



COGE 2023 ANNUAL REPORT

1. Introduction

The IUGS Commission on Geoscience Education (COGE), an international scientific Committee established by and acting under the auspices of the International Union of Geological Sciences (IUGS), was established in 2004 and is bound to the IUGS Statutes and By-Laws. The main goal of this Commission is to examine and develop programs for assisting countries worldwide in maintaining, expanding, or providing better Earth science education.

The current structure and organisation of COGE can be found in the Working Plan Strategy 2024 attached to this report, which includes details of the 2024 budget and activities. The accomplishments of COGE during 2023 are listed below.

During 2023, constant communication with COGE members has been maintained by email, virtual meetings and during the AGU23. Organisational documents, meeting minutes and other relevant documents are stored in a Google Drive corporate account and accessible on the [Commission website](#).

2. Achievements

Organisational documents were formulated and approved following the assessment and exchange of ideas among commissioners and the support of surveys/polls. Due to our growing activities and collaborations the number of members on the commission has increased after a rigorous evaluation reflecting expertise in geosciences education and compliance with our values and COGE Terms of reference (ToR). The Geoscience Education Field Officer (GEFO) Program includes an internship to call young geoscientists interested in collaborating with the field officers. This year we welcomed 3 new regular members from Mexico, Costa Rica and Africa and five new associate members (Mexico, Ecuador, Paraguay, Bangladesh and Bolivia). The COGE committees started working this year with several achievements that will be detailed in the following sections of this report.

2.1. Geoscience Education Field Officer (GEFO) Program (responsible: Susanna Occhipinti)

The GEFO program continues to undergo significant advancements. Presently, 09 Field Officers (FOs) are involved in the program, with two GEFOs transitioning to other roles within COGE and four new FOs recently joining. Our efforts have been documented in Table 1, reflecting the COGE FOs appointed thus far, while Appendix 1 outlines the activities undertaken by them in 2023 and their 2024 plans.

In April, our GEFO leader Susanna Occhipinti, actively participated in the EGU FOs' meeting in Vienna, followed by the GIFT Training organized by the EGU Executive Committee. At these events, Susanna represented COGE through a poster presentation. Additionally, involvement in the Barcelona training held from May 12-14 contributed to formulating the Barcelona Manifesto that COGE supports.



Moving ahead, we are embracing online mediums for regular meetings with FOs, anticipating future online training sessions and, where feasible, in-person gatherings. These initiatives reflect our commitment to advancing GEFO Program objectives and fostering efficient stakeholder communication.

Table 1. Appointed COGE GEFOs up to date

	Name	Country/Region	App-year
1	R. Baskar	India	2019
2	Jasmi Hafiz Bin Abdul Aziz	KL/Malaysia	2020
3	Pauline Yawoa da Costa	Lome/Togo	2020
4	Seydou Sogoba	Burkina Faso	2021
5	Venkatraman Hegde	New Delhi/India	2021
6	Carlos Echeverria Barajas	Bogata/Colombia	2021
7	Yaseen Muhammad	Pakistan	2023
8	Nestor Damian Salinas Franco	Paraguay	2023
9	Raymond Kudzawu-D'Pherdd	Ghana	2023

2.2. Chris King Medal (responsible: Ian Clark)

The IUGS-COGE Chris King medal formulated to honour outstanding geoscience educators started this year awarding Dr. prof. Hector Lacreu from Argentina who will be a keynote speaker in our session at the IGC 2024. The awardee was featured on our website and social media platforms (including an interview in our Youtube channel) in coordination with the COGE Social media Team.



2.3. Publications (responsible: Susana Alaniz)

COGE members collaborated with the edition and promotion of the CGEO journal "Teaching and Communication of Geosciences," which is focused on Spanish language teachers. This collaboration was done for the issues of December 2023.

This Committee also collaborates with the organisation and dissemination of the CGEO Diploma in Teaching Earth Sciences. This diploma, developed in Spanish, was implemented from February to June 2023 to Latin American teachers.



Another task developed for this committee is the Episodes Special issue on "International Geoscience Education Strategies: Innovations, Collaborations, and Future Directions." This issue, which was approved in 2023, is expected to be published in December 2024.

2.4. International Relations (responsible: Miguel Cerna Cano)

In 2023, the Commission made notable progress in broadening its collaborative reach, marked by signing two significant Memorandums of Understanding (MoUs). Established with Women in Earth and Environmental Science Australasia (WOMEESA) and the Geosciences Center of the National Autonomous University of Mexico (UNAM-CGEO), these agreements signify a strengthening of our global network. Additionally, COGE engaged in constructive dialogues with various organisations, laying the groundwork for additional MoUs in 2024. These include formalising relationships with the International Geoscience Education Organisation (IGEO) and the European Geosciences Union (EGU) Education Committee, thereby solidifying our longstanding collaborative efforts.

A Development survey was conducted among COGE members (Appendix 3) to identify potential partnerships aligned with COGE's missions. This effort, complemented by a list provided by the IUGS Executive Committee, identified 13 key organisations as potential COGE collaborators. Subsequently, on December, COGE sent a draft to IGEO Board to further assessment and reached out with an extensive partnership proposal to the University of Mainz and the American Geosciences Institute. These partnerships aim to fortify various initiatives, including cross-promotion of events, network building via joint conference sessions, collaborative research projects, advocacy for equity and inclusion in Earth and Environmental Sciences, and initiatives to enhance the quality of geoscience education and teaching methodologies.



2.5. Social Media (responsible: Scott Miller)

In 2023, COGE witnessed significant advancements in its social media engagement, following the establishment of platforms on Instagram, LinkedIn, and Twitter (now X) in the previous



year. Under the leadership of webmaster Scott Miller, the newly formed Social Media (SM) Committee comprises Romina Celabe, Liliana Corona, and Elvaene James.

The Committee's strategic approach to enhancing COGE's online presence yielded outstanding results. An annual average of more than 60 weekly posts across all platforms led to a marked increase in followers, particularly on Facebook, Instagram, and LinkedIn. These posts not only garnered high impressions but also engaged audiences effectively, reflecting the compelling nature of the content (Figure 1 in Appendix 2). Key campaigns of the year included posts that:

- introduced new COGE members,
- shared video testimonials from existing COGE members,
- celebrated and interviewed the inaugural Chris King Medal winner,
- advertised COGE-sponsored publications (in multiple languages)
- showcased the GEFO Program and significant events such as the AGU Fall Meeting 2023 and AESC 2023.

Additionally, the Committee was vital in promoting global initiatives like the Barcelona Manifesto and educational collaborations with institutions, including CGEO (UNAM, Mexico) and WOMEESA. In the latter half of 2023, the SM Team revitalised the activity of COGE social media platforms, leading to a new membership from Nigeria and expanding COGE's digital outreach. The team launched a YouTube channel to broadcast COGE's activities.

The social media and website analyses were presented at the AGU conference in San Francisco and are being compiled in a manuscript for submission to a peer-reviewed journal in 2024. The SM Committee also connected with the IUGS Social Media team and the AGU Education Social Media Chair at the end of 2023. These connections open avenues for cross-promotion and potential future collaborations, enhancing COGE's visibility and impact in the geoscience community.



2.6. Other achievements

- 2 sessions approved: for the IGC 2024



- 2 sessions on Geoscience Education organised at the American Geophysical Union Fall Meeting 2023 (in San Francisco, USA): A poster session of COGE and a co-sponsored Town Hall and Scientific Session with IGEO.
- Establishment of the COGE Board Elections procedure
- Board Elections called and completed COGE board (now it is comprised by a chair, vice-chair, secretary, Social media coordinator and treasurer)
- Supporting Earth science Olympiads and the geoscientific exposition, MinerLima2023 in Peru
- Poster presentation on COGE at the Australian Earth Science Convention 2023, Perth
- Growing presence in Latin America and Australasia
- Connecting with IUGS Social Media Team and IUGS Webmaster to promote IUGS and COGE activities

3. Use of COGE Budget in 2023

IUGS funds for COGE are administered by the COGE Treasurer and are currently held at the Australian Bendigo Bank, Prospect, South Australia. At the time of the last report (March 2023), US\$10106.00 was remaining from the previous year (equivalent to A\$15042.08 at the time). COGE received A\$14442.52 from IUGS in May 2023. Interest received on account A\$165.32. Total funds available – A\$29649.92.

Expenditure since previous IUGS-COGE report

○ Bank fees	A\$ 168.68
○ Website management fee	A\$ 685.60
○ Field Officer Training	A\$ 2253.27
○ Field Officer Advance	A\$ 5409.21
○ Travel to IUGS EC Belfast	A\$ 4872.93

Current Balance at 14.01.23 = A\$12190.17 (US\$ 8190.58)

Peerspectives at 2024

Plans for COGE in 2024 are detailed in the attached COGE working plan-Strategy 2024

Sandra Villacorta
IUGS-COGE Chair

With contributions from the COGE Board, and COGE Committee's leaders



Appendix 1 COGE FOs performed activities in 2023 and 2024 plans.

Name	Year activities
R. Baskar	We plan to hold a workshop before 31st March 2024. I will update the details.
Pauline Yawoda Costa	Training on Geosciences at Kara town in North Togo, 450 km from Lome. It was about geosciences teaching difficulties in Togo, and Geology of Togo and West Africa, and minerals, rocks, and fossils identification. The participants were 15 secondary teachers.
Venkatraman Hegde	<p>5 days Online training program on " Effective writing of Technical papers' Tips and Tricks" (3 rd October till 7th October 2023).</p> <p>A 4 day training /workshop is scheduled from Nov 20th 2023 to 23rd Nov. 2023 on Effective teaching of Earth Science components in Engineering. This is designed for College Teachers.</p> <p>A national Seminar on Climate Change and Water resources management is proposed in the Feb. 27th, 28th 2024 for higher Research scholars, college Teachers and Professionals</p> <p>In Dec 2023 for School Teachers Effective and innovative methods of Teaching Earth science related subjects/lessons in schools Curriculum</p> <p>In January 2024 "Children's Geological Congress is scheduled.</p> <p>5 days Geological Field observations for aspiring Teachers and Research students and young teachers for a group of ten students.</p>
Carlos Echeverria Barajas	<p>Activities carried out in 2022</p> <p>https://www.youtube.com/watch?v=v29jW_unU-w&t=23s</p> <p>Activities carried out in 2022</p> <ol style="list-style-type: none"> 1. An activity related to the diagnostic properties of the minerals present in the region was carried out in November, taking into account what was proposed on the website (https://www.earthlearningidea.com/), with some modifications. 2. <p>Activities carried out in 2023</p> <p>In the image you can see the students checking the magnetic and electrical properties of pyrite, quartz, emerald, among others.</p>



<p>Seydou Sogoba</p>	<p>1st workshop 2023 Date: Thursday 17 August 2023 Location: Salam school complex in Bobo Dioulasso (365 km from Ouagadougou) Participants: 15 primary school teachers THEME: SHARING TIPS AND TEACHING RESOURCES FOR PRACTICAL AND UTILITARIAN SCIENCE TEACHING IN SCHOOLS-</p> <p>2nd workshop 2023 Date: Wednesday 04 October 2023 Location: TAOFIQ school complex in Ouagadougou Participants: 22 primary school teachers and some members of the administration THEME: SHARING TIPS AND TEACHING RESOURCES FOR HANDS-ON, UTILITARIAN SCIENCE TEACHING IN SCHOOLS</p> <p>November 10, 2023 conference on geosciences for the benefit of teachers of student schools (primary teachers) at the end of the theoretical training at the regional directorate of the National Institute for the Training of Educational Personnel of the Central Plateau of Loumbila. For 2 hours of work, we sensitized future teachers to the practical and utilitarian teaching of science. Discussions focused mainly on the importance of teaching and professions in the geosciences, Pedagogical resources to make the scientific lessons and experience of the European Geosciences Union practical. Finally, we concluded this mini workshop by urging participants to be role models in science education based on 4 main elements:</p> <ol style="list-style-type: none"> 1. Consider the context 2. Keeping up with current science and scientific discoveries 3. Knowing how to anticipate the preparation of lessons by mobilizing the appropriate equipment 4. Establish partnerships
<p>Yaseen Muhammad</p>	<ol style="list-style-type: none"> 1) On Aug 7, 2023, A Geologist Dr Andrzej Dubiniewicz from Faculty of Earth Sciences and Spatial Management, Nicolaus Copernicus University, Poland, visited and conducted two days training for kinds of Primary schools at Dir Lower Pakistan. The school kids and teacher learn about the earth sciences and its applications. 2) Two days of indoor basic earth science training was conducted for the teaching of Earth Science to PST (Primary school teacher). 3) A three-day geological field trip to Salt Range Pakistan UNESCO world heritage site was conducted for aspiring students' researchers and visiting teachers. All the participants learn about the outdoor earth sciences activities.



Appendix 2 Social media Metrics

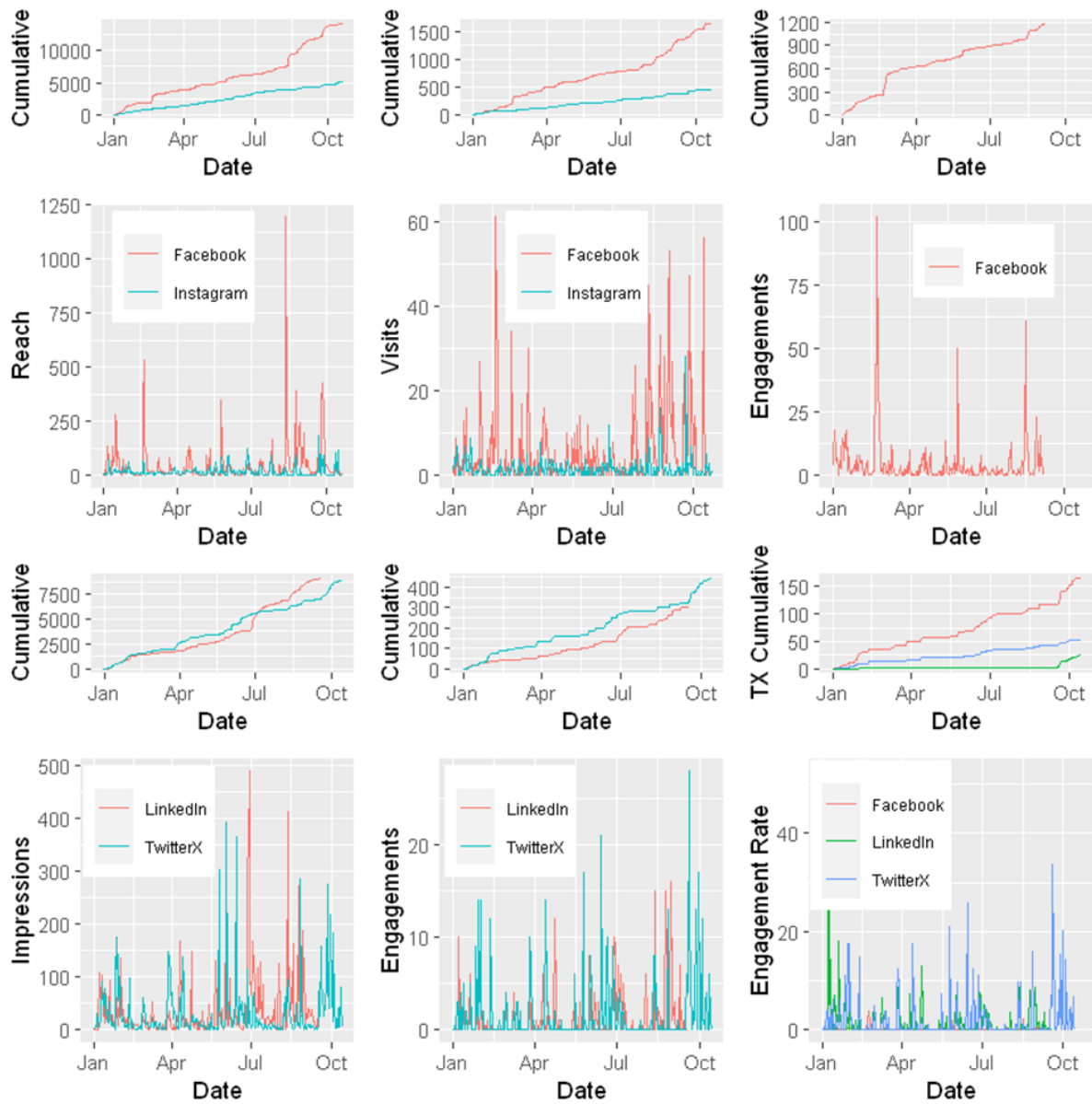


Figure 1. Daily data collected from social media sites, from January-October, 2023. Top row: Cumulative and Daily Reach and Visits for Facebook and Instagram, and Unique User Engagements for Facebook. Bottom row: Cumulative and Daily Impressions and Engagements for LinkedIn and X, and type of Engagements for X.

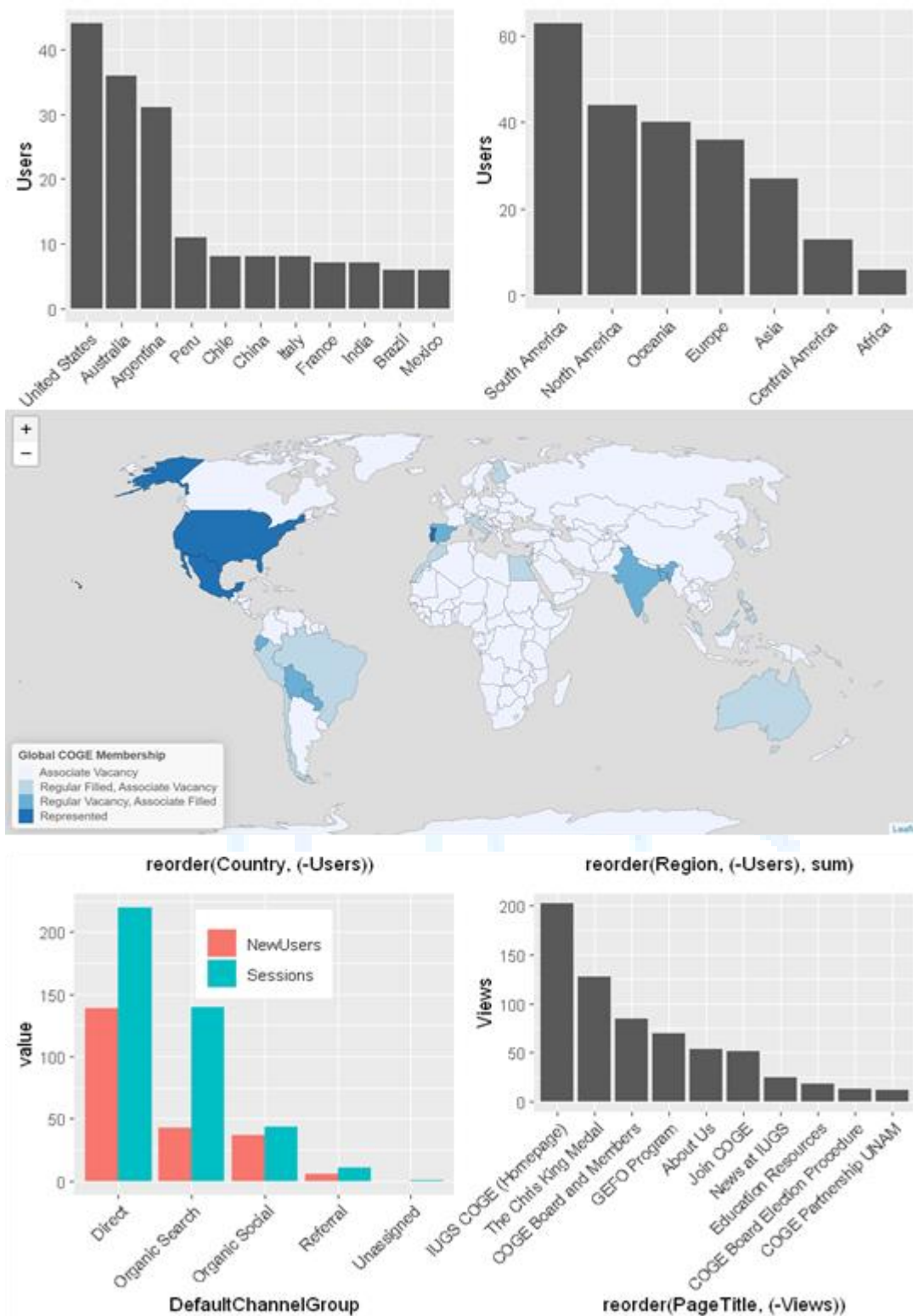


Figure 2. Google Analytics 4 data for the COGE website from August-October, 2023. Clockwise from Top Left: Top 10 Countries of Users (visitors); Count of Users by Continent; COGE members globally (produced in R software); Page Visits for different COGE webpages; New Users and Sessions grouped by Channel.



Appendix 3.
IUGS-COGE Development Survey 4
COGE Development and Assessment of New Members' Application - September

SECTION 1. Suggestions of COGE Agreements

Questions Responses **11** Settings

Name of the Organization and Person in charge Suggested

9 responses

AGU Education Section, IAEG Commission on Education and Training /
Kristen St. John; Fred Baynes (Email: fredb@iinet.net.au)

The Geological Society of Malaysia, Dr. Mohd Hariri Arifin

Department of Geology, University of Peradeniya, Sri Lanka,
Dr. Udeni Amarasinghe, Head of the Department

Camerino University ,prof.ssa Eleonora Paris

YES Network

All international organisations promoting geosciences

Regional Center for Science and Mathematics Education Development (BU RCSMED)

Unión Geofísica Mexicana

IGEOi



Website of the Organization

8 responses

<https://connect.agu.org/education/home>, <https://iaeg.info/commission-04-education-and-training/>

<https://gsm.org.my>

<https://sci.pdn.ac.lk/geology/>

<https://unicam.coursecatalogue.cineca.it/corsi/2023/10473>

<http://www.networkyes.net>

<https://www.facebook.com/RCSMED/>

<https://uniongeofisicamexicana.org.mx/>

IGEO

Please justify in few sentence your suggestion

9 responses

Both, the AGU Education Section and the IAEG Commission on ET are committed to advancing geoscience education worldwide. They can potentially collaborate on resources sharing, joint workshops/webinars, research projects, and advocacy efforts.

The Geological Society of Malaysia is the oldest organisation of geology in Malaysia. Currently, this organisation is active in participating in all activities related to geoscience in Malaysia including conducting seminars and fieldworks.

Only the Department of Geology, University of Peradeniya in Sri Lanka offers B. Sc. Geology Special Degree in Sri Lanka. However, few other universities offer Geology / Earth Science related courses in their degree programs.

UNICAM has always supported education activities in ESE, with PHD, Summer schools, learning weeks for IESO team

I don't know much about the organization, but if we are not collaborating with them, seems like it would be a good group to approach.

Fruiful Collaboration and serious persons after seeing the objectives

BU RCSMED is the institution that facilitates the selection for International Earth Science Olympiad. It has been active in conducting trainings in Earth Science for both primary and secondary school teachers. It is based in Bicol, the main venue of the 2nd IESO when it was held in the Philippines in 2008

This organization contains most of the scientist related with the Geological Sciences

We need to work with them to avoid overlapping