**CEOS Atmospheric Composition Virtual Constellation AC-VC-13 Meeting**
CNES Headquarters, Paris, France, June 28-30, 2017

Executive Summary

1. Greenhouse Gas (GHG) session

Presentations were given on all of the atmospheric carbon missions currently operating and in development, as well as international initiatives that are now underway. With respect to Deliverable CARB-20 (formerly reported as VC-05), the production of the community white paper on atmospheric CO2 and CH4 observations is on schedule for completing a full draft by the end of 2017. A half-day working session determined that the current white paper outline is generally in good shape regarding scope and organization. Adjustments and writing assignments were made based on the discussion. An update will be provided for the September 2017 SIT Technical Workshop. Also, AC-VC agreed to review and provide comment on the Japan-led draft GHG inventory document that is being prepared in support of UNFCCC IPCC engagement.

2. Air Quality (AQ) trace gas session

The white paper on Geophysical Validation Needs for the AQ Constellation (Deliverable VC-03) is proceeding on schedule for a complete draft in Q3 2017. It was agreed that coordination of validation activities remains our most important objective as S5P is launched later this year and the geostationary missions approach launch. Regarding harmonization of data products across the AQ missions, a good match between the atmospheric Sentinels (S5P/S4/S5) has recently been achieved, and current documentation will be shared with the TEMPO and GEMS teams to initiate the next step in ongoing data harmonization efforts. Given that NASA and the EU now have open data policies, including Level-1b and Level-2, enabling the constellation objectives for open data exchange now relies on data access policies for the Asian missions to be established by their organizations.

3. Air Quality aerosol session

A session was held to explore a potential AC-VC coordination activity for aerosol observations from space with application to air quality. Aerosol climate applications were intentionally not included because such coordination is already undertaken by other groups. Invited speakers provided broad overviews of various capabilities and applications that have been demonstrated or are now in development. In summation, participants expressed the need for, and community interest in, developing a new constellation activity on air quality associated with aerosol. The topic is planned to be further explored in the next AC-VC meeting. Particular consideration will be given to possible leveraging of the next-generation operational GEO imagers, which could mesh with the ongoing CEOS activity on non-meteorological applications of data from these instruments.

4. Total ozone dataset harmonization

The activity on intercomparisons of long term gridded monthly total ozone data records is anticipated to meet the Deliverable VC-02 goal of a peer-reviewed publication by Q4 2017. The gridded ozone record is planned to be updated annually as observations continue to be made operationally. Several ozone profile and tropospheric ozone activities are ongoing and initial results are instrument dependent. It is planned to further discuss these activities in future AC-VC meetings before recommending specific next steps on constellation activities and deliverables.

5. Cross-cutting and other activities

Development of constellations for observing air quality and greenhouse gases has largely proceeded independently even though the topics are interdependent. For example, mitigation of poor air quality in the developing world will affect the trajectory of regional and global carbon emissions. International objectives for both air quality and greenhouse gas observations could be achieved more effectively through coordinated planning. In particular, agencies should be encouraged to link existing capabilities for conducting AQ and GHG Observing System Simulation Experiments (OSSEs) to efficiently enable joint AQ/GHG satellite constellation studies.

Though the emergent AQ constellation is a success story, two measurement goals remain unmet: extending geostationary AQ observations to the southern hemisphere (and in particular to the developing world) and providing vertical profile measurements of CO multiple times per day. The CO measurements are relevant to goals of both the AQ and GHG constellations.

AC-VC has initiated (with the CEOS Executive Officer) the process of CEOS membership application by the Korea National Institute of Environmental Research (NIER), the lead agency responsible for the GEMS program.

The 2018 AC-VC meeting is planned to be held in the US in the May-June 2018 period.