Statement reporting on progress by the Committee on Earth Observation Satellites (CEOS) and the Coordination Group for Meteorological Satellites (CGMS) on Coordinated Response to UNFCCC Needs for Global Observations

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The European Organisation for the Exploitation of Meteorological Satellites (EUMETSAT), on behalf of the Committee on Earth Observation Satellites (CEOS) and the Coordination Group for Meteorological Satellites (CGMS), is pleased to update the 50th session of the Subsidiary Body for Scientific and Technological Advice (SBSTA) on the coordinated response to the United Nations Framework Convention on Climate Change (UNFCCC) needs for Systematic Observations facilitated by the UN's Global Climate Observing System (GCOS).

CEOS and CGMS, international organizations of 62 Members and Associates and 16 Members, respectively, are honoured to report to the UNFCCC on space agency activities over the past year.

Space agencies continue to evolve their systematic observation of the Earth's climate system, by implementing the Architecture for Climate Monitoring from Space, 2013 – developed by a team comprised of representatives from CEOS, CGMS, and the World Meteorological Organization (WMO).

The web-based Inventory of existing and planned climate data records of Essential Climate Variables (ECV) observable from space is updated annually and currently contains information for more than 1200 datasets. This version will be published by the end of 2019. The Joint CEOS/CGMS Working Group on Climate continuously analyses the Inventory content to optimise the use of past and current satellite data and to identify Earth observation measurement gaps that may appear in the future, thus potentially interrupting the continuity of climate data records. This analysis is traceable to Earth observation data products and satellite instruments. Space agencies use this resource to inform their planning for both mission and product generation to avoid Earth observation measurement gaps in the future.

The 47th session of SBSTA noted the increasing capability of satellite and in situ data to monitor greenhouse gas concentrations and emissions systematically. Subsequently, space agencies prepared a whitepaper describing a constellation architecture for monitoring atmospheric carbon dioxide (CO2) and methane (CH4) concentrations, as well as their natural and anthropogenic fluxes from space[1] to reduce uncertainty of national emission inventory reporting and to track changes in the natural carbon cycle caused by human activities and climate variations. This architecture provides a reference for individual agencies planning space-based CO2 and CH4 missions as well as for the broader coordination on CO2 and CH4 measurements through CEOS and CGMS.

In parallel to the definition of the constellation architecture whitepaper, space agencies, through CEOS, have taken the initiative to provide detailed input to the update of IPCC guidelines on the methodology used by governments to report their greenhouse gas emissions and removals. The updated version now includes information on the potential contributions of space-based observations for comparison with greenhouse gas emission estimates, drawing attention to data from recently launched and upcoming satellite missions. We welcomed the adoption of these guidelines by the IPCC on May 12, 2019.

Space agencies have tasked the Joint CEOS/CGMS Working Group on Climate to coordinate CEOS and CGMS entities involved in the development of the constellation architecture. The Joint Working Group will coordinate the integration of satellite data into an operational atmospheric CO2 and CH4 monitoring system with relevant stakeholders such as the WMO IG3IS and relevant modelling centres. In addition, the Joint Working Group will build and maintain the necessary partnerships with the relevant users, both within the inventory and policy communities, to address the needs and the overall system implementation goals.

The monitoring system will be implemented in several steps to maximize contributions to the Transparency Framework, the achievement of Nationally Determined Contributions and for stocktaking. The first prototype system, based on available space-based assets, could inform the first global stocktake in 2023 and a pre-operational system should support the second global stocktake in 2028.

In addition, CEOS agencies continue to coordinate annual global coverage of the world's forested areas to ensure the necessary data in support of national reporting processes the Global Forest Observations Initiative (GFOI), and the Global Observation of Forest Cover and Land Dynamics (GOFC-GOLD) effort. In 2019, CEOS will begin to coordinate the use of multiple satellite missions with novel capabilities to determine above ground biomass. These data offer new prospects and will enable more direct estimates in support of forest and carbon emission reporting – including for global stocktakes.

Parties are invited to continue supporting the work of the space agencies.

1. http://www.ceos.org/document_management/Virtual_Constellations/ACC/Documents/CEOS_AC-VC_GHG_White_Paper_Version_1_20181009.pdf

* This report was delivered by EUMETSAT on behalf of CGMS and the Vietnam Academy of Science and Technology (VAST) being the 2019 CEOS Chair Party.

CEOS and CGMS Agencies

Agence Gabonaise d'Études et d'Observations Spatiales (AGEOS), Gabon
Agencia Espacial Mexicana (AEM), Mexico
Agensi Angkasa Negara (ANGKASA), Malaysia
Agenzia Spaziale Italiana (ASI), Italy
Australian Bureau of Meteorology (BoM)
Belgian Federal Science Policy Office (BELSPO)
Canada Centre for Mapping and Earth Observation (CCMEO)
Canadian Space Agency (CSA)
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China Center for Resources Satellite Data and Applications (CRESDA)
China National Space Administration (CNSA)**
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Comisión Nacional de Actividades Espaciales (CONAE), Argentina
Commonwealth Scientific and Industrial Research Organisation (CSIRO), Australia
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Crown Research Institute (CRI), New Zealand
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European Space Agency (ESA)*
Geo-Informatics and Space Technology Development Agency (GISTDA), Thailand
Geoscience Australia (GA)
Global Climate Observing System (GCOS)
Global Geodetic Observing System (GGOS)
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United States Geological Survey (USGS)
Vietnam Academy of Science and Technology (VAST)
World Climate Research Programme (WCRP)
World Meteorological Organization (WMO)*

*Denotes Agencies being Member of both CEOS and CGMS, **Denotes only CGMS Agencies.