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**Statement by the Committee on Earth Observation Satellites**

**to the 15th Plenary Meeting of the Group on Earth Observations**

**Kyoto, Japan**

*Satellite observations to better understand the world we live in.*

The Committee on Earth Observation Satellites, CEOS, serves as the space component of the Group on Earth Observations in developing the space segment of the Global Earth Observation System of Systems (GEOSS). CEOS does this through ongoing coordination of the continued and sustained investments of our sixty Members and Associate Members in observing our planet from Space. As of October 2018, CEOS Agencies had over 155 Earth observation satellites in orbit.

CEOS coordinates the availability of space-based Earth observations to GEO, specifically as Lead of the GEOSS Satellite Earth Observation Resources Foundational Task. Through CEOS, Agencies work together to ensure sustained international coordination of these assets and the data they produce with the aim of delivering as much societal benefit as possible. Through these activities, CEOS provides significant support to GEO at all levels. CEOS implements the space segment of the GEOSS and is the most prolific data provider. CEOS has been a major player in successful ‘Flagship’ initiatives like GFOI and GEOGLAM.

CEOS is tasked to specify, develop, launch, operate and coordinate space missions to provide new observations, sustain critical time-series, and fill or minimize spatial or temporal gaps in the satellite observations required to support sustained production of fundamental variable sets as defined through the GEO requirements and analysis processes. The seven CEOS Virtual Constellations for GEO – Atmospheric Composition (AC-VC), Land Surface Imaging (LSI-VC), Ocean Colour Radiometry (OCR-VC), Ocean Surface Topography (OST-VC), Ocean Surface Vector Wind (OSVW-VC), Precipitation (P-VC), and Sea Surface Temperature (SST-VC) – were created to harmonize efforts among space agencies to deploy Earth observation missions with the aim to close emerging data gaps and help space agencies avoid duplication and overlap in Earth observation efforts and establish and sustain a global Earth observation network.

Significant progress has been made in the last year, organizing the community and advocating for Passive Microwave (PMW) continuity. The SST-VC notes progress with two, complementary missions that if successfully put into operations will fill the looming gap in PMW imagery.

The AC-VC was commissioned to define the key characteristics of a global architecture for monitoring atmospheric CO2 and CH4 concentrations and their natural and anthropogenic fluxes from instruments on space-based platforms to reduce uncertainty of national emission inventory reporting and to track changes in the natural carbon cycle caused by human activities and climate change. Over the course of the last 18 months, a dedicated team of researchers, space agency representatives, and scientists have created a White Paper, titled “A Constellation Architecture for Monitoring Carbon Dioxide and Methane from Space.”

The LSI-VC has been incredibly successful in moving forward with the development of the CEOS Analysis Ready Data for Land (CARD4L). Analysis ready data (ARD) is no longer a desire of global users, but is now becoming a requirement and an expectation and it is clear that space agencies need to make it easier for global users to get ARD.

The OST-VC was successful in securing agency leadership to place Sentinel-3A and -3B in tandem mission first as this is common to previous altimeter missions for long-term record. This successful proposal is already paying off in detecting small inter-satellite processing differences.

Earth Observations from space-based platforms are of course only part of the puzzle. It is of critical importance to the success of GEO that significant progress is made on bringing Earth Observation data acquired by in situ means into GEOSS. While CEOS is not “on the front line” of that particular challenge, it is nevertheless of importance for all engaged in making GEO a success. CEOS looks forward to working with GEO on addressing this challenge.

In 2018, the CEOS Working Group on Capacity Building and Data Democracy (WGCapD) strengthened the skills of participants at the AfriGEOSS and AmeriGEOSS Weeks in June and August, respectively. At AfriGEOSS Week, participants learned to use Google Earth Engine for image visualization and processing, how to apply synthetic aperture radar (SAR) data to map floods and pollution as well as to evaluate forest height, and process climate data sets. At AmeriGEOSS Week, participants learned to use the Instituo Nacional de Pesquisas Excpaciais (INPE’s) TerraMA2 platform to monitor and analyse environmental extremes, and apply multiple tools to use remote sensing images for disaster applications.

People make organisations, and GEO has experienced some key resourcing changes in 2018 specifically in the GEO Secretariat.  CEOS welcomes the energy of the new Director of the GEO Secretariat and, given his intimate knowledge of CEOS and space agencies, believes that we can build a fruitful relationship over the medium term bringing on board the "revolutionary" as well as the "evolutionary" to push GEO in the direction of progress.

In 2019, CEOS hopes to demonstrate and build on some of the excellent work that has been carried out in the CEOS community in recent years, for example:

* Next generation data architectures, particularly as they support moves from enhancing discoverability of data to supporting integration, aggregation, and exploitation of data.
* The foundations that have been laid for the satellite component of an international CO2 and GHG emission monitoring system.
* Increased efforts to expand the use of observations from next generation geostationary satellites, including exploring the development of integrated Low Earth Orbit/Geostationary Earth Orbit products and data processing capabilities.

In addition to this recent work, the 2019 CEOS Chair, Vietnamese National Space Centre, is focusing efforts on integrating many ongoing CEOS activities in regions most affected by climate change, with a focus on the tropical monsoon climate countries in South East Asia. Integration over large regions of existing CEOS thematic acquisition strategies to pool data acquired from space and to make them available to the international community will enable studies and applications in relation to many key thematic areas for GEO such as forests, agriculture, disasters, climate, carbon, and water.