

CDS Working Group Summary

Overall principles for CDS

- Virtual database / distributed system
- Global scope with high-res focus on Europe
- A key role for the delegated body to provide a watch and take steps necessary with external parties to ensure that key systems outside the CCCS are sustained:
 - External producers of ECVs and multi-model runs (ESGF)
 - Reanalyses
- The CDS also needs to include (some) production capabilities
- Provision should be made for “continuous improvement” within CDS ... (e.g. via EQC)
- CCCS/CDS should generate an overall research agenda to which H2020 (e.g. RTD) can respond

CDS Content

- Datasets:
 - ECV products
 - Uncertainties
 - Reanalyses
 - Multi-model output, including projections
 - In-situ and satellite observations – FCDRs
 - Aggregate climate indices
 - ...
- Tools needed to visualise/explore the data
- Technical training to users
- Documentation and metadata

How to ensure that existing global, European and national capabilities are fully supported and augmented by the CCCS?

- Recommend use of GCOS terminology to describe climate-compliant CDS content when appropriate (e.g. 'ECV', 'long-term consistency')
- We recognize GCOS as a reference source of global, operational and science user requirements
- A general user need is to know the past climate, its variability, and current and future trends. This implies requirements on:
 - Length (depends on source)
 - Quality (reliable tendency estimates)
 - Uncertainty on the tendencies
 - Time resolution (e.g. to assess extremes)
 - Spatial resolution
 - Timeliness of availability
- These criteria can be used to identify and address gaps when populating the CDS

How to ensure from the outset that the CCCS is user-driven?

- User consultation process must be built in to the CCCS and the CDS, recognising multiple sources (e.g. SIS, science users, ..). The EC already provides a formal structure for consultation with member states and advisory groups.
- The CDS cannot exclusively react to user requirements – CDS content must also be pushed based on continuous improvement and operational needs
- The primary mission of the CCCS is to serve European policy needs – this guides and determines the complementarity with existing national services
- CCCS aim is to support adaptation & mitigation. Adaptation is local, therefore CDS must provide information on local scales with a focus on Europe (high resolution). This is a strong requirement with significant sizing implications.

What are the criteria for including climate datasets in the CDS? In the SIS?

- Highest attainable resolution + traceability implies that CDS must contain underpinning FCDRs (instrument observation resolution)
- Priorities for CDS content could be set based on gap analysis: What is available today? Is it climate-compliant? Using tools provided by EQC. This is a low-cost fast priority first step for populating the CDS.
- All CDS data should have information on uncertainty, subject to validity assessment to the maximum extent possible (at level of individual measurements, e.g. pixel).
- Multiple datasets will be needed to allow uncertainty assessments (e.g. global warming based on early instrumental record)
- There should be requirements on metadata associated with each dataset, describing uncertainty and usability
- Still an open issue: Whether decadal predictions should be part of the CDS – still a research activity, high risk of failure as an operational service. Seasonal predictions are different because they can be routinely verified (or not).
- The CDS should contain or link to the entire instrumental data record relevant for climate (with some qualifications/practical limitations)
- The value of modern data record (i.e. satellite-based) increases if it can be put in a long-term perspective
- CCCS should support data rescue activities (in-situ as well as satellite) in order to improve the available digital instrumental record

The big picture

- A joint implementation strategy should be agreed among CCCS and other Copernicus services
- CDS should provide a seamless interface to the ESGF for multi-model runs.
- The CCCS needs climate-compliant NRT products; some may be provided by other Copernicus services. This should be investigated as a first step.
- There are questions about how climate scenario productions requested by various EC services will be funded. Presumably not by CCCS. Member-state requirements will also drive the development of the CCCS.
- Dedicated action should be undertaken to coordinate with key related international initiatives beyond Europe, such as
 - Global Framework for Climate Services
 - CEOS/GCOS implementation
 - The GEO SBAs
 - ...

Strong recommendation

CCCS must be implemented in the most open way possible, with maximum traceability, but respecting IPR: Observations, climate data sets, diagnostic/post-processing tools, prioritizing:

- Free and open data access
- Open source software