Space-based capabilities to deliver Climate Data Records for Essential Climate Variables

J. Schulz[1], A. Nunes[2], A. v. Bargen[3]
on behalf of the Joint CEOS-CGMS Working Group on Climate
[1]EUMETSAT, [2]Hamtec Consulting Ltd, [3]Deutsches Zentrum für Luft- und Raumfahrt

Abstract

FCCC/SBSTA/2017/7-SBSTA-47 §56: ***The SBSTA recognized the progress made by the satellite community (see para. 51(e) above), in close collaboration with GCOS, in the development of the essential climate variable inventory (http://climatemonitoring.info/ecvinventory). It noted the usefulness of the essential climate variable inventory for climate services. It invited CEOS and CGMS to report on progress at future sessions of the SBSTA, as appropriate.***

The use of space-based observations with undoubted quality for global stocktakes can play a supporting role of providing evidence for the success of the implementation of the Paris Agreement. Greenhouse gas monitoring helps to provide global and regional constraints on GHG sources and sinks supporting improved National Determined Contributions. Many satellite sensors contribute to the monitoring of sea level rise, storms, extreme precipitation, floods, drought, (de)forestation, and evolution of urban areas enabling statements about disaster impacts leading to loss & damage. The sustained monitoring of the climate system from space also enables monitoring change due to mitigation and adaptation measures applied by UNFCCC Parties.

United Nations Climate Change

COP-21 Paris Agreement: Adaptation (Article 7(c)): Strengthening scientific knowledge on climate, including research, **systematic observation of the climate system** and early warning systems, in a manner that informs climate services and supports decision-making.

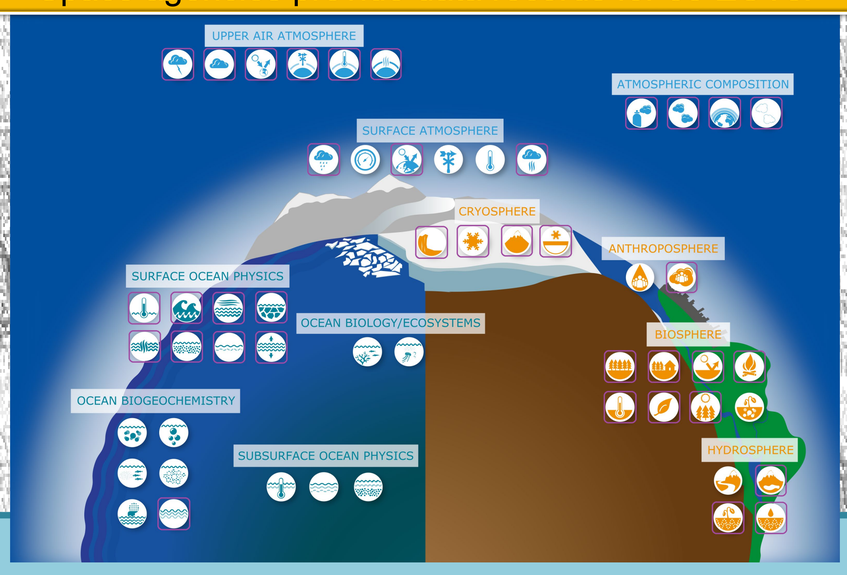
Reports on Progress @ SBSTA/COP

Needs and Requirements

Coordinated Response

CEOS WGClimate The Joint CEOS/CGMS Working Group on Climate CGMS GCOS GLOBAL CLIMATE OBSERVING SYSTEM

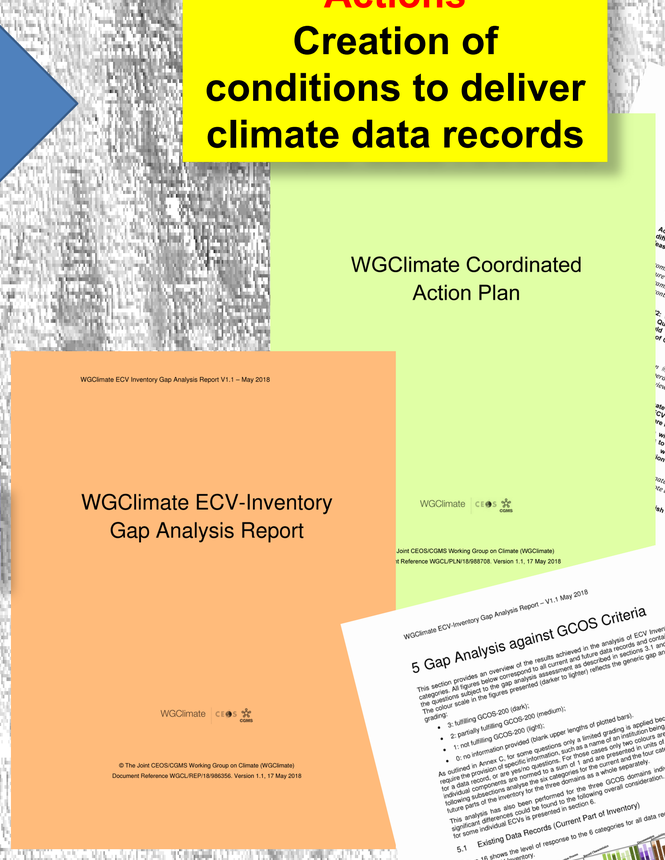
GCOS Essential Climate Variables
37 variables (purple framed) are accessible from space.
Space agencies provide data records for 35 ECVs.



Inventory of ECV Climate Data Records

- The ECV Inventory fully describes current and planned implementation arrangements (ECV-by-ECV) within the Architecture for climate monitoring from space
- The content is fully verified and updated annually with approval from CEOS and CGMS
- **Data access is globally free and open without any constraint for more than 98% of the data records in the Inventory**
- **The Inventory informs space agency planning**, improves availability and interoperability of climate data records
- The inventory provides material for all future responses of the space agencies to the GCOS status report and Implementation Plan
- The Inventory content is used by Climate Services to chose climate data records, e.g., for the Copernicus Climate Change Service
- **Everybody with an internet connection can download the ECV Inventory content for own analysis**, find direct access points to climate data records in the Inventory, and get access to WG Climate gap analysis results and planned actions
- The 2019 web-based Inventory contains information for approximately 1300 data records and **fills previously identified gaps for the ECVs** lightning, sea-surface salinity, **aboveground biomass, and permafrost, the latter two having significance for the study and analysis of the Earth's carbon cycle**.

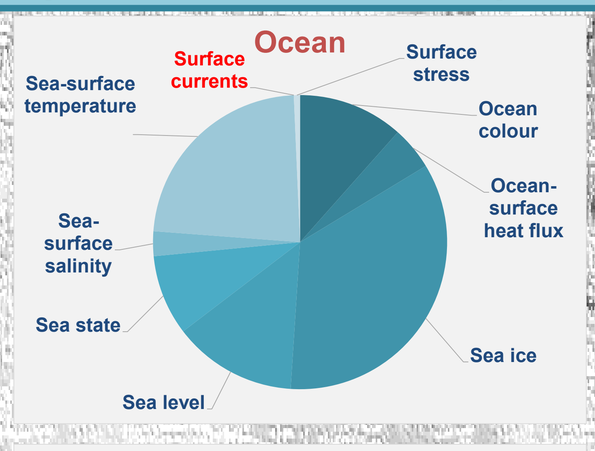
Actions
Creation of conditions to deliver climate data records

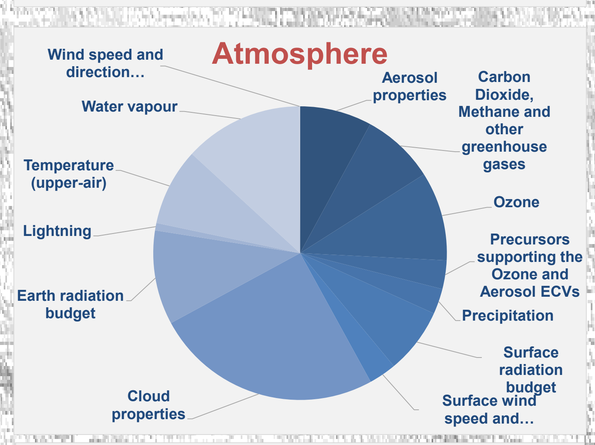


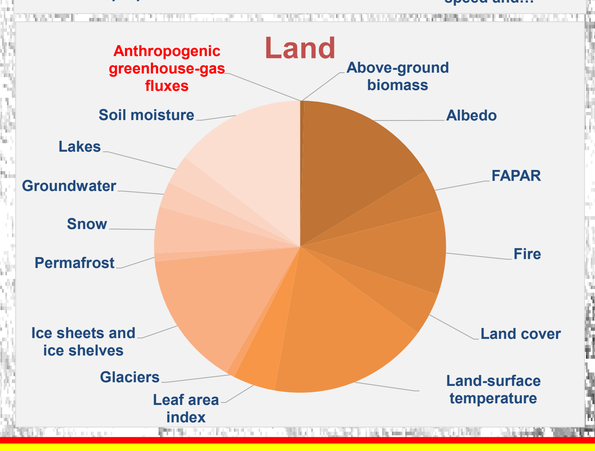
Recommendations to mitigate gaps

ECV Inventory
Population
Content Verification

Gap Analysis
Completeness of ECV Products
Sustainability of space segment
Missed data usage opportunities







To learn more about the ECV Inventory go to http://climatemonitoring.info/ecvinventory or contact us at **ecv_inventory@eumetsat.int**

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