

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

Conference of the Parties (COP24)/SBSTA-49,
3-14 December 2018, Katowice, Poland

The European Organisation for the Exploitation of Meteorological Satellites (EUMETSAT), on behalf of the Committee on Earth Observation Satellites (CEOS), is pleased to update the 49th 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 global observations facilitated by the UN's Global Climate Observing System (GCOS), being implemented by CEOS and the Coordination Group for Meteorological Satellites (CGMS) Working Group on Climate.

CEOS and CGMS, international organizations of 60 Members and Associates and 15 Members, respectively, have had the honour to report on space agency activities to the UNFCCC on several previous occasions.

Space agencies continue to evolve their systematic observation of the Earth's climate system, now over several decades, strengthening scientific knowledge on climate, supporting provision of knowledge-based information to climate services and to support decision making. Space agencies are doing this 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). This architecture involves the identification of existing and potential future gaps in the provision of the climate data requested by the GCOS.

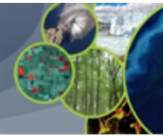
The consolidation of space agency efforts through the establishment of the Joint CEOS/CGMS Working Group on Climate has resulted in a significant increase in efficiency in responding to the needs of Systematic Observations as required by the Convention. Using the web-based Inventory of more than 900 existing and planned climate data records of Essential Climate Variables (ECV) observable from space published in 2017, the Joint Working Group on Climate consolidated its first gap analysis¹. The analysis traced climate data records to contributing satellite instruments: it achieved a full assessment of climate data records against GCOS criteria, and, for eight ECVs including CO₂ and CH₄, it assessed how the use of past and current satellite measurements could be further optimised. In addition it identified gaps in planned future measurements which would prevent the continuation of climate data records. From a space agency perspective, the identification of gaps and their traceability to products and instruments registered in CEOS and WMO instrument data bases provides a sufficient basis for future planning. CEOS and CGMS foresee annual updates of the web-based Inventory and incremental gap analyses addressing specific sets of ECVs

performed by the Joint Working Group on Climate that will further improve the ability of space agencies for a targeted response to the GCOS needs.

The 47th session of SBSTA noted the increasing capability of satellite and in situ data to systematically monitor greenhouse gas concentrations and emissions. Space agencies have been active in the UNFCCC context via SBSTA and have provided a first comprehensive analysis² of the space based state-of-the art of atmospheric greenhouse gas monitoring capabilities in support of international, regional and national climate policy. This analysis provides a reference for individual agencies planning missions in this domain as well as for the broader coordination of virtual and dedicated constellations of space-based CO₂ and CH₄ sensors among space agencies through CEOS and CGMS. To build a strong foundation for the space-based elements of an operational atmospheric CO₂ and CH₄ monitoring system that can be implemented within the next few years and to maximize its impact towards the achievement of Nationally Determined Contributions (NDCs) and for stocktaking, a series of specific steps is identified for space agencies' consideration including the outline of a prototype system, based on available space-based assets, that could inform the first global stocktake in 2023 and an operational system that could support the second global stocktake in 2028. These systems would integrate satellite and in situ observations, modelling components, prior information and ancillary data. Space agencies will continue to work together through CEOS and CGMS to build and maintain the necessary partnerships with the relevant stakeholders to address the user needs and the overall system implementation goals. In addition, space agencies were actively engaged in the refinement process of the IPCC GHG Inventory guidelines. The Second Order Draft of IPCC GHG Inventory Guidelines was released in July 2018 for government and expert review and now contains information on the potential contributions of space-based observations to improve the GHG emission estimates, in particular with the planned new satellite missions.

Finally, CEOS continues to provide systematic satellite observations for forest monitoring through the Global Forest Observations Initiative (GFOI) and is supporting countries in the use of observations for their National Forest Monitoring Systems (NFMS) to provide fully measured, reported and verified (MRV) information for the United Nations initiative on Reducing Emissions from Deforestation and Forest Degradation (REDD+) in developing countries.

1. http://www.ceos.org/document_management/Working_Groups/WGClimate/Documents/WGClimate_ECV-Inventory_Gap_Analysis_Report_v1.1.pdf
2. http://www.ceos.org/document_management/Virtual_Constellations/ACC/Documents/CEOS_AC-VC_GHG_White_Paper_Version_1_20181009.pdf



CEOS Mission Statement

CEOS ensures international coordination of civil space-based Earth observation programs and promotes exchange of data to optimize societal benefit and inform decision making for securing a prosperous and sustainable future for humankind.

CEOS Agencies (CGMS Agencies are asterisked)

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)
Centre National d'Études Spatiales (CNES), France*
Centro para Desarrollo Tecnológico Industrial (CDTI), Spain
China Center for Resources Satellite Data and Applications (CRESDA)
Chinese Academy of Space Technology (CAST)
Comisión Nacional de Actividades Espaciales (CONAE), Argentina
Commonwealth Scientific and Industrial Research Organisation (CSIRO), Australia
Council for Scientific and Industrial Research (CSIR) South Africa
Crown Research Institute (CRI), New Zealand
Deutsches Zentrum für Luft-und Raumfahrt (DLR), Germany
Earth System Science Organisation (ESSO), India
European Commission (EC)
European Organisation for the Exploitation of 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)
Global Ocean Observing System (GOOS)
Global Terrestrial Observing System (GTOS)
Indian Space Research Organisation (ISRO)*
Instituto Nacional de Pesquisas Espaciais (INPE), Brazil
Intergovernmental Oceanographic Commission (IOC)*
International Ocean Colour Coordinating Group (IOCCG)
International Society of Photogrammetry and Remote

Sensing (ISPRS)
Korea Aerospace Research Institute (KARI)
Korea Meteorological Administration (KMA)*
Meteorological Satellites (EUMETSAT)*
MEXT (Ministry of Education, Culture, Sports, Science and Technology)/Japan Aerospace Exploration Agency (JAXA)*
National Aeronautics and Space Administration (NASA), USA*
National Institute of Environmental Research (NIER), Korea
National Oceanic and Atmospheric Administration (NOAA), USA*
National Remote Sensing Center of China (NRSCC)
National Satellite Meteorological Center/China Meteorological Administration (NSMC/CMA)*
National Space Agency of Ukraine (NSAU)
National Space Research Agency of Nigeria (NASRDA)
Netherlands Space Office (NSO)
Norwegian Space Centre (NSC)
Russian Federal Service for Hydrometeorology and Environmental Monitoring (ROSHYDROMET)*
Russian Federal Space Agency (ROSCOSMOS)*
Scientific and Technological Research Council of Turkey (TÜBITAK-Uzay)
South African National Space Agency (SANSA)
Swedish National Space Board (SNSB)
United Arab Emirates Space Agency (UAESA), United Arab Emirates
United Kingdom Space Agency (UKSA)
United Nations Economic and Social Commission for Asia and the Pacific (ESCAP)
United Nations Educational, Scientific and Cultural Organization (UNESCO)
United Nations Environment Programme (UNEP)
United Nations Food and Agriculture Organization (FAO)
United Nations Office for Outer Space Affairs (UNOOSA)
United States Geological Survey (USGS)
Vietnam Academy of Science and Technology (VAST)
World Climate Research Programme (WCRP)
World Meteorological Organization (WMO)*

*Denotes CGMS Agencies. In addition, China National Space Administration (CNSA), India Meteorological Department (IMD), and Japan Meteorological Agency (JMA) are CGMs Members.