

Implementation of Essential Climate Variables Services in the Copernicus Climate Change Service; support to GCOS and UNFCCC

The Copernicus Climate Change Service (C3S) is one of the six thematic services of the EU-funded Earth Observation programme Copernicus, managed by the European Commission (EU). C3S is implemented by the European Centre for Medium-Range Weather Forecasts (ECMWF), and it has as objective providing authoritative climate information in support of climate adaptation and mitigation policies of the EU.

C3S supports the implementation needs of the Global Climate Observing System (GCOS) and in turn, the objectives of the United Nations Framework Convention on Climate Change (UNFCCC), by assuring timely access to a large number of quality assured Climate Data Records (CDRs) of Essential Climate Variables (ECVs). In total, GCOS specifies a total of 54 ECVs which are relevant, measured globally with existing technologies (feasible) and at an affordable level of investment (cost-effective). C3S has already implemented 22 of these land, ocean and atmosphere thematic ECVs derived from space-based Earth observations. Target requirements for most of the ECV products, in terms of uncertainty, stability, temporal and spatial resolution, are mostly based on the framework defined in the GCOS 2016 Implementation Plan (GCOS-IP 2016). However, these requirements are reviewed annually based on the current technology and processing chains, and a document including the existing gaps to reach such requirements is made public.

Access to data and associated information products is provided through the C3S Climate Data Store (CDS). Currently the CDS offers open and free access to more 30 products associated with 22 ECVs. Each data product provides state-of-the-art reliable access to quality-assured and regularly updated gridded CDRs and Interim CDRs with global or near-global coverage. A comprehensive set of documentation, including a user guide and algorithms used in the production, is published along each data product. An independent evaluation of the data products assures their quality and roadmap towards target requirements. Other associated services include online applications providing simple examples of the use of the data for climate purposes, educative tutorials, and specialised user support.

In this presentation we will show the status of the ECV services in C3S, their individual components and the ambition for the future of the programme.