

Discussion Paper on Action on Climate Change

This Document is submitted to the GEO-XVI Plenary for information.

1 GEO PLENARY IS ASKED TO CONSIDER

This discussion paper highlights the areas where Earth observations can support climate action, describes the current state of GEO's engagement on climate matters, and identifies some of the key opportunities for further progress. To stimulate discussion during Session 2: Action on Climate Change the following questions are posed:

- What role is there for GEO to play in helping improve the use of Earth observations for monitoring and understanding of climate change?
- How should GEO proceed in the future to interact with institutions such as IPCC and UNFCCC?
- What are the best approaches for GEO to use to advocate the use and application of Earth observations in support of Member actions on climate change?
- What is the best way to increase the impact of the GEO Work Programme in promoting and supporting the use of Earth observations for assessing and monitoring climate impacts? for evaluating and implementing mitigation and adaptation responses?
- Which of the identified opportunities should the Executive Committee, Programme Board and Secretariat prioritize?

2 GEO'S ENGAGEMENT IN CLIMATE ACTION

Climate change has been acknowledged as one of the biggest challenges facing the world, and also one of the challenges where use of Earth observation can make the most difference. The effects of climate change are faced by all, but poor and vulnerable communities and groups have special needs.

Earth observations have the capability to capture environmental data over a range of spatial, spectral and temporal resolutions. Earth observation information relevant to climate action is not limited to the weather/climate domain but is much broader. For example, Earth observations critically include data on terrestrial areas (e.g. agriculture, ecology, permafrost and glaciers). When integrated with socio-economic data (e.g. population, health, income, borders), Earth observations are a key input to decision making on an issue that lies at the nexus of human/technology/environment interfaces.

GEO is well positioned to support its Members and the broader community with the requisite Earth observations to support: effective assessment and monitoring of climate and related socio-economic variables; assessment and evaluation of different policy

responses and actions; and tracking of the implementation of those actions and responses.

Against this background, GEO uses its unique convening power to connect Members and partners (such as the World Meteorological Organization (WMO), the United Nations Environment Programme (UN Environment) and the Committee on Earth Observation Satellites (CEOS)) to lead national, regional and global climate action efforts.

2.1 Focus on Specific Opportunities: GEO and the UNFCCC

Earth observations could play a crucial role in global efforts to address climate change and implement the UN Framework Convention on Climate Change (UNFCCC). The data and knowledge derived from Earth observations could help countries respond in many areas, including specific provisions of the Paris Agreement. Earth observations can contribute more accurate data on greenhouse gas concentrations and emissions for carbon accounting in relation to mitigation responses. Impact, vulnerability and risk assessments, the development of measures to increase resilience, and efforts to monitor progress on adaptation responses can all be enhanced when Earth observation data combined with other critical socio-economic information at the local scale and over extended timescales.

GEO, through the first GEO Climate Workshop in June 2018, has engaged with the UNFCCC Secretariat to identify the key areas where Earth observations coordinated through GEO could support climate action including: mitigation; activities relating to reducing emissions from deforestation and forest degradation; adaptation; loss and damage; technology development and transfer; capacity building; and the global stocktake. The UNFCCC process has also highlighted the need to strengthen scientific knowledge on climate, including research, systematic observation of the climate system and early warning systems, in a manner that informs climate services and supports decision-making. These are all areas where GEO can provide support.

2.2 Focus on Specific Opportunities: GEO and the IPCC

Earth observation data are important the work of the IPCC. The IPCC provides scientific input to inform the Conference of the Parties (COP) of the UNFCCC and the Convention bodies, in particular the Subsidiary Body for Scientific and Technological Advice (SBSTA). The SBSTA has been increasingly emphasizing the value of systematic observations - a term that encompasses Earth observations in the UNFCCC context. Earth observations, and in particular satellite data, provide benchmark measurements on variables which contribute to the accuracy of climate models and projections that inform policy decisions.

The IPCC has identified a need for support with regard to the monitoring of greenhouse gas concentrations and emissions. The refined IPCC Guidelines for National Greenhouse Gas Inventories include information on the potential contributions of space-based Earth observations for comparison with GHG emission estimates. Parties to the UNFCCC have agreed to use the IPCC Guidelines in reporting to the Convention. GEO could further support Parties in using Earth observations for their reporting.

The IPCC can also benefit from improved use of Earth observations to assess climate impacts and progress on adaptation. GEO can provide information beyond the

weather/climate domain, with real-time data on land areas and land use, cryosphere, global-regional energy exchanges, water distribution, etc. Earth observation data provide large quantities of timely and accurate environmental information, which, when combined with socio-economic data can give unique insights into managing climate risks.

The findings of the latest IPCC special reports have already benefited from the use of Earth observation data and there is scope for improvement. For instance, satellite observations were used to monitor the frequency of marine heatwaves over several decades, and other variables including ice flows. Satellite data were also used to monitor vegetation greening/browning. Increased availability of open Earth observation datasets can increase the quality of monitoring and help address the gaps identified by the IPCC.

Current IPCC analyses do not include urban ecosystem dynamics in detail. Urban areas, urban expansion, and other urban processes and their relation to land-related processes are considered “extensive, dynamic, and complex”. The provision of Earth observation information in support of urban resilience is an area of potential GEO support.

IPCC analyses have identified “a lack of knowledge of adaptation limits and potential maladaptation to combined effects of climate change and desertification”. A similar issue was identified for limits to adaptation in relation to sea level rise and ice loss. Earth observations can provide an understanding of real-time physical risk exposure, notably where other sources of data are sparse, to support decision analysis and the development of adaptation solutions.

Furthermore, the recent IPCC special reports have pointed out that the expanded use of new Information and Communication Technologies (ICTs), climate services and remote-sensing is critical for near-term actions for capacity-building, as well as technology transfer and deployment to strengthen adaptation and mitigation. GEO is working to address the challenges around big data involving the community to use new ICTs for the development of new ways to monitor climate and non-climate variables. Investments in human, technical and institutional capacities on the expanded use of digital technologies are crucial and are expected to bring high returns.

3 CURRENT STATUS OF GEO'S SUPPORT FOR CLIMATE ACTION

The current status of GEO's support for climate action includes the following achievements:

- Proposed establishment of a Climate Working Group in the ‘Engagement Priorities Coordination’ Foundational Task by the Programme Board at its 15th meeting (September 4-5, 2019), which would supersede the Paris Agreement Subgroup established by the Programme Board at its 7th meeting (30-31 August 2017) and closed upon completion of its mandate;
- Ongoing close dialogue with the WMO and its partners;
- Hiring of a Climate Coordinator at the GEO Secretariat in September 2019;
- Obtained the observer status with IPCC in May 2019;
- Supported GEO's contribution to the 2019 refinement of the 2006 IPCC Guidelines on National Greenhouse Gas Inventories, adopted in May 2019;
- Pursuing the observer status with UNFCCC since August 2018 (pending);

- Organization of the first GEO Climate Workshop in June 2018 and preparation of summary recommendations about the role of GEO on climate change as the result of the Workshop discussion with UNFCCC, IPCC, WMO, GCOS, CEOS/CGMS WG on Climate, and IUGG;
- Obtained recognition with UNFCCC as official exhibitor and side-event organizer during COP23 in November 2017;
- Participation in Earth Information Day at UNFCCC COP22 in November 2016;
- Participation in the Research Dialogue during the UNFCCC SBSTA44 in May 2016;
- Publication of GFOI's Methods and Guidance Document linking IPCC guidance to REDD+ decisions (first edition released in 2014, second edition in 2016, next update due 2020).

4 OPPORTUNITIES FOR FURTHER SUPPORT FOR CLIMATE ACTION

To achieve its goals in this area, GEO Secretariat needs to ensure effective collaboration with all key actors working on climate action. In particular, GEO, through the GEO Work Programme, could work to:

- Ensure the continued recognition of the value of Earth Observations and the role of GEO in fora such as the UNFCCC and IPCC;
- Obtain observer status with the UNFCCC (pending as of September 2019);
- Explore entry points for GEO to support the UNFCCC process, in particular by following up on the areas of interest identified by the UNFCCC Secretariat;
- Increase its participation and visibility at UNFCCC COP and SBSTA sessions and mandated events such as the Earth Information Day, as well as in other constituted bodies' meetings;
- Support the IPCC in its Sixth Assessment Cycle, particularly in the development of the IPCC's Sixth Assessment Report;
- Support the Earth observation contribution to implement the IPCC Guidelines on National Greenhouse Gas Inventories;
- Increase the recognition of GEO activities, for example by supporting the Global Forest Observation Initiative (GFOI) in obtaining recognition within the UNFCCC in the context of REDD+;
- Support national-level stakeholders and raise awareness of international GEO efforts and programmes;
- Promote Earth observation in support of public and private investments on climate action.

To support this, the GEO Programme Board could lead in cross-cutting planning, implementation, coordination, monitoring and evaluation of GEO Work Programme activities having climate policy needs.

GEO could look to focus its contribution in those areas where added value is expected, in particular around climate adaptation, climate impact assessments and in the land use domain. This could include the development of additional Work Programme activities/initiatives and projects around the use of Earth observations for the assessment and monitoring of climate impacts and adaptation responses. GEO could also explore proposals for enhancing the use of climate data records for a variety of application areas.

The proposed GEO Climate Working Group in the ‘Engagement Priorities Coordination’ Foundational Task could support this, developing an integrated mechanism for coordination of climate matters across the GEO Work Programme. The proposed Climate Working Group could develop and implement an overall GEO climate strategy to advance the use of Earth observations in support of climate action.

Furthermore, GEO can continue the process of identifying needs, gaps and support access to data (e.g. sustained observations, early warning). GEO will also continue the process of mapping GEO Work Programme activities relevant to the implementation of the Paris Agreement (e.g. on adaptation, mitigation, loss & damage) and follow up on the outcomes of the first GEO Climate Workshop. A second Climate Workshop in 2020 involving a broader policy-relevant audience could assist this.

GEO could seek new opportunities to promote the use of Earth observation through public climate finance and private investments. In particular, GEO could explore potential to encourage the main financial institutions supporting developing countries on climate action (such as the Green Climate Fund (GCF), the Adaptation Fund and the Global Environment Facility (GEF)) to consider investing in activities and actions exploiting Earth observations. GEO could also explore ways to engage with financial institutions, investors and businesses in the implementation of the recommendations of the Financial Stability Board Task Force on Climate-related Financial Disclosures (TCFD) for voluntary and consistent climate-related financial risk disclosures in mainstream filings, which involve strengthened monitoring and reporting of physical climate impacts on assets/investments.

GEO can also provide a framework through which those countries that are Parties to the Paris Agreement can work together to understand and promote the use of Earth observations in:

- Nationally Determined Contributions, National Communications, Adaptation Communications, and Biennial Transparency Reports, including formulating supplementary guidance;
- National Adaptation Plan processes and approaches to address loss and damage, including formulating supplementary guidance;
- National reporting for mitigation, including through the development and recognition of supplementary guidance on greenhouse gas inventory in the land use, land-use change, and forestry sector.