

Report
46th Executive Committee Meeting
Kyoto, Japan, 2 November 2018

As accepted at the 47th Executive Committee Meeting.

EXECUTIVE SUMMARY

Chair: Mmboneni Muofhe, South Africa.

1 OPENING SESSION

1.1 Opening Remarks by Co-Chairs and Secretariat Director

Outcome: The Co-Chairs noted the successful conclusion to the GEO-XV Plenary and looked forward to a busy 2019, which will include preparations for the next Ministerial.

1.2 Introduction of New Members

Outcome: The Executive Committee welcomed as new members Italy, Senegal and Switzerland.

1.3 Adoption of Agenda (Document 46.1 – for decision)

Outcome: The agenda was approved as distributed.

1.4 Objectives and Expected Outcomes of the Commercial Sector Round Table

Outcome: The Lead Co-Chair agreed to prepare a set of questions to be asked of the commercial sector representatives. The Secretariat agreed to prepare a brief set of slides to provide a context on GEO.

2 COMMERCIAL SECTOR ROUND TABLE

2.1 Commercial Sector Round Table

Outcomes: The Executive Committee agreed that GEO, in its engagement of the commercial sector, should consider the following, among other relevant factors:

- Communications and outreach;
- Definition of GEO's needs to which the commercial sector may be able to respond;
- Definition of the benefit model;

- Using GEO to enable the innovation chain, particularly for small and medium-sized enterprises, by using open data;
- Areas that the commercial sector are looking at, for example challenges associated with an aging society, that might be brought into GEO; and
- Models for sharing and integrating commercial and open data.

3 STRATEGIC OUTLOOK 2019

3.1 Outcomes of the GEO-XV Plenary

Outcome: Planning for the GEO-XVI Plenary should take note of the comments raised by Executive Committee members, including the need for additional information and discussion regarding progress in the implementation of the GEO Work Programme.

3.2 Lead Co-Chair Goals and Objectives for 2019 (Document 46.2 – for discussion)

Outcome: The Executive Committee endorsed, as a living document, the set of Goals and Objectives for 2019 presented by the Lead Co-Chair.

Action 46.1: Executive Committee members to provide any additional comments on the Goals, Objectives or Indicators to the Secretariat. **Due: 30 November 2018.**

3.3 Update on the Resource Mobilization Strategy

Outcomes: The Executive Committee approved the project-based resource mobilization strategy, subject to involvement of the Programme Board in the project selection process. The Executive Committee also approved, in principle, the Amazon cloud credits programme, but requested that opportunity be provided to Executive Committee members to review the application form and provide comments prior to launch of the programme.

Action 46.2: The Secretariat to circulate for comment a revised version of the Amazon grant document and a document detailing the background, rationale and implementation of the Amazon Grant, addressing points raised by Executive Committee members. **Due: 5 November 2018, with comments from Executive Committee members to be sent to the Secretariat by 12 November 2018.**

Outcome: The Executive Committee confirmed that the membership of the Budget Working Group in 2019 would be: Stuart Minchin (Australia), Gilles Ollier (European Commission), Mikko Strahlendorff (Finland), and Virginia Burkett (United States).

4 SESSION OUTCOMES AND ANY OTHER BUSINESS

4.1 Review of Participating Organization Engagement (Document 46.4 – for information)

Outcome: The Executive Committee took note of the Secretariat analysis and requested that the Subgroup be convened to complete its tasks.

Action 46.3: The Subgroup on Participating Organization Engagement to report to Executive Committee regarding the outstanding items on its mandate. **Due: 47th Executive Committee meeting.**

4.2 Executive Committee Meetings in 2019

Outcome: Dates of the Executive Committee meetings in 2019 were confirmed as:

- 47th Executive Committee meeting: 19-20 March 2019;
- 48th Executive Committee meeting: 23-24 July 2019;
- 49th Executive Committee meeting: 5 November 2019.

4.3 Any Other Business

Outcome: None raised.

4.4 Session Outcomes and Summary of Action Items

Outcome: The Executive Committee reviewed and approved the Outcomes and Action Items from the meeting.

Report
46th Executive Committee Meeting
Kyoto, Japan, 2 November 2018

FULL REPORT

Friday, 2 November 2018

Meeting convened at 9:00.

Chair: Mmboneni Muofhe, South Africa.

1 OPENING SESSION

1.1 Opening Remarks by Co-Chairs and Secretariat Director

Mmboneni Muofhe, Lead Co-Chair, welcomed participants to the meeting. He noted that there would be an opportunity during the meeting for some reflections about the Plenary and other meetings during the week. The Executive Committee would also be looking forward to 2019, which would be a very compressed and busy year due to the planning for the Ministerial. There will be many more activities in GEO than in a usual year, activities performed not just by the Secretariat, but with Executive Committee members leading by example. It is critical that all GEO Members work to maintain the political support from their ministers, who provide the resources that enable GEO to continue its work.

Mr Stephen Volz, United States Co-Chair, stated that he looked forward to meeting with the commercial sector representatives and to continuing the dialogue that the Executive Committee had begun the previous year. He noted that 2019 would be busy, not only with the preparations for the Ministerial, but also with the development of the 2020-2022 GEO Work Programme and the Mid-Term Evaluation.

Mr Xinming Tang, China Co-Chair representative, welcomed the new Executive Committee members.

Mr Gediminas Ramanauskas, European Commission Co-Chair representative, apologized that Patrick Child was unable to attend the meeting due to unexpected circumstances. Mr Ramanauskas welcomed Mr Muofhe in starting his role as Lead Co-Chair and wished him success in the coming year. He also congratulated all of the Executive Committee members on the success of the GEO Plenary, side events and exhibition, which demonstrated the breadth of grass-roots involvement in GEO. He noted that the European Commission was pleased to see GEO's growing connections to global priorities, notably the Sustainable Development Goals, Paris Agreement, and the Sendai Framework. He welcomed the involvement of executives from commercial sector companies, who can help GEO to achieve its goals.

Mr Gilberto Camara, GEO Secretariat Director, observed that it had been a busy week, filled with discussions and decisions by Plenary, as well as important side events. Key decisions included changes to the GEO Rules of Procedure and on the Regional GEOs.

He also noted movement toward the Results-Oriented GEOSS. Mr Camara concluded by acknowledging that 2019 would be a busy year but the planned activities are all relevant to achieving the vision of GEO.

Outcome: The Co-Chairs noted the successful conclusion to the GEO-XV Plenary and looked forward to a busy 2019, which will include preparations for the next Ministerial.

1.2 Introduction of New Members

The Lead Co-Chair welcomed the new Executive Committee members and invited them to provide some opening remarks.

Italy expressed their gratitude to be part of the Executive Committee, noting that they have supported GEO since its beginning. Italy stated that they intend to work with all members to make GEO effective. They also confirmed their support for the vision of a results-oriented GEOSS and expressed their desire to be able to show early results to the next Ministerial.

Switzerland stated that it was a big honour and responsibility to join the Executive Committee with their European caucus colleagues. Switzerland has also been a supporter of GEO since its inception and reminded Executive Committee members of their role in hosting the GEO Secretariat in Geneva. He noted the new Secretariat Director and the new Lead Co-Chair and said that Switzerland hoped to support them both as much as they can. Switzerland said that they would be pleased to assist in the preparations for the Ministerial in Australia. They concluded by noting that Switzerland brings a wealth of experience to the table, as well as many new ideas and new projects.

Senegal said that it was their pleasure to be returning to the Executive Committee and that they were happy to participate and to contribute to its work.

Outcome: The Executive Committee welcomed as new members Italy, Senegal and Switzerland.

1.3 Adoption of Agenda (Document 46.1 – for decision)

Outcome: The agenda was approved as distributed.

1.4 Objectives and Expected Outcomes of the Commercial Sector Round Table

The Lead Co-Chair reviewed a presentation intended to be given to the commercial sector participants in session 2. The presentation introduced GEO through the three Strategic Objectives: advocate, engage, and deliver, noting that the engagement objective provides the mandate for dialogue with the commercial sector. He then reviewed GEO's three engagement priorities, as well as the emerging priorities. Mr Muofhe noted that much of GEO's engagement efforts are targeting organizations that are concerned with these priorities, especially UN agencies. He stated that GEO welcomes a wide variety of organizations and individuals to participate, with an emphasis on mutual benefit; this includes engagement with the commercial sector. While some concerns have been expressed about how commercial sector engagement may affect GEO, it is important that GEO maintains its principles which are what make it unique.

Turning to the points specifically addressing the commercial sector, Mr Muofhe emphasized that GEO must ensure that its commitment to inclusiveness is sincere. It is important to keep pace with technological evolution, which is moving faster than many appreciate. GEO now operates in a different environment than when it began. To adapt to this environment, GEO needs to work with all stakeholders who have something to contribute. He suggested that the Executive Committee discuss with the commercial sector representatives how they can contribute to building GEOSS and also what they hope to receive in return. This should continue to build on the work that was started in 2018. While GEO may reach a time when it can say that it is working with all stakeholders effectively, for now it is most important to hear their voices and not just talk at them.

The United States commented that the presentation provided a good framing of the conversation with the commercial sector. Mr Volz noted that there was also benefit from learning about the impediments to engaging with GEO, why aren't these firms engaged now? Another aspect that might be missing is an explanation of GEO's longer-term plans.

The Secretariat Director stated that the Secretariat takes the mandate to engage with the commercial sector seriously. However, he sees that this engagement needs to occur within certain constraints, notably, the requirement that the policy of free and open data access be followed for any products or data that come out of this engagement. He noted that the commercial sector is currently in a transition phase in which many traditional players are repositioning themselves in a changing technological and economic landscape. Companies are offering services that are consistent with the expectations of many users for open data. He concluded that there is much benefit that can be realized for GEO by engaging with the commercial sector at this time.

Australia asked how the dialogue would be structured. Would there be a set of questions that Executive Committee would ask to the commercial sector participants?

Germany questioned whether the guests would have a deep understanding of GEO and GEOSS. Perhaps some basis information should be provided about GEO and the products being developed as a starting point.

The Programme Board Co-Chair asked about the criteria for selecting the commercial sector participants, noting that there is a wide range of companies working in this area and the responses may vary considerably depending on which ones participate. It was noted that Programme Board has not yet done much to engage the commercial sector, nor did it have a position on the matter. The question was put to Executive Committee whether it had any expectations for Programme Board on this topic.

China stated that the Executive Committee needed to understand how the commercial sector organizations might contribute to GEO. What will they provide? At what scale? What do they want us to provide to them?

Switzerland said that they had a number of specific questions for the commercial sector. What can they offer in terms of infrastructure for handling and managing data? What legal frameworks will be needed? Where do they see technology heading? How, in this context, do their data and services contribute to issues like climate change and risk management? Is there a risk of locking GEO into a specific infrastructure?

Italy welcomed engagement with the commercial sector, but noted the need to clarify the procedure of engagement. Will this be on the basis of pilot projects? Will there be a business plan with defined objectives? What are the expectations? Italy stated that they would like to hear from the Secretariat Director concerning the potential role of the commercial sector in the Strategy for a Results-Oriented GEOSS. This may also help define what GEO can do for them.

The Secretariat Director responded that there are well-defined Rules of Procedure regarding engagement with the commercial sector. Under these rules, the Secretariat can reach out to the commercial sector as long as the Executive Committee is informed before signing any agreements. He cautioned that GEO should take care before starting a debate about tightening these rules. As more controls are put in place, the flexibility that GEO provides may be lost. As long as the current Rules of Procedure are followed, there will not be any negative consequences. It is important to view this in the context of the shift from the industrial model to the digital economy model. In the industrial model, there is a middle ground between the data to the services to the users. In the digital economy model, companies amass data. Innovation is not necessarily on the methods, algorithms or analytics. In all of the interactions with the commercial sector, the GEO community must always come first. If the digital economy model is the model for GEO, our attention will be on the directions that the community needs. As long as the principles of GEO are followed, we should be prepared to work with any company.

The Lead Co-Chair cautioned Executive Committee members not to rush ahead. GEO is trying to build a relationship that may eventually take us to the details that Italy and the Secretariat Director are discussing.

The United States agreed, saying that GEO should not set too many restrictions before we have even discussed collaborative activities. The commercial sector may not even be aware of the GEO Work Programme, nor is GEO aware of all of what is occurring in the commercial sector.

Australia noted that this discussion points again to the rationale for the creation of the GEO Associates category. While it is important to have these kind of discussions internally, they are not appropriate when the commercial sector representatives are in the room. The Executive Committee should aim for a genuine, welcoming dialogue.

Outcome: The Lead Co-Chair agreed to prepare a set of questions to be asked of the commercial sector representatives. The Secretariat agreed to prepare a brief set of slides to provide a context on GEO.

2 COMMERCIAL SECTOR ROUND TABLE

2.1 Commercial Sector Round Table

The Secretariat Director opened the session with a presentation describing GEO. He started by stating that the mission of GEO was to build GEOSS, which means that GEO support the global community on how best to apply information technology resources to use EO data for decision making on sustainable development. GEO works by making available open Earth observation data, which is then taken up by the GEO community to conduct analysis that supports global agreements, particularly regarding the three

engagement priorities. It is essential for GEO that users be involved in the design of the information and products that they use. The results that are presented must not only be scientifically reliable, but also trusted. GEO's aim is to help its Member countries to use the technologies that are developed through its Work Programme. The digital economy effect means that many people, especially in the Global South, will only use Earth observation data that is free at the point of access. The question then is: who will pay for this? GEO wants to move toward a future where data sits on cloud architectures that do not require data download. The data will then be used by empowered experts around the globe who will have access to reusable shared knowledge. Providing this knowledge is a key element of GEO. Another key part of GEO's mission is the provision of access to in situ data.

The Lead Co-Chair then followed with a presentation on the commercial sector dialogue. The presentation followed the structure of the version presented in session 1.4, but then concluded with a set of questions as a starting point for the discussion, noting that the list was not exhaustive:

- What drives your interest in developing a relationship with GEO?
- What are the impediments to engagement with GEO?
- What exposure and opportunities do you believe you can facilitate for GEO?
- What are current good practices in the commercial sector?
- What are current trends and growth plans?

Key points raised by commercial sector organizations during the discussion included:

- Most Earth observation companies working in Europe, Africa and other regions are small and medium-sized enterprises (SMEs). Many of these are subsidiaries of global firms and others include quasi-public enterprises;
- Many firms use a combination of aerial photography and private imagery, in addition to open data;
- The availability of open satellite data has been a significant boost to private companies. The decision in Europe to open up Copernicus data has stimulated innovation, even for data providers. Value from a commercial perspective is not often built on just providing data;
- Most companies in the sector are not aware of GEO and many that do know of GEO do not understand how they can contribute;
- GEO should consider more commercial sector engagement at the national level;
- The geospatial industry is growing very quickly. There is much innovation occurring, such as in cloud computing and crowd sourcing. Digital value chains are in the early stage of being built. Firms are looking at new areas of business to survive;
- The commercial sector is very diverse and their interests and motivations differ between sectors;
- There are many cloud platforms being built now. GEO platforms should enable connections to commercial sector platforms so they can use GEOSS data;
- Monetizing data is very important to the commercial sector. This often works by having both free and costed components, differing by resolution;

- There are opportunities in Japan for addressing the aging society. Examples of services include identifying optimal driving routes to support delivery services;
- Some firms have found that opening their internal data to select partners can save money and reduce environmental impact, for example, sharing ship data between shipping companies. May be potential to share some of this data with GEO;
- Interest in GEO education or support programs;
- Some open public data have restrictions against commercial use;
- Commercial sector sees GEO as primarily serving government users. What are the boundaries between open and commercial services?
- Commercial users are interested in not just observational data, but also forecast data of various kinds. Industry uses many models and simulations, so if public data can feed into these models they are very valuable.

Outcomes: The Executive Committee agreed that GEO, in its engagement of the commercial sector, should consider the following, among other relevant factors:

- Communications and outreach;
- Definition of GEO's needs to which the commercial sector may be able to respond;
- Definition of the benefit model;
- Using GEO to enable the innovation chain, particularly for small and medium-sized enterprises, by using open data;
- Areas that the commercial sector are looking at, for example challenges associated with an aging society, that might be brought into GEO; and
- Models for sharing and integrating commercial and open data.

3 STRATEGIC OUTLOOK 2019

3.1 Outcomes of the GEO-XV Plenary

The Lead Co-Chair opened the floor for comments and observations regarding the Plenary meeting.

Germany stated that they thought there should be more information on progress in the GEO Work Programme and on the GEOSS Platform. The panel sessions were interesting, but lacked substance in terms of what was happening within GEO. They would like to see the next Plenary have more information on the details of the Work Programme.

Italy sought assurance from the Secretariat Director regarding continuity of the GEOSS Platform in 2019, stating that it was important that the functionalities of the Platform be maintained.

Australia recommended moving away from a format where there are lots of slides. There was not enough interaction with participants in Plenary. Panels reduce this interaction, leading to GEO Members being too passive. High-level officials will not come if there are too few opportunities for interventions. There is a need for changes to make the meeting more effective and more interactive.

The Secretariat Director responded, noting that the lack of information on the GEO Work Programme was an issue well known to the Secretariat. There has been a reorganization within the Secretariat to gather information of better quality about the Work Programme activities. The first results of this process which were presented to the recent Programme Board meeting show that this approach is productive. It requires talking to each activity at length, but it is worth it. A full report will be issued to the first meeting of the Programme Board in 2019, but the interaction won't stop there; this is not a one-off process. Regarding the continuity of the GEOSS Platform, the Platform will continue so long as the European Space Agency continues to support it.

Switzerland stated that they found the Plenary to be very useful. Regarding reporting on activities, it was suggested that perhaps an electronic means of reporting would be helpful. Regarding the continuity of the GEOSS Platform, Switzerland would like to see it improved, but not to disrupt it. It agreed with Australia on the need for a more agile and interactive Plenary.

The United States agreed that there may have been too much talk of sweeping visions and too little on concrete results. It was observed that Participating Organizations (POs) are often not as involved in Plenary but are greatly involved in the Work Programme. Perhaps it would be possible to highlight particular Work Programme activities using statistics.

CEOS noted that many GEO Members and POs spend a lot of time preparing their official statements but these do not get much attention at the meeting.

Germany responded to the comments from the United States, saying that while it was important to have quantitative analysis of the Work Programme, there should also be more presentations on products being produced in the Initiatives, like those by GEOGLAM and GEOGLOWS. These should come at the beginning of the Plenary, before the panels.

The Secretariat Director shared his view that there are relatively few Work Programme activities currently producing concrete results. Others are working on interesting issues, but lack a strategy to turn these into concrete results and to take them global.

Australia agreed that Work Programme activities are at different stages of development, but that it is GEO's job to incubate them. It is important to show Members what is happening at these different levels so they understand how they can assist them.

Outcome: Planning for the GEO-XVI Plenary should take note of the comments raised by Executive Committee members, including the need for additional information and discussion regarding progress in the implementation of the GEO Work Programme.

3.2 Lead Co-Chair Goals and Objectives for 2019 (Document 46.2 – for discussion)

The Lead Co-Chair introduced the document, noting that there is much continuity between the Goals and Objectives for 2018 and those proposed for 2019. Some items are proposed to be elevated to a higher profile, some are perhaps a bit lower, but nothing is lost. The key theme across the set is a message of inclusiveness. Mr Muofhe described each of the Goals and Objectives and then opened the floor for comments.

Germany requested clarification of Objective 2.2 regarding the relationship between the Strategy for a Results-Oriented GEOSS and the 2020-2022 GEO Work Programme. It was assumed that any activities required to implement the Strategy would be included in the Work Programme.

Italy suggested that Objective 1.1 indicator also include facilitation of access to Earth observation knowledge. It was also questioned whether the indicator for Objective 3.2 regarding access to Earth observations by countries was overly ambitious. The Secretariat Director responded to the latter point that the Secretariat intended to report on the number of countries that were accessing information through the Amazon cloud services project and through various GEO Work Programme activities, such as the open data cube, the Copernicus climate data store, and Japan DIAS.

China stated that the Objectives were clear and complete, but believe it may be difficult to report on some of the indicators. Generally agree with the proposed Goals and Objectives, especially in relation to support to the Global South.

The Programme Board Co-Chair asked why the urban agenda is included as Objective 1.4 but ecosystem accounting was not included. The Lead Co-Chair responded that it is a question of the maturity of the activity within GEO. Ecosystem accounting remains a key topic for GEO and progress will be monitored.

The Lead Co-Chair concluded by saying that the indicators would be reviewed, and revised as needed, based on the comments received.

Outcome: The Executive Committee endorsed, as a living document, the set of Goals and Objectives for 2019 presented by the Lead Co-Chair.

Action 46.1: Executive Committee members to provide any additional comments on the Goals, Objectives or Indicators to the Secretariat. **Due: 30 November 2018.**

3.3 Update on the Resource Mobilization Strategy

The Secretariat Director introduced the item, acknowledging the assistance of Justyna Nicinska of the United States (NOAA) in the preparation of the document. Mr Camara stated that the resource mobilization approach presented in the document is based on specific projects that are expected to advance certain promising GEO Work Programme activities. These projects must reflect the priorities of GEO, reflect the principles of co-design and co-production, and involve local organizations in the area where the work will occur. The assessment of potential projects uses three levels of maturity, and so is not limited to only those Work Programme activities that are closest to operational readiness. He referred Executive Committee members to the distributed document for further details.

The Secretariat Director also presented a draft application form for the proposed Amazon cloud credits programme. He stated that the purpose of the programme would be to offer access to free cloud services to low- and middle-income countries to help with hosting, processing, and analysis of big Earth observation data for sustainable development. Agencies within eligible countries, as well as multi-national projects, could apply for credits for non-commercial projects to be implemented over a three-year period. The applications would be assessed by the GEO Secretariat based on a defined set of criteria including having tangible objectives, an inter- or trans-

disciplinary approach, and taking account of co-design and co-production with local stakeholders. The projects should also demonstrate a transition from research to practical application in a way that will be translatable to other contexts and the wider community. Data and software used in the projects will be required to be made fully and freely open and accessible to the GEO community. Priority would be given to proposals using Copernicus and Landsat data, for which there is full, free and open access.

Australia said that the proposed actions were headed in the right direction, but clarification was needed to the language since the term “resource mobilization” has been used in GEO more in terms of the GEO Trust Fund. Care is needed to ensure that everyone understands that it is not the Secretariat which will invest in the projects, but GEO Members. The Amazon cloud credits programme might be best applied to early stage projects rather than to pre-operational, since the credits may be time-limited.

Switzerland stated that the terminology of “projects” creates problems within GEO Member countries regarding who will need to commit to funding these projects. The Secretariat budget should be used for core activities, not for projects.

The United States viewed the proposals as supportive of the implementation of the GEO Work Programme. Experience has shown that when Work Programme activities are supported by the GEO Secretariat, they tend to make more progress. It is reasonable to look to raise a portion of the funds required by activities by looking to foundations and other non-governmental sources. The United States sees this as an exploratory model that could provide an additional service to Flagships and Initiatives. The process is merely being managed by the Secretariat to provide continuity.

China asked whether the projects are another category of GEO Work Programme activity.

South Africa observed that the proposals are not comprehensive and do not rule out other approaches. They would likely help GEO Work Programme activities to succeed. South Africa has also used a similar classification of readiness, which works well. Regarding the Amazon cloud services programme, it was noted that no money would come into the GEO Trust Fund from Amazon, that it was based on credits that would be made available to GEO Members. The Secretariat’s role was to provide analysis as to which applications should be accepted.

Italy asked about how cash contributions would be handled by the Secretariat. It also stated that there should be a clear link between these projects and GEO priorities and the GEO Work Programme activities.

Japan requested extra time to consider the Amazon cloud services document.

The Secretariat Director responded to three issues that had been raised. Regarding the concern about projects and the GEO Trust Fund, the Director stated that the proposals were intended to make GEO more relevant. Most UN organizations distinguish between a core budget, which covers essential activities, and a project budget based on targeted voluntary contributions for specific projects that donors want. If GEO Members wish to provide funds for the projects through the GEO Trust Fund, these funds will be earmarked and managed separately, just as the Secretariat is already doing for funds from Canada and Germany that support GEOGLAM. On the relationship between the

projects and the GEO Work Programme, Mr Camara clarified that the project approach is a way to help move the Flagships and Initiatives forward; it is not about starting new activities. On the Amazon cloud credits programme, the Secretariat has followed the GEO rules on commercial sector engagement.

The United States asked about the rationale for requiring use of Copernicus or Landsat data. The Secretariat Director responded that these programs were considered to be good examples of data sharing that others should follow. Also, the Secretariat has received assurance that analysis-ready data would be available from these sources to support the cloud services.

Germany asked whether there would be a call for new projects or whether it was supporting the GEO Work Programme. If the latter, why are the projects different from the existing Implementation Plans? The Secretariat Director responded that, in the case of the Amazon cloud credits, there are many countries that do not currently participate in the GEO Work Programme but which could benefit from the credits. The Secretariat wants these countries to be able to realize the benefits of using Earth observations. It is viewed as unlikely that the project applications received will not relate to any GEO Work Programme activities.

Australia said that the Amazon cloud credits should be viewed as a contribution to GEOSS, rather than to the Trust Fund. Effectively, they are asking the Secretariat to manage the selection process to decide who will access the contributed resources.

The European Commission stated that they would like to have some time to provide suggestions on the Amazon cloud credits application. The Secretariat Director promised to send a copy to all Executive Committee members for comment.

Italy asked who would do the evaluation of the project proposals.

The Programme Board Co-Chair stated that the Programme Board should be involved in the selection process.

Outcome: The Executive Committee approved the project-based resource mobilization strategy, subject to involvement of the Programme Board in the project selection process. The Executive Committee also approved, in principle, the Amazon cloud credits programme, but requested that a document detailing the background, rationale and implementation of the Amazon cloud credits programme be produced for Executive Committee consideration and that an opportunity be provided to Executive Committee members to review the application form and provide comments prior to launch of the programme.

Action 46.2: The Secretariat to circulate for comment a revised version of the Amazon cloud credits application and a document detailing the background, rationale and implementation of the Amazon Grant, addressing points raised by Executive Committee members. **Due: 5 November 2018, with comments from Executive Committee members to be sent to the Secretariat by 12 November 2018.**

The Lead Co-Chair then recognized a request from the Budget Working Group to give a brief presentation on its plans for engagement related to resource mobilization.

Virginia Burkett (United States), on behalf of the Budget Working Group, outlined five aspects of engagement that the Budget Working Group plans to pursue with respect to resource mobilization:

- Leads of Regional GEOs will be contacted for recommendations and assistance in reaching out to both GEO Members regarding contributions to the GEO Trust Fund, and to non-Member nations who may be active in the Regional GEO but which are not yet GEO Members;
- Executive Committee members will be engaged to assist in contacting GEO Members who are not yet contributing to the GEO Trust Fund;
- The GEO Secretariat will be asked to assist in developing communications to prospective developing countries, to encourage them to join GEO. The Secretariat is also well-placed to coordinate contacts through permanent missions based in Geneva;
- Looking forward to the 2019 Ministerial, there will be a focus on engagement of Pacific island nations as well as countries in Africa that are engaged in the Digital Earth Africa project. SPREP has also offered its assistance in making connections with the Pacific island nations;
- Engagement is also needed with existing contributors to the Trust Fund. The Budget Working Group noted that there were relatively few pledges announced during Plenary.

Ms Burkett asked for Executive Committee concurrence with the proposed Budget Working Group membership for 2019. She noted that meetings of the Working Group were already planned for early December and late January. The Budget Working Group also requested that Patricia Geddes in the Secretariat continue to support the activities of the Working Group.

Outcome: The Executive Committee confirmed that the membership of the Budget Working Group in 2019 would be: Stuart Minchin (Australia), Gilles Ollier (European Commission), Mikko Strahlendorff (Finland), and Virginia Burkett (United States).

4 SESSION OUTCOMES AND ANY OTHER BUSINESS

4.1 Review of Participating Organization Engagement (Document 46.4 – for information)

Craig Larlee presented the item on behalf of the Secretariat. He reminded Executive Committee members that they had established a Subgroup on Participating Organization Engagement at their 44th meeting. While the Subgroup had not yet been convened, the Secretariat had undertaken some analysis to respond to the first two parts of the Subgroup mandate. On the first part, which dealt with the current rules for participation in GEO by POs, the Secretariat had found that there was no current requirement that POs must contribute to the GEO Work Programme, nor any other specific expectation of participation in GEO. On the second part, which addressed recent engagement of POs in GEO, the Secretariat found that a large majority of POs appeared to be active in the GEO Work Programme. There were a relatively small number (27) POs for which no evidence of recent engagement was discovered. The analysis suggested that these POs fell into three categories: POs that had recently

joined GEO; those that had been involved prior to 2016 but not after; and POs that had been in GEO for many years but had never been active. It was suggested that the Subgroup, with the assistance of the Secretariat, could contact the 27 inactive POs to confirm if they are, in fact, actively engaged and, if not, the reasons for this. They should also be asked whether they remain interested in future involvement with GEO.

Australia noted that participation in GEO is not limited to the GEO Work Programme. It may take other forms that are quite legitimate. The contact should be approached from a positive angle. If these organizations believe they are not getting value from GEO, it is important for the Executive Committee to understand the reasons for this.

Japan said that POs should be expected to actively engage, but that GEO needs to allow several years before taking action. Japan believes the Secretariat should have the ability to remove POs from the list if they are inactive.

Outcome: The Executive Committee took note of the Secretariat analysis and requested that the Subgroup be convened to complete its tasks.

Action 46.3: The Subgroup on Participating Organization Engagement to report to Executive Committee regarding the outstanding items on its mandate. **Due: 47th Executive Committee meeting.**

4.2 Executive Committee Meetings in 2019

Outcome: Dates of the Executive Committee meetings in 2019 were confirmed as:

- 47th Executive Committee meeting: 19-20 March 2019;
- 48th Executive Committee meeting: 23-24 July 2019;
- 49th Executive Committee meeting: 5 November 2019.

4.3 Any Other Business

Outcome: None raised.

4.4 Session Outcomes and Summary of Action Items

Outcome: The Executive Committee reviewed and approved the Outcomes and Action Items from the meeting.

Meeting adjourned at 17:30.

List of Participants 46th GEO Executive Committee	
China	
<p>Mr Xinming Tang Deputy Director of GEO China Secretariat Deputy Director-General of Land Satellite Remote Sensing Application Center Ministry of Natural Resources of the P.R. China No. 45 Fuwai Street Xicheng District Beijing 100037 China</p>	<p>tangxinming99@qq.com</p>
<p>Ms Songmei Zhang Deputy Director-General National Remote Sensing Center of China (NRSCC) Ministry of Science and Technology (MOST) of P.R.China West of No. 8A, Liulinguan Nanli, Haidian District Beijing 100036 China</p>	<p>songmei.zhang@nrsc.gov.cn</p>
<p>Ms Yiliang Liu Project Officer National Remote Sensing Center of China Ministry of Science and Technology of P.R. China West of No. 8A, Liulinguan Nanli, Haidian District Beijing 100036 China</p>	<p>Phone: +86 10 58881187 liuyiliang@nrsc.gov.cn</p>
European Commission	
<p>Mr Gediminas Ramanauskas Research and Innovation Counsellor at the EU Delegation at the European Union in Tokyo</p>	
<p>Ms Jane Shiel Co-Chair Representative European Commission DG Research & Innovation</p>	<p>Phone: +32 2 296 2984 Fax: +32 2 29 50 568 jane.shiel@ec.europa.eu</p>

List of Participants	
46th GEO Executive Committee	
Unit I4 Climate Action and Earth Observation CDMA 03/183 1049 Brussels Belgium	
Dr Tom Kuczynski S&T Section Delegation of the European Union to Japan	
Ms Marjan Vna Meerloo Seconded National Expert Earth Observation Sector DG RTD European Commission	
South Africa	
Mr Mmboneni Muofhe Deputy Director General Science and Technology Department of Science and Technology Private Bag X 894 0001 Pretoria South Africa	Phone: +27 12 843 6341 Cell: +27 74 296 6244 Fax: +27 12 844 0396 mmboneni.muofhe@dst.gov.za mmbonenimuofhe@gmail.com buliswa.omodona@dst.gov.za
Ms Andiswa Mlisa Managing Director Earth Observations South African National Space Agency (SANSA) Enterprise Building Mark Shuttleworth Street Innovation Hub (PO Box 484, Silverton, 0127) Pretoria 0087 South Africa	Phone: +27 12 844 0385 Cell: +27 82 907 9856 Fax: +27 86 681 0057 amlisa@sansa.org.za mlisa.andiswa@gmail.com
Mr Imraan Saloojee Manager Stakeholder and Business Development SANSA Earth Observation Enterprise Building, Mark Shuttleworth Street Innovation Hub Pretoria 0087 South Africa	Phone: +27 12 844 04 26 / +27 12 660 3035 Cell: +27 72 267 0583 Fax: +27 12 844 0396 isaloojee@sansa.org.za
United States	
Dr Stephen Volz	Phone: +1-301-713-3578

List of Participants	
46th GEO Executive Committee	
Assistant Administrator Department of Commerce The National Oceanic and Atmospheric Administration (NOAA) 1335 East West Highway, Bldg. SSMC1 20910-3283 Silver Spring United States	Fax: +1-301-713-1249 stephen.m.volz@noaa.gov
Dr Virginia Burkett Chief Scientist Climate and Land Use Change U.S. Geological Survey 540 North Courthouse Street Many LA 71449 United States	Phone: +1 318 332 1828 virginia_burkett@usgs.gov
Ms Yana Gevorgyan Senior International Relations Specialist NOAA Satellite and Information Service Department of Commerce The National Oceanic and Atmospheric Administration (NOAA) 1335 East-West Highway Room 7317 20910 3226 Silver Spring United States	Phone: +1 301 713 70 54 yana.gevorgyan@noaa.gov
Ms Justyna Nicinska Senior International Relations Specialist IIAD NESDIS The National Oceanic and Atmospheric Administration (NOAA) 1335 East-West Highway 20910 Silver Spring United States	Phone: +1 301 713 70 59 justyna.nicinska@noaa.gov
Mr Timothy Styker Outreach and Collaboration Branch National Land Imaging Program US Geological Survey (USGS) 12201 Sunrise Valley Dr Reston, Virginia, 20192 United States	Phone: + 1703 648 46 10 tstryker@usgs.gov

List of Participants	
46th GEO Executive Committee	
<p>Mr Bob Ford Office of Space and Advanced Technology Bureau of Oceans, Environment and Science U.S. Department of State 1800 G St. NW Room 10100 20006 Washington D.C. United States</p>	<p>Phone: +1 202 663 399 68 Cell: +1 202 374 14 29 fordrj@state.gov</p>
Argentina (did not attend)	
Armenia (did not attend)	
Australia	
<p>Dr Stuart Anthony Minchin Chief of Division Environmental Geosciences Geoscience Australia GPO Box 378 Canberra ACT 2601 Australia</p>	<p>Phone: + 61-2-62499898 Cell: + 61-428602791 Fax: + 61 2 62499964 stuart.minchin@ga.gov.au sminchin@gmail.com</p>
<p>Mr Adam Lewis Branch Head National Earth and Marine Observation Environmental Geosciences Geoscience Australia Cnr Jerrabomberra Ave and Hindmarsh Drive SYMONSTON Canberra ACT 2609 Australia</p>	<p>Phone: + 61 2 6249 9353 Cell: + 61 413 021 022 adam.lewis@ga.gov.au</p>
<p>Mr Jonathon Ross Director, National Planning and International Relations Environmental Geosciences Geoscience Australia Cnr Jerrabomberra Avenue and Hindmarsh Drive Symonstron ACT GPO Box 378</p>	<p>Phone: + 61 2 6249 5847 Fax: + 61 2 6249 9999 jonathon.ross@ga.gov.au</p>

List of Participants 46th GEO Executive Committee	
Symonston ACT 2609 Australia	
Ecuador (did not attend)	
Finland	
Mr Mikko Strahlendorff Space Adviser Development Unit Administration Department Finnish Meteorological Institute Erik Palménin aukio 1 FI-00560 Helsinki Finland	Phone: +358 50 359 3795 Cell: +358 50 359 3795 mikko.strahlendorff@fmi.fi
Germany	
Dr Helmut Staudenrausch Earth Observation / National GEO (D-GEO) Secretariat Space Administration German Aerospace Center (DLR) Königswinterer Strasse 522-524 53227 Bonn Germany	Phone: +49 228 447 594 Cell: +49 172 297 1590 Fax: +49 228 447 792 helmut.staudenrausch@dlr.de
Italy	
Mr Nicola Pirrone Research Director National Research Council of Italy Earth System Science and Environmental Technologies Institute of Atmospheric Pollution Research (CNR-IIA) c/o UNICAL Via Pietro Bucci 87036 Rende Italy	Phone: +39 09 84 49 32 39 Cell: +39 335 21 99 89 Fax: +39 0984 49 32 15 nicola.pirrone@iia.cnr.it pirrone@iia.cnr.it
Mr Giovanni Rum Technical Expert	Cell: +39 3385 32 59 74 giovanni.rum@gmail.com

List of Participants	
46th GEO Executive Committee	
ASI Agenzia Spaziale Italiana Via del Politecnico snc 00133 Rome Italy	
Japan	
Ms Okamura Naoko Deputy Director-General Research and Development Bureau Ministry of Education, Culture, Sports, Science and Technology (MEXT) 3-2-2, Kasumigaseki Chiyoda-ku Tokyo 100-8959 Japan	Yoshida-misato@mext.go.jp
Mr Masafumi Sato Director for Environmental Science and Technology Environment and Energy Division Research and Development Bureau Ministry of Education, Culture, Sports, Science and Technology (MEXT) 3-2-2, Kasumigaseki Chiyoda-ku Tokyo 100-8959 Japan	Phone: +81 3 6734 4181 Fax: +81 3 6734 4162 msatou@mext.go.jp
Ms Misato Yoshida Administrative Researcher Environment and Energy Division Research and Development Bureau Ministry of Education, Culture, Sports, Science and Technology (MEXT) 3-2-2, Kasumigaseki Chiyoda-ku Tokyo 100-8959 Japan	Phone: +81 3 6734 4181 Fax: +81 3 6734 4162 yoshida-misato@mext.go.jp
Mr Mizuno Izumi Officer Environment and Energy Division Research and Development Bureau Ministry of Education, Culture, Sports, Science	izumism@mext.go.jp

List of Participants 46th GEO Executive Committee	
<p>and Technology (MEXT) 3-2-2, Kasumigaseki Chiyoda-ku Tokyo 100-8959 Japan</p>	
<p>Mr Okuyama Chikako Officer Environment and Energy Division Research and Development Bureau Ministry of Education, Culture, Sports, Science and Technology (MEXT) 3-2-2, Kasumigaseki Chiyoda-ku Tokyo 100-8959 Japan</p>	c-okuyama@mext.go.jp
<p>Mr Ikeda Mikiko Senior Specialist for the Promotion of Earth Observation Environment and Energy Division Research and Development Bureau Ministry of Education, Culture, Sports, Science and Technology (MEXT) 3-2-2, Kasumigaseki Chiyoda-ku Tokyo 100-8959 Japan</p>	mikikoi@mext.go.jp
<p>Mr Nara Yuta Researcher Environment and Energy Division Research and Development Bureau Ministry of Education, Culture, Sports, Science and Technology (MEXT) 3-2-2, Kasumigaseki Chiyoda-ku Tokyo 100-8959 Japan</p>	y-nara@mext.go.jp
<p>Mr Toshio Koike Director of International Centre for Water Hazard and Risk Management (ICHARM) Japan</p>	koike@icharm.org

List of Participants	
46th GEO Executive Committee	
Mr Muraoka Hiroyuki Senior Professor River Basin Research Center Gifu University Japan	muraoka@green.gifu-u.ac.jp
Korea, Republic of	
Ms Youngeun Sakong Assistant Director Space and Science Policy Division Ministry of ICT and Science Government Complex-Gwaheon, 47, Gwanmun-ro, Gwacheon-si 13809 Gyeonggi-do Korea, Republic Of	Phone: +82 2 2110 2429 Cell: +82 10 2170 4020 sbys402@korea.kr sbys402@gmail.com
Dr Yongseung Kim Principal Researcher National Satellite Operation & Application Center Korea Aerospace Research Institute 169-84, Gwahak-ro Yuseong-gu Daejeon 34133 Korea, Republic Of	Phone: +82 42 860 2476 Fax: +82 42 870 3909 yskim@kari.re.kr
Morocco (did not attend)	
Russian Federation	
Mr Sergey Tsenko Head of the department of special and scientific programs The Federal Service for Hydrometeorology and Environmental Monitoring Novovagankovsky lane 12 125993 Moscow Russian Federation	Phone: +7 499 255-68-77 s.tsenko@meteof.ru andreeva.planet@gmail.com
Ms Tatiana Labenets Main Specialist-Expert International Cooperation Division ROSHYDROMET	Phone: +7(499)2520808 Fax: +7(499) 2555226 labenec@mail.ru t.labenets@meteof.ru

List of Participants	
46th GEO Executive Committee	
12, Novovagan'kovsky Str. Moscow 125993 Russian Federation	
Mr Valery Zaichko Deputy director Remote sensing space systems Navigation system and remote sensing Russian Space State Corporation ROSCOSMOS 42 Shepkina St. 107996 Moscow Russian Federation	Phone: +7 495 631 9000 Fax: +7 495 631 9213 zval@mail.ru opoi@roscosmos.ru gtd@ntsomz.ru
Switzerland	
Dr Jose Romero Chief Scientist Environment International International Affairs Division Department of Environment, Transports, Communication and Energy Federal Office for the Environment (FOEN) 3003 Bern Switzerland	Phone: +41 58 462 68 62 Cell: +41 79 251 90 69 Fax: +41 58 463 03 49 jose.romero@bafu.admin.ch
Uganda (did not attend)	
United Kingdom	
Dr Iain Williams Defra Deputy Chief Scientific Adviser Department for Environment, Food and Rural Affairs Nobel House 17 Smith Square SW1P 3JR London United Kingdom	Phone: +44 208 225 7749 / +44 208 026 3533 iain.williams@defra.gsi.gov.uk
OBSERVERS	
CEOS	
Ms Kerry Ann Sawyer SIT Vice-Chair Team	Phone: +1 301 713 7074 / +1 301 713 2024

List of Participants 46th GEO Executive Committee	
International and Interagency Affairs Satellite and Information Services National Oceanic and Atmospheric Administration (NOAA - NESDIS - IIA) 1335 East West Highway Room 7325 Silver Spring MD 20910 United States	Cell: +1 202 309 3099 / +1 202 309 0399 Fax : +1 301 713 2032 kerry.sawyer@noaa.gov
IEEE (did not attend)	
IOC (did not attend)	
Programme Board co-chair	
Mr Osamu Ochiai Associate Senior Administrator Satellite Applications and Promotion Center (SAPC) Space Applications Mission Directorate Japan Aerospace Exploration Agency (JAXA) 2-1-1 Sengen Tsukuba-shi Ibaragi-ken 305 Tsukuba 8505 Japan	Phone: +81 50 3362 6960 Fax: +81 29 868 5975 ochiai.osamu@jaxa.jp
COMMERCIAL SECTOR ROUNDTABLE	
China	
Mr Tao GUO Doctor of Engineering Vice President Beijing Piesat Information Technology Co., Ltd YiYuan a-1-5 Xingshikou Road Haidian District Beijing 100195 China	Phone: +86 10 82 55 62 03 Cell: +86 188 11 47 75 59 guotao@piesat.cn

List of Participants 46th GEO Executive Committee	
EARSC	
<p>Ms Monica Miguel-Lago Executive Secretary Secretariat European Association of Remote Sensing Companies (EARSC) Rue de la Loi 26, 7^{ème} étage 1040 Brussels Belgium</p>	<p>Cell: +34 639 584 684 monica.miguel-lago@earsc.org secretariat@earsc.org</p>
Japan	
<p>Mr Junji Inoue Executive Managing Director Remote Sensing Technology Center of Japan TOKYU REIT TORANOMON Bldg. 3FL Toranomom 3-17-1 Minato-ku 105-0001 Tokyo Japan</p>	<p>Phone: +81 364 35 67 00 Cell: +81 202 55 72 inoue_junji@restec.or.jp itfinouejunji@gmail.com</p>
<p>Ms Akira Mukaida General Manager Solution Service Dpt. II Remote Sensing Technology Center of Japan (RESTEC) TOKYU REIT Toranomom Bldg.2F 3-17-1 Toranomom, Minato-ku 105 Tokyo 0001 Japan</p>	<p>Phone: +81 364 35 61 30 Cell: +81 903 52 11 752 Fax: +81 357 77 15 80 akira@restec.or.jp mukaida4k1r4@gmail.com</p>
<p>Mr Alex Otake Senior Manager of AW3D Team Social Innovation Division NTT Data Corporation Japan</p>	<p>Phone: +81 364 35 61 30 Cell: +81 903 52 11 752 Fax: +81 357 77 15 80 ootakea@nttdata.co.jp</p>
<p>Mr Ervianto Abdullah Assistant Manager of AW3D Team Social Innovation Division NTT Data Corporation Japan</p>	

List of Participants 46th GEO Executive Committee	
Mr Alex Otake Senior Manager of AW3D Team Social Innovation Division NTT Data Corporation Japan	Phone: +81 364 35 61 30 Cell: +81 903 52 11 752 Fax: +81 357 77 15 80 ootakea@nttdata.co.jp
Dr Hideyuki Ando Senior General Manager of MTI NYK Japan	Hideyuki_ando@monohakobi.com
Mr Katsunori Tachibana Director GIS Division PASCO Corporation Japan NTT Data Corporation Japan	Kaanta9945@pasco.co.jp
Mr Shuhei Yamaya Business Development and Sales Group Axelspace Corporation Japan	
Mr Yoshitaro Ikeda Manager of Business Development and sales Group Axelspace Corporation Japan	ikedata@axelspace.com
Dr Tomoyuku Suhama Deputy General Manager PASCO Corporation Japan	
South Africa	
Mr Sives Govender RGL EOSIT Meraka Institute CSIR Private Bag X447 0001 Pretoria	Phone: +27 128 412 501 Cell: +27 829 295 034 Fax : +27 123 492 080 sives.govender@gmail.com sgovender5@csir.co.za sgovender@eis-africa.org

List of Participants 46th GEO Executive Committee	
South Africa	
GEO Secretariat	
7 bis, avenue de la Paix Case postale 2300 CH-1211 Geneva 2 Switzerland	Phone : +41 22 730 8505 Fax : +41 22 730 8520 secretariat@geosec.org