

Report of the Programme Board

This document is submitted by the Programme Board to the Executive Committee for discussion.

1 INTRODUCTION

This document provides a summary of the outcomes of the 18th Programme Board meeting, held by videoconference on 1-3 September 2020, as well as other activities of the Programme Board since the previous report.

2 GEO WORK PROGRAMME UPDATE

The Programme Board reviewed and approved updates to the 2020-2022 GEO Work Programme. As this is the first update since the development of the Work Programme in 2019, there were few modifications. The significant changes were the addition of two Community Activities – Open Earth Alliance (OEA) and Earth Observations for Climate Change Impacts on World Heritage Cities (CCI-WHC) – and the inclusion of the terms of reference for the four Foundational Task Working Groups.

Further information may be found in document ExCom-53.13 Update to the 2020-2022 GEO Work Programme.

3 2020 GEO VIRTUAL SYMPOSIUM – LESSONS LEARNED

In its previous report to the Executive Committee, the Programme Board noted the strong participation in the GEO Symposium this year, which was the first time the event was held in an online format. While detailed information on participants was not available at that time, the Secretariat provided this information to the Programme Board at its 18th meeting and will be summarized here.

The analysis that follows is based on three related, but distinct data sets:

- Data provided by Symposium participants through the pre-registration page of the GEO website;
- Standard viewer analytics generated by YouTube, which was one of two video streaming services used to deliver Symposium content to participants (the other was CDN Video, but similar analytics were not available from that service);
- Data provided by respondents to a voluntary online survey of Symposium pre-registrants.

Some of the key findings are summarized below:

- The number of unique pre-registrations was 1,534, excluding the GEO Secretariat. Of these, 1,304 (86%) were from GEO Members, 127 (8%) were from Participating Organizations, 14 (1%) were from GEO Associates, and 8 were from GEO Observers. A total of 55 (3.5%) were from countries or international organizations having no current affiliation with GEO.
- The regional distribution of pre-registrants was 33% from Europe, 32% from the Americas, 21% from Asia-Oceania, 13% from Africa, and 1% from CIS.
- Unique live session viewers at the start of the Symposium were close to the pre-registrant numbers: 1,424 on the first day. However, these numbers dropped to 266 on the second day and below 200 on the remaining days (compare to the average attendance of in-person Symposia of 100). Average view duration went up on days 2 to 5, suggesting that many viewers joined briefly on the first day and did not return.
- Recordings of the live sessions were not viewed often; the most viewed session was only watched by 14 unique viewers.
- By contrast, some of the pre-recorded videos had view numbers comparable to the live sessions (nine videos having more than 100 unique views).
- The sessions with the highest number of views for the pre-recorded videos were:
 - Leveraging Advanced Technologies;
 - Contributing to Reproducible Knowledge; and
 - Earth Observations for COVID-19 Response and Recovery.
- The video with the highest number of views was Sen2Agri: Operational System for Agricultural Products. See figure 1 for the ten most-watched pre-recorded presentations.
- Based on the participant survey, the number of viewers watching the recorded videos was similar to those watching the live sessions, though relatively few watched both for the same session. Many watched some sessions live and others by recorded videos.
- Satisfaction ratings by survey respondents were high, with combined scores above 80 (on a scale of 0 to 100). Highest ratings were for the sessions on COVID-19, Capacity Development, and the Closing Session.
- Most respondents said that they preferred that future Symposia combine in-person with remote participation or an all-virtual format. Only four respondents

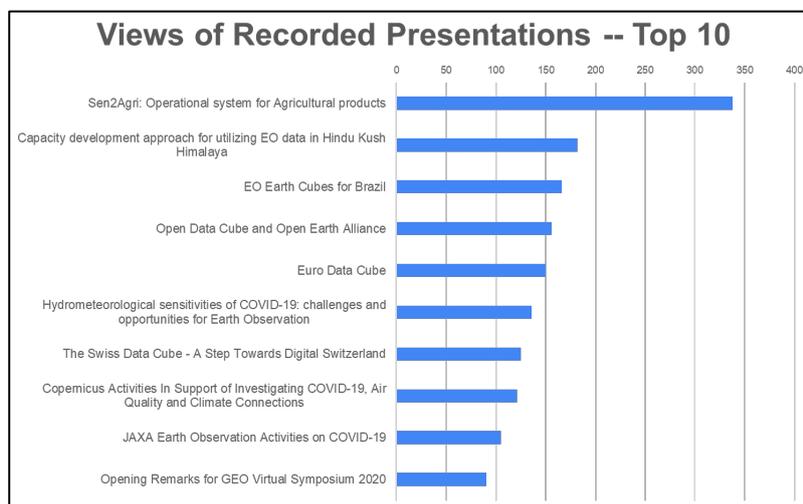


Figure 1

preferred only the in-person format.

Kerry Sawyer (CEOS), co-chair of the Symposium Subgroup, stated that the Subgroup had reviewed the findings and identified some lessons to guide the organization of similar events in future, including:

- More opportunity for direct interactions among speakers, panelists, and participants should be provided;
- Recorded videos should be kept to less than ten minutes to hold attention of participants;
- The sessions should be broken up into shorter blocks of time, rather than having long sessions for an entire week;
- The use of virtual “break-out rooms” should be investigated to allow participants to discuss topics together in a small-group format;
- Videos should be easier to find on the GEO webpage; and
- Planning for the next Symposium should begin early in 2021, with a new Symposium Subgroup to be established at the 19th Programme Board meeting.

The Programme Board thanked the Symposium Subgroup co-chairs, Kerry Sawyer and Kathy Fontaine (ESIP), the other Subgroup members (European Commission, France, IUGG, SWF), and the Secretariat for their efforts in organizing the 2020 GEO Virtual Symposium. The Programme Board also agreed to consider establishing a new Symposium Subgroup at its 19th meeting, taking account of the lessons of the 2020 Symposium and of GEO Week 2020.

4 FOUNDATIONAL TASK WORKING GROUPS

The Programme Board received presentations by either a Working Group co-chair or coordinator (GEO Secretariat) regarding the status of each of the Working Groups.

All four Working Groups had elected their co-chairs and three had established subgroups.¹ The co-chairs of each Working Group were actively meeting and preparing draft work plans in consultation with the Secretariat. The subgroup structures and work plans of all subgroups are closely based on the respective terms of reference.

Programme Board members were appreciative of the presentations and were generally satisfied with the progress that had been made, recognizing the complexity of the start up given the large number of participants in each Working Group.

The Programme Board also made specific recommendations to individual Working Groups:

- The Capacity Development Working Group and the GEO Knowledge Hub team were encouraged to discuss opportunities for collaboration;
- The Climate Change Working Group was reminded of the importance of working with other key international organizations in the climate domain, while

¹ At the time of preparation of this document, all Working Groups have now determined their subgroups.

communicating the value that GEO can offer; it requested that the Working Group promptly forward any significant issues it encounters in its external engagement to the Programme Board; and

- The Data Working Group was recommended to create a dedicated subgroup to look at issues of data ethics, both specific issues such as the potential for misuse of personal data of GEO cloud computing programme users, as well as broader issues such as the need for GEO to adopt a set of ethical principles to complement its data sharing and data management principles. Several Programme Board members volunteered to participate in the next Working Group meeting where data ethics would be discussed.

5 REPORTS FROM SUBGROUPS AND ENGAGEMENT TEAMS

5.1 Awards Subgroup

The Programme Board reviewed and approved terms of reference for the Awards Subgroup (see Annex A). The Subgroup membership is: Ghana and the Federation of Earth Science Information Partners (co-chairs), Canada, China, and the United Kingdom.

The Programme Board requested that the Subgroup formalize and document its criteria and processes to ensure that the selection of award recipients is fair and transparent. It also suggested that the Subgroup consider creating a new award category for groups or teams, and to consider asking Regional GEOs to publicize and possibly pre-review nominations for their regions.

Finally, the Programme Board decided to review later whether a formal role for the Executive Committee in the awards process is required.

5.2 Urban Resilience Subgroup

Evangelos Gerasopoulos, co-chair of the Subgroup, provided an update on the work of the Subgroup. He reviewed the membership of the Subgroup, which now includes Greece and the European Space Agency (co-chairs), Canada, China, European Commission, Ghana, Kenya, Pakistan, United States, Global Open Data for Agriculture and Nutrition (GODAN), and the Institute for Electrical and Electronics Engineers (IEEE). As well, meetings are regularly attended by the leads of the major GEO Work Programme activities active in the urban resilience domain (GEO Human Planet, EO4SDG, and GUOI) and by representatives of several urban-related organizations: Foundation for Research and Technology – Hellas (FORTH), the Global Resilient Cities Network, and the European Innovation Partnership on Smart Cities and Communities (EIP-SCC).

The immediate priorities of the Subgroup are:

- Compiling an inventory of urban-relevant GEO activities;
- Initiating engagement with external players in the urban domain;
- Developing Earth observation use cases relevant to urban stakeholders;
- Engaging with Regional GEOs;
- Identifying synergies with the New Urban Agenda; and
- Consolidating the case for urban resilience as a fourth GEO engagement priority.

Regarding the last priority listed, Mr. Gerasopoulos presented a draft document for Programme Board consideration. This document was an earlier version of Excom-53.9 Urban Resilience as a Fourth Engagement Priority. The Programme Board endorsed the proposal for presentation to the Executive Committee for approval. It also requested that the engagement priority be inclusive of all human settlements, not only cities, which was agreed by the Urban Resilience Subgroup members present. The Programme Board also recommended that the Subgroup continue to engage GEO Work Programme activities, including Regional GEOs, and others in the GEO community.

5.3 Private Sector Subgroup

Jonathan Ross (Australia), co-chair of the Subgroup, provided a presentation on the Subgroup's activities since the previous meeting. He noted that the Subgroup has a mandate from both the Programme Board and the Executive Committee and reminded members that the Subgroup's initial focus would be on the commercial sector component of the private sector and on small, medium, and micro-sized enterprises (SMMEs) in particular. The Subgroup membership includes Australia and South Africa (co-chairs), Canada, European Commission, France, Norway, United States, and the International Association of Geodesy (IAG). Commercial sector guests have included ZA Space and EIS Africa.² The inclusion of private sector organizations in the meetings is a strategy to provide a “reality check” on the Subgroup's ideas, as a channel for the private sector to inform GEO of what would help them; and as a pathway for local and regional perspectives.

The Subgroup is currently developing its work plan. A key task is to support the organizers of the 2020 Virtual Industry Track in GEO Week 2020. Other opportunities under discussion include:

- Mentoring and support to GEO Work Programme leads on engagement of the private sector;
- Brokering services to connect SMMEs and GEO Work Programme activity leads;
- Checklist on how well the activity supports the private sector;
- Bi-directional prospectus of opportunities for SMMEs and GEO Work Programme engagement; and
- User-driven, sector-focused approaches.

Future meetings are expected to occur monthly. Regional GEOs and industry associations will have a key role in the work of the Subgroup and are encouraged to participate.

The presentation concluded with an overview of the 2020 Virtual Industry Track schedule.

The Programme Board welcomed the progress achieved by the Subgroup, recognizing the importance of private sector participation in GEO.

² Since the presentation, the European Association of Remote Sensing Companies (EARSC) has also attended a Subgroup meeting.

5.4 Equality, Diversity, and Inclusion Subgroup

Nathalie Pettorelli (United Kingdom), Subgroup chair, presented the report on behalf of the Subgroup. She stated that the Subgroup had convened two meetings, one in May and one in late July. An early focus for the Subgroup was to expand its initial membership to increase gender and geographic diversity. As of the report, the Subgroup now included members from Australia, Ghana, Norway, South Africa, United States, IAG, and the Regional Centre for Mapping of Resources for Development (RCMRD).³

Progress to date in the Subgroup has included:

- Agreement on access and storage of data used by the Subgroup for its analyses;
- Analysis of GEO Symposium attendance data, including demographic data of Symposium participants (the first time such data have been collected);
- Analysis of GEO Week 2019 participants;
- Discussion of the structure of the first GEO Equality, Diversity, and Inclusion Report;
- Discussion of a possible GEO statement regarding equality, diversity, and inclusion; and
- Identification of relevant external groups or networks with whom connections should be established.

Some initial observations from the analyses included:

- A large majority of 2020 Symposium attendees were male and that the response to the survey was relatively high from India and low from Europe; and
- In GEO Week 2019, only about one-third of participants were female, Africa was under-represented, and there was a gender imbalance in speaking slots, particularly from Asia-Oceania.

The Programme Board thanked the Subgroup for its work, noting that useful information was starting to emerge from the process.

5.5 Update on the Pacific Islands Advisory Group

Anthony Milne (Geoscience and Remote Sensing Society (GRSS)) provided an update on the work of the Pacific Islands Advisory Group (PIAG). He reminded Programme Board members that the creation of the PIAG was driven by Articles 10 and 11 of the Canberra Declaration, which welcomed new members from the Pacific and other island nations and emphasized the importance of GEO being inclusive of these countries. The Talanoa Statement “EO in the Pacific”, issued during GEO Week 2019 indicated the expectations of the Pacific Islands on how they wished to engage with GEO. In response, the Executive Committee established the PIAG at its 51st meeting “to recommend ways to improve communication and engagement in GEO by the Pacific and other island nations” and then requested at its 52nd meeting that the PIAG “engage more closely with the Programme Board and with Asia-Oceania GEO as it continues its work”.

³ Since the report, Mexico has also joined the Subgroup.

At the time of the update, the PIAG membership was comprised of five GEO Members (Australia, China, European Commission, France, and the United States) and five Participating Organizations (GRSS, World Ocean Council, Secretariat of the Pacific Community (SPC), Secretariat of the Pacific Regional Environment Programme (SPREP), and the United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP)). The PIAG is co-chaired by Australia, China, and the SPC. Five meetings of the PIAG had been held. A major focus of recent discussions has been the development of the terms of reference for the PIAG.

Mr. Milne provided an overview of some key activities relevant to the PIAG, which included:

- Launch of a Pacific Data Hub in 2019 (pacificdata.org);
- A needs assessment study on strategic Earth observation needs of the Pacific islands being undertaken by the SPC, with funding from Australia, New Zealand, and the United States;
- A review by SPC staff of the GEO Work Programme to identify activities of interest;
- Announcement of a Digital Earth Pacific project (funding being sought); and
- A decision by the Pacific Geospatial Survey Council to act as the collective voice for Pacific Earth observations data collection, linking together senior government officials of Pacific country governments for the first time.

Several challenges facing the PIAG were also noted, including:

- Access to staff in the Pacific islands, given that the governments are very small but have large remits;
- Identifying the needs and priorities of the island countries;
- Balancing delivery of Earth observation support quickly while ensuring it is fit for purpose and implemented with Pacific country leadership and collaboration; and
- Difficulties in arranging meetings with PIAG members given the spread of time zones.

The Programme Board thanked Mr. Milne for his presentation on behalf of the PIAG.

5.6 Update on the Engagement Teams

Wenbo Chu of the Secretariat gave a brief update on the engagement team process. This process was agreed by the Programme Board at its 16th meeting. The concept was to reconfigure the teams that reviewed GEO Flagship, Initiative and Regional GEO implementation plans during the development of the 2020-2022 GEO Work Programme. Now that the development process was complete, the role of the teams would shift to one of monitoring progress and assisting the implementation of the GEO Work Programme activities. Programme Board members volunteered to participate in one or more of eight “engagement teams”. These teams would participate in calls with the leads of the Flagships/Initiatives/Regional GEOs, assist them in furthering their objectives, and participate in the preparation of status reports to the Programme Board.

Due to the impact of the pandemic and the increased demands on the Secretariat in supporting the 2020 Symposium, the engagement team process was delayed in starting. Consequently, the first calls with GEO Work Programme activities took place in August.

Ms Chu provided a summary of the calls which had been completed, were scheduled, or were in the process of being scheduled, as of the date of the meeting.

Initial feedback from the process has included the following:

- GEO Work Programme activity leads very much appreciate the opportunity to speak directly with Programme Board members, seeing the new process as reflecting a shift from reporting to collaboration. Some suggested having more than one call per year.
- Programme Board members have been actively participating in the calls and were key in helping link activity leads with other activities across the GEO Work Programme and in providing their own expertise in the discussions.
- All participants found the discussions beneficial, appreciating the frank discussion of areas where actions were needed. Programme Board members welcomed the opportunity to understand the implementation status of the activities more clearly, while the activity leads found it very useful to understand the broader context of GEO and how to leverage their efforts.

Highlights from the initial set of calls included the following:

- Regarding the impact of COVID-19, most activities have not experienced significant direct impacts, although the longer-term impacts may not yet be visible. Most activities have been able to continue their regular work and to reach out to partners around the world. A minority of activities, however, have experienced serious disruption due to loss of funding through re-prioritization by governments and international organizations. On a positive note, some activities have taken the opportunity to re-think their strategy and their way of working.
- Some key achievements include (very preliminary list):
 - EO4EA developed Ecosystem Extent Accounting pilots in 15 countries;
 - GEOGLAM reported that Sen2Agri has been ingested into AWS and that they are drafting white papers on their contribution to the GEO engagement priorities;
 - GEOBON noted the launch of the Essential Biodiversity Variables (EBVs) in the Cloud programme with Microsoft Azure, as well as the selection of the new GEOBON Secretariat;
 - GWIS reported on their provision of monitoring services in support of the response to the wildfires in Australia, noting that the service is now near-operational.
- Initial feedback indicates that most of the objectives identified with the activities remain valid, noting that they are designed to be dynamic. Collaborative actions with the Programme Board and Secretariat for realizing the objectives have emerged from the discussions. Requests for assistance from the activities have also come forward; in many cases these involve activities seeking greater visibility, assistance in obtaining funding, and access to specific expertise.

6 GEO CLOUD COMPUTING PROGRAMMES

As requested by the Programme Board at its 17th meeting, Douglas Cripe of the Secretariat provided a presentation on lessons learned and transition plans for the GEO

Cloud Computing Programmes, these being the GEO-Amazon Web Services (AWS) Cloud Credits Programme, the GEO-Google Earth Engine (GEE) Programme, and the GEO BON-Microsoft Essential Biodiversity Variables (EBVs) in the Cloud Programme. The Secretariat also shared with Programme Board members the progress reports provided by the project teams in the GEO-AWS Programme.

Key benefits identified to date include:

- Demonstration that the “zero-download” model lowers barriers to access and to analyze Earth observation data;
- Having a common set of data to work with brings greater consistency to results; and
- The open science approach promotes greater collaboration, serves as a “reality check”, and enables broader uptake, especially for developing countries.

Some positive lessons include:

- The review process worked smoothly and efficiently, allowing an impartial selection of proposals;
- Several of the projects are moving along rapidly and have shown impressive results after only one year; and
- The Sentinel Hub credits from Sinergise was critical to enabling the Iran/Iraq proposal to move ahead;

However, some issues did arise during implementation which required responses from the Secretariat and the service providers:

- Many organizations in developing countries do not have the capacity to work in the cloud independently and there is a lack of open-source tools to help countries explore big Earth observations data sets;
- Changes in personnel, delays in fieldwork and impacts of COVID-19 and other factors delayed progress in some projects; and
- Legal issues prevented one project from directly using the AWS credits.

Regarding transition at the end of the projects, it was noted that none of the organizations involved in the projects are under any obligation to continue using the platforms or cloud services afterwards. Each of them can assess the value of these services and whether they wish to purchase services or otherwise negotiate arrangements to continue access. The Secretariat will continue negotiation with other cloud service providers and will work with projects not already in the GEO Work Programme to connect them with Work Programme activities such as Digital Earth Africa.

7 ATTENDANCE AT THE 18TH PROGRAMME BOARD MEETING

7.1 Present (by teleconference)

GEO Members

Australia, Canada, China, European Commission, Finland, France, Germany, Ghana, Greece, Italy, Japan, Kenya, Norway, Pakistan, South Africa, United Kingdom, United States.

Participating Organizations

CEOS, ESA, ESIP, GODAN, GRSS, IAG, IEEE, IUGG, MRI, OGC, POGO, SWF.

7.2 **Absent**

GEO Members

Cambodia.

Participating Organizations

COSPAR, UN Environment.

ANNEX A

TERMS OF REFERENCE FOR THE AWARDS SUBGROUP

PURPOSE

The Awards Subgroup is convened in response to the desire to recognize exemplary ongoing efforts of the members of the GEO community in convening expertise across numerous disciplines, nurturing communities and mobilizing common action, promoting broad and open data policies, and generating tangible results that allow for sustained Earth observation information for the benefit of humankind. The Subgroup will oversee the development, evaluation, and recognition of such efforts.

DUTIES

- Develop award categories and descriptions that support inclusiveness, the GEO principles, and the GEO Work Programme.
- Develop selection criteria consistent with inclusiveness, GEO principles, and support for the GEO Work Programme.
- Conduct periodic calls for nominations in support of the award categories.
- Develop and periodically revise (as needed) review criteria for nominations.
- Establish the eligibility rules for nominees.

EXPECTED DELIVERABLES

- Release of Annual Awards Call.
- Recommendation of winners based on review criteria.
- Periodic reports to the Programme Board and the Executive Committee.

MEMBERSHIP

Participation in the Awards SG is open to all Programme Board member representatives, as well as to other individuals nominated by GEO Members, Participating Organizations and Associates.