

ECMWF Copernicus Workshop
Virtual, 11-12 June 2020



Cross-services interactions

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with contributions from EEA

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Two topics – Cross-services interactions

Two topics:

1. **The Copernicus Knowledge Hubs (CKH):** The concept as envisaged for Copernicus Services 2021-2027, to appear in the technical annex for each Contribution Agreement.
2. **Coordination of *in situ* observations** for Copernicus Services in general, using the (new) CO2 monitoring service as an example.

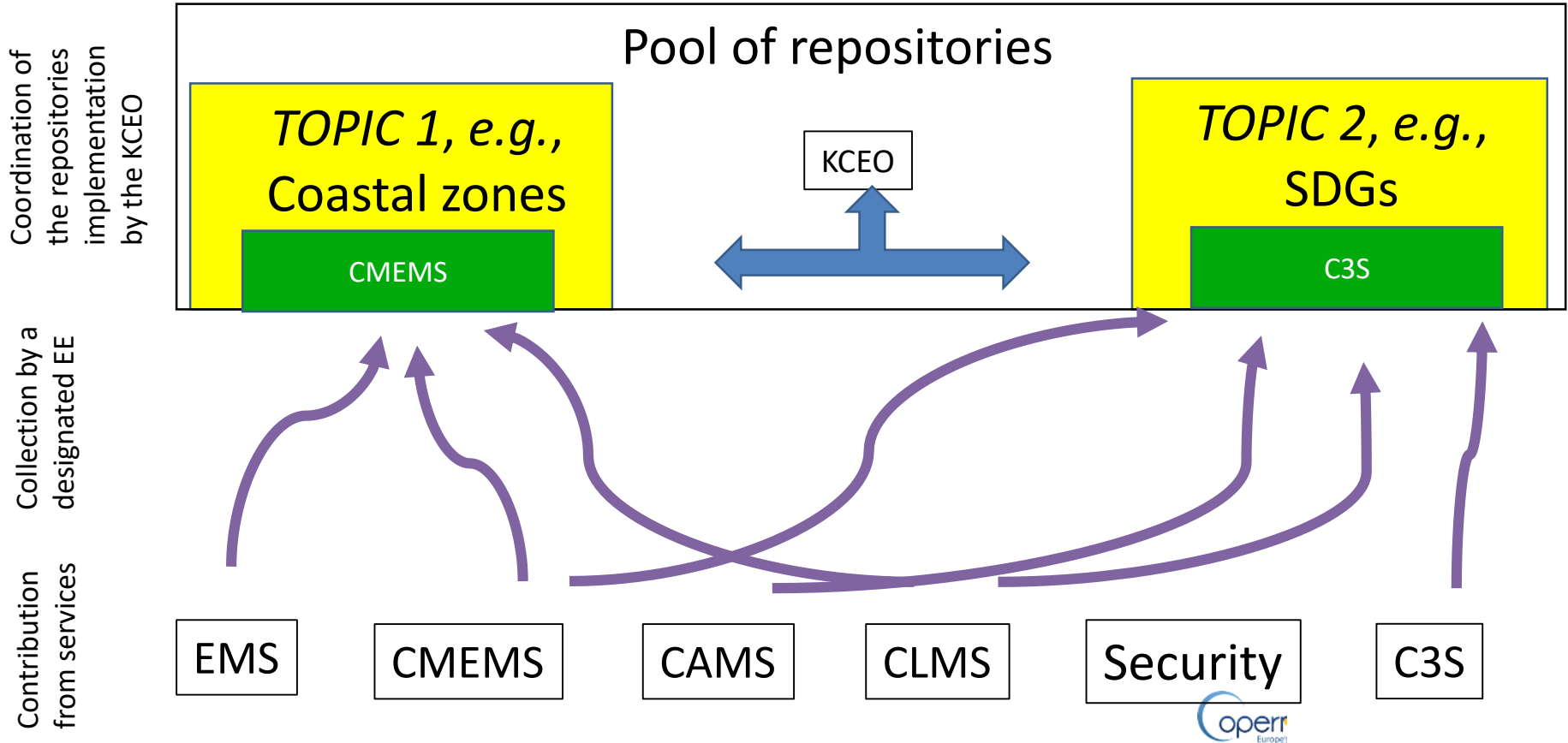


Rationale behind the CKH concept

1. Provide a single entry point for an ensemble of data, products and information addressing a high-level topic/strategy/policy area.
2. Better address Europe's strategic objectives through the Copernicus Services (the Space Regulation, the Green Deal, the Paris Agreement)
3. Ease the user journey
4. Exploit synergies between Copernicus Services.

There will be a phased introduction, coordinated by the Commission's Knowledge Centre for Earth Observations (KCEO).

Functional architecture of the Copernicus Knowledge Hubs





Copernicus

Copernicus Knowledge Hub – the concept

This CKH concept is being developed as an element of Copernicus 2021-2027. Member State consultation is ongoing.

1. The EEs **contribution** products to CKH will be part of their delegated duties.
2. The **collection** process of a CKH will be assigned to a EE (one service), a small activity, with some specific funding.
3. **Coordination** of the CKHs to be handled by the European Commission KCEO (Knowledge Centre for Earth Observation), jointly led by JRC and DG DEFIS.
4. Overall responsibility and **direction** lies with DG-DEFIS

The CKH concept is to be finalised as an element of the Cooperation Agreements 2021-2027. Each year, details agreed with EEs via the annual implementation plans.



Copernicus

Topics for the CKHs

Cross-cutting strategic objectives to be addressed by Copernicus Knowledge Hubs

1. Bio diversity
2. Health
3. Coastal zones
4. The Arctic
5. Energy
6. SDGs the Sustainable Development Goals of the UN
7. Cultural Heritage
8. Support to the Paris Agreement (UNFCCC)
9. ... and potentially several others (Environmental compliance assurance, water management, extreme events, international development, agriculture and food security.)



Copernicus

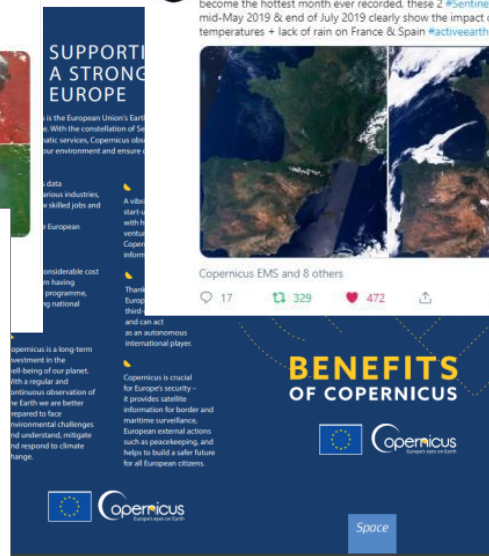
In situ, in general

“Why do we worry about in situ observations – because key user requirements cannot be met unless Copernicus has access to essential in situ data.”

Henrik Steen Andersen (EEA)



Tap into a world
of environmental data



CO2 TASK FORCE, 22-23 JANUARY 2020

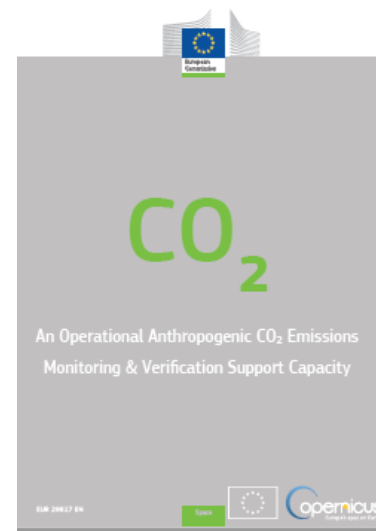


Copernicus

In situ – the Green Report

For the Copernicus CO₂ Monitoring and Verification Support (MVS) capacity, *in situ* observations are required to:

1. Calibrate and validate the space component of the MVS capacity (cal/val),
2. Assimilate data in the models and to integrate information in the core MVS capacity,
3. Validate and further improve physical models that govern the evolution of CO₂ in computer simulations, and
4. Evaluate the output generated by the MVS capacity for its end users.

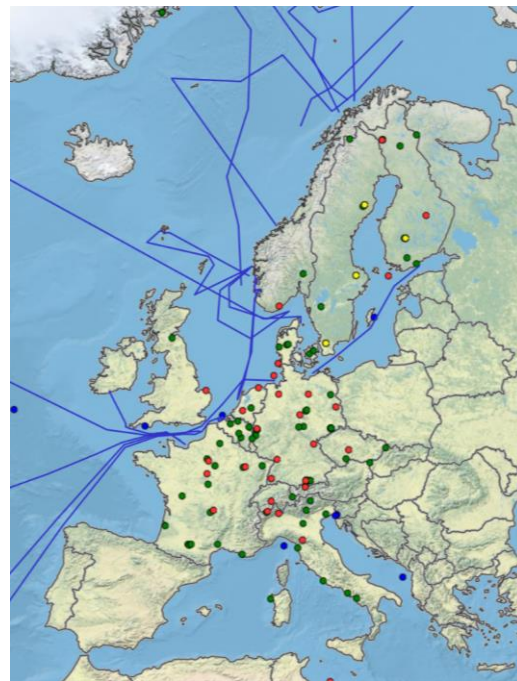




Copernicus

In situ for CO₂ MVS capacity - challenges

- Sparseness of existing networks
 - Focus of fossil-fuel CO₂ (ffCO₂)
 - Focus on urban areas
 - Focus on hot spots
- Ambitious MVS goals – to determine the emissions for countries, cities and hot-spots
- Sustainable funding and governance
- Insufficient *in situ* network is identified as **a significant risk** for the MVS





Approach

1. Assess current *in situ* networks.
 - a. Identify who the main actors are and their plans.
 - b. Determine the projected *in situ* capability.
2. Quantitatively determine the *in situ* observation requirements - relating observation network scenarios with MVS performance projections.
Carry out simulations!
3. Conduct a **gap analysis** (scenario minus projected capability).
4. Address the gaps.

For:

- 1. satellite cal/val needs**
- 2. MVS service operations**



In situ – the role of EEA

EEA the European Environment Agency (Copenhagen):

- The Copernicus *in situ* component provides access to *in situ* data, serving primarily the Copernicus services;
- The Space component includes provision of *in situ* data for cal/val of dedicated mission observations;
- Copernicus relies predominately on existing *in situ* data capacities;
- Member state organizations and many other *in situ* infrastructures and data are essential contributions to Copernicus.

EEA have contracted with EUMETNET to provide access to *in situ* data for Copernicus Services.



In situ sustainability (EEA WG on *in situ* observations, 27 November 2019)

- Copernicus does not directly support *in situ* observations by financial contribution to purchase and/or operations of *in situ* instrumentation;
- Copernicus supports data management activities in CMEMS, C3S, CAMS, CEMS and CLMS;
- Copernicus provides financial support for Copernicus specific activities to pan-European and international networks that are inadequately sustained via national funding mechanisms;
- Promote member States and data providers to emphasize the importance of and demand for sustained *in situ* observations and free exchange of data using the FAIR principles (findable, accessible, interoperable and reusable);
- Improved European coordination and governance structure for *in situ* observations;



In situ – In the Space Regulation

Eligible actions for data acquisition: *“actions to provide and coordinate access to in situ and other ancillary data necessary for the generation, calibration and validation of Copernicus data and Copernicus information, including where appropriate and cost-effective the use of existing national capacities and avoiding duplications.”* Draft Space Regulation April 2019.

- The **Copernicus services, ESA, and EUMETSAT** work directly with *in situ* data providers to collect and control observations needed to produce and validate their products;
- The **EEA** focuses on overall coordination and crosscutting overview, analyses, to Copernicus.
- Copernicus Services relies on **the *in situ* national capacities**