,
Chair, IUGS-COGE