



GROUP ON
EARTH OBSERVATIONS

GEO-X

15-16 January 2014

Report of GEO-IX

Document 4

As approved at GEO-X.

**Report of GEO-IX
22-23 November 2012
Foz do Iguaçu, Brazil**

22 November 2012

1 OPENING OF THE SESSION

The GEO-IX Plenary meeting was chaired by Ms Manuela Soares, the GEO Co-Chair from the European Commission. She opened the Plenary by expressing her thanks to Brazil's Ministry of Science and Technology and to the Director General of the Brazilian National Institute for Space Research (INPE), Dr Leonel Perondi, to whom she then gave the floor.

1.1 Welcome from Brazil

Dr Perondi prefaced his remarks by noting the recent launch of Brazil GEO, an encouraging event in his view, and that Brazil had hosted the first GEOSS in the Americas meeting in 2007. Actions taken by Brazilian authorities, based on the use of Earth observations, have led to a substantial decline in Amazon deforestation, and Dr Perondi underscored that GEO had contributed greatly to this initiative. He also mentioned that INPE has carried out several initiatives in support of GEO, and that Brazil fully supports the GEOSS Data Sharing Principles. He also remarked that capacity building is central to Brazil's commitment to GEO, thus Brazil is committed to the AfriGEOSS initiative. Further, Brazil uses open-source software for image processing, and access to data from the China-Brazil Earth Resources Satellite (CBERS) for the Africa initiative is being fully provided to downlink stations across Africa (South Africa, Canary Islands, and Gabon). Future plans include expansion to Kenya through a joint project with Italy, and Egypt. He concluded his remarks by observing that Brazil is helping shape the future of GEO and GEOSS in that the Rio+20 Outcomes Document makes explicit acknowledgement of GEOSS which is in turn influencing the GEO post-2015 discussion.

1.2 Opening Remarks

The GEO Co-Chair from the European Commission, Ms Manuela Soares, in her capacity as Chair of the Plenary, again thanked the Brazilian hosts for their preparations and hospitality, and welcomed the new Secretariat Director, Ms. Barbara J. Ryan. She saw this Plenary as one of transitions, including the new Director, the Implementation Boards (IBs), the discussions regarding GEO post-2015, and activities begun with the new GEO 2012-2015 Work Plan. In light of these transitions, she felt it essential that GEO not lose sight of its primary focus, which the Ministers originally called for, that being execution of the GEOSS 10-year Implementation Plan. She cautioned that if GEOSS is not delivered by 2015, there would be little point in a GEO post-2015. However, she was convinced that GEO is on the right track and hoped that Plenary would affirm their contributions to GEOSS implementation.

The GEO Co-Chair from China, Prof. Liao Xiaohan, thanked the Brazilian hosts and said he believed that this Plenary would contribute to the successful implementation of GEOSS. He noted that GEONetCast, AfriGEOSS and GEOGLAM are just a few of the many examples of success stories in

establishing GEOSS. He also noted that China had worked towards increasing capacity across Asia, and within the country itself, a prototype China GEO is being established across 19 agencies. Observations from weather and ocean satellites will be key components in this effort, and the Chinese delegation would be holding a side-event to celebrate the release of 30m land-cover data.

The GEO Co-Chair from South Africa, Mr Philemon Mjwara, thanked the Brazilian government and INPE for hosting the GEO Plenary. He shared the sentiment of the Co-Chair from the EC, that this was a crucial time for GEO as thoughts turned to GEO post-2015. He stated that he would not be doing this work if he did not believe that GEO was making progress. As he saw it, current challenges included learning from findings and recommendations by the Monitoring & Evaluation Working Group (M&EWG) as they conducted their evaluations, as well as deepening regional initiatives. He noted there was cause for excitement with the development of the AfriGEOSS initiative and the introduction of a set of new structures such as the IBs. He felt the work of the IBs was important because the GEO community wants to refine its work as it gets closer to the targets it has promised to deliver, and the IBs can help in this process. Finally, he observed that changes bring uncertainties, but was confident that GEO, as a collective, would find a way to manage these transitions. He concluded by thanking the Secretariat and the new Director for their good work.

The GEO Co-Chair from the United States, Dr Kathryn Sullivan, thanked the Brazilian government and INPE on behalf of the entire US delegation. She commented that the beauty of the setting at Foz do Iguaçu reminded her of the importance of the work of GEO in its efforts to help protect the planet. She noted that GEOSS is starting to earn more widespread recognition, as evidenced by its reference in the Rio + 20 Outcomes Document. Moreover, though Earth observations are used every day to provide monitoring as well as the basis for forecasts, she remarked that the machinery that makes these benefits possible may not be readily apparent. The year 2012 has been marked by headlines of severe cold in Europe, floods in China, and droughts in Brazil and the US. The Mississippi river in the US was recently at record lows, which had an impact on commerce, resulting in an increase in frequency (monthly to weekly) of drought outlooks by the US National Drought Mitigation Center. These outlooks are reviewed by the highest levels of government, illustrating the central promise driving the advent of GEO: the establishment of a system of systems to create a value chain turning Earth observations into decision support tools. Plus, given the increasing cost of disasters, the need for GEOSS is becoming all the more acute and there is a need to redouble efforts to carry work of GEO forward with renewed commitment, to realize the GEOSS vision for "... a future wherein decisions and actions for the benefit of humankind are informed via coordinated, comprehensive and sustained Earth observations and information."

The GEO Secretariat Director, Ms. Barbara J. Ryan, thanked the Brazilian hosts, Co-chairs, Plenary and Secretariat for their hard work and dedication. She said she was looking forward to the discussions as she deeply believed in the need for GEO as an intergovernmental coordination mechanism. She noted that many arenas urgently depended on Earth observations for effective management, such as disaster mitigation, provision of clean water, countering the spread of disease, and preventing loss of ecosystems and habitat. The need for GEO is only increasing, calling for more, not less, coordination, particularly in financially difficult times. In her view, a challenge continues to be communicating the added-value of GEO to ministers, as well as finding ways to strengthen Earth observing infrastructure, especially *in-situ*. She said she looked forward to constructive conversations on the variety of topics before Plenary. She concluded her remarks with an acknowledgement of the impending retirement of Mrs. Natasha Brutch-Dastur from the Secretariat, and thanked her for her tremendous work and dedication in support of GEO since its inception.

1.3 Administrative Announcements

1.4 Adoption of Agenda (Document 1 (Rev1)) (for acceptance)

The Chair remarked that agenda item 3 (GEO Post-2015) should start no later than 3:30pm on Thursday, 22 November. In case the Plenary was running late with respect to the agenda timing, any points preceding item 3 would be shifted to Friday, 23 November.

Switzerland proposed that agenda item 4 (3Announcement of GEO-X and Preparation for the 2013 Ministerial) be moved from Friday to Thursday in the agenda, as it may have a bearing on the GEO post-2015 discussion. Italy supported the proposal. The Chair responded that part of agenda item 4 (the Announcement) would be considered immediately following the morning coffee break.

The agenda was then accepted, subject to this modification.

1.5 Recognition of New Members (Document 2) (for information)

The Chair informed the meeting that Ivory Coast became a GEO Member on 7 March 2012, bringing the total GEO membership to 89 countries, including the EC. The meeting welcomed the new Member with a round of applause.

1.6 Statements from New Members

Ivory Coast was unable to attend GEO-IX.

1.7 Recognition of Participating Organizations (Document 3 (Rev1)) (for acceptance)

The Secretariat Director presented the applications from the International Cartographic Association (IAC), the United Nations Convention to Combat Desertification (UNCCD) and the World Data System (WDS). She confirmed that the Executive Committee had evaluated the applications, recognized that they were true international organizations with mandates that are fully aligned with GEOSS, and recommended that the Plenary recognize them. The three organizations were accepted as Participating Organizations without objection, raising the total number of GEO Participating Organizations to 67. In addition, the application from the Secure World Foundation (SWF) for observer status was accepted.

1.8 Approval of GEO-VIII Report (Document 4) (for acceptance)

The Chair presented the report. There being no comments, the Chair concluded that the report was a true reflection of last year's discussion in Istanbul and the report was accepted.

The meeting then adjourned for the official opening of the GEO-IX Exhibition.

4 ANNOUNCEMENT OF GEO-X AND PREPARATION FOR THE 2013 MINISTERIAL

The Chair gave the floor to Switzerland, which noted its engagement with GEO dates back to the inception of GEO and, still today, fully supports the ongoing efforts to bring GEOSS to fruition. Switzerland further remarked it is proud to host the Secretariat in Geneva with the valuable synergies that proximity to other international organizations affords. Switzerland supports the Rio+20 Outcome Document and wishes to see GEOSS implementation of highest quality. Switzerland thus offered to host the GEO-X Plenary and Ministerial Summit in Geneva, and said it stands ready to be actively engaged in the process and organization, and in the activities of the Post-2015 Working Group. The timing of the Plenary and Ministerial Summit can be flexible, depending on the speed of preparations and recommendations by the Executive Committee in the months ahead.

The Chair thanked Switzerland for the generous offer and, noting the absence of any other proposals, accepted the offer, which was supported by a round of applause from the Plenary.

2 GEOSS IMPLEMENTATION

2.1 Assessment of Progress

- Target Assessment (Document 5) (*for acceptance*);
- Task Assessment (Document 6) (*for acceptance*).

Professor Stuart Marsh presented both Document 5 and the first half of Document 6. He expressed his thanks to the GEO community, the IBs, and the Secretariat for their help and guidance in preparing Document 5. He noted that all three IBs have been in existence for less than a year, yet had managed to achieve the considerable task assigned to them in producing this document on time, all the more remarkable considering the IBs have been learning as they go. He outlined the color-coding structure of each Strategic Target pyramid (green: expected to be achieved; yellow: at risk of not being achieved without additional actions/intervention; red: not expected to be achieved without significant actions/intervention), and explained that the colors did not represent a straight summation from Task level to Target. Thus, for example, a Task at the Work Plan level might be red, yet the Target level could be green or yellow due to the blending effect of assessed progress on other related Tasks and underpinning Strategic Target outcomes (“Demonstrated by” bullets).

Common themes emerging from the assessment:

- Resources of all types are frequently requested;
- Investments in the observing system need to be long term;
- *In-situ* coordination remains a challenge.

In order to accurately report on progress:

- Critical information needs to be readily available through the Task and component sheets;
- Cross-working is essential and thus more regular joint IBs + secretariat + M&E meetings are necessary;
- The IBs must focus on all Board activities, not only on narrowly assessing progress towards targets.

Prof. Marsh said that, overall, GEOSS implementation is currently yellow, and that there is a risk of GEO not reaching its objectives. He noted that progress towards ten of the Strategic Targets was rated as yellow, and underscored the need for increased commitment and resources to move GEOSS implementation as a whole to green.

The Chair thanked Prof. Marsh for the presentation, the IBs for tremendous effort undertaken, and reminded Plenary that, before opening the floor for comments, Document 5 was presented for acceptance.

Norway appreciated the presentation and, while recognizing the difficulty of this endeavor, stated the need for a more in-depth analysis for next year. In particular, the assessment of the ways in which different Tasks are considered to contribute to the progress of a given Target needs clarification. For example, it was a bit of a surprise to Norway that progress made within the Task on Global Forest Observation Initiative (GFOI), which Norway supports, does not appear as supporting the achievement of Climate Target. Additionally, more Tasks than those identified are contributing to the User Engagement and Data Management Targets, the latter being concerned with how to make data generally available for use across SBAs.

Brazil found the report to be a very good first attempt at providing proof that GEO is making progress, yet recognized that there are great challenges and still a lot of work to do. The Brazilian delegation is in full support of the three IBs. Brazil's main concern is with capacity building in developing countries, in particular that information generated is more fully utilized.

The UK found the first assessment to be excellent and thanked both the IBs for their hard work and Prof. Marsh for the clear presentation on difficult issues. In agreement with Norway, the UK remarked that perhaps a separate, nuanced assessment of the cross-cutting Societal Benefit Tasks, such as GFOI and Blue Planet, was needed.

China commented there was a need to consider how to design activities to fully support the Strategic Targets, especially in connection with those colored red, as well as how to get more GEO Members and Participating Organizations to support the idea of GEOSS and its activities. As mentioned earlier, efforts have been devoted to building a China GEO as an inter-ministry mechanism, across 19 agencies, and initial progress has been made with respect to data sharing and policy exchange. However, without more solid involvement from other governments, GEO was in danger of not achieving the Strategic Targets for GEOSS.

Germany found the assessment much improved over past efforts, but requested a unified report from the IBs and the Secretariat. Germany would also like to see an emphasis on added-value of GEO in the assessment and additional details pertaining to recommended actions.

The EC congratulated the IBs for the good work done, and wanted to point out that although the IBs have been set up to assess Task progress towards the Strategic Targets, it was important not to lose sight of the fact that the Terms of Reference of the IBs called for them to identify ways to collaborate across Task and SBAs.

Italy thanked Prof. Marsh for the excellent job, noting the assessment by the IBs, though not perfect, was an important response to requests by the Executive Committee and the GEO Community to provide a measure of the progress of GEOSS implementation. Italy also requested additional information be provided with respect to the status of Ecosystems Target, given that Italy has recently offered to provide coordination for the Ecosystems Task.

Canada thanked the IBs for the good work done, and also for bringing together the GEO community for this assessment. It noted the key role of the M&E WG in the process, and then made the observation that Targets coded as yellow might always be yellow in certain cases, such as expansion and maintenance of *in-situ* networks. The focus should perhaps rather be on what is attainable, even though there are gaps. As a way forward, GEO could try to establish a process or coordination mechanism for *in-situ* measurements. There are some POs who could meet this challenge, and it is important to identify how they can contribute to better coordination of these and other functions.

The US thanked the Secretariat, Task teams, IBs, and all who have contributed to this process, and recommended that these key entities develop mitigation plans for Tasks in trouble. The US will redouble its efforts where it has committed to Task leadership.

Australia supported the remarks of Canada, noting there are many ways to fill gaps, starting by assisting Members and POs in the execution of their functions and in identifying priority requirements for observations. In particular, in the domain of *in-situ* observations, Australia noted that GEO may facilitate development of new networks where they do not exist, and support improvement of those that do. It mentioned the example of the World Meteorological Organization (WMO) Integrated Global Observing System (WIGOS), which equips its Members with tools to understand requirements and the extent to which they are being met, promotes use of fit-for-purpose standards for observing networks and encourages National Meteorological Services to work with national partners to strengthen and supplement observing systems.

The Republic of South Korea commented that the strategic plan for the implementation of GEOSS should take into account new initiatives, such as the Global Framework for Climate Services (GFCS).

There are many similarities between GFCS and GEOSS, such as the approach to promoting user engagement. Both are trying to bridge the gap between information providers and users, and GEO and WMO should work closely together.

The European Environment Agency (EEA) offered to take the lead in setting up a framework for an integrated approach to coordinating *in-situ* measurements.

In closing, Prof. Marsh acknowledged there are indeed many ways to fill the gaps pointed to by the Target assessment. He also noted it will likely not be possible to build the equivalent of a CEOS (Committee on Earth Observation Satellites) for *in-situ* measurements, but that GEO needed to leverage offers such as that made by the EEA. Finally, he appreciated the observation that some elements of GEOSS implementation may always be coded yellow, and that this may not necessarily be a bad thing; however, a clear explanation as to why should be provided.

The Chair concluded that both Documents 5 and 6 were accepted by Plenary, and that the comments received would be taken into account for the next assessment.

2.2 3rd Evaluation Report (Document 7) (for acceptance) and Monitoring & Evaluation Outlook (Document 8) (for acceptance)

Mr Craig Larlee, Co-chair of the Monitoring and Evaluation Working Group (M&E WG), presented both documents. Main findings (Document 7) included:

- Perceived high turnover within Task and Task leadership;
- Voluntary nature of GEO inhibits participation, capacity and influence of developing countries;
- Roles and responsibilities are unclear to many Task participants;
- GEO is adding value, though mostly through large cooperative initiatives; there is less evidence that GEO is increasing the use of Earth observations or building institutional capacity;
- Communities of Practice, regional systems and pilot projects are effective ways of bringing together practitioners and stakeholders;
- Ensuring participation of developing countries is a significant challenge;
- GEO should re-examine the GEOSS Strategic Targets post-2015.

South Africa, on behalf of the Executive Committee, presented the Committee's management response to the report. In particular, the Post-2015 WG will be requested to consider the findings and recommendations of this and previous Evaluation Reports, and in particular to develop guidance on the issue of global initiatives.

Japan expressed its appreciation for the work of the M&E WG and recalled Japan's support to the M&E process.

China welcomed the report and agreed it provided helpful information for post-2015 planning. In particular, GEO should note the recommendations as it considers how to accelerate Work Plan activities to meet the Strategic Targets.

Next, Mr Larlee explained the proposal for the M&E WG to establish a process for tracking the implementation of recommendations stemming from the evaluations (Document 8).

Germany fully supported the proposal.

The UK also supported the proposal, noting the methodology seemed reasonable, and recommended that the M&E WG seek the views of the IBs on the implementation of all the recommendations, not just specific issues as stated in the proposal, in order to have the most up-to-date information available.

The Chair concluded that the Plenary accepted Document 7, endorsed the response by the Executive Committee, and accepted Document 8 with the comment from the UK.

2.3 GEO 2012-2015 Work Plan Update (Document 9) (for acceptance)

The Secretariat Director presented the Work Plan Update. She emphasized that the report is completely based on the contributions of Members and Participating Organizations as it incorporates the technical and official comments received from the GEO community during the period May-September 2012 and draws from the recommendations of the 2012 Work Plan Symposium (30 April-2 May, Geneva). As such, the present Update does not propose any major change to Revision 1 which was circulated to the GEO community on 13 December 2011. Rather, it proposes a series of adjustments and updates.

China welcomed the update and reiterated the need for strong engagement and support from GEO Members and POs, noting China's commitment with the release of 30m resolution global landcover datasets. It underlined the importance of dataset validation and announced that a meeting is being planned on the subject.

Sweden stated that GEO is important to its nation and wished to underscore its participation and support for global land cover, global urban observation, and mercury observation system initiatives, as well as its participation in the Fourth GEOSS Evaluation.

The US accepted the document subject to revisions it had submitted to the Secretariat, and encouraged everyone in the GEO community to engage more fully with activities of the Work Plan.

The EC thanked the Secretariat for the update, while noting a few contributions from Europe were missing, such as the three new major supersites that have been initiated in Iceland, Southern Italy and Turkey (Istanbul). Additionally, five new projects have been launched under the citizen observatory, including new technologies for *in-situ* measurements. The EC requested that these be mentioned in the update for Plenary-X.

Italy thanked the Secretariat for the important improvements which it finds are going in the right direction. Decisions to remove or merge Tasks, where necessary, are a good solution rather than keeping them on board without tangible results. However, it is regrettable that the Task on ecosystems capital accounting was dropped. Although the task is a challenging one, it would be important for GEO to restart it, particularly for the role GEO intends to play in supporting the implementation of the green economy

The Netherlands was pleased to note how the Work Plan has sharpened its focus in the number and composition of its Tasks, and offered to consider how to better exploit synergies with UN agencies such as the World Health Organization (WHO), the Food and Agriculture Organization (FAO), and others.

The Chair concluded that Document 9 was accepted by Plenary as a living document.

2.4 GEO 2012-2015 Work Plan Implementation Highlights

Dr Alexia Massacand of the Secretariat gave an overview presentation on the recent progress of the GEO 2012-2015 Work Plan Implementation. For a summary of the scope of the activities included in the overview presentation, the reader is referred to the GEO 2012-2015 Work Plan Implementation Report Task Assessment (Document 6), pages 2-10, which contains a summary table featuring: (i) An overview of progress and issues at the Task level; (ii) Highlights of GEO Members' and Participating Organizations' work towards Work Plan implementation; and (iii) Actions/Intervention needed.

Following the presentation, several Member and Participating Organization delegations gave remarks on their involvement in, and contributions to, GEO Work Plan activities.

CEOS provided a written statement outlining how it continues to provide space-based Earth observations in support of the implementation of the Global Earth Observation System of Systems (GEOSS). CEOS ensures a sustained approach to the coordination of its Members' satellite missions, derived data products, and comprehensive user interactions for societal benefit.

In 2012, CEOS took decisive steps in support of the 2012-2015 GEO Work Plan, through its leadership and contributions to almost half of the Work Plan's Tasks and Components. Through these efforts, CEOS has made substantial progress in coordinated support to climate observations and research, carbon assessments, data sharing, capacity building, as well as forest observations, agricultural research, and disaster risk management strategies. Highlights include:

- In the area of Climate Observations and Research: CEOS has made major strides in 2012 to better coordinate Agencies' space-based climate research and monitoring activities. In September, CEOS provided a detailed response to the 2010 Global Climate Observing System Implementation Plan and its Satellite Supplement, highlighting progress among CEOS Agencies in coordinated information outputs for the monitoring of Essential Climate Variables. CEOS will present its status report to the 37th Subsidiary Body on Scientific and Technological Advice of the UN Framework Convention on Climate Change. The report calls for an unprecedented level of coordination among CEOS Members, with long-term success depending on continuity of observations and the full and open sharing of satellite-derived data for the purposes of climate research and monitoring;
- In support of GEO carbon-related Tasks, the CEOS Carbon Task Force continues to define a carbon strategy for the next generation CEOS Agency satellite missions. This strategy will support measurements of the global carbon cycle and its various sinks, sources, and fluxes – aimed at a better understanding of climate change processes and climate modeling;
- Supporting the recommendation of the GEOSS Data Sharing Working Group to provide full and open exchange of Earth observation data as much as possible, CEOS Agencies continue identification of satellite product information that can be categorized as GEOSS Data-CORE datasets. Initial findings from a study by the CEOS Systems Engineering Office on 100 CEOS Agencies' satellite missions, indicated that more than 70% of identified satellite data are available at no or little cost, and with minimal requirements for user registration and data redistribution. CEOS Agencies will continue to provide, free-of-charge, data access from various satellite missions in support of key GEO initiatives;
- And lastly in the area of Capacity Building and Data Democracy: In support of GEO's Individual and Institutional Development Tasks, CEOS Agencies have enhanced their cooperation in remote sensing data sharing for education, training, and capacity building, particularly for traditionally-underserved countries. CEOS is also implementing a new, 180-hour e-learning remote sensing course for university educators.

Among its priorities for 2013, CEOS Agencies will continue and enhance cooperation to support more effective societal decision-making in the areas of climate change, forest monitoring, sustainable development, food and water security, and disaster risk management. This cooperation will be expressed through a number of global-level initiatives. CEOS Agencies are fully engaged in implementing the space-based component of GEOSS and will continue this support in 2013. I would lastly like to express sincerest thanks to our Brazilian colleagues and the GEO Secretariat for this very successful Plenary.

Brazil reaffirmed its commitment to activities of the Work Plan, such as GFOI and the DI-01, and was hoping to increased participation as a consequence of establishing GEO-Brazil, starting with the Biodiversity Task.

The EC remarked that it was critical that GEO Members and POs actively participate in the Data Sharing Working Group in the very near future, in particular through contributions to the GEOSS Data CORE.

ESA thanked Ms. Massacand for the presentation which provided the “big picture” overview of Work Plan progress. ESA reiterated its commitment to supporting GEO and its Work Plan, in particular to the operation and continuous improvement of the GEO Portal, and repeated its request that all European data and information be made available through the GEOSS Common Infrastructure (GCI).

2.5 Featured Initiatives

Blue Planet

Dr Albert Fischer, Head of the Ocean Observations and Services Section - Global Ocean Observing System (GOOS) Project Office, IOC-UNESCO, delivered the presentation on Work Plan Task SB-01 Oceans and Society: Blue Planet.

Brazil, which had hosted the Blue Planet Symposium through INPE at Ilhabela, 19-21 November 2012, wished to express thanks to the Secretariat Director, Douglas Cripe, and Albert Fischer for their support and a very productive symposium at Ilhabela. Brazil stressed the need for Tasks such as Blue Planet to foster exploitation of the oceans in a sustainable manner as the oceans have an impact on everything, including food security. It noted links with Rio+20 outcomes and anticipated Brazil would contribute to the activities in the future.

CEOS was pleased with the development of the Blue Planet Task, noting it was well situated to support the Task with four Virtual Constellations for ocean color radiometry, ocean surface vector winds, ocean topography, and sea surface temperature. It also mentioned it will use Task results as inputs for mission definition of the next generation satellites.

Norway welcomed this approach to ocean monitoring, noting it was a huge challenge to accommodate monitoring in all areas where oceans have an impact. Norway has much to offer and would like to be closely involved in this Task, and is of the opinion that, to be successful, the Task will need strong governance, perhaps modeled along the lines of GFOI.

Italy appreciated the presentation and strongly supports the Task, noting it has a large scientific community working on oceanic monitoring that could provide useful contributions.

The US remarked it has been a major supporter of GOOS and other international partnerships for ocean monitoring. Recognizing that GOOS development has plateaued in recent years, the US strongly supported the Blue Planet initiative as a way to advance ocean monitoring.

The EC found the Task fills a real need and noted the EC is already committed to the provision of ocean monitoring and information through Global Monitoring for Environment and Security (GMES) and other activities. In the view of the EC, the Task should develop an implementation plan, and as Blue Planet advances, recommended moving administrative support outside the Secretariat, similar to other global initiatives.

POGO welcomed the Task and congratulated Task team.

France welcomed and fully supports the Blue Planet Task, and has much to contribute to it, finding it fully in line with Rio+20 objectives.

COSPAR supported the Blue Planet concept, noting the importance of establishing a truly globally integrated system.

Madagascar expressed its appreciation and full support for the Task.

ISDE fully supported the Task, noting that ocean science has a strong citizen science component.

The Chair concluded by echoing Plenary's endorsement of the Blue Planet Task, and requested Plenary to take note of the requests for resources made during the presentation, including the need for individual countries to support national and international sustained, long-term observations programs.

AfriGEOSS (Document 10) (for information)

Mr Ganiyu Agbaje of Niger delivered the presentation on AfriGEOSS.

Japan welcomed the initiative and noted it will continue to contribute to AfriGEOSS through the African Water Cycle Coordination Initiative (AfWCCI). Plans are being finalized for a 3rd workshop to be held in Morocco, February 2013, at which time preliminary work in the Niger and Volta river basins will be reviewed.

China noted it will continue to support the provision of Earth observation information for Africa through CBERS, together with Brazil.

EUMETSAT welcomed the initiative and noted the support that GEONETCast Stations, installed in almost every African nation, may provide to the initiative.

Niger welcomed the initiative.

COSPAR welcomed the initiative and will continue supporting capacity building projects, notably through its collaboration with the WMO Space Program and the South African National Space Agency (SANSA).

South Africa fully supported the initiative and will continue to facilitate workshops and other activities related to AfriGEOSS. It also noted that a new satellite is under development which will fully support AfriGEOSS. It also pledged continued support to AfriGEOSS through dedicated contributions to the GEO trust fund and continuing to second a technical expert to the Secretariat.

Canada commented that AfriGEOSS should be linked to bilateral initiatives and recalled that there are a number of Canadian initiatives taking place across Africa, and hoped that AfriGEOSS would find a way to leverage these while avoiding duplication.

The US recognized that the initiative serves as an umbrella for coordination across Africa, and is pleased with the successful collaboration taking place, particularly through the Regional Centre for Monitoring and Resource Development (RCMRD) and the East-Africa SERVIR hub. The US wished to emphasize the promotion of women in capacity building efforts as AfriGEOSS develops.

Madagascar observed the importance of African ownership within the AfriGEOSS initiative, if continuity of activities and projects under its aegis were to be assured.

GSDI welcomed the initiative and noted the AfriGIS conference to be held at the end of 2013, which could be a good opportunity to discuss coordination and synergies.

Austria welcomed the initiative and is willing to contribute. It recalled two Austrian initiatives relevant to AfriGEOSS that are ongoing, and stands ready to be contacted for further proposals.

The WMO welcomed the initiative and noted that further promotion of integration among WMO observing systems with partners' observing systems within AfriGEOSS would promote synergies and achieve a most cost-effective and comprehensive system of systems. It recalled it had organized an Addis-Ababa meeting to discuss a meteorological observation plan for Africa, which can be considered as a contribution to GEOSS.

Brazil recalled it had noted its full support of the initiative in the opening talk by Dr Perondi. Brazil hoped to see an increasing number of African nations becoming involved in GEO.

EuroGeoSurveys noted that a joint EU-Africa initiative would be launched in the following week. The initiative is considered very relevant to AfriGEOSS, including, among other items, a strong Capacity Building component and access to African data available from European national geological surveys.

Italy appreciated the AfriGEOSS initiative and reminded the meeting of the contributions that the ASI-Italian Space Agency station in Malindi, Kenya could provide to African monitoring: satellite, including COSMO SkyMed, data reception, processing and distribution and training. Italy also hoped the initiative could help with moving Kenyan Membership in GEO forward. Italy is ready to be contacted to move activities forward.

The EC warmly welcomed the initiative, noting it was committed to providing support through GMES in Africa.

The Chair concluded it was clear by the number of comments made, that Plenary fully endorsed the initiative.

As mentioned under agenda item 1.4, the Chair then took the prerogative to preempt the current position in the agenda with item 3 (GEO Post-2015), to allow ample discussion in response to the interim report prepared by the Post-2015 WG.

3 GEO POST-2015 (DOCUMENT 15 (REV1)) (FOR CONSULTATION)

Mr Mmboneni Mmuofhe delivered the Post-2015 WG interim report presentation outlining the rationales, options, and recommendations for GEO in the period post-2015. The Chair then thanked the members of the Post-2015 WG and recalled its Terms of Reference had called for the WG to assess options and scenarios for the next phase of GEO, make recommendations to Plenary, and seek the guidance of Plenary with respect to those recommendations. The Chair also noted the WG had been required to report regularly on its progress to the Executive Committee and to produce an interim report for the GEO-IX Plenary, with a final report to be produced for the GEO-X Plenary. For an efficient discussion, the Chair requested that interventions address specific remarks on the points raised in the interim report. The objective was to conclude the session by adopting recommendations to be given to the Post-2015 WG, to be captured in a summary document for presentation the following morning (see Annex I).

China congratulated the WG on its work well done, and had 4 comments: China 1) fully supported that GEO should continue; 2) favored the 2nd strategic direction (option 2.1.B); 3) supported the 2nd SBA recommendation (option 2.2.B); and 4) supported the 2nd governance recommendation (option 2.3.B). China noted its 3-stage plan strategy proposal for GEO to address a 20-year horizon, which included in a 1st phase constructing an international GEOSS, in a 2nd phase constructing regional and national GEOSS', and in a 3rd phase linking the various GEOSS components together to make a truly global system. A roadmap should be developed to chart the steps in this strategic plan.

Chile thanked the WG and found the document to be excellent and concise, well-suited to prepare the Plenary for a fruitful discussion. Chile agreed with the core functions for GEO as presented. Taking an incremental approach, in the time remaining until 2015, GEO should work to consolidate GEOSS; in the 2nd phase post-2015, GEO should embark in specific applications and services. Chile preferred maintaining the current SBA structure, while favoring the addition of Oceans as a tenth SBA. With respect to governance, Chile felt it critical that recommendation 2.3.B be retained. Finally, Chile suggested the WG needed to now embark upon elaboration of an in-depth financial analysis, taking the current unfavorable financial climate into account.

The UK thanked the WG for its hard work and wished to underscore that the final decision whether GEO continues post-2015 or not rests with the Ministers. The UK also wished to express its support, in principle, for continuation of GEO post-2015, and to emphasize the need to recognize linkages with international conventions in connection with Recommendation 4, such as the Convention on Biological Diversity (CBD), the United Nations Framework for Climate Convention (UNFCCC) and the UNCD. Last, the findings and recommendations from the M&E WG evaluations need to be taken into account by the Post-2015 WG.

The US welcomed this draft of the interim report and the creativity the document represents, and expressed its full support for the continuation of GEO post-2015. The US strongly endorsed the perspective that “form follows function”, and this view should be allowed to inform and guide GEO as technologies evolve. The US supported the WG recommendations; with regards to recommendation for strategic directions, in which activities may be developed and incubated, a caveat would be to ensure the system of systems approach is reflected in each initiative, and that GEO engages fully with all sectors, including the private.

Australia thanked the WG for its efforts thus far, and found that the message on the importance of GEO with respect to the global scene had been enhanced. However, while those close to GEO were clearly aware of its achievements to date, Australia was concerned the message has not yet been made convincingly enough to persuade Ministers that GEOSS has a unique place to fill, and why GEO needs to continue. Australia endorsed the recommendations of the WG as far as they currently go, noting it will be important to identify the added-value and complementary roles of GEO and GEOSS in cooperation with other global Earth observations organizations, especially those UN agencies that are already POs. Regarding the SBA recommendation, the document brought a sense of broadening the SBA structure, to address bigger questions, and in this context Australia cautioned against increasing the scope given the challenges of delivering on the aspirations of the first 10 years. Australia offered an alternative, more focused and goal-oriented structure for the SBA’s that makes it clear the existing weather, water and climate SBAs (to which Australia recommended adding ‘oceans’) are cross-cutting and underpinning other specific SBA’s, all of which contribute to the overarching global societal challenges. With respect to the Governance recommendation, Australia considered that the current proposals too narrowly constrain the institutional options towards the extremes and suggested there could be value for GEO in learning from other initiatives which have global intergovernmental membership and in exploring a wider range of options for the institutional “form” of GEO. Australia suggested that having stronger ongoing UN linkages would be beneficial for GEO and advocated establishing a forum for high-level dialogue with POs, especially the major global Earth observations actors, perhaps in conjunction with the Executive Committee. In Australia’s view, GEO has prided itself on its flexible nature, and this aspect should be leveraged to explore improving ties to other organizations at both global and national levels to help ensure that benefits can be delivered.

Germany found the WG report to be a very good basis for discussion, and supported the recommendations. Germany also saw the need for GEO to continue post-2015, that its efforts should include all observation systems, and that it should strive to improve its relationship to other organizations.

The Netherlands remarked that more formal relations should be fostered with agencies such as the Food and Agriculture Organization (FAO) and WMO, and that they should take advantage of GEO as a coordination mechanism. The Netherlands also suggested the governance option mention more explicitly the need for GEO to improve its relations with other intergovernmental organizations.

Canada thanked the WG, found the document excellent as a basis for discussion, and wished to support comments made by Australia. Canada queried, with respect to the promise made in 2003 and characterized by the Vision for GEOSS, whether the case has really been made regarding the benefits GEO provides to society. One dimension that could be brought forward is the efficiency that GEO can engender through its coordination mechanisms. It is noteworthy that many UN agencies are in GEO, meaning these bodies, while operating under the remit of their constituent programs, have agreed to assemble within the GEO community and this cooperation should be more actively leveraged. With respect to the core functions for GEO, in Canada’s view, a function dealing with engaging decision-makers was missing. Additionally, regarding the 5th core function, Canada was not certain if the GEO community was the correct arena to encourage research and development. Canada noted that, in the context of the intergovernmental community, the GFCS had just been created with a new set of mechanisms and GEO needed to express how its relationship with GFCS would be defined. With

respect to options for strategic direction, Canada was concerned the incubation of global initiatives could prove costly, noting that there are global, regional, national mechanisms already in existence capable of delivering specific applications and services. Regarding the SBA structure, Canada suggested rethinking what the Member governments in GEO wish to support, for example, whether weather and climate should be considered as socio-economic benefit areas. In the case of governance, Canada would like to see a more detailed description of what the different arrangements might cost. Further, the role of intergovernmental bodies with a stake in Earth observations, such as the WHO, should be more clearly accounted for in terms of exercising co-leadership.

The EC agreed with the WG on the need for GEO to continue, yet at the same time evolve from its current configuration, starting with a renewed vision in the form of a political message to be delivered to Ministers. The message should acknowledge progresses made thus far and that a renewed GEO would aim to build on current strengths, and recognize that current global needs point to the need for GEO to support sustainable development goals. The EC endorsed options 2.1.C, 2.2.B, 2.3.B, and requested that Plenary appoint a Ministerial Working Group (MWG) to direct preparations for 2013 Ministerial Summit as quickly as possible.

France generally supported the recommendations of the WG and commented that, in its message to Ministers, GEO should clearly show how it adds value to existing infrastructures and systems. Regarding the strategic directions options, France would like clarification with respect to the “strengthened” financial model for GEO (option 2.2.B) and the moderately strengthened financial model (option 2.2.C), agreeing with previous comments that increasing financial contributions would be difficult under the current financial climate.

Italy observed that, given the strong Plenary participation, the community obviously believed in GEO. Moreover, many countries are facing climate- and the environment-related challenges each day, and thus GEO should continue post-2015 as it builds on current successes. Italy was uncertain as to why criticism was being voiced from certain countries who had been active in the WG, suggesting that these criticisms should have been dealt with at an earlier stage. Nevertheless, Italy recognized there is potential overlap between GEO and GFCS, and the Italian government clearly expects collaboration to occur. Italy agreed with concerns of Australia concerning the commitment of Ministers, but noted that, given the presence of so many delegations, the assumption must be that Ministries have been informed and supported delegate participation at the GEO Plenary. Italy was confident that GEO is headed in the right direction, and it is the role of the GEO community to convince its Ministers therein. Italy supported strategic direction option 2.1.C, considering incubation as an important role for GEO; SBA option 2.2.B, given that governments were increasingly tending towards a green economy; and governance option 2.3.B as it represented the available solution for governance.

Switzerland thanked the WG for producing a good document, finding it paved the way for a substantial discussion, and wished to emphasize four points: 1) Switzerland certainly supported the need for GEO post-2015, and acknowledged progress was clearly being made as evidenced by the assessment reports discussed earlier in the agenda; 2) nevertheless, the added-value of GEO with respect to the strategic direction options was not evident enough, and the financial implications of the different financial models was unclear; 3) Switzerland supported SBA option 2 (2.2.B), with enhanced linkages to sustainable development goals and conventions; and 4) GEO is a success story because it is voluntary and flexible, and the benefits of these aspects should be emphasized. However, it is still not entirely clear how the private sector will be engaged in GEO and this aspect needs to be approached with caution, based on clear definitions.

Japan appreciated the efforts of the WG and was firmly convinced that GEO should continue for another ten years. In particular, Japan wished to draw attention to strategic direction 2.1.C and the need to identify stakeholders who would shoulder responsibility for global initiatives once incubated through GEO. Japan also underscored the need to consider ways in which financial support to the Secretariat Trust Fund might be augmented. Finally, Japan thought it important that GEO consider

how to attract and engage newcomers, such as within the private sector, and was otherwise supportive of the other WG recommendations.

Estonia noted it had participated in the WG and thus all recommendations reflected the position of its government. Although, at the political level, the current voluntary and flexible governance structure appears as the most appropriate governance model for GEO, it renders obtaining resources to support activities at the Task level difficult. Estonia suggested considering of some type of mandatory membership dues.

Sweden thanked the WG, finding that dealing with the impacts of climate change currently taking place makes GEO more relevant than ever. Sweden agreed with the recommendations of the WG, and wished to underscore the importance of linking to international conventions and agencies. In terms of governance, Sweden would prefer a stronger arrangement, but recognized the difficulties of finding consensus on this issue. Sweden supported Switzerland's request for clarification on engaging the private sector in GEO.

Brazil found that the case for continuation of GEO had been made, but there was also room for improvement. The Brazilian delegation fully endorsed option 2.1.C and the incubation model used to develop initiatives such as GEOGLAM and GEO BON. With respect to SBA option 2.2.C, Brazil would like to see clarification of terms such as "vibrant planet." Brazil supported governance option 2.3.B, but echoed Switzerland's concerns with respect to the private sector. Other remarks of Brazil included a strategy for augmenting financial commitments needed to be developed; the SBA structure should be modified to include Oceans; and finding balance in decision support should be emphasized.

The IEEE strongly supported the continuation of GEO, noting that global issues are becoming urgent, yet there is no other agency that can provide coordination of Earth observations do aid decision-making for meeting the challenges. Specifically:

- 1) participation in GEO was important for all sectors, including the private sector, to maximize societal benefits from Earth observations;
- 2) socio-economic data was needed for a more complete understanding of sustainability;
- 3) the participation of social scientists in GEO is needed;
- 4) it is necessary to develop the cross-component aspects of GEO to address many complex issues, such as the food-energy-water nexus.

The WMO stated that GFCS was a new international partnership process, and clearly there would be some important opportunities for cooperation and synergies between GFCS and GEOSS. The WMO believed that GFCS would benefit from GEOSS achievements which promoted synergies among the global, regional and national observing systems to support all the Societal Benefits Areas (SBAs) including global climate services. The GFCS process would in turn further facilitate the success of GEOSS climate SBA for realization of climate benefits to broader communities. These comments received strong support from several Members, including Australia, Canada, Croatia, Germany, and the UK. They supported the strong complementary needs and roles between GFCS and GEOSS, and believed finding ways to work together would be truly a win-win strategy, demonstrating collaborative success and the added value of GEO, and should be one of the key considerations for GEO post-2015

The IOC welcomed previous comments on strengthening ties with international agencies, suggesting that GEO should encourage better leverage of UN global observing systems.

CEOS supported each of the recommendations, found the core functions critical, and strongly believed in the need to link to international initiatives such as GFCS. Having been known as the "space arm" of GEO, CEOS offered to play a greater role in coordinating with *in-situ* observing communities to become known as the "observing arm."

ESA stated it believed in GEO, would like to see it strengthened, and that GEO needed to restart the political momentum it had at the beginning. GEO should also demonstrate its capacity to deliver data

and link with international initiatives. ESA preferred a mixture of governance options 2.3.A and 2.3.B, keeping in mind the original mandate and vision of GEO.

EUMETSAT voiced its support for strategic direction option 2.1.B, finding that incubation should be accomplished through strong coordination with other agencies. In terms of governance options, EUMETSAT supported the point of view of ESA.

The Chair then called for Plenary to be adjourned for the day, noting that a summary presentation and document of the discussion in response to the Post-2105 WG interim report would be prepared for delivery before Plenary the following morning.

23 November 2012

2 GEOSS IMPLEMENTATION - *CONTINUED*

2.6 Actions Arising from GEO-VIII

• **Global Forest Observation Initiative (GFOI) (Document 11) (for consultation)**

Dr Miriam Baltuck, CSIRO Australia, delivered the presentation on GFOI. She confirmed that all organizational arrangements are now in place and summarized the 2012-2013 activity plans for each of the main GFOI components, as follows:

- Coordination of satellite data acquisition and supply;
- Capacity development;
- Methods and guidance documentation;
- Research, development and demonstration;
- Administration and overall coordination.

She also identified the need of securing acquisition of coordinated satellite data and of expanding countries participation as the main challenges ahead.

The Plenary, through several interventions, confirmed unanimous endorsement of the GFOI. In particular:

Brazil confirmed support through INPE and recalled Brazil's operational activities regarding deforestation monitoring (PRODES, DETER) which has included use of CBERS satellite data.

China confirmed its support, in conjunction with Brazil, through the provision of CBERS data.

The US recognized the progress made and confirmed their support through the SilvaCarbon program, and in particular to the on-going provision of Landsat data to countries, as well as support for research and development, and capacity building components of GFOI.

The UK was pleased with the progress made by the GFOI team and recommended that the GFOI team continue to work with the FAO to ensure that the Methods and Guidance Documentation is aligned with the national forest monitoring systems guidance that FAO is developing, and ensure a smooth transition of the GFOI Task Force to the GFOI Steering Committee.

The EC welcomed the developments and underlined the need for stronger coordination with the Global Carbon Task of the GEO Work Plan.

CEOS confirmed its full support and recalled its efforts to provide coordinated data acquisition through the "CEOS Satellite Data Coordination Group" to the present date.

South Korea confirmed its availability to provide support to developing countries.

ESA noted that GEO FCT and now GFOI was one of the best performing projects in GEO, and confirmed its support and recalled its contributions through provision of satellite data and expert personnel.

Canada confirmed its support, in particular through the continuation of Radarsat 2 data acquisition. It also recalled Canada's contributions to the Forest Carbon Partnership Facility of the World Bank and to the Congo Basin Forest Fund, in the hopes of fostering a coordination of GFOI with these other international initiatives.

Norway confirmed its full support to GFOI, recalling that finalizing organizational arrangements required more time than expected, and asked GEO Members and Participating Organizations to provide additional contributions to the Task.

The Secretariat Director announced that the process to identify the GFOI Office Coordinator has been completed and that Mr Simon Eggleston had been selected.

The Chair concluded by thanking Dr Baltuck and the GFOI Team for the good work performed.

• **GEO Global Agricultural Monitoring (GEO GLAM) (Document 12) (for consultation)**

Mr Joao Soares, Scientific expert for Agriculture with the GEO Secretariat, presented GEOGLAM on behalf of the Agricultural Task leads (AG-01) and the Community of Practice. He focused on explaining the components of GEOGLAM and reported on the meetings held in 2012, and on the achievements done in prototyping Global Scales outlooks for the production of the main commodities of interest for the G20. He also highlighted the governance model and asked for guidance on strategies for fund raising. The GEOGLAM document/report presented to the Plenary garnered a wide-spread support from the delegations. In particular:

Japan confirmed the country's support by leading the Asia Rice monitoring component and also providing satellite data in close coordination with CEOS.

Brazil confirmed its support and acknowledged GEOGLAM as a good example of global level initiatives where GEO can really add value, through sharing best practices, coordinating satellite data acquisitions, and improving interoperability as well as advocating for data sharing.

Australia committed to continuing support of GEOGLAM, and highlighted the country's willingness to develop and lead a new component dedicated to rangelands and pasture land monitoring. This component will emphasize biomass production for feeding beef, which is also important in the context of food security. Australia is also proposing a Joint Experiment of Crop Assessment and Monitoring (JECAM) site as a pilot project in this context.

The US acknowledged the efforts made so far and confirmed its strong support through leading various components. The USA also requested that the GEOGLAM team improve and clarify priorities for 2013 as well as the coordination committee, including articulating more clearly the relationship with the private sector to open the door to private investment in the activity. The U.S. suggested that specific needs and goals for priority activities be expressed in order to help Members better support the initiative.

The Netherlands said the country was highly appreciative of GEOGLAM and listed several projects that are in line with its goals. They asked for an effective coordination to take full advantage of all activities and avoid duplication with other similar initiatives.

Switzerland supported GEOGLAM in the context of food security, a major issue for which GEO should help with information for decision making.

China supported GEOGLAM and mentioned CBERS as one asset to be used alongside other, smaller satellite missions. China also mentioned its willingness to share best practices based on their in-country experience with China CropWatch, and called for sharing toolboxes and proven methods across the concerned communities.

The EC recalled the substantial support it had provided through its 7th Framework Programme, and noted a recent call had been issued for proposals to consider the environmental aspects of GEOGLAM (on the order of €9 million). The EC also requested that in-kind contributions should be made explicit in the GEOGLAM work budget Table.

The United Kingdom expressed its support for the initiative but felt that the business case needed further development and encouraged the GEOGLAM team to set up links with other existing and complementary initiatives. The UK also requested that the next draft of the business case provide

further information on the requested resources, including setting out for each activity whether the requested resources are expected to come from in kind contributions or if new funding is being sought. The UK agreed with the US on the need for a phased approach for project implementation within the initiative.

Italy also welcomed the initiative and recognized the large amount of work that had gone into it. Italy asked for clarifications on whether discussions had been initiated as to who, among the partners or other organizations, such as the FAO/Global Information and Early Warning System (GIEWS), might wish to take charge of the initiative once the “incubation” period is over. Italy also advised on the need to link GEOGLAM with other existing projects in FAO and in the UN World Food Program (WFP).

Canada said the country is fully committed to GEOGLAM and is part of its core team. Canada expressed the country’s view that GEOGLAM has the potential to become the flagship initiative of GEO as it could show the way on how to bring together the community. Also in line with other Member countries, Canada warned on the need to clarify how the budget is being established, how the satellite coordination has been arranged, and synergies with other initiatives. Canada also commended JECAM on its best practices focus as a good illustration as to how research and development is being used.

Niger expressed the desire to see a more direct explanation on how African nations can benefit from GEOGLAM

CEOS highlighted the importance it attaches to Agriculture by its efforts in support of JECAM, and the discussions on how to support GEOGLAM that took place at the CEOS plenary in Bangalore. CEOS recognized the progress made in defining the requirements and completion of the volumetric assessment, but clarified that a decision on a coordinated approach has yet to be taken.

IAASA stated it is fully engaged with the GEO Agricultural Task and GEOGLAM, and is delivering a wiki-based global cropland map as an important milestone of the GEO Agricultural Community of Practice. IAASA is joining other institutions to respond to calls for proposals that specifically deal with GEOGLAM goals.

2.7 Public Private Partnership (Document 14) (*for consultation*)

The Secretariat Director introduced the document, suggesting that it might have been better entitled “Broadening Stakeholder Involvement into GEO.” She noted the topic had been discussed for several years during meetings of the Executive Committee and it was now time to fully address this issue. She viewed this document as proposing a framework for engagement, building on the fact that the private sector is already contributing in many ways to GEOSS through Tasks of the Work Plan. She recalled that the Open Geospatial Consortium (OGC) is a PO in GEO, and the strategy should be to leverage what OGC and others have already done in terms of engagement in GEO. She went on to suggest that, broadly speaking, for determining where the private sector could engage with GEO, commercial entities could be divided into categories with respect to Earth observation data streams, such as developers, providers of services, data producers, and end users. Further, engaging the private sector could bring extra expertise and different perspective on applications for Earth observations, citing the example of the L’Oreal Company which makes use of geographic location, elevation and cloud coverage to determine levels of suggested sunscreen strength.

Germany welcomed the many ideas presented in the document, and emphasized the importance of establishing partnerships based on transparency, thereby guaranteeing an independent future for GEO.

The OGC noted that AIP5 was another venue by which the private sector had already been involved in GEO. Also, the OGC, with its more than 400 partners, said it had a strong interest in supporting new GEO initiatives, and urged GEO members and POs to actively contribute to this next phase.

Chile remarked that academia, research centers, NGOs, and enterprises all constitute the private sector. Although Chile appreciated the contributions of the private sector, it should be stressed that

GEO is fundamentally an intergovernmental group and care must be taken to ensure that decisions are made in a transparent manner, only by Member countries.

The US strongly supported the document and was generally pleased with the text as it stood, noting that the needs and requirements of all stakeholders constituting the private sector should be considered and that definition of mechanisms for actual engagement should be elaborated.

New Zealand applauded the development of this paper and wished to emphasize that data sharing is an important message within the private sector. As GEO embarks on a strategy of more active engagement, appropriate terms, depending on the potential stakeholders, need to be considered and developed.

Canada generally supported the document, noting that the private sector contributes heavily to the innovation cycle by developing new techniques and methods, and should therefore be involved in the discussion on incubating services. Also, an effective way to engage foundations, which possess significant resources, needs to be identified, perhaps appealing to being a catalyst for finding solutions to society's problems. Development of a code of ethics is an important aspect, and perhaps government processes can be used to link with the private sector.

Switzerland welcomed the framework process, observing it was important to clarify the role of the private sector in a stricter sense to preserve the public dimension of GEO. Switzerland echoed the comment by Chile, that implementation of a framework for engaging the public sector should be done in a transparent manner.

Italy endorsed the document fully, sharing the point made by Germany on the need for transparency, and Chile where responsibility of decisions made should remain with Member governments. Italy also shared the view of the US that the needs of all potential stakeholders should be addressed, and the view of Switzerland on the need to preserve the public dimension of GEO.

The Secretariat Director thanked the Plenary for its comments, and suggested that a forum be convened prior to each Plenary at which the private sector could inform the GEO community of its interests and related efforts. With regards to the transparency issue, several US and European associations of companies (or consolidators, such as the OGC) have expressed interest in GEO, and these inter-company mechanisms could serve as an effective entry point for GEO and its engagement with the private sector.

Mr Lawrence Friedl presented the joint NASA and US Department of the Interior William T. Pecora Award to Dr Gilberto Cãmara. In his acceptance speech, Dr Cãmara likened the impact of the current technological revolution from analog to digital as being as fundamental to shaping society as the Gutenberg press was in the 1450s with its moveable-type printings of the Bible and subsequent impact on literacy throughout Europe.

3 GEO POST-2015 - CONTINUED

The Chair reminded Plenary that the purpose of the session devoted to agenda item 3 was to allow Plenary to respond to and provide guidance with respect to the options and recommendations contained in the Post-2015 WG interim report. She then turned the floor over to Dr Alan Edwards who delivered a summary presentation of the comments made by delegations the previous afternoon. A more detailed summary document was also distributed to Plenary at the same time (see Annex I).

Canada requested clarification on whether the Post-2015 WG would present further options in the final report it produced for Plenary-X, or simply elaborations on the recommendations as presented to Plenary. Canada believed options were important for Ministers to select from.

Italy observed that its Ministers preferred proposals to respond to, rather than options, and preferred that the WG further develop its recommendations. Italy also wished to remind all delegations that they needed to be in close contact with their Ministries.

Post-2015 WG Co-chair, Mr Gilles Ollier, responded that with respect to the strategic direction options, the response of Plenary had been between options 2.1.B and 2.1.C, so it was clear that more work remained for the WG to develop the details.

The Chair then concluded by requesting the Post-2015 WG to take into consideration the guidance provided by Plenary, captured in the summary document, as the WG begins to draft the final report. She also requested that Plenary be provided ample time to respond to the summary document.

4 ANNOUNCEMENT OF GEO-X AND PREPARATION FOR THE 2013 MINISTERIAL - CONTINUED

The Chair reminded Plenary of the previous day's offer from Switzerland to host the GEO-X Plenary and Ministerial in Geneva, noting there was some flexibility regarding dates. As a next step, and conforming to past practice regarding Ministerial preparations, she informed Plenary that the Co-Chairs had agreed during the 26th Executive Committee held on Wednesday, 21 November 2012, to recommend to Plenary that a Ministerial Working Group (MWG) be established.

The Chair then gave the floor to Dr Edwards for a presentation on proposed MWG Terms of Reference (see Annex II).

Following this presentation, the Chair gave the floor to Co-Chair Dr Sullivan for a presentation on a proposed process and timeline for Ministerial preparations (see Annex II).

The Chair then asked Plenary whether the establishment of the MWG with its Terms of Reference, and the proposed Ministerial process, were endorsed.

The US responded that it fully endorsed all proposals.

Hearing no objections, the Chair concluded by confirming the establishment of the MWG along with its Terms of Reference, and the proposed process for preparation had been endorsed by Plenary, and requested that nominations for the MWG be sent to the Secretariat as quickly as possible.

5 MEMBER AND PARTICIPATING ORGANIZATION STATEMENTS (FOR INFORMATION)

See Annex III.

6 FINANCIAL REPORTS

6.1 2011 Financial Statements and Report of the External Auditor (Document 16) (for acceptance)

The Co-Chair from the U.S. presented the 2011 external audit report. The audit revealed no material weaknesses or errors in the accuracy or validity of the financial statements, and noted that the financial statements had been properly prepared in accordance with International Public Sector Accounting Standards (IPSAS).

The 2011 Financial Statements and Report of the External Auditor were accepted.

6.2 Interim Report on Income and Expenditure 2012 (January to August) (Document 17 (Rev1)) (for information)

The Secretariat Director presented the document. She reported that total voluntary contributions received and pledged for 2012 totaled CHF 3,790,009. Under IPSAS, contributions are now recorded as soon as a formal pledge is made in writing. The cash flow situation is excellent. However, the number of secondments to the Secretariat has decreased, and the Secretariat has had to compensate by

hiring contractors, which reduces the Trust Fund for other activities. As secondments represent a large percentage of the GEO budget, these in-kind contributions are extremely important. The Secretariat Director encouraged each Member to review the list of requests for secondments that was distributed to GEO Principals during November 2012.

China stated it will increase its contribution to USD 200,000, in addition to continuing to provide secondments.

Norway wished to clarify that its contribution was earmarked for GFOI specifically and thus should not be considered for general operations. In this regard, Norway asked that expenditures, as well as contributions, be displayed accordingly. Norway said that it would continue to support the Secretariat at the same level as last year.

The US requested that a separate column be introduced to account for funds dedicated to special initiatives in the future, to provide a more complete overview. The US will make an additional contribution to the Secretariat Trust Fund before the end of the year, for a total contribution of US\$ 900,000 in 2012.

Australia supported the US call for separate reporting of contributions for special initiatives. Australia noted its support of the Secretariat Trust Fund with AUS\$ 50,000 in 2012, and that it would be contributing the same amount for 2013.

6.3 Secretariat Operations Budget for 2013 (Document 18 (Rev1)) (for acceptance)

The Secretariat Director presented the document, noting that the 2013 budget was generally similar to the budget for 2012. She noted one difference, however, and that was the abolishment of a Representation Fund, with those funds being folded into staff training and other expenditures.

The EC noted it had fixed its contribution at € 600,000 for 2013, for the Secretariat Trust Fund irrespective of use. The EC will also continue to support participation of delegates from developing countries to GEO meetings, where possible.

The Secretariat Director commented that she wished to promote a best practice of earmarking a portion of in-country research funds for GEOSS, thus avoiding any increased financial burden on the country while providing support for the Work Plan.

The 2013 Secretariat operations budget was accepted.

7 REPORT OF THE EXECUTIVE COMMITTEE TO PLENARY (2012) (DOCUMENT 19) (FOR ACCEPTANCE)

Dr Ruth Kelman presented the report describing the key actions and decisions taken by the Executive Committee at its three meetings in 2012. The report was accepted without comment.

8 PRESENTATION OF THE NOMINEES FOR THE EXECUTIVE COMMITTEE

The Secretariat Director informed the Plenary that the five caucuses had met and agreed on their nominations for the Executive Committee. They are South Africa (as Co-Chair) and Nigeria for Africa; the Russian Federation for the Commonwealth of Independent States (CIS) region; the European Commission (Co-Chair), Estonia and the United Kingdom for Europe; Argentina, Canada and the United States (Co-Chair) for the Americas; and China (Co-Chair), South Korea, Japan and New Zealand for Asia/Oceania.

9 RULES OF PROCEDURE UPDATE

9.1 Membership of Implementation Boards

9.2 Adoption of Rules of Procedure (Document 20 (*for acceptance*))

The Secretariat Director presented the document and read out the proposed changes. Particular attention was drawn to the changes in Section 5.3 and Appendix 1 to Annex B in which new rules for membership in the GEO Implementation Boards were proposed, and Appendix 3 to Annex B in which new suggested Terms of Reference of the Data Sharing Working Group were presented.

Hearing no objections from Plenary, the Chair concluded the changes were adopted and the new Rules of Procedure took effect immediately.

10 REVIEW OF SESSION OUTCOMES

The Chair reviewed the outcomes of the GEO-IX Plenary on an overhead screen.

Japan made a formal announcement to Plenary, inviting delegate to participate in the 6th GEOSS Asia-Pacific Symposium: "Accelerating interlinkages in the Asia-Pacific region for global Earth observations", scheduled for 25-27 February 2013 in Ahmedabad, India.

11 CONCLUDING REMARKS

The Brazilian delegation thanked the World Bank, INPE and its staff, and the staff of the GEO Secretariat for their support.

The Chair expressed her personal thanks to Mrs. Natasha Brutsch-Dastur, for all she had done over the years. She commented that everyone had come to rely on Mrs. Brutsch-Dastur, who could solve any problem that might arise. As someone who put her heart and soul into GEO, it will be hard to imagine life in Secretariat without her. She will be missed.

Plenary then gave Mrs. Brutsch-Dastur a standing ovation.

The Secretariat Director noted with pleasure that a lot of energy had been created around global initiatives such as Blue Planet, GEOBON, GEOGLAM, and AfriGEOSS, as these are integrating activities across the entire WP. She also noted that a large number of Plenary interventions referred to the need to strengthen and coordinate *in-situ* observation networks. She found the fact that the COSPAR intervention indicated that COSPAR intends to step forward to devise a roadmap for Science and Earth observations an encouraging demonstration of the flexibility of GEO. Another important task is finding the correct way to engage the private sector, as well as elaboration of a communications strategy. She wished to personally thank entire Secretariat for their assistance in seamlessly staffing this Plenary, and the Brazilian delegation for hosting the Plenary with such hospitality.

The Co-Chair from China said he was satisfied that, after two days of hard work, Plenary had successfully completed all elements of the agenda, and he was especially pleased with the progress made in the post-2015 discussion. As a developing country, China wanted to reiterate its dedication to the Beijing declaration and commitment to advancing data sharing. Finally, he wished to express heartfelt thanks to INPE and Brazil for excellent hosting.

The Co-Chair from South Africa thanked Brazil for hosting the Plenary, the Secretariat and Director for preparing the meeting, and the Post-2015 WG and Implementation Boards for their hard work, often behind the scenes. He also wished to express his appreciation to the other Co-Chairs for their support and leadership.

The Co-Chair from the United States remarked that this Plenary was convened at important juncture for GEO. As the GEO community is getting prepared to start new chapter, it was critical to obtain clear guidance from Plenary regarding the options put forth by the Post-2015 WG, and devise a roadmap that will lead smoothly to the GEO-X Plenary and Ministerial Summit. She wished to thank the delegations for their quick interventions, and the Secretariat and Director for their hard work. She also wished to recognize the Co-Chair from the EC for doing a superb job as Chair, and thanked her for all she has done on behalf of GEO noting that many initiatives across Africa were due to her interventions. As a final note, she observed that GEO-IX was the last Plenary for Dr Alan Edwards and wished him well in his new endeavors.

The Chair then thanked Brazil for its hospitality, INPE for its excellent organization, and Marcia Alvarenga and her team, Hilcea Ferreira, Claudio Almeida, and Julio D'Alge in particular for the contributions they had made. She also wished to thank the Secretariat Director and staff for their dedication throughout the year leading up to this Plenary. She felt confident that GEO can go forward. However, this Plenary was her last and she will only be able to watch efforts from afar, as senior staff at the EC are required to rotate to a new position every 5 years and she will be moving to another post within DG Research and Innovation. She concluded by acclaiming the GEO spirit, whereby it is possible for us to work constructively within a framework that respects different cultures and allows GEO to achieve something positive through consensus.

**Group on Earth Observations
Ninth Plenary Session – GEO-IX
Foz do Iguacu, Brazil, 22-23 November 2012**

Review of Meeting Outcomes

Thursday, 22 November 2012

Convene at 09:00

1 Opening of the session

- 1.1 Welcome Address by Dr Leonel Perondi, Director General, INPE
- 1.2 Opening Remarks
 - Manuela Soares, Director, Directorate-General for Research and Innovation, European Commission, (Chair of the Session)
 - Jianlin Cao, Vice Minister, the Ministry of Science and Technology of the People's Republic of China
 - Philemon Mjwara, Director-General, Department of Science and Technology, Republic of South Africa
 - Kathryn Sullivan, Assistant Secretary of Commerce, Deputy Administrator, National Oceanic and Atmospheric Administration (NOAA), United States of America
 - Barbara Ryan, Director, GEO Secretariat
- 1.3 Administrative Announcements
- 1.4 Adoption of Agenda (Document 1 (Rev1)) *(for acceptance)* **ACCEPTED with one change, item 4 moved to after the coffee break**
- 1.5 Recognition of New Members (Document 2) *(for information)* **One new member acknowledged – Côte d'Ivoire**
- 1.6 Statements from New Members
- 1.7 Recognition of Participating Organizations (Document 3 (Rev1)) *(for acceptance)* **ICA, UNCCD, WDS recognized as Participating Organizations. SWF recognized as Observer**
- 1.8 Approval of GEO-VIII Report (Document 4) *(for acceptance)* **ACCEPTED**

10:15-10:45 Opening of the Exhibition and Coffee Break

Switzerland offers to host GEO-X and the 2013 Ministerial Summit. Plenary accepts the offer.

2 GEOSS Implementation

2.1 Assessment of Progress

- Target Assessment (Document 5) *(for acceptance)* **ACCEPTED with comments noted by IBs**
- Task Assessment (Document 6) *(for acceptance)* **ACCEPTED with comments noted by IBs.**

2.2 3rd Evaluation Report (Document 7) *(for acceptance)* **ACCEPTED** and Monitoring & Evaluation Outlook (Document 8) *(for acceptance)* **ACCEPTED with comment from the UK**

2.3 GEO 2012-2015 Work Plan Update (Document 9) *(for acceptance)* **ACCEPTED as a living document**

2.4 GEO 2012-2015 Work Plan Implementation Highlights

2.5 Featured Initiatives

- Blue Planet
- AfriGEOSS (Document 10) *(for information)*

12:30 Lunch, Reconvene at 14:00

2.6 Actions Arising from GEO-VIII

- Global Forest Observation Initiative (GFOI) (Document 11) *(for consultation)* **Proposal to transform the Task Force into the GFOI Steering Committee is endorsed**
- GEO Global Agricultural Monitoring (GEO GLAM) (Document 12) *(for consultation)*

2.7 Public Private Partnership (Document 14) *(for consultation)*

3 GEO Post-2015 (Document 15 (Rev1)) *(for consultation)*

16:00-16:30 Coffee Break

3 GEO Post-2015 (Document 15 (Rev1)) *(Continued – Discussion)*

18:00 Adjourn and Official Reception

Friday, 23 November 2012

Convene at 08:30

3 GEO Post-2015 (Continued – Summary and Conclusions)

Action item: GEO Secretariat to draft a compelling case for Ministers regarding the achievements of GEOSS and the need for continuing GEO and GEOSS into the future, to be tabled at the time of the March 2013 Executive Committee meeting.

4 Announcement of GEO-X and Preparation for the 2013 Ministerial Offer from Switzerland to host the Ministerial Summit and GEO-X – acclaimed by plenary

Terms of reference of the Ministerial Working Group accepted by plenary

5 Member and Participating Organization Statements (for information)

Delegations that wish to speak may make short statements (3 minutes) focusing on the value added benefits of their participation in GEO.

10:30-11:00 Coffee Break

5 Member and Participating Organization Statements (continued)**6 Financial Reports To include separate financial information for “special initiatives”**

6.1 2011 Financial Statements and Report of the External Auditor (Document 16) (for acceptance) **ACCEPTED**

6.2 Interim Report on Income and Expenditure 2012 (January to August) (Document 17 (Rev1)) (for information)

6.3 Secretariat Operations Budget for 2013 (Document 18 (Rev1)) (for acceptance) **ACCEPTED**

12:30 Lunch, Reconvene at 14:00

7 Report of the Executive Committee to Plenary (2012) (Document 19) (*for acceptance*)
ACCEPTED

8 Presentation of the Nominees for the Executive Committee

- **Europe: European Commission (Co-Chair), Estonia, United Kingdom**
- **Americas: USA (Co-Chair), Argentina, Canada**
- **Asia/Oceania: China (Co-Chair), Japan, South Korea, New Zealand**
- **Africa: Republic of South Africa (Co-Chair), Nigeria**
- **CIS: Russian Federation**

9 Rules of Procedure Update

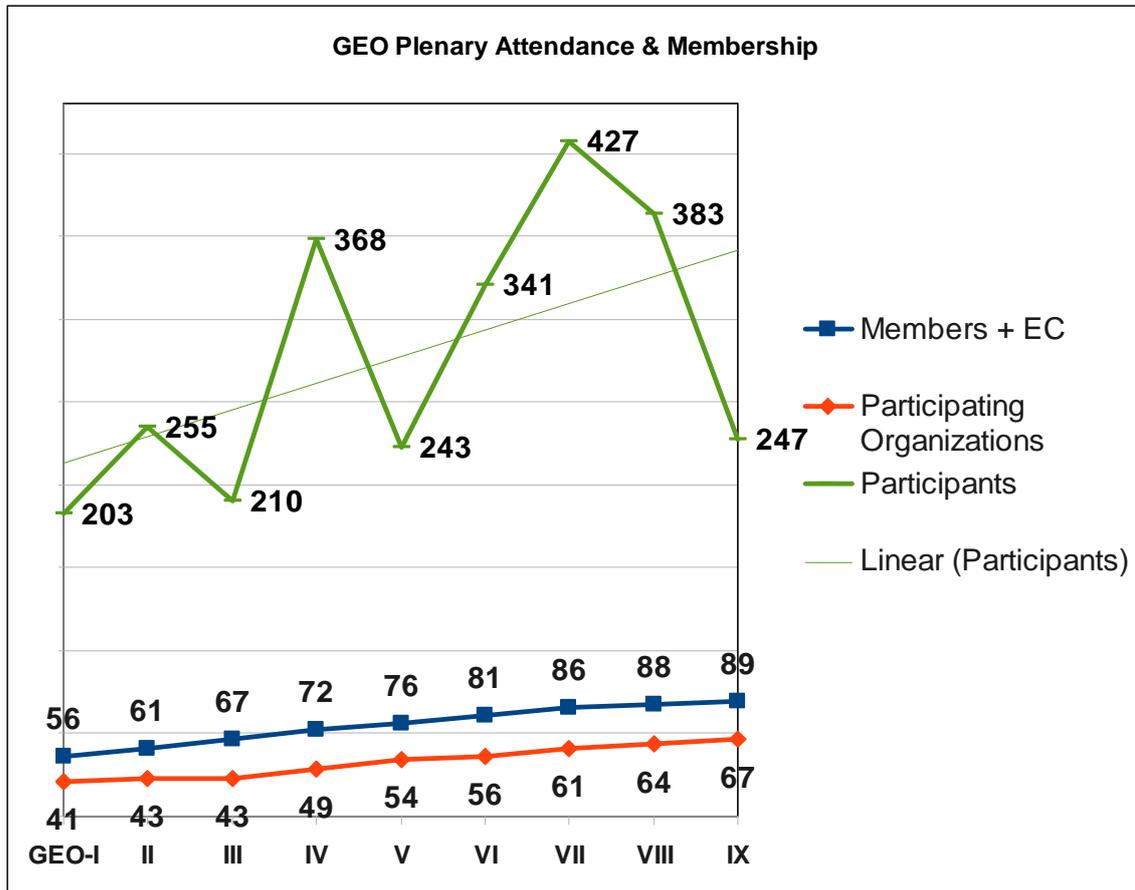
9.1 Membership of Implementation Boards

9.2 Adoption of Rules of Procedure (Document 20 (*for acceptance*)) **ACCEPTED**

10 Review of Session Outcomes

11 Concluding Remarks

16:30 Adjourn



List of Participants
GEO-IX
22-23 November 2011
Foz du Iguacu, Brazil

Australia

Susan Barrell
Miriam Baltuck
Alex Held
Andrew McGee
Stuart Minchin
Andy Steven

Heather Aucoin
Douglas Bancroft
Michael Crowe
Kenneth Korporal
Craig Larlee
Michael Ott
Guy Seguin

Austria

Michael Staudinger
Monica Koehler
Gerhard Wotawa

Chile

Luciano Parodi
Andrea Cantillana
Rodrigo Perez
Hugo Rivera
Franco Romero
Rodrigo Suarez

Bahamas

Mary Butler

Bangladesh

Khondaker Asaduzzaman
Arjumand Habib

China

Jianlin Cao
Xiaohan Liao
Jun Chen
Linhao Chen
Xiao Cheng
Zhongxin Chen
Peng Gong
Huadong Guo
Jian Kang
Zengyuan Li
Shunlin Liang
Zhefeng Liu
Yi Luan
Yan Ma
Hui Meng
Xinming Tang
Liming Wang
Qiao Wang
Qiulong Xu
Songcai You
Huanyin Yue
Xingying Zang
Xiang Zhao

Brazil

Luiz Figueiredo Machado
Fábio Pitaluga
Júlio Dalge
Leonel Perondi
Ana Albernaz
Humberto Barbosa
Gilberto Câmara
Humberto de Mesquita Jr.
Aroldo de Oliveira
André Farias de Souza
Petronio de Souza
George Ferreira
Hilcéa Ferreira
Leila Fonseca
Rozane Fonseca
Milton Kappel
Dirceu Menezes Machado
Fabio Matsumoto Ricarte
Afrânio Righes

Canada

David Grimes

Colombia

Gustavo Galindo Garcia

Costa Rica

Diego Naranjo

Croatia

Ivan Cacic

Czech Republic

Radim Tolasz

Jan Kolar

Estonia

Tiit Kutser

Reet Talkop

European Commission

Manuela Soares

Alessandro Annoni

Florence Beroud

Massimo Craglia

Alan Edwards

Gilles Ollier

Jose Rubio Iglesias

Reinhard Schulte-Braucks

Finland

Mikko Strahlendorff

France

Dominique Marbouty

Claude Boucher

Steven Hosford

Lionel Menard

Thierry Ranchin

Lucien Wald

Germany

Paul Becker

Carsten Dettmann

Thorsten Büßelberg

Stephanie Goebel

Michael Nyenhuis

Bernd Richter

Stefan Sandmann

Helmut Staudenrausch

Hungary

Zoltán Dunkel

Italy

Ezio Bussoletti

Stefano Nativi

Maria Dalla Costa

Paolo Mazzetti

Antonio Bombelli

Stefano Bruzzi

Fabio Dell'Acqua

Nicola Pirrone

Elisa Vuillermoz

Japan

Satoru Ohtake

Takashi Kiyoura

Masao Fukasawa

Tetsuro Isono

Koki Iwao

Masatoshi Kamei

Masahiko Kamei

Chiyoshi Kawamoto

Takeshi Kawano

Toshio Koike

Richard Lawford

Ryosuke Shibasaki

Shizu Yabe

Akiko Yamada

Korea, Republic of

Won-Tae Yun

Dong-Ik Hwang

Minsu Joh

Tae-Dong Kim

Seung-Ho Lee

Byung-Moon Park

Madagascar

Frederic Ramarolahivonjtitiana

Ambinintsoa Noasilalao

Netherlands

Ger Nieuwpoort

Frits Brouwer

Ruud Grim

New Zealand

Kevin Sweeney

Niger

Issoufou Wata Sama

Nigeria

Ganiyu Agbaje

Norway

Per-Erik Skråvseth

Bente Bye

Romania

Ion Nedelcu

Ioana Vlad

Russian Federation

Alexander Gusev

Alexander Konyakhin

South Africa

Philemon Mjwara
Mmboneni Muofhe
Lee Annamalai
Lulekwa Makapela
Sandile Malinga
Paidamwoyo Mangara
Andiswa Mlisa
Jonas Mphepya
Terry Newby
Jane Olwoch
Robert Scholes
Lerato Senoko

Sweden

Thomas Klein
Göran Boberg

Switzerland

Karine Siegwart
Fabio Fontana
Gregory Giuliani
Nicolas Perritaz
Nicolas Ray

Tajikistan

Suhrob Olimov
Sherov Suhrob

Turkey

Emin Bank

Ukraine

Sergiy Guchenkov

United Kingdom

Arwyn Davies
Ruth Kelman
Stuart Marsh

United States

Kathryn Sullivan
Peter Colohan
Phillip Dickerson
Gary Foley
Kathleen Fontaine
Lawrence Friedl
Yana Gevorgyan
Leonard Hirsch
Douglas Muchoney
David Reidmiller
Zdenka Willis

CEOS

Kerry Sawyer

Brent Smith

COSPAR

Jean-Louis Fellous
David Halpern

ECMWF

Manfred Kloeppel

EEA

Christian Steenmans

EPOS

Fabio Dell'acqua

ESA

Simonetta Cheli
Mirko Albani
Michael Berger
Roberto Cossu
Joost van Bemmelen

EUMETNET

Frits Brouwer

EUMETSAT

Mike Williams
Vincent Gabaglio

EuroGeoSurveys

Luca Demicheli
Stuart Marsh
Claudia Delfini
François Robida

GBIF

Tim Hirsch

GEM

Fabio Dell'Acqua

GSDI

Gabor Remetey-Fulopp

ICSU

Mustapha Mokrane
Paul Uhlir

IEEE

Hans-Peter Plag
Richard Lawford
Jay Pearlman
Françoise Pearlman

IIASA

Steffen Fritz

IOC

Albert Fischer
Sarah Grimes

ISDE

Changlin Wang
Fang Chen
Jie Liu
Kim Lowell

ISDR

David Stevens

OGC

Trevor Taylor
Bart de Lathouwer
Tien-Yin Chou
Lan-Kun Chung
Meixia Deng
Liping Di
Pi-Hui Huang
Perry Peterson
Fernando Salas

POGO

Francisco Chavez

SWF

Natasha Antoniou
Agnieszka Lukaczszyk

WMO

Brian O'Donnell
Wenjian Zhang

GEO Secretariat Guests

Alexander Müller
Jim Weber

GEO Secretariat

Barbara Ryan
Hendrik Baeyens
Natasha Brutsch-Dastur
Yingchu Chu
Douglas Cripe
Francesco Gaetani
Alexia Massacand
Humbulani Mudau
Yubao Qiu
Sofia Rodriguez
Giovanni Rum
Georgios Sarantakos
Gillian Sauteur
Chloé Tiberghien
Espen Volden
Tomoko Mano
Joao Soares

ANNEX I

GEO MINISTERIAL SUMMIT WORKING GROUP TERMS OF REFERENCE

As accepted by the GEO-IX Plenary

MANDATE

The GEO Ministerial Working Group will address the commitment in the 2010 Beijing Ministerial Declaration requesting GEO to convene a future meeting:

"to review the progress of implementation against the GEOSS Strategic Targets and the recommendations for the governance, role and future work of GEO beyond 2015 and to take the necessary decisions".

The GEO Ministerial Working Group will:

- Assist GEO Members in raising the awareness of GEO Ministers regarding the need for GEO to take important decisions;
- Prepare the agenda of the Ministerial;
- Coordinate the contributions to the Ministerial from the GEO Community and in particular those from:
 - i. The GEO Post-2015 WG;
 - ii. The Monitoring & Evaluation WG; and
 - iii. The Implementation Boards and Work Plan Tasks;
- Prepare the Draft of the Ministerial Declaration.

The mandate of the Working Group will run from 1 January 2013 through to the end of the Ministerial.

MEMBERSHIP AND NOMINATION

The GEO Ministerial Working Group is open to all GEO Members and Participating Organizations. Working Group members should be nominated by their GEO Principal.

It should be co-chaired by a representative of Switzerland, the Host Country, and at least [X] other members of the Working Group.

The Working Group will be supported by the GEO Secretariat.

ACTIVITIES, OUTPUTS AND SCHEDULE

The GEO Ministerial Working Group will:

- Hold its first meeting in Geneva in January 2013 to decide on its co-chairs and schedule of work;
- Report on progress to the meetings of the Executive Committee;
- Hold meetings and other activities as agreed by the Working Group;
- Report to the GEO-X Plenary;
- Submit a draft of the Ministerial Declaration to the GEO-X Plenary.

ANNEX II

GEO POST-2015 WORKING GROUP INTERIM REPORT SUMMARY OF THE GEO-IX DISCUSSIONS¹

Plenary expressed its thanks to the Post-2015 Working Group for the excellent work it had carried out in preparing the Interim Report. At this point in the process, the brevity of the Report was considered a plus.

Plenary also noted that the final decision on all issues related to the possible continuation of GEO Post-2015 was a matter for Ministers to decide upon.

I. THE VISION FOR GEO AND GEOSS POST-2015

Recommendation 1: The Post 2015 Working Group strongly believes that the need for GEO remains and that, while recognizing there is room for improvement, GEO is making significant progress towards meeting its Strategic Targets. Considering the urgency of the global challenges faced by humanity and the benefits of a response involving an international, collective approach to supplying the Earth observations, the Post-2015 WG recommends that GEO, and the implementation of GEOSS, be continued.

Response of Plenary to Recommendation 1: GEO should continue beyond 2015, but it should evolve.

Points for further assessment by the WG include:

- The need for GEO has grown in importance over the last 10 years. The urgent challenges facing society today makes GEO more relevant than ever;
- We need other organisations to see GEO as an efficient global EO coordination mechanism;
- GEO is moving forwards, making progress. We should therefore look to demonstrate the positive aspects and strengths of GEO;
- Equally, we should be clear that there is room for significant improvement;
- The paper should look to renew the vision for the GEOSS;
- It should also make the case for the benefits that arise from GEOSS implementation, as well as the need to bring socio-economic data, together with EO data, into the GEOSS.

II. ISSUES AND OPTIONS FOR GEO AND GEOSS POST-2015

2.1 Strategic Direction – Core Function

For the post-2015 period, building on its current activities, the WG considers the continuation of the following five core functions for GEO to be essential:

1. Strengthening observation networks (space-based, airborne and particularly *in-situ*);
2. Advancing interoperability and integration of Earth observations;
3. Enhancing data access and sharing;
4. Building capacity to collect and use Earth observations;

¹ To be updated in January 2013 once review deadline has passed (31 December 2012).

5. Encouraging research and development of integrated applications of Earth observations.

Response of Plenary to the Core Functions: the core functions listed are correct.

Points for further assessment by the WG include:

- However, in addition to User Engagement, in the future GEO should also consider engaging with decision-makers. There is a need to promote a dialogue between those who make the decisions and those who make the observations;
- Inclusion of R&D as a core function needs explanation;
- Governments have recently endorsed the Global Framework for Climate Services. There is no reference to the GFCS in the paper (and other global initiatives, such as the Eye-on-Earth Network). For example, the GFCS implementation plan mentions the importance of collaboration between GFCS and GEO;
- Collaboration with other global initiatives, such as the GFCS, could (or perhaps should) be a win-win situation for all parties concerned in these ventures.

2.1 Strategic Direction – Recommendation 2

2.1.A: GEO will function as a **catalyst** for Earth observations The financial model for GEO would remain unchanged;

2.1.B: In addition to 2.1.A, GEO will commit appropriate resources to implement and sustain a more **robust and expanded GEOSS information system**. A strengthened financial model for GEO would need to be elaborated prior to 2015 to support this option;

2.1.C: In addition to option 2.1.B above, GEO will **incubate specific applications and services** based on Earth observations, A moderately strengthened financial model for GEO would need to be elaborated prior to 2015 to support this option

Recommendation 2: Considering the demonstrated success of the incubation model (which brings together existing observation systems dedicated to a specific issue and sets up the conditions to ensure that global and regional observation datasets become available and easily), the Post-2015 WG recommends Plenary endorse strategic direction option 2.1.C for the period 2015-2025.

Response of Plenary to Recommendation 2: the Strategic Direction indicated by Plenary lies between option 2.1.B and 2.1.C.

Points for further assessment by the WG include:

- Strategic option 2.1.B would be easier for GEO to implement post-2015, than 2.1.C;
- GEO could enter difficult areas if it tries to incubate applications and services. Although the incubation model is interesting, incubating services could prove to be troublesome and costly;
- Increasing the financial contribution in the years ahead will be very hard;
- So to come to a conclusion on the Strategic Direction post-2015, there is a need to provide more details on the strengthened financial models referred to in 2.1.B and 2.1.C. This should also consider possible scenarios to increase the financial scale of GEO;
- In addition, the value-added of the options 2.1.B and 2.1.C should be elaborated;
- It is important for GEO to support global initiatives. This will bring global visibility.

2.2 Societal Benefit Areas

2.2.A: Retain the overall current SBA structure (status quo);

2.2.B: Maintain the current basic SBA structure while allowing for modifications, and explore linkages to sustainable development framework themes;

2.2.C: Restructure the work of GEO around sustainable development framework themes, building on the successes of the current SBA structure.

Recommendation 3: Given the historical background that gave rise to GEO and links with sustainable development issues since its inception (Section 1.1 above), the Post-2015 WG recommends Plenary endorse SBA structure option 2.2.B for the period 2015-2025.

Response of Plenary to Recommendation 3: general agreement to option 2.2.B.

In general Plenary believes that coordination of EO in support of the pillars of Rio+20 and sustainable development goals are way in which GEO should evolve.

Points for further assessment by the WG include:

- An Ocean SBA should be added to the current 9 SBAs,
- Changes to the SBA structure as recommended by the M&E WG evaluation reports;
- Stronger linkages should be forged with international conventions and policy frameworks such as the Convention on Biological Diversity (CBD) and United Nations Framework on Climate Convention (UNFCCC).;
- SBAs should be broadened or repackaged to emphasize the cross-cutting nature, (example of Water-Weather-Climate);
- Collaboration with Participating Organizations should have greater prominence in SBAs.
- SBA structure should account for and leverage global, regional and national mechanisms that can deliver specific applications and services;
- SBA structure should seek greater leverage with existing UN observing systems.

2.3 Governance

2.3.A The current GEO governance structure will be maintained (voluntary, non-juridical, and flexible);

2.3.B The current GEO governance structure will be maintained (voluntary, non-juridical and flexible); additionally, linkages with other relevant Earth-observation organizations, including the private sector, should be improved and resources to sustain key components of GEOSS should be identified;

2.3.C GEO will be constituted as a totally new, formal intergovernmental program or organization, with mandatory financial contributions and a more formalized governance structure.

Recommendation 4: In the interest of preserving GEO as a flexible, agile and inclusive international partnership, the Post-2015 WG recommends Plenary endorse governance option 2.3.B for the period 2015-2025.

Response of Plenary to Recommendation 4: general acceptance of option 2.3.B

Points for further assessment by the WG include:

- Clarify the GEO position in the global picture (vis-à-vis other international organizations) and at national levels. This to be done by addressing areas not within the mandate of others, and by

ensuring that other organizations will make use of GEOSS. Coordination with other organizations is generally felt as a pre-condition to proceed with the recommended option;

- Assess what different government processes and implications (including financial) are connected to different options. Provide a clear rationale on why a number of multilateral/global initiatives should be conducted within the GEO framework. The identification of GEO role in the global picture will certainly help;
- Involvement of private sector needs further analysis and definition of suitable mechanisms;
- Maintaining the principles of the current GEO governance, it may be appropriate to improve the governance by changing some of the current mechanisms to allow direct participation of more members to the governing processes;
- Define mechanisms to ensure suitable financial contributions to actually implement the recommended option.

ANNEX III

MEMBER AND PARTICIPATING ORGANIZATION STATEMENTS (*FOR INFORMATION*)

MEMBERS

AUSTRIA

Austria has a strong interest in a further participation and will undertake all efforts to continue to support GEO and bring its ideas to life with in-kind contributions. Austria is participating in the GEO Institutions and Development Implementation Board (Peter Zeil) and made very positive experiences there, which are facilitating enhanced networking in Austria itself. Networking within Austria under the umbrella and the guidance of best practices in other countries has taken place in different areas:

- A GCOS 2012 meeting with 17 partners in 2012 built the first steps for a functioning national platform for data management. Austria learnt from the Swiss example of the national data catalogue and will take this as a model;
- ZAMG and other research institutions will participate in the CCCA (Climate Change Centre Austria) which will build a platform between data management (*in-situ* and remote), climate services and user driven climate products;
- Several other initiatives have been undertaken to go from national to **regional scale** on e.g. data homogenization, (HIST-ALP), monitoring of phenological data (PEP 725) and nowcasting (INACE) all of them based on homogenized data across the Alps and the wider Alpine areas;
- Z_GIS undertakes the FP7 Project EnerGEO which provides a data basis for the production of alternative energies;
- In delivering services the MeteoAlarm project goes across all of Europe. It merges and harmonized multihazard warnings from 35 European countries and is based on data assimilation as input for meteorological models;
- FARMSupport and GEOSAF are projects funded by the Austrian Space Programme and ESA which use Earth observation data and meteorological data and forecasts to predict crop yield in eastern Africa

It would be worthwhile to connect some of these initiatives on a wider basis with other mountain regions in the world facing similar problems. Austria sees in these regards UN organizations as important players for the governance and future development of GEO: WMO is very and successfully present and should be integrated together with WHO in the governance of GEO, others like UNESCO are still missing.

CANADA

Canada would like to highlight and reiterate our support and engagement in the development and implementation of GEO and GEOSS activities and initiatives. Specifically:

- In terms of JECAM (the Joint Experiment for Crop Assessment and Monitoring), Canada is pleased to continue in a leadership and coordination role for the development and implementation of the Joint Experiment for Crop Assessment and Monitoring (JECAM), including hosting of the global secretariat and JECAM coordination website;
- In terms of GEO-GLAM – (the GEO Global Agricultural Monitoring initiative), GEO-GLAM is an important recent initiative of the G20 Agriculture Ministers to improve global crop monitoring and reduce food price volatility worldwide. Canada actively supports GEO-GLAM as a member of the core implementation team, and encourages all GEO Members and relevant Participating

Organizations to actively participate and contribute to this high-level politically supported initiative. Agriculture and Agri-Food Canada will continue to lead Canada's engagement in close collaboration with the Canadian Space Agency and other federal agencies;

- In terms of priorities for the upcoming Canadian CEOS Chair, Canada, through the CSA, will take on the Chair of CEOS in 2013 Chair of CEOS, and is pleased to be hosting the 2013 CEOS Plenary in Montreal. Canada will use this opportunity to advance GEO priorities related to the Impact of Climate Change on polar regions and Improving Disaster Risk Management through closely coordinated actions;
- Finally, in the area of enhanced Arctic monitoring, Canada is pleased to inform Plenary that during the summer of 2012 we have put in place additional weather monitoring buoys, which will help us to close observational gaps in the Arctic Ocean. Our expanded suite of marine weather and ice forecasts and warnings will help to improve international marine safety as transportation and industrial development increases in the far North (to deliver this we received \$26M investment), but will also give us a climate monitoring capability in this data sparse region. The CSA is also preparing a complete mapping of the Arctic ice sheet with RADARSAT-2. Furthermore the RADARSAT Constellation Mission is just beginning the manufacturing phase. Resourcing has been secured and the three satellites are expected to be launched in December 2017. The RADARSAT constellation mission will help make substantial contributions to GEO. \$39M in new funding has been received for new satellite receiving stations.

In conclusion, Canada would like to confirm its strong support for the added-value GEO offers in terms of leveraging access to critical earth observations which are supporting public policy and programs and the performance of Canada's private sector, and specifically, which are helping to improve agricultural practices, contributing to managing our natural resources, particularly in our vast North, and protecting our citizens and building resilience in our communities against threats from weather, too much or too little water, and climate.

FINLAND

Finland has not been very active in GEO compared to our neighbouring Nordic countries. Our actions are integrated in European actions. We have concentrated in progressing GEO topics in Finland. The major issue has been to open free access to public data. Finnish regulation made most publicly produced data sets to only be available for a fee. This made selling data a significant income source for public agencies producing interesting data. This income being jeopardized was for many years the biggest hurdle to freely make data available in Finland. On August 7th this year the finance ministry announced that from 2013 onwards there is budget to compensate income losses for opening data for free use in the Finnish public sector.

Taking the Finnish Meteorological Institute as a concrete example the finance ministry is making next year 2,3 million € available for making first observation archives and numerical model outputs available as Web Map and Feature Services. This will be almost half of FMI's current 800 TB of relevant data that in the first lot is not including satellite related data. The compensation will however grow eventually to 5,6 m€ for all data produced by FMI to become available. Also other Finnish public agencies are preparing similar actions as a 15 m€ total budget is continuously annually available for opening data for free in Finland.

GEO can congratulate itself having been one of the key global motivations in our compensation process. The more concrete drivers have been EU developments like the INSPIRE directive. Also here GEO has made for a great justification for opening and sharing more data. So there is progress born from GEO – thanks a lot! So watch out for more GEOSS pledges from Finland next year! We will also step up more direct action within GEO tasks as Finland is setting up the headquarter for the Integrated Carbon Observing System and expanding global snow activities.

GERMANY

Germany continues to strongly support GEO and GEOSS. We are convinced of the added value of bringing together Earth Observation activities, data, products and users world-wide. We acknowledge the progress made by GEO so far in this respect, and remain committed to contribute our share to reach our objectives. So many German institutions and individuals from the governmental, research and private sectors continue to contribute at all levels: to the GEO trust fund, the implementation boards and working groups, to many of the Work Plan tasks and with linking data and services to the GEOSS common infrastructure. We also like to mention the European level, that plays a major role in contributions from Germany. However, we will not report on those many activities in detail, but pick only one highlight:

In Germany, the idea of the GEO Data Sharing Principles of open and free Geo Data has now been successfully implemented into a new national legislation act. Since last Friday (16.11.2012), all Federal Geodata in Germany are generally accessible free of charge for commercial and non-commercial use and re-use. The terms and conditions of use are well managed by a binding regulation. Additionally, earlier this year, a new version of the German Geodata Portal has been launched. The underlying database, the Geodata catalogue covers the data available within the federal government and its agencies, and this catalogue is fully integrated into the GEOSS Common Infrastructure, so it is available through and for GEOSS as well. In addition, we have launched an initiative to better link Geodata generated in the German research sector, which also runs important databases and monitoring programs.

NEW ZEALAND

New Zealand would first like to acknowledge our warm and gracious hosts here in Brazil who have facilitated what has been both an enjoyable and productive week.

We would also like to acknowledge the broad areas of global benefit courageously embraced by GEO members and participating organisations through this venue.

New Zealand is happy to participate as a member of GEO and help represent the Oceania region within the global member community.

New Zealand is also proud to sit as a member of the GEO Executive Committee and contribute to strategic thinking and operational guidance, particularly at this important stage in GEO, leading up to 2015.

We have been fortunate to be able to leverage that position on the Executive Committee to raise awareness of issues regarding earth observation data amongst Pacific Island nations. Earlier this year New Zealand proposed investigations with the GEO Secretariat to scope the development of a Pacific Island GEOSS project, modeled on the success of AfriGEOSS and to designed to promote GEO participation amongst developing countries in the Pacific.

New Zealand has a particular alignment with those areas of GEO concerned with the Data Sharing Principles and the GEOSS Common Infrastructure (GCI). In this regard New Zealand is pleased to serve as a co-chair of the Data Sharing Working Group.

New Zealand has a history of supporting such open data principles and is also currently in the midst of developing and implementing its national spatial data infrastructure (SDI), to realise benefits of geospatial information, including of course earth observation data.

In 2011 New Zealand adopted a Declaration on Open and Transparent Government, which directs government agencies to release their high value data (geospatial and otherwise) for re-use, in compliance with a set of Data and Information Management Principles. These principles include the release of data under the most liberal version of the Creative Commons license suite and in machine-readable format (to support interoperability).

In the area of the GCI, New Zealand earlier this year registered its national geospatial catalogue with the GEO Portal. Because it was developed in an environment of open data, the New Zealand catalogue and all of its referenced datasets qualify and are attributed as GEO Data-CORE.

New Zealand sees many areas of close alignment between our national agenda and the goals and initiatives advanced by GEO and GEOSS and in that environment looks forward to continued and productive involvement as a member country.

SWEDEN

Since our last plenary meeting, yet another series of disasters has dramatically illustrated the need for globally coordinated and shared Earth observations. GEO and the GEOSS are of fundamental importance to provide us with improved capabilities to prevent loss of life and mitigate the effects of such catastrophes.

The rapid environmental change in sensitive regions such as the Arctic is alarming and poses specific challenges on observational capabilities and the timeliness of data sharing. Together with the US, Mexico, Canada, Ghana, Bangladesh and UNEP, Sweden has launched the Climate and Clean Air Coalition with the aim to reduce emissions of Short-Lived Climate Pollutants. Mitigation actions need to be based on relevant atmospheric observations, which is a particular challenge in data sparse regions such as the Arctic. Full, open and timely access to long-term monitoring datasets, a core theme of GEOSS, is essential for that.

In line with the Beijing-declaration, Swedish progress towards full and open data access is well on track. This includes the promotion of GEOSS DataCORE policies within different communities. Regarding the scientific community, GEOSS DataCORE is promoted in Swedish research infrastructures such as Environment Climate Data Sweden, ECDS. ECDS provides for the discovery of many interesting data resources, including data from Swedish projects during the last International Polar Year. In 2013, we will commit work to integrate ECDS with GEOSS at a technical level.

GEO is important to Sweden. Swedish experts are committed to several GEO-tasks and thereby to the fulfillment of the GEOSS Implementation Plan. We would like to high-light Swedish expert participation as task lead within “Global Land-cover and Land-cover Change”, “Global Urban Observation and Information”, “Global Biodiversity Observation Network” and as task contributor within “The Global Mercury Observation System”. In addition, the Swedish Civil Contingencies Agency is prepared to contribute to the fourth evaluation of the GEOSS implementation with their experience and user’s view on the societal benefit area of disasters.

We are also happy to announce that Sweden’s financial contribution to the GEO trust fund for 2013 is expected to be consistent with previous years, i.e. 600000 Swedish kronor.

We would like to take this opportunity to thank the GEO-Secretariat for their continuous efforts and enthusiasm. Especially, we would like to welcome the new GEO-director Barbara Ryan and wish her all the best in her important work.

And finally, we would like to thank our host Brazil for the great hospitality and the excellent arrangement of this meeting at this magnificent place on a fragile and precious planet Earth.

THE UNITED STATES OF AMERICA

The United States appreciates this new focus for the national statements. We believe that GEO has shown its value as a voice for data sharing and open data access. It is fostering the development of new tools to bring disparate datasets together for analysis, for modeling, and for furthering understanding of the changes occurring around us on the planet.

GEO promotes collaborations and collective learning which supports users & innovative uses – and helps data providers meet the growing demands for Earth Observations, thereby reducing the burden on individual data-providing nations. In addition to the annual Work Plan Implementation Reports – which give many examples of the collaborations – let us illustrate a few cases of GEO’s added value in nurturing coordinated projects that have been achieved:

- GEO has been the catalyst for creating the Center of Hydrologic and Spatial Information for Latin America and the Caribbean (CIEHLYC), a network of water and remote sensing experts from governments and academia. It has been formed to support the objectives of GEOSS and the Water SBA. CIEHLYC has developed a partnership with Brazil’s University of Santa Maria that made possible the release of *in-situ* soil moisture data collected over the years. This data is being contributed to the International Soil Moisture Network, filling a geographical gap, improving the ability of scientists to perform validation of land surface models, climate models and remote sensing data sets. CIEHLYC also developed a partnership with the regional Corporación Autónoma Regional del Valle del Cauca in Colombia, which has agreed to contribute to GEOSS *in situ* meteorological and hydrological data. Thanks to the interoperability of the GEONETCast-Americas and EUMETCast-Americas systems, the contribution from Colombia can reach a broad base of users across the Western Hemisphere.
- Based on the coordination initiated under GEO, the U.S. supports Andinas Amazonas (Andean Amazon) with Colombia, Ecuador and Peru to support forest inventory, assessment and monitoring. In addition, through the SilvaCarbon program, the U.S. is providing \$3 M and working with a cadre of scientists and funders to develop further capacity and techniques for measurement of forest carbon.
- The coordination within CEOS to provide timely and appropriate data for GEO programs such as GEOGLAM and GFOI give the global community data which can support decision making directly.
- We support the attention at Plenary this week to *in-situ* observations. Building on this, the Blue Planet initiative provides new coordination with GEO in the area of Ocean observations. We see significant potential for expanded collaboration, building on the U.S. contributions through the U.S. Integrated Ocean Observing System and global glider missions.

Overall, the cumulative impact of integrated observing system networks, interoperable systems and standards in data management promulgates these arrangements as best practices in other communities. We are indeed delighted to see these positive developments that participation in GEO brings about and that we could build on in the coming 10 years.

PARTICIPATING ORGANIZATIONS

CEOS (Committee on Earth Observation Satellites)

CEOS is deeply committed to GEO, reflected in the large scale and broad scope of CEOS Agency resources allocated on a best efforts basis in 2012 to GEO activities, including support to 28 Tasks and Components of the 2012-2015 GEO Work Plan. A large part of these contributions were made through CEOS’s four standing Working Groups on 1) Calibration and Validation, 2) Climate, 3) Capacity Building and Data Democracy, and 4) Information Systems and Services, and through CEOS’s seven Virtual Constellations. CEOS Virtual Constellations harmonize and maximize efforts among space Agencies to deploy Earth observation (EO) missions as part of GEOSS, address emerging data gaps, avoid overlap among observing systems, and make maximum use of existing assets. A Virtual Constellation consists of multiple satellites, ground systems, and related data delivery systems mobilized in a coordinated manner for greater EO efficiency and global humanitarian benefit. Seven Constellations currently exist: Atmospheric Composition, Land Surface Imaging, Ocean Colour Radiometry, Ocean Surface Topography, Ocean Surface Vector Wind, Precipitation, and Sea Surface Temperature.

The following representative examples, reflecting the CEOS priorities for 2012, illustrate some of the numerous CEOS accomplishments in support of GEO:

- CEOS has made major strides in 2012 to better coordinate Agencies' space-based climate research and monitoring activities. In September, CEOS provided a detailed response to the 2010 Global Climate Observing System (GCOS) Implementation Plan and its Satellite Supplement, highlighting progress among CEOS Agencies in coordinated information outputs for the monitoring of Essential Climate Variables (ECVs). CEOS will present its status report to the 37th Subsidiary Body on Scientific and Technological Advice (SBSTA-37) of the UN Framework Convention on Climate Change. The report calls for an unprecedented level of coordination among CEOS Members, with long-term success depending on continuity of observations and the full and open sharing of satellite-derived data for the purposes of climate research and monitoring;
- The CEOS Working Group on Climate has also worked closely with the World Meteorological Organization (WMO) and the Coordination Group for Meteorological Satellites (CGMS) to define and develop an operational Architecture for Climate Monitoring from Space, to adequately meet society's needs for long-term, accurate climate information. The report calls for a constellation of research and operational satellites, broad, open data-sharing policies, and contingency planning among CEOS Members. In furtherance of this architecture, CEOS Members, in conjunction with CGMS and WMO, will conduct a gap analysis and develop appropriate implementation plans, including appropriate use of the Virtual Constellations to support the needs of the climate community. In support of the monitoring and assessment of carbon sequestration capacity of the world's forested regions, CEOS has continued its coordinated acquisition and provision of essential satellite data for the GEO Global Forest Observation Initiative (GFOI). Twelve CEOS Agencies are contributing satellite data to support national forest monitoring and assessment activities connected to the enhanced UN Reduction of Emissions from Deforestation and forest Degradation (REDD+) program, in support of UNFCCC objectives. Satellite data acquisition for 2012 includes coverage of forested regions of Brazil, Cameroon, Colombia, the Democratic Republic of the Congo, Guyana, Indonesia (Borneo and Sumatra), Mexico, Nepal, Peru, and Tasmania. In 2013, CEOS Agencies will expand coverage to the tropical and subtropical forested regions of other UN REDD and World Bank partner countries, with the aim of eventual global coverage of all forested regions in 2015;
- CEOS Agencies are also continuing coordinated data acquisitions for the GEO Joint Experiments on Crop Assessment and Monitoring (JECAM) project. Related findings from satellite data applications will enable the JECAM project to develop standards for agricultural monitoring and reporting protocols and best practices for the monitoring of different cropping systems. JECAM will help identify and validate future satellite-related user requirements for agricultural monitoring, and serve as an important precursor to the G20/GEO Global Agricultural Monitoring (GEOGLAM) initiative. CEOS Agencies are consulting with the GEO Agricultural Community of Practice to assess GEOGLAM's needs for future satellite data, and to consider potential future data acquisition scenarios;
- In support of GEO carbon-related Tasks, the CEOS Carbon Task Force continues to define a carbon strategy for the next generation CEOS Agency satellite missions. This strategy will support measurements of the global carbon cycle and its various sinks, sources, and fluxes – aimed at a better understanding of climate change processes and climate modelling. The Task Force is assessing the three major domains (atmosphere, oceans, and land), and their interrelationships;
- Supporting the recommendation of the GEOSS Data Sharing Working Group to provide full and open exchange of Earth observation data as much as possible, CEOS Agencies continue identification of satellite product information that can be categorized as GEOSS Data-CORE datasets. Initial findings from a study by the CEOS Systems Engineering Office on 100 CEOS;

- Agencies' satellite missions, to include 256 mission-instrument combinations, indicated that more than 70% of identified satellite data is available at no or little cost, and with minimal requirements for user registration and data redistribution. CEOS Agencies will continue to provide, free-of-charge, data access from various satellite missions in support of key GEO initiatives;
- In support of GEO's Individual and Institutional Development Tasks, CEOS Agencies have enhanced their cooperation in remote sensing data sharing for education, training, and capacity building, particularly for traditionally-underserved countries. Working with a wide range of partners, CEOS is supporting improved access to Digital Elevation Model (DEM) data on a country-by-country basis. CEOS is also implementing a new, 180-hour e-learning remote sensing course for university educators. CEOS will continue to work with the GEO community to address gaps and enhance synergies in remote sensing applications;
- CEOS members have developed a systematic process for review and approval of data requests in support of the international Geohazards Supersites initiative. This process will provide substantial benefits to the geohazards community, by providing a wide range of previously-unavailable high-resolution radar and optical data from CEOS Agencies;
- As the human and economic losses caused by hazards have continued to grow, decision makers and major Disaster Risk Management (DRM) stakeholders have revised their strategies, which until now have been primarily focused on the response phase, to better address all DRM phases -- mitigation, warning, response, and recovery and assessment. To demonstrate the utility of satellite EO data beyond the response phase, CEOS Agencies have agreed to define a Global Satellite Observation Strategy for DRM, related to a few selected types of hazards to better address stakeholders' needs. CEOS Agencies will also seek to define a DRM Baseline Dataset, which would consist of no-cost data for selected observations, disaster themes, and geographic areas. CEOS representatives will maintain a close dialogue with GEO and UN experts to ensure appropriate recognition for the use of space-based EO within the Post-Hyogo Framework for Action (HFA) for the 2015-2025 timeframe;
- CEOS Agency representatives are consulting with members of the GEO Biodiversity Observation Network (GEO BON) to better assess and respond to information requirements in support of the UN Convention on Biodiversity (CBD), and CEOS Agency representatives are participating in a GEO Water Community of Practice effort to develop a GEO Water Cycle Strategy;
- CEOS has updated its on-line Missions, Instruments, and Measurements (MIM) Database, which provides the list of current and future EO resources and their measurement capabilities to the worldwide EO community from CEOS Member Agencies. It has also published an Earth Observations Handbook with a focus on sustainable development issues, in connection with the June 2012 "Rio+20" summit;
- CEOS has been an active participant in the Working Group on GEO's post-2015 organization and activities. Within this Working Group, CEOS has recommended that GEO simplify its organization and Work Plan to focus on a smaller number of highly visible, major projects with global impact and involvement from major stakeholders and partners that can continue on an operational, sustainable basis. Also, as part of the GEO community, CEOS recommends the need for closer coordination and integration among space-based and *in-situ* assets.

Among its priorities for 2013, and following the *CEOS Bangalore Statement* distributed to GEO Plenary participants, CEOS Agencies will conduct focused activities in several main areas:

- (i) Development and provision of Climate Data Records (CDRs), to support climate monitoring and research;
- (ii) Coordinated observations to support the effective monitoring and management of the worlds' forested regions;

- (iii) Development of a strategy for observing and assessing the global carbon cycle;
- (iv) The application of space-based Earth observations to support research in agricultural productivity and an improved understanding of the global water cycle;
- (v) Development of a more integrated approach in the application of Earth observations for the purposes of disaster risk management; and,
- (vi) Close collaboration with all countries, especially developing countries, to share new sources of EO satellite data and enhance their governments' capacity to apply these data for societal benefit.

In conclusion, CEOS Agencies are fully engaged in implementing the space-based component of GEOSS and will continue such support under the leadership of the 2013 CEOS Chair, the Canadian Space Agency, and the 2011-2013 CEOS Strategic Implementation Team Chair, the U.S. National Aeronautics and Space Administration.

COSPAR (Committee on Space Research)

COSPAR has a long association with GEO, participating in the past as co-chair of the Science and Technology Committee, and currently as co-chair of the GEO Data Sharing Working Group and a member of the GEO Post-2015 Working Group.

Through this statement, COSPAR wishes to recognize the significant progress that can be attributed to GEO and GEOSS, and is perceptible within the GEO space and in situ research community in advancing the science of global integrated Earth system, which, as everyone knows, is dependent on data sharing and international cooperation. This is illustrated in various domains, such as the long time series measurements of total solar irradiance, stratospheric ozone over Antarctica, and sea level rise, to name but a few. COSPAR has strongly contributed in the important area of enhanced communication and exchange of ideas between scientists throughout the world without regard to nationality.

COSPAR welcomed the excellent report by the Third Evaluation Working Group, and noted the need to strengthen the sense of scientific ownership of GEO, especially in the grand scientific challenge of improved predictions of the Global Integrated Earth System. The scientific community is both a user of GEOSS and a provider of indispensable contributions to the conversion and improvement of observations into high-quality information that can be used for the benefit of society. With this in mind, COSPAR, with its long tradition of fostering of interdisciplinary Earth science, is offering to further its contribution to improving the GEO process, through the development of a science roadmap for future enhancements of Global Integrated Earth System Science based on GEOSS in the post-2015 era. This science roadmap activity finds its origin in discussions held at the COSPAR Scientific Assembly last July in Mysore, India, where the GEO Secretariat Director Ms. Barbara J. Ryan opened a symposium on "How GEOSS Enables Earth System Science". The COSPAR roadmap activity should result in the delivery of a scientific document involving the contributions of a selected panel of distinguished scientists. The document will be peer-reviewed. COSPAR aims at releasing it, hopefully, in time for the next GEO Plenary and Ministerial in 2013.

COSPAR wishes to thank Brazil for the splendid organization of this Plenary, and thank you all for your attention.

EEA (European Environment Agency)

The EEA would like to highlight three contributions that it has made to the GEOSS Work Plan 2012-2015:

1. The Eye on Earth Network was launched at the end of 2011 in Abu Dhabi. Together with the Global Earth Observation System of Systems (GEOSS), it was recognised in the Rio+20 Declaration as an important initiative for improving the access to and sharing of

environmental information as a means to support sustainable development. Eye on Earth is now focusing on the integration of crowd sourced and citizen science data into the GEOSS global public information platform. These types of data are collected for the air quality, water quality, noise, invasive species and marine litter themes. Everyone is invited to the First Eye on Earth user conference, which will take place in Dublin 4-6 March 2013;

2. Good progress has been made on the contribution to the task on global land cover, namely on validation and user engagement .The Global Monitoring for Environment and Security (GMES) programme is providing a major European contribution, not least with high resolution land cover data for the European continent at a resolution of 20m;
3. I would also like to confirm the EEA's commitment to GEOSS for the coordination of surface based observing networks. The results of the GMES *In-situ* Coordination project (GISC) will be used as an important building block.

Finally, we are very pleased with the proposal from Italy to take the lead on global ecosystem monitoring and are looking forward to discussing how we can support this important task for GEOSS with our Italian colleagues.

EUMETSAT

Dear Delegates and Colleagues,

2012 has been an intensive and important year for EUMETSAT, as significant decisions have been taken to secure the availability and continuity of our data and products for our users worldwide during the next decades. This year, we have successfully launched two satellites: the 3rd Meteosat Second Generation (MSG) satellite, on 5th July 2012 and the second Metop Polar orbiting satellite, on 17th September 2012. These two satellites ensure the continuity of the data obtained through our current European systems of geostationary and polar orbiting satellites.

EUMETSAT Member States have already approved the Meteosat Third Generation programme, ensuring continuity in the geostationary orbit coverage over Europe, Africa, the Atlantic Ocean, Brazil and a large part of South America, until 2040, and last week, EUMETSAT Member States initiated the Preparatory Programme for the Second Generation of our Polar System. On Wednesday this week, the ESA Council at ministerial level approved the programme enabling the start of the development of the Metop SG satellites. With this sustained satellite infrastructure, EUMETSAT will be equipped to continue to serve the global user community for many years to come.

With respect to GEO, the main EUMETSAT contribution will remain focused on our components of GEONETCast, which include EUMETCast Europe, Africa and Americas, in close coordination with NOAA and with CMA who operate the other components. GEONETCast is now reaching a mature stage and is a core element of the GEOSS Common Infrastructure. We are now ensuring that it can contribute significantly to other key GEO initiatives, such as GEOGLAM and GFOI.

We are also very keen that other emerging initiatives, such as AfriGeoss and Blue Planet can benefit fully from GEONETCast, as the system can greatly facilitate operational access to numerous Earth Observation products.

With regard to AfriGEOSS, it should be noted that more than 380 GEONETCast stations are today deployed across Africa, in every African country. The MESA programme, funded by the EU, which follows the AMESD project, will upgrade this infrastructure to ensure that African countries maintain operational access to EO data and products through GEONETCast. It is important that emerging GEO initiatives in Africa benefit from this.

We have had an intense discussion on the GEO post-2015. I would like here to reiterate that GEO has delivered when it has been able to catalyse coordination between the contributions provided by its

Members and Participating Organisations, through their own assets and infrastructures and when it has facilitated access to existing observing systems, thereby increasing benefit for users.

In the forthcoming years, the consolidation of the GEO coordination role is, from a EUMETSAT point of view, the key to future success.

Thank you for your attention.

GSDI (Global Spatial Data Infrastructure Association)

The Global Spatial Data Infrastructure Association congratulates to the Group on Earth Observations GEO for the efforts and achievements under the leadership of the Secretariat and Executive Committee and pleased to learn the expressed commitments to continue the program after 2015.

GSDI is committed to GEO being convinced that efforts to increase the societal benefits of Earth Observation will need advanced data sharing policies and a common technical architecture including interoperable spatial data infrastructures and capacity building.

GSDI potential contributions to facilitate the implementation of the GEO actions include the following:

1. GSDI has established the Geographic Information Knowledge Network (GIKnet) to gather and share knowledge accumulated at its members. The network is open also for the EO community;
2. GSDI established the International Geospatial Society (IGS) to motivate interested individuals to join on global level, providing access to information disseminated by GSDI;
3. GSDI provides a forum at its World Conferences to highlight the newest achievements in:
 - spatial data infrastructure-related technical challenges and solutions;
 - exchange of SDI experience, lessons-learned, and best-practices from local to global implementation of SDIs with special emphasis on developing countries.

The next GSDI Conference will be in Addis Ababa in November 2013. Together with IGS, EIS-Africa and UNECA the jointly organised Africa GIS Conference and the 14th GSDI World Conference will provide an excellent opportunity to bring the geospatial and Earth Observation experts involved in GEO's AfriGEOSS initiative together.

4. National SDI efforts are encouraged to register their spatial data and services with GEOSS for discovery by the EO and geospatial communities;
5. In the data policy context GSDI's Legal & Socioecon Committee experts are playing role to survey licensing models across the globe and taking part significant European Commission supported projects such as LAPSI and LAPSI 2.0 (Legal Aspects of Public Sector Information and re-use) lead by Politechnico Torino and the K.U. Leuven respectively. In the shared and open data context active participation have been made at the 4th Digital Earth Summit in Wellington and at the 23rd ICSU CODATA Plenary in Taipei;
6. GSDI experts are participating in the work of Earth Observation activities. This includes support of GEO Infrastructure Tasks, in the Data Sharing Working Group, GEOSS Common Infrastructure and providing two-way reporting between GSDI and CEOS Working Group on Information System and Services, WGISS, (in this year at the GSDI Board Meeting in Quebec and at WGISS 34th Plenary held in Hyderabad organised by ISRO). Another promising regional initiative is the planned Europe Challenge of NASA's World Wind open source development environment in societal benefit areas mobilizing universities across Europe.

ICSU (International Council for Science)

It is ICSU's great pleasure to address the GEO IX Plenary to give you an update on our current contributions to GEO/GEOSS. As you know, ICSU is a co-sponsor of the Global Climate Observing System (GCOS), the Global Ocean Observing System (GOOS) and the Global Terrestrial Observing System (GTOS). The organization is also contributing to GEO through its other specialized interdisciplinary bodies.

ICSU is pleased that the World Data System (WDS) was recognized yesterday by the GEO Plenary as a Participating Organization and hope that it will establish a successful partnership with GEOSS. WDS is moving into an operational phase for the 2012-2015 period and several activities have started and will be gradually contributed to GEOSS. A WDS Open Metadata Catalogue is being developed and will allow WDS to contribute its Members' key multidisciplinary quality-assessed scientific datasets to the GEOSS Data CORE. WDS is also promoting a community-based framework for long-term preservation and publication of scientific data and hopes that it will be used in the context of GEOSS.

ICSU would like to commend the continued contribution and support provided to the GEOSS Data Sharing Working Group (DSWG) by its Committee on Data for Science and Technology, CODATA, which has provided two co-chairs to the DSWG since 2006.

ICSU would like also to call on GEO Members and Participating Organizations to support the Global Biodiversity Observation Initiative, designed to enhance global biodiversity observations in support of the GEO-BON implementation plan. Diversitas, the joint ICSU-UNESCO international research programme on biodiversity, is also to be commended for its contribution to GEO-BON.

Finally, ICSU would like to thank Brazil for hosting the GEO IX Plenary and the GEO Secretariat for their continued support to the GEO community.

IIASA (International Institute for Applied Systems Analysis)

For those who have not yet heard about IIASA, it is the International Institute for Applied Systems Analysis, based in Austria, just south of Vienna. IIASA uses advanced systems analysis to conduct policy-oriented research into the most pressing areas of global change – energy and climate change, food and water, poverty and equity – and their main drivers.

IIASA fully supports the GEOGLAM initiative and feels that GEOGLAM can make a significant contribution in the field of food security and crop production forecasting. A critical layer for global crop monitoring is an accurate global crop map or crop mask. Therefore, IIASA very much welcomes the change in the new Work Plan to place more emphasis on land cover and in particular global land cover datasets as it is an essential base dataset for many societal benefit areas. IIASA also welcomes the initiative by China to improve global land cover validation datasets. IIASA's research has shown that global land cover datasets, in particular, still contain high uncertainties, especially in the cropland domain.

The request for improved global land cover has been driven in the past by the climate change community, but more recently the global biophysical modelling and integrated assessment communities are requesting more accurate global land cover information with an accuracy similar to what is available for countrywide or regional datasets for example the US and Australian land cover datasets, or the European land cover dataset Corine.

IIASA has been contributing to GEOSS on a number of tasks in the field of benefit assessment studies in the different societal benefit areas, through the contribution of the land cover validation and crowd-sourcing tool Geo-Wiki (www.geo-wiki.org) and now with a new hybrid 1km percentage cropland dataset. This product was released officially today and is a hybrid map using 26 existing global, regional and national maps integrated into a single product. This cropland map is a result of an international workshop held at IIASA in June 2011 where more than 70 land cover experts

participated and is part of the GEO AG subtask that IIASA is leading on global cropland and also represents a valuable contribution to the GEOGLAM initiative. Moreover, this product was produced in collaboration with the International Food and Policy Research Institute (IFPRI), who are currently using the product to create global crop type distributions, and is consistent with FAO's national and IFPRI's subnational cropland statistics.

A beta version is available for visualization on the geo-wiki platform, and the map itself can be freely downloaded and will be registered in the geo-portal and also as a WMS in the future. We would encourage your feedback via email or through the interactive tools built into the website in order to help us improve this product. This product will be continually updated as new cropland datasets are shared and produced in the future.

POGO (Partnership for Observation of the Global Oceans)

The Partnership for Observation of the Global Oceans, POGO, is a forum to promote global oceanography, particularly the implementation of an international and integrated global ocean observing system. The long-term aim of POGO is to participate in the creation and operation of an integrated global ocean observing strategy, addressing information needs of decision-makers, researchers, service providers, and the general public.

The term Blue Planet comes of course from the fact that the oceans occupy over 70% of the earth's surface. Examples of the importance of the oceans to humankind are everywhere. The great majority of the oxygen that we breathe has its origin in marine photosynthesis and our atmospheric CO₂ problem would be much greater had the oceans not absorbed about a quarter of what we have produced with uncertain consequences. Droughts suffered throughout the world, including the recent one in the US, are in great part associated with changing ocean conditions. Yet because of their opaque nature, remoteness and great depths the oceans often remain out of sight and out of mind in particular by the public at large.

POGO appreciates the many expressions of support for the Blue Planet initiative, seeing in them recognition that oceans affect all societal benefit areas of GEO.

Oceans have influenced humankind, directly or indirectly, throughout history. Many ocean services are under threat as the Earth's climate changes, with profound impacts, not only on coastal communities but on the world population in general. There is a collective responsibility on all countries to ensure informed stewardship of the oceans and promote enhanced efforts for ocean observation and management.

To understand, predict and perhaps modulate the future effects of oceans on society, we must observe the oceans completely, regularly and in an integrated fashion, using in situ as well as remote-sensing devices. This is the arena in which the Blue Planet initiative tries to make progress: we request the continued support of member nations and participating organizations to help make it a success. Our host Brazil is certainly leading the way in that regard. Thank you Brazil and thank you Chair.

(SWF) Secure World Foundation

We would like to thank all of you for inviting us to become an Observer to the Group on Earth Observations. We are very honored to become a part of the GEO family and we are very much looking forward to working on the initiatives relevant to the group.

Secure World Foundation (SWF) is a private operating foundation that promotes cooperative solutions for space sustainability and the peaceful use of outer space. SWF brings together disparate communities – technical, legal, policy – to find new ways to improve the use of space systems for human benefit and environmental security. SWF facilitates discussion and provides a platform for problem solving so that all people can take advantage the benefits of space systems.

SWF strongly believes that space systems can play an important role in improving many aspects of human security. Space systems, including position, navigation and timing (PNT), remote sensing, earth observation, and telecommunications, provide significant benefits for a wide variety of human and environmental concerns. Natural and human-caused disasters call for an efficient, coordinated response to improving the delivery of space benefits to people. SWF is aware that for a variety of reasons, benefits from space systems do not always adequately reach the ordinary citizens who could benefit most from them. The full utility of these important systems is blunted by a variety of institutional, policy, educational, and social barriers. Narrowing the gap between potential and reality requires a combination of technical and policy expertise, which SWF can provide. More specifically:

SWF facilitates dialogue and international cooperation

The Foundation acts as a research body, convener and facilitator to promote space related topics and to examine their influence on governance and international development. More specifically, SWF has been collaborating with:

- United Nations Platform for Space-based Information for Disaster Management and Emergency Response (UNSPIDER), by holding capacity-building workshops (Germany, Austria) and providing training to assist developing countries (such as Ethiopia and Cape Verde) in responding more effectively to natural disasters;
- Committee on Earth Observation Satellites (CEOS) by participating as an active member in the Working Group on Capacity Building & Data Democracy;
- National Oceanic and Atmospheric Administration (NOAA), by working closely organizing several events such as the Global Earth Observation System of Systems Young Professionals Virtual Forum at the International Astronautical Congress;
- United Nations Office for Outer Space Affairs (UNOOSA), by supporting events that propose space technologies, applications, information and services that contribute to sustainable economic and social development programmes supporting human and environmental security, primarily in developing countries;
- Several national space entities in Poland, Mexico, Chile, Kenya and South Africa focusing on issues such as use of space application in humanitarian operations, space for human and environmental security in the Americas: space policy, long-term sustainability and cyber-health, space technology for socio-economic benefits, climate change and space for human and environmental security.

SWF increases awareness of potential benefits from space assets. Partnership with Imaging Notes magazine informs a wide scientific, commercial, and policy making community about how remote sensing technologies and spatial information can assist in solving the urgent interrelated issues of the environment, energy, and security. The magazine serves as a vehicle for SWF to highlight our work and bring the message of better governance and effective use of space activities to a broader audience. SWF promotes ways to increase effective use of space assets Community Remote Sensing (CRS) is "a new field that combines remote sensing with citizen science, social networks, and crowd-sourcing to enhance the data obtained from traditional sources". It includes the collection, calibration, analysis, communication, or application of remotely sensed information by these community means.

SWF has a permanent observatory status in United Nations Committee on the Peaceful Uses of Outer Space (UNCOPUOS) and consultative status in Economic and Social Council (ECOSOC) of the United Nations, while it is also a platinum sponsor of the Space Generation Advisory Council (SGAC).

Once again we would like to thank GEO for welcoming SWF to the group. We are looking forward to fruitful partnerships and interesting projects.