

*“Paths to Sustainability: from strategy to practical measures”*

This paper communicates the priorities of the 2022 CEOS Chair team of CNES to the CEOS community, serving as a focus for discussion leading to the 35<sup>th</sup> CEOS Plenary. These priorities have been formulated in consideration of the NASA 2021 CEOS Chair priority: *“Space-based Earth Observation Data for Open Science and Decision Support”*, and seeking to provide general continuity of this theme.

CNES last chaired CEOS back in 1997 and served as SIT Chair in 2014-15. CEOS, and the world, has changed significantly over the 25 years since. CEOS has accomplished a great deal of work on the coordination of national EO satellite observation programmes, promoting free and open data principles, and helping society make the most of the unique data provided by EO satellites. Various CEOS strategies have been implemented to respond to the most pressing global issues, most recently in response to the Paris Climate Agreement, the Sendai Framework for Disaster Risk Reduction, and the 2030 Agenda for Sustainable Development.

The CNES CEOS Chair team for 2022, under the banner of *“Paths to Sustainability: from strategy to practical measures”* proposes to build on these solid foundations in a number of ways:

1. Through increased emphasis on the evolution of our various R&D and demonstration activities into applications and services.
2. Focusing on the CEOS relationship with GEO to engage the stakeholders necessary for such evolution to applications and services.
3. Work with the CEOS Working Groups, Virtual Constellations, and *Ad Hoc* Teams to develop case studies for our various applications to improve stakeholder understanding and appreciation of how EO data may help their information challenges.
4. Through support to the AFOLU Roadmap and related specific initiatives recently emerging from the CEOS structure, including adoption of the CEOS Biomass Protocol and development of the GEO Community Activity: Forest Biomass Reference System from Tree-by-Tree Inventory Data (GEO-TREES).
5. Initiating new and complementary activities, in collaboration with the relevant technical specialist groups in CEOS. This will include cooperation on thermal IR cross-collaboration.

The 2022 CEOS Chair prospectus will ensure continuity of the important priorities highlighted by the current SIT Chair Team, including in relation to carbon and biomass. The prospectus is also supportive of incoming SIT Chair priorities, such as creating new opportunities for EO space agencies and fostering the development and use of innovative digital services. 2022 efforts will ensure our agreed policy framework priorities will continue to be well served, including the UN Framework Convention on Climate Change (UNFCCC), the Sendai Framework for Disaster Risk Reduction, and the 2030 Agenda for Sustainable Development. CNES will also continue the work of previous Chairs to secure a long-term solution for CEO and Deputy CEO continuity.

### **Priority #1: Paths to Sustainability – Demonstrating Outcomes of CEOS Strategic Plans, Efforts on Disaster Risk Reduction and Response, and Capacity Building**

CNES proposes a range of measures aimed at ensuring the long-term sustainability of the various strategies which CEOS has developed over the past decade or so. Including:

- a. Highlighting activities and use cases of the CEOS community. CEOS Agencies and working teams will be asked to contribute to specific use cases to improve awareness of capabilities.
- b. Developing synergies between CEOS projects where possible, in particular: the work of the Virtual Constellations and Working Groups; calibration and validation efforts related to Open Science; climate and carbon; Analysis Ready Data (ARD); and, the Sustainable Development Goals (SDGs).
- c. Work with GEO and CEOS Associates, including UN entities and WMO, to identify mechanisms and key external stakeholders to support the continued operation and application of demonstrators.
- d. Identifying demonstrators or R&D stage activities across the CEOS structure that would be suitable for efforts to evolve them to the next level, with a view to engaging key stakeholder agencies through the GEO mechanisms, and with the ultimate goal of establishing operational services. The WGDIsasters Recovery Observatory and the Space Climate Observatory initiatives are prime candidates, and others may come from existing strategies (such as carbon or water) or from CEOS work on the SDGs (one or more Indicators).

### **Priority #2: CEOS Strategy for Support to the UNFCCC Global Stocktake**

The Global Stocktake is a key measure of the Paris Climate Agreement and CNES is pleased to assist in 2022 with the implementation of the CEOS Strategy, and to work closely with the groups responsible for the Greenhouse Gas and AFOLU Roadmaps (WGClimate, LSI-VC Forests & Biomass). As CEOS Chair, CNES will:

- a. Aim to ensure its planned missions, such as MicroCARB, provide practical support to the Global Stocktake data requirements, and will encourage CEOS Agencies to do the same.
- b. Support several of the *in situ* sites specified as necessary for the CEOS Biomass Protocol, and encourage broad participation and support from all CEOS Agencies to achieve the objectives of the Protocol.
- c. Support the GEO-TREES GEO Community Activity which has evolved from the CEOS proposal for a Forest Biomass Reference Network, and could be an exemplar for CEOS engagement with GEO for establishing new capabilities and communities.

The incoming ESA SIT Chair team has also indicated that it will prioritise CEOS engagement in the Global Stocktake process in 2022-23, following the anticipated endorsement of the draft CEOS Global Stocktake Strategy Paper at the 2021 CEOS Plenary.

### **Priority #3: Support to Cal-Val Initiatives**

The following calibration and validation activities will be explored:

- a. A new cooperation for a CEOS protocol to support the cross-calibration of thermal infrared measurements from future CEOS Agency missions, in particular those missions identified as key for Surface Biology and Geology (SBG), including Trishna, Copernicus LSTM, CSIRO Aquawatch, etc. Ideally

this would include the establishment of a network of sites for Land Surface Temperature (LST) measurements based on thermal IR sensors.

- b. Development of multi-thematic cal-val sites based on capacity pooling as much as possible, in order to develop international synergies between CEOS Agencies and support the sustainability of future use cases.