

THE CEOS ATMOSPHERIC COMPOSITION CONSTELLATION: ENHANCING THE VALUE OF SPACE-BASED OBSERVATIONS

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ABSTRACT:

The Committee on Earth Observation Satellites (CEOS) coordinates civil space-borne observations of the Earth. Participating agencies strive to enhance international coordination and data exchange and to optimize societal benefit. In recent years, CEOS has collaborated closely with the Group on Earth Observations (GEO) in implementing the Global Earth Observing System of Systems (GEOSS) space-based objectives.

The goal of the CEOS Atmospheric Composition Constellation (ACC) is to collect and deliver data to improve monitoring, assessment and predictive capabilities for changes in the ozone layer, air quality and climate forcing associated with changes in the environment through coordination of existing and future international space assets.

A project to coordinate and enhance the science value of a future constellation of geostationary sensors measuring parameters relevant to air quality is ongoing and supports the forthcoming European Sentinel-4, Korean GEMS, and US TEMPO missions. Recommendations have been developed for harmonization to mutually improve data quality and facilitate widespread use of the data products.

In the ongoing total ozone measurement coordination activity, intensive activities have enabled advances in error quantification and comparisons between multiple data sets and ground based data. The integration of infrared sensor data will take place. Key benefits include the ability to expand measurement coverage to polar regions and fill in other missing data obtained from the UV sensors. The production of a combined monthly mean total ozone data sets with a grid of 5x5 degrees is in progress.

ACC is engaged in an effort to build community awareness of the looming gap in atmospheric composition limb sounding observations in the upper troposphere and lower stratosphere. In response to the recently-released CEOS Carbon Task Force report, ACC is playing a role in implementing its atmospheric relevant recommendations (e.g., coordinating the emerging LEO constellation of GHG-measuring missions, mirroring the successful Air Quality constellation activities.