



In situ

Cross-cutting coordination of in situ data activities

Glenn Nolan (EuroGOOS)

Henrik Steen Andersen (European Environment Agency)





The benefits of Copernicus

In situ

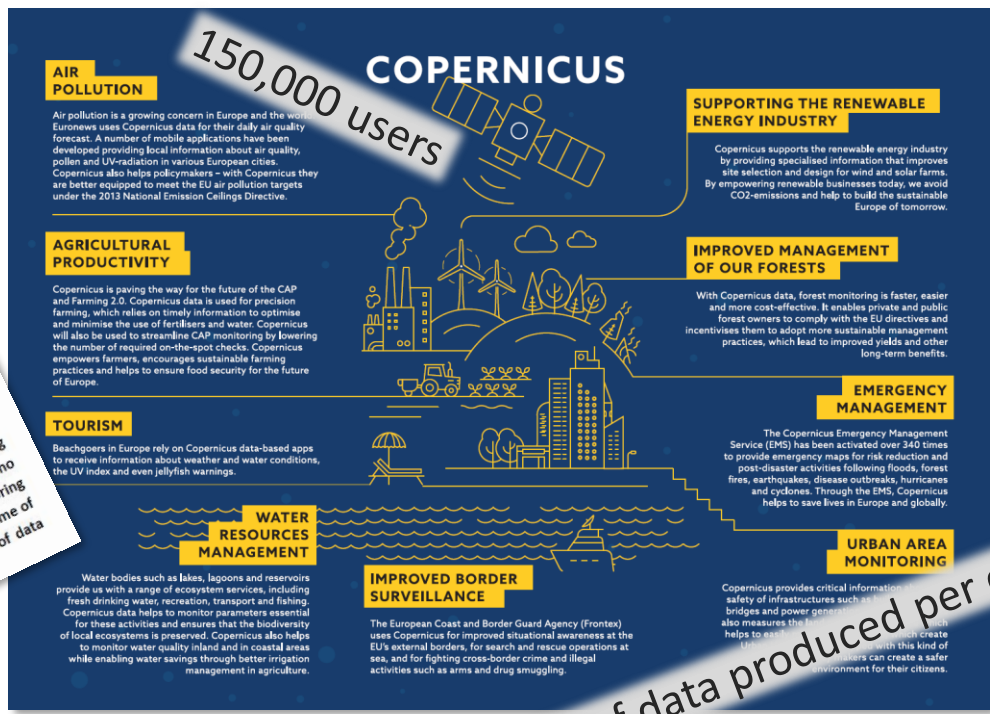


Copernicus: 20 years of History

Bavento, 20 June 2018

20 years of the Copernicus Programme

Today in Bavento, Italy we celebrate 20 years of the EU Copernicus Programme, the leading provider of Earth observation data across the globe. It all started in 1998 with the Bavento Manifesto - a document proposing the creation of a European environment-monitoring programme. 20 years later and with seven satellites in orbit, Copernicus is a flagship programme of the European Union. It provides six operational services and collects tens of Terabytes of data every day.



150,000 users

COPERNICUS

12 terabytes of data produced per day

AIR POLLUTION

Air pollution is a growing concern in Europe and the world. Euronews uses Copernicus data for their daily air quality forecast. A number of mobile applications have been developed providing local information about air quality, pollen and UV-radiation in various European cities. Copernicus also helps policymakers - with Copernicus they are better equipped to meet the EU air pollution targets under the 2013 National Emission Ceilings Directive.

SUPPORTING THE RENEWABLE ENERGY INDUSTRY

Copernicus supports the renewable energy industry by providing specialised information that improves site selection and design for wind and solar farms. By empowering renewable businesses today, we avoid CO2-emissions and help to build the sustainable Europe of tomorrow.

AGRICULTURAL PRODUCTIVITY

Copernicus is paving the way for the future of the CAP and Farming 2.0. Copernicus data is used for precision farming, which relies on timely information to optimise and minimise the use of fertilisers and water. Copernicus will also be used to streamline CAP monitoring by lowering the number of required on-the-spot checks. Copernicus empowers farmers, encourages sustainable farming practices and helps to ensure food security for the future of Europe.

IMPROVED MANAGEMENT OF OUR FORESTS

With Copernicus data, forest monitoring is faster, easier and more cost-effective. It enables private and public forest owners to comply with the EU directives and incentivises them to adopt more sustainable management practices, which lead to improved yields and other long-term benefits.

EMERGENCY MANAGEMENT

The Copernicus Emergency Management Service (EMS) has been activated over 340 times to provide emergency maps for risk reduction and post-disaster activities following floods, forest fires, earthquakes, disease outbreaks, hurricanes and cyclones. Through the EMS, Copernicus helps to save lives in Europe and globally.

TOURISM

Beachgoers in Europe rely on Copernicus data-based apps to receive information about weather and water conditions, the UV index and even jellyfish warnings.

WATER RESOURCES MANAGEMENT

Water bodies such as lakes, lagoons and reservoirs provide us with a range of ecosystem services, including fresh drinking water, recreation, transport and fishing. Copernicus data helps to monitor parameters essential for these activities and ensures that the biodiversity of local ecosystems is preserved. Copernicus also helps to monitor water quality inland and in coastal areas while enabling water savings through better irrigation management in agriculture.

IMPROVED BORDER SURVEILLANCE

The European Coast and Border Guard Agency (Frontex) uses Copernicus for improved situational awareness at the EU's external borders, for search and rescue operations at sea, and for fighting cross-border crime and illegal activities such as arms and drug smuggling.

URBAN AREA MONITORING

Copernicus provides critical information to improve the safety of infrastructures such as bridges and power generation plants. It also measures their health and helps to assess their risk. It can create heat maps and, with this kind of information, city planners can create a safer environment for their citizens.



In situ

EEA's main cross-cutting activities

Maintain an overview of the Copernicus In Situ Component

Improve access to selected in situ data

Raise awareness about the Copernicus In Situ Component

The EEA is supported by EuroGOOS and EUMETNET





In situ

Known key in situ data challenges

- Sustainability
- Data policy
- Accessibility
- Data quality
- Coverage
- Timeliness
- Data gaps

“Stable and sustained long-term solutions are needed”

“Use restrictions are often incompatible with Copernicus’ data policy”

“Acknowledgement and attribution of ownership”

“Sustainability of in situ observing systems remains a strong concern”

“Access to locally available observations”



In situ

CMEMS' views on what to improve

Cooperation with pan-European and global networks

... CMEMS has a powerful capacity to collect and prepare in situ data from European (EuroGOOS ROOS) and international networks. This should be developed further in Copernicus 2.0.

Address data gaps

... There are critical gaps in sampling for physical (e.g. currents, temperature, salinity, sea level) and biogeochemical observations (e.g. carbon, oxygen, nutrients, chl-a).

Ensure sustained data provision through improved coordination and co-funding

... Sustainability of the in situ observing systems remains a strong concern. This calls for improved coordination (EU delegated entities, member states, in situ infrastructures, EuroGOOS, etc). Moreover, co-funding mechanism should be set up to complement national activities.

These new mechanisms can be considered in the framework of a future European Ocean Observing System (EOOS).



In situ

The EEA is creating an overview

Requirement details

Name	Chlorophyll
Note	
Dissemination	NRT Service
Quality Control Procedure	Automatic

Data details

Name	Chlorophyll
Note	
Update Frequency	Hourly
Area	North Atlantic
Name	ARC
Acronym	
Description	Artificial
Note	

Product details

Data provider network

Name	NOG
Description	
Countries	Belgium Denmark France Germany Ireland Netherlands Norway Sweden United Kingdom
Members	Rijkswaterstaat Water, Traffic and Environment National Institute for Coastal and Marine Management Royal Belgian Institute of Natural Sciences, Directorate Natural Environment Defence Centre for Operational Oceanography Mifréo-France Bundesamt für Seeschifffahrt und Hydrographie University of Oldenburg, Institut für chemie und biologie des meeres (ICBM) Marine Institute Centre for Materials and Coastal Research (Helmholtz-Zentrum Geesthacht) Service Hydrographique et océanographique de la marine Norwegian Institute for Water Research Koninklijk Nederlands Meteorologisch Instituut Finnish Ministry of Mobility and Public Works, Agency for Maritime and Coastal Services, Coastal Division Institute of Marine Research in Norway Natural Environment Research Council (NERC) / National Oceanography Centre (NOG) Met Office Centre for Environment, Fisheries and Aquaculture Science Norwegian Meteorological Institute Institut Français de Recherche pour l'Exploitation de la Mer Swedish Meteorological and Hydrological Institute Danish Meteorological Institute Nansen Environmental and Remote Sensing Center
State	Draft
Created by	Erik Buch, erik.buch@eurogoos.eu

Edit requirement



FACT SHEET ON COPERNICUS IN SITU DATA REQUIREMENTS



COPERNICUS MARINE ENVIRONMENT MONITORING SERVICE

The Copernicus Service rely on a wide range of monitoring systems. This Fact Sheet provides an overview of the data collected from ground-based, sea-borne or air-borne monitoring systems. This data are collectively referred to as "in situ" data. Copernicus Services at component level.

Fact Sheets

Edit data

Delete data

Close

Delete product



The Copernicus In Situ Component Information System

EA/ROM/15/066/073 Issue 1.0 Date: 31/03/2017
Research Infrastructures and Copernicus

Framework Service Contract EEA/IDM/15/026/LOT 1 for Services supporting the European Environment Agency's (EEA) implementation of cross-cutting activities for coordination of the in-situ component of the Copernicus Programme Services

Thematic Report

Research Infrastructures and Copernicus

A wide variety of in situ data is collected over decades. These data include temperature, dissolved oxygen, turbidity, chlorophyll, etc.

Operational use in CMEMS
In situ data are assimilated in operational forecast models of the ocean. This improves the accuracy of the forecasts.

Reports



Examples of reports produced by the In Situ Component of the Copernicus Programme Services
IPCC

European Environment Agency



European Commission





In situ

The EEA is raising the awareness

Policy Infrastructure Marine Observations

Integrated and Sustained Ocean Observing System: A European Strategy

A full-day European Ocean Observing System (EOOS) forum on 8 March brought together 80 ocean science managers, researchers, policymakers and private companies on the topic of ocean observations.



Marine Observations

An interview with Loïc Petit de la Villéon, Deputy Coordinator CMEMS In Situ Thematic Assembly Centre

The Copernicus Marine Environment Monitoring Service (CMEMS <http://marine.copernicus.eu/>) measures, models and forecasts the state of the global oceans and regional seas, providing more than 150 specific products comprising data from satellite images, ocean forecast models and ocean observations (measurements taken in the sea). Within CMEMS, the In Situ Thematic Assembly Centre (INSTAC) ensures that a steady supply of these in situ ocean measurements is made available to the other service components. Loïc Petit de la Villéon, Deputy Coordinator of the CMEMS INSTAC, told us more about what INSTAC does for CMEMS, how it works, and why it is important for the Copernicus Marine Service.

The information required to design observing infrastructures. Measurements taken for various standards. To address these issues, an integrated European

EOOS will address marine in situ measurements in a framework, allowing all users to

High quality marine in situ data from the Marine Environment Monitoring Service Component access to the most critical sustainability issues, and add



Loïc Petit de la Villéon, Deputy Coordinator of the Copernicus Marine Service's In Situ Thematic Assembly Centre

1. Could you explain what the INSTAC does?

The In Situ Thematic Assembly Centre, or INSTAC, is one of the components of the Copernicus Marine Service.

Observations Marine

In situ data critical for the Copernicus Marine Service

The Copernicus Marine Environment Monitoring Service benefits from a range of in situ observations from a wide variety of platforms, including autonomous ocean-based observatories and sensors. Almost 9000 platforms supply the service with data, which is critical for the production of the Copernicus Marine Service products.



In situ data in global CMEMS

Operational use of in situ data by Bojan Bojkov

Jun 15, 2018

ment Monitoring Service (MMS) provides information on the current state and future state of the ocean, including forecasts, coastal protection and ocean models. The MMS products comprise the following:

ment realized through the In Situ Thematic Assembly Centre (INSTAC), including, predicted WMO-IOC Commission for the Scientific Data (SeaDataNet), and in situ marine data.



Land Infrastructure Marine Observations

Copernicus projects for high-quality in situ validation: the TRUSTED case study

To achieve the desired quality of Sentinel-3a Land Sea Surface Thermal Radiometer (SLSTR) products, the sensor needs to be calibrated with very accurate in situ measurements. Several dedicated fiducial reference measurement (FRM) initiatives are collecting new sets of in situ measurements for Copernicus that are traceable, long-term, and calibrated to the International System of Units (SI). Among them is the TRUSTED project, which is spearheading the deployment of an array of temperature-measuring surface drifters.



Temperature-measuring surface drifters. Credit: NEE

Earth Observation programs provide the scientific community with continuous large-scale datasets. They have the advantage of being able to provide data everywhere regardless of accessibility issues (geophysical or political) and for some sensors regardless of meteorological conditions.

Policy Spatial data Observations

In situ data of various kinds is used operationally to verify satellite data products and calibrate satellite instruments. Dr. Bojkov, Head of the Remote Sensing and Products Division in the Department of Technical Support and Science at EUMETSAT, explained the close links between space and in situ data, and the [...]

READ MORE

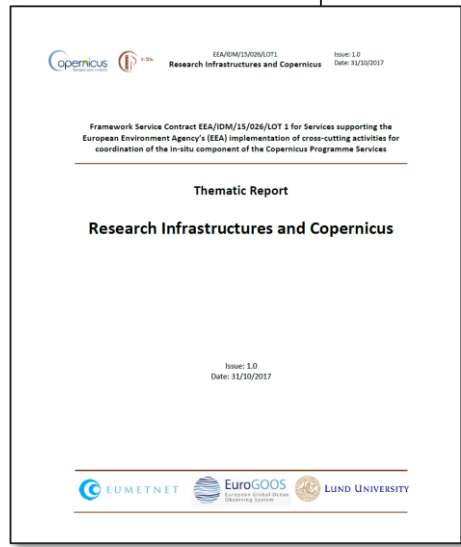
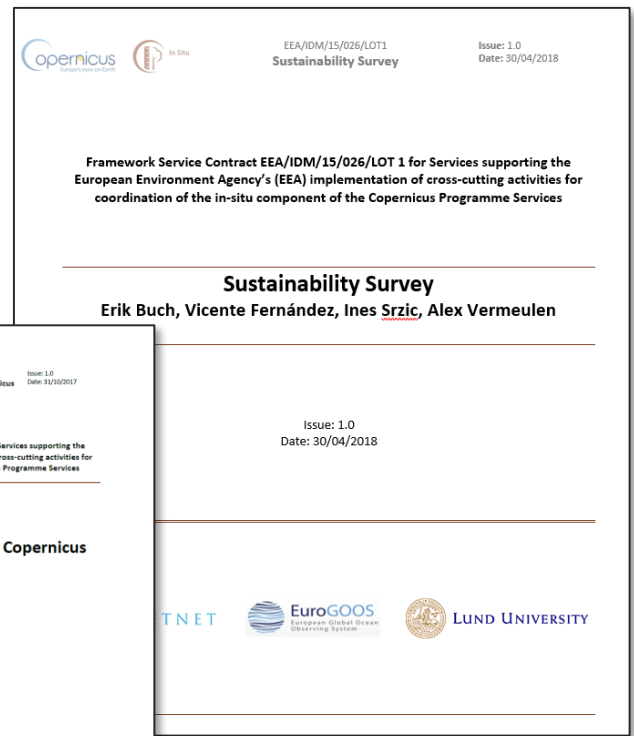


Key observing systems' sustainability

In situ

The EEA is striving to document key observing network's level of sustainability.

With a view to influencing decision makers at national and European level.





In situ

Sustainability – key findings

Funding sustainability	Ocean	Meteo.	Atm. Composition
Solved today, no problems foreseen in the future	28%	68%	30.0%
Solved today, but problems foreseen in 2-3 years	52%	27%	40.0%
No funding today, but plans for funding in the near future is under	7%	3%	
No funding today and no plans for funding in the near future way	9%	2%	30.0%
Other	4%		

Funding sustainability of the environmental in situ observing networks in Europe

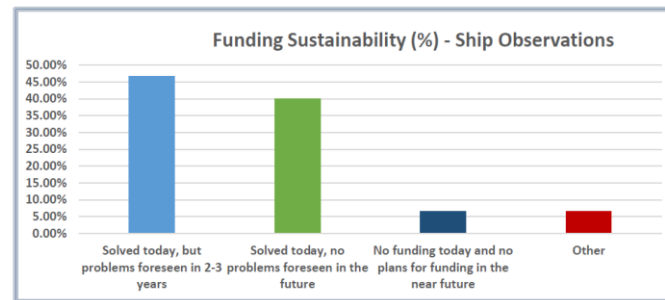
The Copernicus In Situ Coordination team conducted a survey to analyse sustainability of in situ measurements and infrastructures for ocean, atmosphere and met services. The survey shows remarkable differences in the funding of observations and indicates a direct link between the source of funding and the funding sustainability. For most meteorological observations, the funds are provided sustainably by national institutions, while for most of atmospheric composition and ocean observations, the main bulk of funding comes from short-term or research projects and is claimed unsustainable in the long term.



New article

Ship observations

Around 40%, out of 15 responds, of the ship-based observation systems around Europe are sustained in the future.



ARGO (profiling floats)

Only 2 national systems (Norway and Finland) have a sustained system, the others, including Euro-Argo, may have problems in the next 2-3 years.

Ferry Box

All (4) Ferry Box Systems have replied they foresee problems for the next 2-3 years



In situ

EU budget: A €16 billion Space Programme to boost EU space leadership beyond 2020

EU Space Budget - 06/06/2018

Space technology, data and services have become indispensable and are used every day by Europeans.

They also play an essential strategy role and ensure Europe's leadership and autonomy in space.

For the next long-term EU budget 2021-2027, the European Commission is proposing to devote €16 billion to help maintain and further enhance the EU's leadership in space.

It is proposed to allocate this budget as follows:

- €9.7 billion for Galileo and EGNOS, the EU's global and regional satellite navigation systems
- €5.8 billion for Copernicus, the EU's Earth Observation programme
- €500 million to develop new security components





In situ

For more information

Copernicus Europe's eyes on Earth
 In Situ
 About | Contact us | Log in
 Search
 HOME STATE OF PLAY OBSERVATIONS SPATIAL DATA DATA ACCESS LIBRARY NEWS
COPERNICUS IN SITU COMPONENT
 Copernicus Services rely on the availability of a wide variety of In situ data. These data are used for production and validation of Copernicus products and are also provided to users as observations in their own right.
 READ MORE

Copernicus Europe's eyes on Earth
 In Situ
 HOME STATE OF PLAY OBSERVATIONS SPATIAL DATA DATA ACCESS LIBRARY NEWS
SUBSCRIBE TO THE NEWSLETTER

In situ.copernicus.eu

EXPLORE THE COPERNICUS IN SITU COMPONENT

Copernicus is the European Union's revolutionary Earth observation programme. Copernicus offers a world of insight about our planet to global citizens, public authorities, policy makers, scientists and business. Copernicus is openly and freely available to everyone at no cost.

Copernicus transforms information from satellite observations into operational services for keeping watch over the planet Earth's land, sea and atmosphere, monitoring climate change, supporting disaster risk management and safeguarding civil security.

The Copernicus Services rely on many environmental measurements collected by data providers external to Copernicus, from ground-based, sea-based monitoring systems, as well as geospatial remote sensing and ancillary data, collectively referred to as "in situ" data.

The Copernicus In Situ Component maps the landscape of In situ data availability, identifies data access gaps or bottlenecks, supports the provision of data and manages partnerships with data providers to improve access and use conditions.

Discover the Copernicus Services



Marine



Atmosphere



Land



Security



Emergency



Climate

Home » Newsletter » Subscribe to the Newsletter

Subscribe to the Copernicus In Situ Newsletter

Use the form below to subscribe to our newsletter.

First Name

Last Name

Organisation

Email

Country

Please select country...



I accept the EEA's terms and conditions

SUBMIT

Subscribers list

European Environment Agency



European Commission





In situ

Thank you for your
attention

