GROUP ON EARTH OBSERVATIONS

Draft Report of GEO-VIII
16-17 November 2011
Istanbul, Turkey

1 OPENING OF THE SESSION

The GEO-VIII Plenary meeting was chaired by Mr Philemon Mjwara, the GEO Co-Chair from South Africa.

Mr Yücel Altunbasak, President of the Scientific and Technological Research Council of Turkey (TÜBITAK), which hosted the Plenary, addressed the delegates. He described Turkey as an advocate of science, technology and innovation as tools for improving prosperity and the quality of life. The country has adopted a research and development spending target for 2013 of 2% of GDP, with space research as a privileged area. TÜBITAK has supported over 200 Earth observation projects over the past five years and has signed bilateral agreements with the European Space Agency (ESA), the Russian Federal Space Agency (ROSCOSMOS), and others.

The GEO Co-Chair from South Africa, in his capacity as Chair of the Plenary, thanked Turkey for its hospitality and, like many other speakers during the Plenary, offered his condolences to the victims of the country's recent earthquake. He said that GEO-VIII should focus on deepening the implementation of the GEOSS 10-Year Implementation Plan and the GEOSS Data Sharing Principles. The meeting would review a number of new initiatives, such as the Global Forest Observation Initiative (GFOI) and the Global Agriculture Monitoring initiative (GEO-GLAM), that promise to demonstrate the added value of GEO.

The GEO Co-Chair from China, Mr Cao Jianlin, said that Turkey's earthquake demonstrated the importance of improving the scientific understanding of earthquakes and of disaster reduction. He applauded the progress made by GEO since 2005 in advancing from the concept stage to the development of an operational system of systems. He called for further strengthening the capacity of developing countries, focusing on infrastructure development, and promoting data sharing. Mr Cao welcomed the fact that the GEO GLAM initiative had attracted the support of the Group of 20 (G20), and he highlighted China's contribution of a new generation of meteorological satellites and its support to GEONETCast.

The GEO Co-Chair from the European Commission, Ms Manuela Soares, said that the recent earthquake further demonstrated the need for global cooperation on Earth observation. GEO has travelled far in a short time and should continue to work towards achieving the 2015 Strategic Targets and prepare for even greater achievements in the post-2015 era. The decisions taken by GEO-VIII would help to maintain momentum and ensure a smooth transition to the new 2012-2015 Work Plan. The EC is fully committed to building a Global Earth Observation System of Systems (GEOSS) of the highest quality and reliability.

The GEO Co-Chair from the United States, Mr Steven Fetter, said he hoped that the Earth observation community would succeed in improving humanity's ability to monitor and prepare for earthquakes. The US is fully committed to advancing GEOSS and believes that integrated Earth observations are an indispensable foundation for addressing global environmental issues such as climate change and food security. As no one nation can afford the costs of building GEOSS alone, continued international cooperation is vital. Earth observation data are a global public good, and full and open public access to

these data is at the heart of GEO's work. He urged all governments to recommit to the GEOSS Data Sharing Principles.

The Secretariat Director, Mr José Achache, said he expected that the Plenary discussions would demonstrate the maturity of GEOSS and its potential for further growth. GEO has been instrumental in advancing the full and open sharing of data for addressing global issues. A key priority is to build on the recent "Sprint to Plenary" for improving the GEOSS Common Infrastructure (GCI) and accelerating its ability to provide access to data. He highlighted important progress such as the GEO Biodiversity Observation Network (GEO BON), the Supersites and Natural Laboratories for geologically active regions, GFOI, GEO GLAM, and the expanded engagement of Latin American and Caribbean countries in GEOSS. He stressed the importance of coordinating with other large initiatives such as the United Nations Programme on Global Geospatial Information Management (GGIM) and the Eye on Earth Summit.

The Minister of Science, Industry and Technology of Turkey, H.E. Mr Nihat Ergün, stressed that humanity shares a common destiny, and that earthquakes and other natural disasters are a common concern. A better understanding of natural systems will make it possible to improve forecasts and minimize impacts from disasters. It was essential for the world's nations to join forces and to share and integrate their data. GEOSS is an invaluable tool for providing decision-makers with access to useful information. He pledged that Turkey would actively contribute to international platforms that help to address global issues, including GEO. The country has recently launched a national space research programme as well as many projects and activities relevant to GEO and Earth observation. Space-based and other Earth observation activities can also contribute to economic development.

1.1 Administrative Announcements

1.2 Adoption of Agenda (Document 1(Rev2) - for acceptance)

The agenda was adopted without comment.

1.3 Recognition of New Members (Document 2 - for recognition)

The Secretariat Director informed the meeting that Tajikistan became a GEO Member on 7 March and Colombia joined on 25 August, bringing the total GEO Membership to 88. The meeting welcomed the new Members with a round of applause.

1.4 Statements from New Members

Colombia said that it was an honour to participate in a GEO Plenary for the first time. He applauded the excellent technical and scientific work that has gone into building and strengthening GEOSS. He highlighted the importance of improving access to reliable risk-management information and of building national capacities. Colombia is creating a national agency for outer space affairs, and in 2009 it joined the GEO Forest Carbon Tracking task (FCT) as a Demonstrator.

1.5 Recognition of Participating Organizations (Document 3(Rev1) - for decision)

The Secretariat Director presented the applications from the European Plate Observing System (EPOS), the European Renewable Energy Centers Agency (EUREC), and the Global Earthquake Model Foundation (GEM). He 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 64.

1.6 Approval of GEO-VII Report (Document 4 - for acceptance)

The Chair presented the report. Canada asked for a minor correction. There being no other comments, the Chair concluded that the report was a true reflection of last year's discussion in Beijing and was accepted with the Canadian amendment.

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

2 GEOSS IMPLEMENTATION PROGRESS AND HIGHLIGHTS

2.1 National and Regional Activities

Brazil stated that it is has been an active GEO member since the first Earth observation summit in 2003. It has participated in the Executive Committee and the Capacity Building Committee, and it regularly seconds an expert to the GEO Secretariat. Brazil offers to host the GEO-IX Plenary in 2012. Key activities include the China Brazil Earth Resources Satellite program (CBERS) and a regional training center in Amazonia for transferring Brazil's tropical-forest monitoring technology to other developing countries. Brazil sees GEO as a model and is fully committed to its principles.

Canada is fully committed to GEO. It is ensuring the continuity of its widely used SAR data via its RADARSAT programme, which applies a data policy that is fully consistent with GEOSS. Canada will continue with its leadership of the Joint Experiment for Crop Assessment and Monitoring (JECAM), including by hosting the secretariat, the website and various meetings. It fully supports GEO GLAM and considers it to be an important initiative. Canada also supported the recent GEOSS in the Americas Symposium held in Santiago de Chile.

Chile is focusing on both science and technology, and particularly on remote sensing. It organized and hosted the recent GEOSS in the Americas Symposium, and it plans to launch SSOT, an Earth observation satellite, by the end of the year.

China has focused on improving disaster emergency response. It provided assistance, including the provision of satellite data, for this year's earthquake and tsunami in Japan, the earthquake in Turkey and the floods in Thailand. China is enhancing its global research programmes, in particular on global change, and collaborating with scientists worldwide. It is developing global land-cover maps using 30m resolution satellite images and will provide full and open access to these data. In 2010 a new generation of meteorological satellites joined China's Earth observation satellite fleet, and in 2011 it launched a satellite for monitoring the oceans, to be followed in 2014 by a carbon-dioxide monitoring satellite. China actively supports GEO GLAM and GEONETCast.

The European Commission continues to assist the owners of European data to contribute these data to GEOSS and the GEOSS Data Collection of Resources for Everyone (Data-CORE). The operational phase of the Global Monitoring for Environment and Security programme (GMES) is providing datasets and information that are being integrated into GEO BON, the Supersites and other GEO flagships. The EC contributes proactively to the development of the GCI. Recognizing that the European Union's strategy of moving to a low-carbon economy by 2020 will require public acceptance of scientists' climate scenarios, which in turn depend on evidence provided by Earth observations, the GMES space component will help to deliver climate services starting from 2013. The development of the in situ component of GEOSS is a priority for Europe, so the EC is working with the European Environment Agency on this issue and on citizen science capabilities.

Germany contributes to the GEOSS Data-CORE and considers the Data Sharing Action Plan to be one of GEO's major achievements. The German GEO Working Group (D-GEO) ensures that Earth observation providers within the country support the framework of existing licenses. Germany has also supported the response to many natural disasters, for example by activating the International Charter on Space and Major Disasters and contributing to the Supersites.

Italy believes that GEO can offer great value by coordinating space and in situ observations and improving user uptake of Earth observations. GEO can also support the sustainable use of natural resources and the transition to a green economy. Italy's main contribution to the space component of GEOSS is through the COSMO-SKYMed constellations and related programmes, which support emergency response for disasters and make civil data and products available free-of-charge to everyone. Italy also contributes to the non-space component by providing access to its own key environmental datasets and information services, in line with the INSPIRE Directive and SEIS, and through cooperation among the Institute for Environment Protection and Research (ISPRA), the National Research Council (CNR) and other key Italian institutions and universities. It will also provide the necessary level of resources to operate the EuroGEOSS Broker during the 2012-2015 period. Italy strongly supports cooperation between GMES and GEO. It also strongly values the results of the 2nd GEOSS Evaluation of the Architecture and Data Management component and believes that the identified actions for correcting the situation should be addressed promptly. Italy believes that the voluntary approach to GEOSS implementation should be maintained in the post-2015 era, while political commitment and private-sector involvement should be reinforced

Japan appreciates the broad support it received after it was struck by a major earthquake and tsunami last March. It remains committed to promoting various GEO activities, for example by providing global carbon data from the GOSAT satellite to the GEO Global Carbon Observation and Analysis System. Japanese experts are active in many GEO tasks, including those on water resources management, notably the Asian Water Cycle Initiative, and capacity building. Japan plans to organize the next GEOSS Asia Pacific Symposium next March or April.

Madagascar plans to strengthen its national meteorological infrastructure. It appreciates the support of the African Monitoring of the Environment for Sustainable Development programme (AMESD), which has provided capacity building and equipment for monitoring the Indian Ocean's fisheries, temperature, chlorophyll and so forth. Madagascar has published an important report on its biodiversity data and is establishing a biodiversity monitoring capacity. Many of the country's data are available via the Global Biodiversity Information Facility (GBIF) portal. Madagascar is seeking funds to digitalize more of its data and is seeking satellite imagery for cyclones and other disasters.

The Russian Federation has been active in GEO since the very beginning and has established an interagency commission for coordinating work on Earth observation. It is particularly interested in disasters, agriculture, and water resources. Russia launched a meteorological satellite in 2011 and will remain active in space programmes, for example through the remote sensing of the Arctic region. Another key contribution is its role in GEONETCast, which has seen a large growth in users. At the same time, Russia recognizes the value of ground observations and the need for GEO to support in situ monitoring. It regularly informs the countries of the Commonwealth of Independent States (CIS), including non-GEO members, about GEO activities, including through a Russian-language GEO website. As it looks to the future, Russia plans to enhance its participation in GEO activities.

South Africa has both contributed to and benefited from GEO. It launched its national space agency, SANSA, in 2010 and is now in the process of defining a national space programme, whose future outputs will be contributed to GEOSS. A South Africa GEO has been established at an Earth observation data centre. Current activities include cataloguing space-based Earth observations, developing an Earth observation portal, enabling broader access to South African data by Southern African Development Community (SADC) countries, and establishing an Earth observation forum and Communities of Practice. South Africa's contributions to the GEO Work Plan include sensor web enablement, remote sensing for geohazards, work on a South African risk and vulnerability atlas, engagement with the China Brazil Earth Resources Satellite (CBERS) programme, the African resource monitoring constellation, and data democracy.

Sweden recognizes the global need for R&D on disasters and improved capacities for emergency response, especially for earthquakes, which GEOSS can support. The GFOI, with the critical support of the Committee on Earth Observation Satellites (CEOS), has an important role to play. GEO can

contribute in many ways to addressing today's global problems. Sweden's new contributions to GEOSS include the advanced research satellite Odin, developed together with Canada, Finland and France and operated in collaboration with the European Space Agency; the open-source water modelling tool HYPE; and the environmental and climate research infrastructure ECDS, which is funded by the Swedish Research Council. These components will also provide data for the GEOSS Data-CORE.

Turkey is active in all of the Societal Benefit Areas. The national mapping agency focuses on geodetic field surveys, standard cartographic products, the acquisition of aerial photographs, etc. The country also continues to develop its national gravity network, magnetic network, GPS network, and geodetic control networks. It tracks earthquake risks by monitoring principal strain rates and GPS-derived displacements and flood risks by monitoring precipitation and sea-levels.

The United States is fully committed to the collective goal of establishing a system of systems and implementing the GEOSS Data Sharing Principles. The GEOSS Data-CORE and advances in GEOSS architecture are moving GEO forward. In October the US launched a new polar orbiting satellite to monitor climate, forest fires, land-cover change, biological productivity, and the ozone layer; all of the resulting data will be fully open to the public. The US has so far contributed more than 8,000 unique entries to the Data-CORE. Since launching the SilvaCarbon program last year for monitoring forest carbon, the US has launched a partnership with developing countries, businesses, non-governmental organizations and governments to expand the training that SilvaCarbon provides. The US actively supports the development of the Sustained Arctic Observing Network (SAON) and the expansion of the SERVIR and GEONETCast networks. It should be noted that the Board of the International Charter on Space and Major Disasters recently accepted an offer by GEONETCAST providers to use this system to distribute Charter data.

The Committee on Earth Observations (CEOS) is providing space data to GEOSS and ensuring the sustained coordination of its members' satellite missions. In 2011, CEOS supported the GEO Work Plan by leading many Tasks and contributing to others. It plans to contribute to many priority initiatives in the new Work Plan, including those on agriculture and disasters management. Key contributions involve agricultural research, data sharing, forests, and capacity building and data democracy. CEOS focuses on data availability, the common infrastructure, the availability of multiple datasets, and a data-quality assurance strategy for GEO. It will ensure long-term data and processing support for national forest information systems. CEOS will also support climate observations and research for the Essential Climate Variables (ECVs), and it will work with GEO, the Global Climate Observing System, the World Meteorological Organization and the Coordination Group for Meteorological Satellites to develop an Architecture for Climate Monitoring from Space.

EUMETSAT has provided all of its essential data to the GEOSS Data-CORE. Its main contribution to the 10-Year Implementation Plan is GEONETCast, which is based on continued cooperation between EUMETSAT, China and the United States. GEONETCast is a powerful end-to-end service that continues to expand its user base; the results can be reviewed at the Exhibition booth. One hundred and eleven GEONETCast ground stations have been installed and upgraded in Africa, and there are now at least two stations in every sub-Saharan country. EUMETSAT will contribute to GEOSS through the new Work Plan.

The Food and Agriculture Organization (FAO) recognizes that meeting the challenge of providing food security for an increasing global population requires addressing many factors. Increasing agricultural production and income will demand greater resilience to climate. At the same time, emissions from the rural landscape need to be reduced. Monitoring is an important instrument for tackling these challenges, and building scientific knowledge is also essential. Most elements of the GEO Work Plan are important for FAO's work, as demonstrated by a series of workshops and activities that FAO has organized with GEO. Key FAO initiatives include a remote-sensing survey implemented together with the EC's Joint Research Center (JRC) and to be presented at the Durban climate conference; global agricultural zoning, for which a new portal will soon be available; and an

upcoming report on the state of the world's land and water resources for managing food systems at risk. FAO recognizes the value of working together with global organizations and initiatives such as GEO in order to respond to the needs of its member states and of society as a whole.

The International Union of Geological Sciences (IUGS) is involved in GEO through the Geological Application of Remote Sensing program (GARS), which it co-sponsors with the UN Educational, Scientific and Cultural Organization (UNESCO). IUGS looks forward to playing a role in capacity building, and it welcomes the appearance of the geo-resources theme in the new Work Plan, to which it also plans to contribute.

The International Association of Geodesy (IAG) serves as the interface between geodetic services and external users such as GEO, the International Council for Science (ICSU) and the United Nations. IAG promotes geodetic interoperability within GEOSS, and in 2011 its Global Geodetic Observing System (GGOS) became an associate member of CEOS. Over the next four years IAG will increasingly work on the issue of geohazards.

The Global Biodiversity Information Facility (GBIF) has 57 member countries and helps to build capacity for developing national BIFs. It provides the informatics infrastructure that countries can use to collect and compile data across all government institutions. Standardization to enable sharing of data between countries is as essential for GBIF as it is for GEO, the GEO Biodiversity Observation Network (GEO BON) and the upcoming Intergovernmental Platform on Biodiversity and Ecosystem Services (IPBES). GBIF's work on invasive alien species was recently recognized by the Convention on Biological Diversity. GBIF values its involvement in GEO and will contribute to the common informatics structure of GEOSS.

The Global Terrestrial Observing System (GTOS) is committed to supporting the coordination and management of terrestrial observations. It contributes to the GEO Work Plan and welcomes the simplified structure of the new Plan. GTOS will provide continuous support to the Tasks on forest observation, climate information, global carbon, biodiversity, and other issues. It looks forward to the launch of GEO GLAM, and it welcomes and supports the European Commission/FP7-funded GEOCARBON project. The integration of space and terrestrial data remains an important issue, as do translating data into products for decision-making and improving terrestrial observations of the land, especially in poorly represented regions.

2.2 GEO 2009-2011 Work Plan Progress (Document 5 - for acceptance)

Ms Alexia Massacand of the Secretariat presented the document. She emphasized that the report is completely based on the contributions of Members and Participating Organizations, and she highlighted three main trends: many new products and services are now available, data sharing and the capacity for accessing and using data continue to grow, and there is increased support for user engagement. The GCI has now registered about 500 components and provides access to about 100,000 resource descriptions, while the GEOSS Data CORE has grown to contain over 120 datasets with thousands of resources. Other noteworthy progress involves the Supersites and National Laboratories initiative, GEONETCast, an improved global topographical map, new Global Early Warning System for Wildland Fire, the Global Oceans Observing System (GOOS), multi-model products for extreme weather prediction, forest carbon tracking, new tools for land-cover maps, improved ecosystem classification and mapping, GEO BON, CBERS, the Joint Experiment for Crop Assessment and Monitoring (JECAM), and GEO GLAM.

CEOS stated that its members had contributed to 41 Tasks in the current Work Plan, 16 of which they led or co-led. They have been supporting six virtual constellations and have just launched a seventh for monitoring sea surface temperatures. They are also supporting the Essential Climate Variables (ECVs).

China stressed the importance of the recent work on the Societal Benefit Areas and the investments in the GEOSS Common Infrastructure. China has contributed a number of important datasets to the Task

on global datasets, including through its programme on land-cover data and terrestrial parameters and the China Crop Watch System. It has also provided many training courses. China requested that these comments be reflected in the report.

Germany recognized that the report reflected the large amount of work that has been accomplished over the past year. It believed, however, that the assessment of progress remained too optimistic. It was to be hoped that the new management structure and Work Plan will facilitate the production of more clear and transparent progress reports that will help to identify issues and opportunities for accelerating progress.

The United Kingdom welcomed the impressive progress that many Tasks have made. It requested that future reports follow more closely the recommendations of the mid-term evaluation and include an update on the status of the deliverables and the targets. They should also identify any issues preventing progress and identify the specific contribution that GEO makes to each Task in order to highlight the added value of GEO.

Italy said that the purpose of the report was to demonstrate how well GEO is doing, and that discussing weaknesses in implementation was also important.

Asked by the Chair to respond to the issue of highlighting weaknesses and problems more prominently, the Secretariat Director said that, given the nature of the reporting from Task teams, this would be difficult to achieve in a coordinated manner. The new Implementation Boards could perhaps provide a better framework for addressing this in a more systematic manner.

The Chair noted the value of indicating in future reports the particular contributions made by GEO to the various Tasks. The document was accepted with the changes proposed by China.

2.3 Evaluation of GEOSS Implementation

2.3.1 2nd Evaluation (Document 6(Rev1) - for acceptance

Mr Craig Larlee, Co-Chair of the Monitoring and Evaluation (M&E) Working Group, presented the report in the absence of the M&E Team Co-Chair. He explained that the Working Group oversees the process, but the Teams are responsible for the actual evaluations. The Architecture and Data Management (ADM) Evaluation Team delivered its final report to the Executive Committee in June 2011. The evaluation was based on a review of documents and literature, on-line surveys, interviews, and a test case. It concluded that there was no clear evidence that the ADM Strategic Targets will be met by 2015 (although this does not mean that they will not be). It pointed to various weaknesses in the functionality, content and usability of the GCI; the difficulties of finding information through the portal; and other limitations. It also provided a number of recommendations for making improvements.

The Co-Chair from the United States presented the Executive Committee's management response to the report. The Committee welcomed the evaluation's findings and thanked all of the parties that have been working to implement the GEOSS architecture, and particularly the GCI providers. The recommendations should be addressed by GEO at the highest level. The Sprint to Plenary has already addressed many of the issues raised.

Germany welcomed the report and said that it provided important recommendations. Germany will contribute to future evaluations.

Canada said that it hoped the new Implementation Boards will consider the team's recommendations as they plan their work. The Boards should interact with the M&E Working Group in order to strengthen the ongoing reporting and monitoring of Tasks and outcomes. Canada encourages all Members and Participating Organizations to join the M&E Working Group and the Evaluation Teams, including by responding to requests for information and surveys, in order to ensure that a wide range of views is reflected.

The United States appreciated the excellent work of the team, recognized that challenges remain for the GCI, and looked forward to the outcomes of the Sprint to Plenary, which was designed to address the team's concerns. Delegates should recognize that all Members and Participating Organizations are responsible for contributing the GCI with content and datasets and for facilitating data discovery by allowing access to their system interfaces.

The United Kingdom thanked the Monitoring & Evaluation Working Group for its excellent report and expressed concerns about the findings. It supported the recommendations of the Working Group, particularly the need for clearly defined goals aligned to the relevant strategic targets, as this will help GEO to monitor the progress of the GCI.

2.3.2 Monitoring and Evaluation Working Group Progress Report (Document 7 - for information)

Mr Larlee presented the report. He described the M&E Working Group's roles as overseeing the process of periodic evaluations and supporting the regular monitoring and reporting of progress, including through the development of quantitative indicators. The third annual evaluation, which has just been launched, will address agriculture, biodiversity and ecosystems. The Working Group proposes that the fourth focus on disasters, energy and health, and the fifth on weather, climate and water. These SBA reviews should also address user engagement and capacity building within each SBA. If required, the overall evaluation of GEOSS could be moved up from 2014; he asked for the Plenary's guidance. The details of how the Working Group will interact with the new Implementation Boards still need to be worked out. It remains vital for the GEO community to provide experts for the Working Group and the Evaluation Teams.

Japan appreciated the reports of the Working Group and the 2nd Evaluation Team and hoped that the work on new performance indicators will continue. Japan will contribute to this important activity and has nominated an expert.

Noting the Working Group's plan to evaluate the climate SBA, the Global Climate Observing System (GCOS) said that GCOS plans to make its own evaluation in 2014-15 and to report the results to the UN Framework Convention on Climate Change (UNFCCC). It may be useful to coordinate the two processes.

ESA said that space agencies are considering a review of space activities related to disasters, to be undertaken over the next year or two; this could provide a useful input to the 4th Evaluation Team.

Mr Larlee responded that the Working Group was indeed interested in trying to connect with other relevant evaluations that may be planned or under way. This is already achieved in part through the practice of examining available documentation. He offered to consult with GCOS and CEOS on their plans.

The Secretariat Director said that there are two issues, gap analyses and evaluations. It is not surprising that CEOS and GCOS are conducting evaluations, although it is important to note that GEO's specific interest is in identifying, as Germany has recommended, the added value of GEO in each domain. GEO therefore does need to conduct its own evaluations.

The Chair agreed, but said the risk is that the same people are approached too many times for the same information. He suggested that the Working Group Co-Chair engage now informally with CEOS and GCOS and report back to the Plenary on the following day. He concluded that the Plenary accepted the recommendations of the 2nd Evaluation Report, that the issues raises by various interventions should be noted, and that Members and Participating Organizations should explore nominating experts for the evaluations. Germany confirmed that it would nominate an expert for the Working Group, and Mr Larlee invited participants to provide him further nominations after the session.

Later, at the end of the Plenary meeting, the Chair invited Mr Larlee to report on his informal discussions with GCOS and CEOS. Mr Larlee said it had been agreed that the GEO evaluation of the

climate SBA should proceed on the original schedule and that the evaluation team would interact with GCOS and other interested parties to minimize any overlap and any burden on potential respondents.

2.4 GEOSS Common Infrastructure

Mr Ivan Deloatch, Co-Chair of the Architecture and Data Committee (ADC), presented the item. He described the Sprint to Plenary as an intensive activity designed to accelerate improvements to the GCI. Responding to the ADC's own evaluation as well to feedback from others, the Sprint has shown a number of successful results in time for the Plenary, as demonstrated in the video shown to the participants illustrating the use of the GCI by both Earth-observation and non-Earth-observation experts for disaster management. Key actions have included adopting new technologies for search and discovery, proactively approaching data holders, executing technical enhancements to improve functionality and outcomes, simplifying the registration process for data providers, and proactively identifying potential Data-CORE resources. New functions will become operational over the next few months. Work will continue on improving the user experience, improving functionality, and ensuring easier access to global resources. Members and Participating Organizations should contribute to the effort by improving access to their own data resources.

ESA reaffirmed that it will remain committed to supporting the GEOSS portal. The issue of liability for damages caused by the misuse of data made available through the GCI is one that does need to be addressed.

The United States commended the work of the Sprint to Plenary team. The new demos of the GCI enhancements, including those that can be viewed in the Exhibition, illustrate the recent advancements in searching and accessing Earth observation data and information. The US will continue to participate in the future development of the GCI in the lead up to 2015.

CEOS said that its member agencies have contributed to the Sprint to Plenary and have worked throughout the past year to integrate their information systems and tools into the GCI. Access to millions of Earth observation satellite products has been greatly enhanced thanks to the new link between the GCI and the CEOS International Directory Network and its database of more than 50,000 registered Earth observation resources. The support of space agencies to the implementation of the GCI will be a top priority for CEOS in 2012.

The European Commission said that the Executive Committee's managerial response to the 2nd Evaluation Report had provided useful guidance for the technical solutions being implemented to overcome problems in developing the GCI. The progress made gives confidence that the system of systems concept can work. The EC was pleased that certain technology products from EC-supported projects have been useful.

Italy said that everyone had carefully read the 2nd Evaluation Report and new ways needed to be explored for tackling the challenges. The implementation of the EuroGEOSS broker should be considered and tested.

Mr DeLoatch said that a number of options were being explored and that the EuroGEOSS data broker and GENESI did appear to be good technologies.

The Chair said the Executive Committee had agreed that it has a role in continuing to monitor the development of the GCI. It has noted an increase in willingness of Members and Participating Organizations to contribute to the GCI. The work of the Data Sharing Task Force has also been valuable.

2.5 Report of the Data Sharing Task Force and Status of Data-CORE (Document 8(Rev1) - for acceptance)

Mr Alan Edwards, Co-Chair of the Data Sharing Task Force (DSTF), presented the document. He described the development of the Data Sharing Action Plan and the adoption of the 2010 Beijing

Declaration calling on countries to maximize the number of datasets available on a full and open basis in the GEOSS Data-CORE. Over the past year, the Task Force has promoted contributions to the Data-CORE, identified existing licensing options consistent with CORE requirements, and addressed other issues such as user registration and legal liability. It continues to work on making Data-CORE assets more visible through the GCI. The DSTF believes that the adoption of a sensible legal regime will encourage even more people to contribute because they will see that their rights are being respected. The Data-CORE's terms and conditions can best be met through the use of statutory public domain, a private law waiver of rights, or a common use license. The Task Force recommends that the new Work Plan include an overarching Task focusing on advocacy for the Data Sharing Principles; given the fundamental importance of data sharing, this Task should report to the Plenary and its members should be nominated by Principals.

The International Council for Science (ICSU) fully supported the report, and said that ICSU's Committee on Data for Science and Technology (CODATA) will continue to contribute to GEO's work on data sharing. ICSU will also contribute to the Data-CORE via its new World Data System, and it looks forward to working with the GEO Secretariat and the GEO community on these issues.

Germany supported the Task Force report and the Data-CORE and said that these activities are going in the right direction. It called for the consideration of a new category of scientific and education data, which would allow many contributions to be listed outside the category of "other."

The United States recognized the progress being made in establishing the Data-CORE and encouraged Members to contribute to it. It applauded the work of the Task Force and supported the establishment of a Working Group. The US will be pleased to provide a co-chair for this Group.

The United Kingdom welcomed the progress made by the DSTF, particularly on legal interoperability and liability. The Data-CORE, building on the pledges made by many Members and Participating Organizations, will be a major achievement for GEO. The UK supported the recommendations set out in the two white papers, including the establishment of a Working Group on data sharing.

The Committee on Space Research (COSPAR) commended the outstanding accomplishments of the Task Force, which had been achieved through an open and transparent process. Given the importance of the Data Sharing Principles, COSPAR endorsed the document and proposed that the new Working Group devote full energy to achieving high-quality datasets that are referenced to international standards.

ESA said that GEO should obtain legal advice to ensure that there is a legally watertight solution for any potential liability issues.

France recognized the important work of the Task Force and the progress made in understanding the concept of the Data Sharing Principles. It is now urgent to promote the registration of more datasets and also to continuously review these data.

The Netherlands appreciated the efforts of the Task Force and noted the progress made on the Data-CORE and on registration. The success of GEOSS requires that users are engaged, so the quality of datasets must be adequate. The Netherlands proposed that the new Working Group explore a self-evaluation process for registration, and it fully supported the concept of full and open access to data.

Mr Edwards thanked the Plenary for its recognition of the work of the Data Sharing Task Force. He stated that all of the comments and issues raised, such as data quality, the need for new categories, and so forth, would be taken on board and considered by the Working Group. He also acknowledged that it is indeed important for GEO to now obtain proper legal advice.

The Chair concluded that the Plenary accepted the recommendation for a Working Group on data sharing.

2.6 Geohazards Supersites and Natural Laboratories (Document 9 - for information)

Mr Falk Amelung, a Task co-lead, presented the document. He described the purpose of the Supersites and Natural Laboratories as being basic science for earthquake and volcano studies. The initiative seeks to empower the global scientific community by promoting collaboration, coordination and data sharing between space and in situ data providers. He highlighted the Istanbul and Tohoku-oki Supersites and the preliminary actions being led by EPOS, ESA and the US Geological Survey to develop a global network of regional Natural Laboratories that will connect data providers. He urged governments to encourage their national monitoring agencies to contribute GNSS and other in situ data to the network.

2.7 GEO BON (Document 10 - for information)

Ms Anne Larigauderie, a Task co-lead, presented on behalf of the GEO Biodiversity Observation Network (GEO BON) Steering Committee. She said that the international target of reducing the rate of biodiversity loss by 2010 had not been achieved, and that one reason for this was the lack of an integrated system for providing data to decision makers. GEO BON seeks to build this system and to provide tools for data integration and analysis. Over the past year, GEO BON has engaged with the Convention on Biological Diversity (CBD), including by delivering a report on the adequacy of biodiversity observation systems, and the new Intergovernmental Platform on Biodiversity and Ecosystem Services (IPBES), which has recognized GEO BON as a delivery system for observations. GEO BON is also considering the development of Essential Biodiversity Variables by building on the approach taken by GCOS for ECVs.

Mr Robert Hoft of the CBD Secretariat, speaking on behalf of the CBD Executive Secretary, confirmed that implementing the Convention's strategic plan will require better data, and that the Convention has recognized that GEO can make a significant contribution in this field. The Conference of the Parties to the Convention has noted the establishment of GEO BON and welcomed its adequacy report. He invited GEO BON to continue its work on Essential Biodiversity Variables.

COSPAR acknowledged the great work of GEO BON.

FAO welcomed GEO BON and announced that is now preparing its first-ever report on the status of biodiversity for food and agriculture. The FAO is also contributing to the work of the CBD on indicators.

2.8 African Water Cycle Initiative (Document 11 - for information)

Mr Toshio Koike, a Task co-lead, presented the document. He said that only 26 of 52 African countries are on track to meet the Millennium Development Goal on access to water. Water-related diseases in Africa kill many children who are under five years old. Other challenges are floods, droughts and climate impacts on the water cycle. Given the vast potential, the exploitation of hydropower is too limited. The African Water Cycle Initiative held its first symposium in 2009 and its second in February 2011. Participants identified strategies for the Initiative's design and considered its potential contribution to the Rio+20 Conference. Most river basins are transboundary, and around 41 transboundary aquifers have been identified on the continent so far. The GRACE satellite mission is tracking changes in terrestrial water storage. A GEO-UNESCO workshop will be held in January 2012, and 12 river basins from all over Africa will be represented. This will be followed by a third symposium in February to discuss an implementation plan.

2.9 The Black Sea Environment Project (Document 12 - for information)

Mr Anthony Lehmann, a Task co-lead, presented the document. The EC-funded Black Sea Environment Project was established in 2009. It has 30 partners in 15 countries and is led by the University of Geneva and UNEP/GRID. The project's contributions to GEOSS (and INSPIRE) include providing the vast amount of data that the project has used for modelling water resources. The

project also gathers information on demographics and land cover to build scenarios of the region's future. The gathered data are shared through web services to feed decision-support and capacity building efforts. Other activities involve preparing policy briefs, organizing workshops and communicating about the project to public and decision makers.

2.10 Global Drought Monitor (Document 13 - for information)

As the presenter was not able to travel to the conference, the document was not presented orally.

2.11 GEO Global Agricultural Monitoring (GEO GLAM) (Document 14 - for information)

Mr Pascal Kosuth, a Task co-lead, presented the document on behalf of the Agricultural Monitoring Community of Practice. He recalled that food price volatility has been a Group of 20 priority during the course of 2011. The G20 is concerned that price stability is essential for encouraging large investments in agriculture over the next 20 years. Two related new initiatives are GEO GLAM and the FAO's Agricultural Market Information System (AMIS), which are both cited in the recent final declaration of the G20 Heads of State. GEO GLAM will help to build national capacities for agricultural monitoring; strengthen, harmonize and connect global and regional agricultural systems; and develop an operational global Earth observation system of systems for agricultural monitoring. Long-term commitments and open-data policies will be vital to its success. GEO can remain a key driver of this initiative.

Japan said that JECAM is producing data on precipitation, water levels and other relevant information, and that it plans to nominate a co-lead for the GEO GLAM task.

Canada said that seasonal climate factors are key for agricultural production and asked why the project does not seem address climate signals, given the link between food production variability and climate variability.

The FAO welcomed the G20 declaration on GEO GLAM. The GEO role of coordinating satellite monitoring systems in different regions in order to enhance existing projections and forecasting systems is vital. FAO encouraged GEO GLAM to collaborate with work by the FAO and the World Bank on global agricultural statistics and to avoid overlaps. It welcomed the partnership with GEO GLAM and recognized the need to develop a data dissemination framework that would include assuring data quality.

China supported the initiative and appreciated the hard work that has gone into launching it. More transparent food-production information is needed, and GEO GLAM will improve the current situation. China will provide its expertise as well as data from systems such as CBERS. It is important to determine how to link GEO GLAM and AMIS, as AMIS should be a key user of GEO GLAM. GEO GLAM will need funding, especially from the G20 countries. China will hold an international workshop on food and water resources next year.

The Netherlands welcomed the initiative. It is already involved in several supporting activities in Europe and plans to be active in GEO GLAM. Remote sensing will play an important role.

CEOS said that its member agencies recognize the importance of the initiative. They cooperate with and support the JECAM project and work closely with the project office to understand data needs in designated cropping regions. They plan to expand their supply of data in 2012 and are reviewing GEO GLAM's proposed information requirements. CEOS looks forward to further dialogue on this initiative.

Australia welcomed the initiative. A number of its institutions are increasing their support for GEO's work on agriculture and particularly on GEO GLAM. Its crop forecasting programme is becoming increasingly involved in GEO and has agreed to lead the development of a subtask on rangeland monitoring.

Russia welcomed this important initiative, recalling that its European regions had suffered greatly from drought the previous summer. GEO GLAM can bring together existing national and regional systems and link remotely sensed and in situ data. Climate change impacts are occurring on the seasonal time scale. It will be important to engage WMO in the international exchange of in situ meteorological and hydrological data. Russia is interested in knowing how the interaction with WMO will be organized.

The United States recognized the significant progress that the GEO agriculture task has made in harmonizing famine early warning and coordinating satellite and in situ observations. It agreed that the GEO GLAM plan could be strengthened through better interaction with WMO and with climate issues. Based on current progress, the US believes the task will improve monitoring and forecasting of agricultural production at national, regional, and global scales.

Italy strongly welcomed the initiative, which demonstrates the value of Earth observation in a very important area. The initiative also combines the bottom-up push from a Community of Practice with the top-down blessing of the G20. Italy stressed the importance of engaging countries in such initiatives through the more formal channel of the Principals; this will improve coordination within countries and lead to more engagement. GEO GLAM should also make a link with the related European initiatives, such as GMES Global Land Monitoring.

Mr Kosuth confirmed that the Task would make contact with the national delegations.

The Chair concluded that the Plenary had offered broad support for the initiative and said that all of the comments would be taken on board.

2.12 GEO Global Forest Observations Initiative-Implementation Plan (GFOI) (Document 15 - for acceptance)

Mr Gary Richards, Chair of the GFOI Task Force, presented the document. He recalled that the GFOI initiative has its roots in the Forest Carbon Tracking task, which focuses on scientific and demonstration activities. According to the concept plan accepted at GEO-VII, GFOI will support long-term observation needs and engage with key users, notably FAO and the IPCC. GFOI is underpinned by an observations strategy developed by CEOS. The GFOI Implementation Plan calls for a phased approach with a start-up phase in 2012, the commencement of operations in 2013 and then full operations from 2014. The GFOI Task Force recommends that the GEO Plenary ask it to continue working through 2012, accept the GFOI Implementation Plan, agree that GFOI can accept contributions, support the holding of the proposed GFOI Linkages Forum, and request the Task Force to develop proposals for long-term hosting, governance and budgets for presentation to GEO-IX.

Australia welcomed the work of the Task Force and accepted it without reservation. GFOI will be an important demonstration of the large-scale application of Earth observation and the benefits of coordinated data acquisition and processing. While the science can already support GFOI there will be benefits to further strengthening it. Australia will also continue to support the FCT Task. The GFOI start-up phase should be managed via the GEO Secretariat with dedicated funds, and later phases should be managed through another appropriate agency. Determining the timing of the Linkages Forum should be a priority. In addition to its regular contribution, Australia will provide up to A$1 million, of which A$50,000 per year will go as overhead to the GEO Trust Fund for the Secretariat.

Germany strongly supported the GFOI Implementation Plan. It still has concerns about the relationship between GFOI and GEO and recommends that the GFOI Task Force take advice from the Executive Committee.

CEOS has contributed more than 140,000 images to the FCT Task, which is based on the ambitious idea of a systematic, sustained and worldwide gathering of satellite images. Extending the FCT to the GFOI will require larger contributions from space agencies, and they are committed to responding. CEOS is working closely with the GFOI team on the Implementation Plan. Other initiatives that may

be launched through GEO should examine the planning effort that went into the FCT, as this could provide a good model.

ESA said it has led the CEOS activities on data acquisition and remains committed to this role. It urged delegates to read the annexes to the report, endorsed the comments of Australia, and applauded GFOI's work on engaging not just FAO and IPCC but also the World Bank and the Climate Change Convention (UNFCCC).

FAO welcomed the progress made by GFOI and recognized the considerable benefits that will accrue from improved coordination. It remains committed to the program and offered to host the GFOI planning team as GFOI moves towards the operational phase.

Norway said it has been an active co-lead from the start and sees the GFOI as a key Task. FCT has played a critical part in helping to plan GFOI and make it operational in the future. FCT and GFOI should work in parallel. Norway will continue to support the Secretariat's work on FCT through the Trust Fund and hopes that in 2012 it will be able to provide some support for GFOI as well.

The Netherlands recognized the many societal benefits that the GFOI can provide and will be pleased to actively support GFOI implementation.

The United Kingdom thanked the GFOI Task Force for its efforts and strongly supported the GFOI, particularly as it has strong links to relevant stakeholders such as the IPCC, UNFCCC and FAO. The programme is ambitious and its success will depend on continued support from GEO Members and Participating Organizations in order to address technical issues, such as consistent and reliable data availability and the IPCC technical guidelines; the support of Australia and Norway for the GFOI Secretariat is therefore especially welcome. The UK also supports the proposal from Germany that the GFOI should work with the Executive Committee to define its relationship to GEO.

Estonia said it would be pleased to participate more actively in GFOI. It has special remote-sensing test sites for forestry and may be able to find some additional funding. The organizational structure of the work may not be ideal: if all Tasks want their own staff person within the Secretariat, this could be dangerous for GEO's overall work.

Italy completely endorsed GFOI, which demonstrates that when GEO starts to get serious about something it can produce serious results. It welcomed Australia's decision to channel some of its contribution as an overhead charge to the benefit of the Secretariat. This approach could be encouraged more broadly by formulating some flexible rules regarding targeted contributions.

As an FCT Demonstrator country, Colombia welcomed the progress of GFOI. It recommended increasing the financial resources by 2014 to ensure that all of the activities of the operational phase are implemented. Colombia supported the development of a proposal for long-term hosting, governance, and funding as well as the development of a long-term data acquisitions strategy.

The United States said that the GFOI concept creates unique opportunities and should be further developed. It thanked Australia and Norway and noted that US support comes via its investments in the SilvaCarbon initiative. The US accepts the Implementation Plan in concept but requested that the key activities be further developed, together with a staffing plan, for approval by the Executive Committee before they start. The Linkages Forum should not be held before 2013, and it should focus on the lessons learned from the FCT Task and from SilvaCarbon. The US will support efforts to ensure that projects such as GFOI do not undermine support for GEO as a whole.

China supported the launch of GFOI.

Canada acknowledged the effort that went into producing the GFOI Implementation Plan. It recommended exploring synergies with other SBAs, such as agriculture. Canada will support GFOI through the GOFC GOLD initiative, and the Canadian Space Agency will provide support via CEOS. Canada welcomed the financial support from Australia and Norway and the idea of providing a percentage of the targeted contributions as overhead to the Secretariat.

The Secretariat Director thanked France for taking the lead on GEO GLAM and Norway and Australia for leading on FCT and GFOI. These two examples show how GEOSS could be built in the future, and they demonstrate that when one or two countries take the lead on a project and invest over the years, the result can be substantial. Such initiatives will have implications for the way the Secretariat operates. Providing an overhead contribution together with targeted contributions could be a good model for the future of GEO.

The Chair said that the Executive Committee would work with the Task Force on the comments made, including the US comment on the Linkages Forum, as well as on the issue of how to ensure that such initiatives do not channel funding away from the general work of the Secretariat.

3 REPORTS FROM GEO COMMITTEES AND WORKING GROUP (DOCUMENTS 16, 17, 18, 19 - FOR INFORMATION)

Mr Peter Zeil made a presentation on behalf of his fellow co-chairs of the Capacity Building Committee (CBC). He described the Committee's leadership and membership and said that the CBC continues to enhance the coordination of efforts to strengthen individual, institutional and infrastructure capacities in all countries. The Committee's achievements include the GEO Call for Proposals, which attracted 72 full proposals in four SBAs; the GEONETCab success stories, promotional materials and marketing toolkit; various courses and training materials, which have increasingly been made available via the internet, GEONETCast and "summer schools"; a global network of operational oceanography capacity-building centers; the development of forecasting systems for various regions; the bioenergy atlas for Africa; and the GEOSS outreach workshops.

Mr Joern Hoffmann, Co-Chair of the Science and Technology Committee (STC), presented the Committee's report. The STC focuses on engaging the science and technology communities for the benefit of both of these communities. It oversees the implementation of the STC roadmap, which will be addressed under Task ID-03 in the new Work Plan. The STC carried out a scientific review of the GEO Work Plan, developed the GEO label, worked on catalyzing R&D funding, developed a gap analysis strategy, and developed the GEOSS citation standard. The Committee recommends that the scientific reviews continue under the next Work Plan. The GEO label can help users to assess the quality and reliability of GEO components and services and presents an incentive for providers to register; a technical proposal for the label will be ready in a year. The "GEOSS at work" case studies explore how GEOSS benefits the science and technology communities. The Committee recommends that GEO take a strong position on data citation, that it assigns future oversight for implementing the STC roadmap to a relevant body, reviews the new Work Plan for scientific soundness, maintains the process for identifying the scientific and technological barriers faced by Tasks, assigns responsibility for gap analysis, and accepts the Committee's proposed position statement calling for the full recognition of data sources.

Ms Lerato Senoko, a member of the User Interface Committee (UIC), presented the Committee's report. User engagement starts with face-to-face engagement of a spectrum of relevant users, and it ends with feedback from users on whether this has helped their work or provided societal benefits. In 2011, the UIC invited presentations by users at its meetings, collaborated with the Communities of Practice, and organized SBA-focused workshops. It has held five user engagement sessions to date and identified important issues, such as the fact that users want products and not just information, that licensing of GEOSS products could discourage users, that there may be large user groups that GEO is overlooking, multiple registrations are a problem for GEOSS users, and delays in outreach activities are detrimental. There is demand for a guide on how to engage with different types of users. The UIC led a Task that produced reports on specific characteristics of priority Earth observations and produced SBA and cross-SBA reports. It continues to refine a prototype GEO User Requirements Registry with the aim of integrating it into the GCI in 2012. It also continues to encourage the establishment of Communities of Practice. The Committee recommends that the Plenary note that the engagement of users should remain a priority in the new Work Plan, that the terms of reference for the new

Implementation Boards be adjusted to reflect this, and that the Communities of Practice should be continued to ensure a user-driven GEOSS.

Mr Ryosuke Shibasaki, Co-Chair of the Architecture and Data Committee (ADC), presented the Committee's report. He recalled that the strategic targets for architecture and data call for achieving the sustained operational continuity and interoperability of existing and new systems. The GCI should serve as a central hub for the discovery and sharing of data and systems. Today more than 28 million data products are discoverable via the GCI. This rapid growth is due to the numerous Earth observation product catalogues registered in the CEOS International Directory Network (IDN) now harvested by the GCI and to the introduction through the Sprint to Plenary of the EuroGEOSS brokerage software. This software allows the GCI to talk to external catalogues containing an enormous number of resources. The user sends a request to the GCI which is then transmitted through the broker to these catalogues. Because different catalogues use different keywords (e.g. rainfall vs. precipitation), a controlled vocabulary – the GEOSS Earth observation vocabulary – has been established by combining existing and well-established dictionaries and glossaries. The Committee found the UIC report on Critical Earth Observation Priorities to be very useful for determining whether the discoverable datasets really meet user needs. Of the top 25 most important parameters, 23 are covered by the GCI, as are 111 of the 146 critical Earth observation parameters. Next steps are to advance the GCI's capability from simple discovery to enabling access and exploitation and to create and implement a communication plan. The easy access to data achievable by using state-of-the-art tools such as GENESI (an FP7 project) demonstrated the growing potential of the GCI to provide benefits to the end-user community.

The Chair thanked the presenters and concluded that the Plenary accepted the Committees' recommendations.

4 2012-2015 WORK PLAN

4.1 GEO 2012-2015 Work Plan (Document 20 – for acceptance)

4.2 Decision on Work Plan Management Structure (Document 21 - for acceptance)

Ms Massacand of the Secretariat presented the documents. She explained that the new Work Plan followed the guidelines set out at the 2010 Plenary and Summit meetings, incorporated the comments and proposals submitted by the GEO community until August 2011, and drew on the 2011 Work Plan Symposium. The number of Tasks has been streamlined from 42 to 26, and they have been organized into the three parts of Infrastructure, Institutions and Development, and Information for Societal Benefits. As for the Work Plan management structure, the three parts will each be supported by an Implementation Board, while each Task will be implemented by a Task team consisting of all the co-leads and contributors supported by a Task coordinator. Task teams will have direct responsibility for the best-efforts management, execution and coordination of the underlying Task components. The current Data Sharing Task Force will evolve into the new Data Sharing Working Group. Coordination across Tasks will be supported by the Boards and the Secretariat, and coordination within Tasks will be supported by the Task teams, Communities of Practice and Secretariat. The existing Committees will be disbanded and their roles transferred to the Task teams and the Implementation Boards.

China offered its congratulations for the two documents and in principle supported the new structure. It expressed interest in joining a number of Tasks, including in the agriculture, climate and disaster SBAs, and provided details of the contributions it can make.

The European Environment Agency welcomed the documents. It would like to see more emphasis on incorporating capacity building into the SBA Tasks and on engaging the users and providers of in situ data more fully in the GEO process.

COSPAR, which has a commission dedicated to the scientific study of the Earth and the interactions between the land, the oceans, the atmosphere, and so forth, recognized the importance of GEO and the GEOSS Data Sharing Principles. It would like to join the Implementation Board for Infrastructure.

Australia acknowledged the extraordinary value that GEO has obtained from the Committees, which have served as a forum for exchanging and incubating ideas; this value should not be lost. It recommended holding the first meeting of the Implementation Boards face-to-face rather than virtually to ensure an effective transition and to maintain momentum. Holding the next Work Plan Symposium in conjunction with the Plenary could also be useful.

The United Kingdom supported the new Work Plan's stronger focus on the Tasks and welcomed the introduction of mineral projects in the Energy SBA. Many of the Task descriptions have improved and could be even further improved by requiring Tasks to set out clear and realistic milestones through 2015. The Task descriptions should explicitly state how activities contribute to the delivery of the Strategic Targets. Concerning the new management structure, it is important to ensure that the individual components of each Task are properly implemented; given that many of them are independent programmes in their own right this can be a challenge. The three Boards charged with monitoring progress consist only of Task members; however, greater independence would be assured if they also included one or two members not directly engaged in the Tasks. There is also a concern that with only one expert per Societal Benefit Task and Community of Practice, the Boards may not have the necessary expertise to oversee every SBA. Each Task should produce an implementation plan against which progress can be monitored. The Secretariat must ensure a smooth transition to the new structure to avoid the risk that people disengage.

EuroGeoSurveys supported the Work Plan and the proposed management structure in principle. It had some concerns about the management but recognized the valuable attempt to improve the governance of GEO and its capacity to deliver. It is not fully clear how the Boards will be launched and how all of the current weaknesses are going to be addressed in the new system.

Germany said that the success of the new management structure will depend on how the transition is managed, particularly for the ADC activities and the development of the GCI. The Secretariat needs to support the process very systematically.

Brazil said that it had played an important role in the development of the new Work Plan and endorsed it. It will support a wide range of Tasks, including the coordination of space-based systems, the GCI, the Data Sharing Principles, data democracy, and the GFOI. Brazil would like to be a member of two of the Implementation Boards.

Italy said the documents reveal many positive and significant changes that respond to expectations. The management structure seems simpler and efficient, although how it will work in practice will need to be seen. The new Work Plan offers an opportunity for institutions in countries to make a stronger commitment to GEO. GEO needs to further engage developing countries. The new structure can be used as tool to overcome these problems.

The European Space Agency said that the new Work Plan is improved and is clearly structured. ESA is committed to making a full contribution, in particular to the GEO Portal. The Boards represent a useful simplification and provide a more direct link to the Tasks. It is important that the Boards not be too large and that they be comprised of active Task participants. ESA would be willing to sit on the Board for Infrastructure.

The United States supported the simplified approach to Work Plan management and the improved distinction between management and the crucial work of Task implementation. It thanked all of the Committees for years of dedication and invited the Plenary to give them a round of applause. The US endorsed the position statement on data citation presented by the Science and Technology Committee and encouraged the Plenary to consider the Committee recommendations. In addition to the contributions already contained in the Work Plan, the US was ready to co-lead, together with WMO,

GCOS and CEOS, the Task on Earth observing systems and the development of an integrated architecture for climate monitoring.

Canada applauded the documents. Referring back to the earlier discussions on the 2nd Evaluation Report, it would seem that the new structure will lend itself better to monitoring and evaluation and should be more transparent. Canada supported the lighter and more focused governance structure that was being implemented. Regarding Australia's comment on the Committees, Canada agreed that their innovative thinking and creativity had benefited GEO over the past six years and recommended that this value be somehow incorporated into the discussions on GEO's post-2015 future.

France recognized the importance of achieving the implementation of GEOSS over the next three years and hoped that the new structure, although rather complicated, would contribute to this.

WMO said that the new Work Plan has a tighter structure and an improved management methodology. The Secretariat should again closely check the Plan against the Evaluation Report to ensure that all critical gaps were filled. The management, retrieval and interoperability of data were critically important to the entire GEO community, and particularly to users. WMO will be pleased to take the lead on a number of Tasks and components and to align its contribution to GEOSS with WMO priorities.

Japan said that the three Implementation Boards should consist of central players and focus on implementation and not evaluation. The document referred to the Boards monitoring progress towards the 2015 Targets, but this should not be the focus.

The Secretariat Director said that the Secretariat had taken good note of all the recommendations. The new process that will need to be evaluated over the coming months, and the management structure will be aligned with the evaluation process.

The Chair noted that a number of specific requests had been made and invited China and others to forward the inputs in writing to the Secretariat. The proposal that the first meeting of the Boards be a physical one should be strongly considered. These meetings should look closely at the terms of reference and consider the Committees' recommendations and concerns about capacity building and the need for a sufficient number of SBA experts. He concluded that the Plenary accepted the documents.

5 FINANCIAL REPORTS

5.1 Report of the External Auditor, 2010 Financial Statements and List of Direct Contributions to GEOSS (Document 22 - for acceptance)

The external auditor, Mr Steve Townley of the UK National Audit Office, presented the 2010 audit report. The audit revealed no material weaknesses or errors in the accuracy or validity of the financial statements. The transition to the International Public Sector Accounting Standards (IPSAS) system has been successful and presents a basis for improved financial decision making.

The Chair thanked the World Meteorological Organization for ensuring the smooth transition to IPSAS. He confirmed that the Executive Committee would work with WMO to make arrangements for covering the liabilities that are now explicitly reported under IPSAS. The document was accepted.

5.2 Interim Report on Income and Expenditure 2011 (January to August) (Document 23 - for information)

The Secretariat Director presented the document. He reported that voluntary contributions for 2011 totalled CHF 3,143,000. 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.

China informed the Plenary that its government has approved its 2011 and 2012 annual contributions to GEO and they will be transferred together early next year. In addition, China will continue to fund many activities, including those involving capacity building and hardware and software, and it will again provide a seconded expert.

South Africa is contributing ZAR 2 million, of which ZAR 500,000 is earmarked for activities in Africa.

The European Commission will continue its annual contribution of €600,000.

5.3 Secretariat Operations Budget for 2012 (Document 24 - for acceptance)

The Secretariat Director presented the document. He said that the 2012 budget was very similar to the one presented last year for 2011. Contributions have been fairly consistent over the past four years. A key change for 2012 relates to the anticipated contributions for GFOI.

The Chair took note of the pledges made by China, South Africa and the European Commission.

The United States said that it would contribute USD 200,000, with some additional funds if possible. It noted the importance of distinguishing contributions to the core budget from contributions to GFOI.

Australia said that funding support to GFOI (minus any overhead support) should be recorded separately from the contributions to the regular budget to avoid a misleading picture. Australia prepaid its regular contribution for 2011 last year due to the misalignment of its financial year with GEO's. For 2012 it pledged AUD 85,000 plus AUD 50,000 for GFOI.

Norway said that it would continue to support the Secretariat at the same level as last year.

The 2012 Secretariat operations budget was accepted.

Turkey screened a short video about its work on GEOSS implementation.

6 GEO POST-2015 (DOCUMENT 25 - *FOR ACCEPTANCE)*

The United States presented the document and the Executive Committee's proposed amendments to the Rules of Procedure contained in the document's annex.

Italy welcomed the establishment of a Post-2015 Working Group with open membership and said that it was important for the Executive Committee remain engaged in the process.

Canada proposed that the Secretariat distribute a survey to all Members and Participating Organizations asking them about their expectations from GEO, how they would measure success, their evaluation of the benefits of the new management structure, their key priority areas, and the capabilities they bring to the table. The first meeting of the Working Group would benefit from having this kind of information.

CEOS welcomed the establishment of the Working Group and said it will nominate members.

The United States supported the creation of the Working Group as well as the idea of a survey as proposed by Canada.

The Chair thanked the speakers for their useful suggestions. The Plenary endorsed the establishment of the Post-2015 Working Group.

7 REPORT ON THE PROCESS OF APPOINTMENT OF THE DIRECTOR OF THE GEO SECRETARIAT FOR THE PERIOD 2012-2014

Ms Manuela Soares, Co-Chair from the EC, took over the chair for this agenda item as Mr Mjwara was responsible for presenting the item on behalf of the Executive Committee. He recalled that the GEO-VII Plenary had endorsed the Executive Committee's proposal for a competitive process for choosing the Secretariat Director for the period 2012-2014. A vacancy note was circulated and interviews were held in March 2011, however it was not possible to reach a decision. Another notice was issued in July, and Principals were encouraged to circulate it widely. The Executive Committee has now chosen a candidate, who has accepted the post. The official announcement will be made after all of the candidates have been informed of the decision. The current Director has been extended through June 2012 to ensure continuity and to avoid the risk of a vacuum.

8 REPORT OF THE EXECUTIVE COMMITTEE (DOCUMENT 26 - FOR ACCEPTANCE)

The GEO Co-Chair from the EC presented the document describing the key actions and decisions taken by the Executive Committee at its three meetings in 2011. The report was accepted.

9 PRESENTATION OF THE SLATE OF 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 Morocco for Africa; the Russian Federation for the Commonwealth of Independent States (CIS) region; the European Commission (Co-Chair), Germany and the United Kingdom for Europe; Brazil, Canada and the United States (Co-Chair) for the Americas; and China (Co-Chair), Korea, Japan and New Zealand for Asia/Oceania.

10 RULES OF PROCEDURE UPDATE (DOCUMENT 27 - FOR ADOPTION)

The Secretariat Director presented the document and read out three proposed new paragraphs for a new section 6.6 on engaging the private sector. He also described the changes resulting from the acceptance of the new Work Plan management structure, which mostly affected section 5 of the Rules of Procedure as well as Annex B and its Appendixes.

Australia said the proposed amendments to the Rules of Procedure should be accepted on an interim basis to give delegations time to read them.

WMO said that, given that the Committees were being disbanded, it would be a good idea to consider a more deliberate transition, following the model of the earlier transition of the Integrated Global Observing Strategy (IGOS) into GEO.

The Chair agreed with Australia's comments and concluded that the Plenary accepted the amendments to the Rules of Procedure in the spirit of a living document. The Secretariat should invite delegations to provide feedback within two months, and then the Executive Committee should review this feedback so that the revised Rules of Procedure can be presented to the next Plenary meeting. This approach was accepted.

11 PARTICIPATION OF GEO IN THE RIO+20 CONFERENCE

The Secretariat Director informed the Plenary about the discussions to date on how GEO could be represented at the United Nations Conference on Sustainable Development (Rio+20), to be held in Rio

de Janeiro, Brazil, in June 2012. He reported that Japan has offered to support GEO's participation through a side event and exhibition booth that would focus on how GEO contributes to the Millennium Development Goals, sustainable development and the green economy. Italy, Japan, the United States, CEOS and the Secretariat will work together to organize the event.

Brazil said that its delegation will work with the conference organizers to facilitate the event. It should be noted that a resolution on international cooperation on outer space affairs will shortly be adopted by the UN General Assembly, and that it is expected to invite GEO to contribute to the preparatory process for the conference.

Japan described the ongoing efforts to organize the side event in cooperation with other GEO members.

Colombia said that the international community aims to agree at the Rio+20 Conference on concrete approaches for delivering on the Millennium Development Goals; this should be seen as an opportunity for GEO.

12 ANNOUNCEMENT OF GEO-IX AND PROPOSALS FOR GEO-X AND THE 2013 MINISTERIAL

Brazil informed the Plenary that, as indicated at GEO-VII, it would be pleased to host the GEO-IX Plenary in the city of Foz de Iguazu in late 2012. It then screened a short video. The offer was welcomed with a round of applause.

The Secretariat Director reported that no proposals have yet been received for 2013.

13 REVIEW OF SESSION OUTCOMES

The Secretariat Director presented the outcomes of the GEO-VIII Plenary on an overhead screen. He reported that 383 participants had attended the meeting, so that the general upward trend in participation continues.

Germany asked whether the reports of the Committees should be accepted while the recommendations should be noted. This was confirmed.

Norway noted that while the level of participation was good, not many developing countries were represented at the meeting, which was a worry.

Norway and Australia thanked the Secretariat Director for his contributions to GEO and said that he can lay claim to an important legacy.

14 CONCLUDING REMARKS

The representative of the Co-Chair from China applauded the results of the meeting and the good progress on GEOSS implementation. The acceptance of the new Work Plan and the launch of work on the post-2015 period were particularly important. He wished the incoming secretariat director well, and said that China, as a developing country, will continue to provide hardware and software and scientific and technological advice.

The Co-Chair from the European Commission thanked the hosts and the Secretariat and recognized the many positive contributions made by delegations during the meeting. The Plenary has taken the necessary steps to move GEO forward, and the EC looked forward to the next Plenary meeting with confidence.

The United States thanked the Secretariat and Secretariat Director, TUBITAK, the delegations and the GEO-VIII chair.

The Co-Chair from South Africa also thanked TUBITAK and the Secretariat and Secretariat Director. He recognized that GEOSS implementation continued to deepen and was optimistic that much would be achieved by 2015. With this he adjourned the meeting and invited delegates to gather for a group photograph.

GROUP ON EARTH OBSERVATIONS

List of Participants
GEO-VIII
16-17 November 2011
Istanbul, Turkey

Argentina
- Ana Medico

Australia
- Susan Barrell
- Stuart Minchin
- Miriam Baltuck
- Alex Held
- Gary Richards

Austria
- Liane Lippsky
- Michael Staudinger
- Monica Koehler
- Herwig Proske
- Ernest Rudel
- Peter Zeil

Bangladesh
- Shahid Sarwar
- Arjumand Habib

Brazil
- Fabio Vaz Pitaluga
- Julio Dalge
- Hilcea Ferreira

Canada
- David Grimes
- Luc Brulé
- Michael Crowe
- Jeff Dechka
- Kenneth Korporal
- Craig Larlee

Chile
- Juan Acuña Arenas

China
- Jianlin Cao
- Xiaohan Liao
- Jiantao Bi

China (continued)
- Zhiping Cai
- Linhao Chen
- Wen Chen
- Saixian Cheng
- Xiao Cheng
- Jieming Chou
- Xin Du
- Jinlong Fan
- Ou Fu
- Fuping Gan
- Huadong Guo
- Xin Hu
- Wenjiang Huang
- Jiahong Li
- Zengyuan Li
- Mingsen Lin
- Fujiang Liu
- Liangyun Liu
- Zongxin Ma
- Hui Meng
- Fangni Song
- Xinming Tang
- Zhigang Wang
- Jinnian Wang
- Qiao Wang
- Bingfang Wu
- Guoxiang Wu
- Zhong Xie
- Wen Xu
- Changxiang Yan
- Xianwu Yang
- Zhenyin Yang
- Dake Yang
- Yan Yao
- Huanyin Yue
- Xingying Zhang

Colombia
Ricardo Lozano Picon

Croatia
Ivan Cacic

Czech Republic
Radim Tolasz
Jana Klanova

Denmark
Esben Elbrønd-Bek

Egypt
Islam Abou El-Magd
M. Medhat Said

Estonia
Tiit Kutser

European Commission
Manuela Soares
Alessandro Annoni
Boris Antic
Florence Beroud
Palma Blonda
Lieven Bydekerke
Namik Cagatay
Terry Callaghan
Jérôme Colin
Massimo Craglia
Vladimir Crnojevic
Vesna Crnojevic-Bengin
Caroline Cusack
Raffaele De Amicis
Paula Diaz
Menno Dillen
Alan Edwards
Emile Elewaut
Mauro Facchini
Paolo Favali
Silvia Filosa
Felix Janssen
Anna Johansson
Robert Jongman
Stefan Lang
Jorge Lopez
Carmela Marangi
Joan Maso
Marie Menard-Caer
Massimo Menenti
Manfred Mittlböck
Gilles Ollier
Gelsomina Pappalardo
Roberto Pastres

European Commission (continued)
Carsten Pathe
Petros Patias
Francesco Pignatelli
Federico Prandi
Claude Rella
Hannele Savela
Martijn Schaap
Dick Schaap
Ivette Serral
Jean-Jacques Serrano
Jane Shiel
Anders Tjulin
Alex Vermeulen
Patrick Vittet-Philippe
Bernhard Vockner
Kym Watson
Peter Zeil

Finland
Mikko Strahlendorff
Yrjö Sucksdorff

France
Daniel Vidal-Madjar
Claude Boucher
Steven Hosford
Pascal Kosuth
Lionel Menard

Germany
Paul Becker
Carsten Dettmann
Thorsten Büsselberg
Stefanie Goebel
Jörn Hoffmann
Martin Koechy
Michael Nyenhuis
Helmut Staudenrausch

Ghana
Prosper Ashilevi

Greece
Vasileios Tritakis

Indonesia
Sri Prabotosari
Taufik Maulana
Bambang Wisnu

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Mohammad Enayat

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Italy
- Ezio Bussoletti
- Maria Dalla Costa
- Giorgio Boni
- Nico Bonora
- Vojko Bratina
- Stefano Bruzzi
- Fabio Dell'Acqua
- Sandra Moscone
- Stefano Nativi
- Nicola Pirrone

Japan
- Yoshikazu Kato
- Toshio Koike
- Toshihide Fukui
- Ryosuke Shibasaki
- Takao Akutsu
- Masao Fukasawa
- Yoshikazu Fukushima
- Akiko Goda
- Tetsuro Isono
- Koki Iwao
- Makoto Kajii
- Masatoshi Kamei
- Masahiko Kamei
- Chiyoshi Kawamoto
- Takashi Moriyama
- Tesuya Tsugami
- Akiko Yamada

Korea, Republic of
- Won-Tae Yun
- Dong-Chul Shin

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- Frederic Ramarolahivonjitiana Ambinintsoa Noasilalaonomenjanahary

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- Elina Plesca

Morocco
- Noureddine Boubrahmi

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- Raja Chhatkuli
- Kedar Prasad Dev

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- Ger Nieuwpoort
- Roeland Van Oss
- Ruud Grim
- Frank Lantsheer

Niger
- Issoufou Wata Sama

Norway
- Per-erik Skrøvseth
- Øystein Nesje
- Bente Bye

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- Qamar-Uz-Zaman Chaudhry

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- Jorge Pacheco Linares

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- Ion Nedelcu
- Ioana Vlad

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- Alexander Frolov
- Kirill Borisov
- Alexander Gusev
- Oleg Milekhin
- Anna Prokopchik
- Boris Vasilyev

Serbia
- Alexandre Petrovic
- Filip Sanovic
- Ivana Vasiljevic

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- Vlasta Janova
- Marian Zlocha

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- Silvo Žlebir
- Matevz Domanjko
- Anka Lisec

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- Imraan Saloojee
- Luc Chevallier
- Sandile Malinga
- Mmboneni Muofhe
- Lerato Senoko

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- Ana Casals Carro

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- Göran Boberg
- Patrik Wallman

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- Nando Foppa
- Anthony Lehmann
- Nicolas Ray

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- Mertkan Akça
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- Mustafa Çoşkun
- Burcu Dikmen
- Ahmet Doğru
- Ayşegül Domaç Dağgez
- Mehmet Dora
- Hakan Erden
- Semih Ergintav
- Muzaffer Kahveci
- Suha Kapucuoğlu
- Okan Kara
- Kaan Kavak
- Mustafa Kendüzler
- Osman Kılıç
- Kaan Kırtay
- Akın Kısa
- Ahmet Köse
- Mustafa Kurt
- Onur Lenk
- Ali Mermer
- Mete Mirzaoğlu
- Nihat Oktay
- Serkan Orcan
- Yusuf Orhan
- Tamer Özalp
- Gürcan Ozan
- Taner Özdemir
- Haluk Özener
- Özgür Özmen
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- Elif Sertel
- Sevinç Sırdaş
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- Fatih Temiz
- Aynur Tokel

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- Murat Yılmaz

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- Ruth Kelman
- Russ Evans
- Miles Gabriel
- Stuart Marsh
- Kay Smith
- Liz Tucker

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- Denise McWilliams
- Kathryn Sullivan
- Madelyn Appelbaum
- Tonya Ashworth
- Peter Colohan
- Ivan Deloatch
- Phillip Dickerson
- Gary Foley
- Kathleen Fontaine
- Lawrence Friedl

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- Douglas Muchoney
- Douglas Nebert
- Ibrahim Oztürk
- David Reidmiller
- Marie Ricciardone
- Frances Ricciardone
- Shepard Smith
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- Sergey Myagkov

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OGC
George Percivall
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Peter Baumann
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Mattia Santoro
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Gerhard Triebnig

POGO
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UNCBD
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