



A world of environmental data



The European Centre for Medium-Range Weather Forecasts (ECMWF) implements the Copernicus Atmosphere Monitoring Service (CAMS) and the Copernicus Climate Change Service (C3S) and assists in the Copernicus Emergency Management Service (EMS) by improving flood forecasting.



Atmosphere
Monitoring Service



Climate
Change Service

1 We place Europe's environment in the context of the changing climate

We provide information on essential climate variables, seasonal forecasts and climate projections to help visualise global, European and regional changes. For instance, our monthly surface air temperature maps help to keep track of global and regional effects of the changing climate. We also monitor precipitation and soil moisture levels worldwide and keep an eye on the state of our atmosphere. Our 'European State of the Climate' provides an overview of essential climate indicators of the past year.

2 We provide climate information that Europe needs

Our observational data and forecasts on CO₂ and other greenhouse gases provide a monitoring tool for the COP21 Paris Agreement. By monitoring 40 essential climate variables we provide key climate information to policy and decision makers to help achieve a more sustainable future.

↑ Increase of 2.5 ppm per year in CO₂ concentration in air during last decade.

↑ Around 1.8°C increase in European surface air temperature since latter half of the 19th century.

3 We support the United Nations Sustainable Development Goals (SDGs) and provide services to European businesses, policy and decision makers

By providing air quality data we support sustainable health solutions. Practical applications based on the data provided by the Copernicus services range from smartphone apps that inform European citizens about the air quality to maps that show longer-term climate predictions to assess future river flows. We also provide the renewable energy sector with the necessary information to make renewable energy more viable and by providing climate indicators to policy and decision makers we support climate action.

4 Copernicus benefits society

Our services lead to net savings across many industries because of cost reductions. For instance, by improving forecasts a 2% increase in revenue has been achieved for photovoltaic electricity producers. Air quality forecasting has allowed a 60% improvement in the precision of monitoring pollutant migration.

5 Copernicus data is freely accessible and open to all

Thanks to our open-data policy all kinds of different sectors use our services, from health to transport, water management, energy, insurance, tourism and many more.

Open access to Copernicus data leads to excellent downstream services, e.g. air quality apps, wind speed forecasting maps, extreme weather prediction for insurance policy makers. This creates jobs, especially for SMEs, in all EU member states.

Agriculture and forestry



Energy



Water management



Health



Tourism



Coastal areas



Insurance/
Transport/
Infrastructure/
Disaster risk
reduction

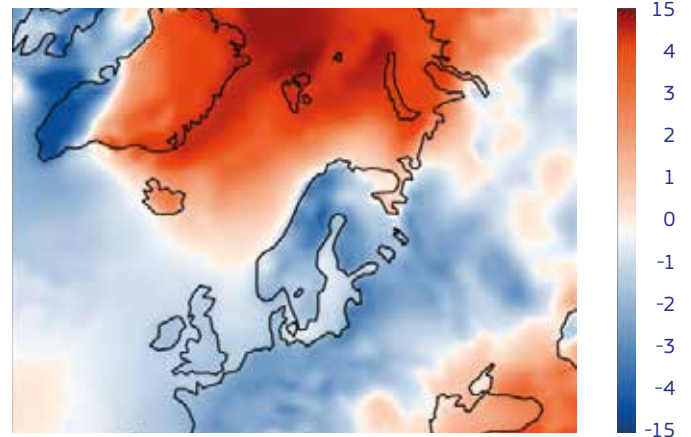


The Copernicus Climate Change Service (C3S)

The Copernicus Climate Change Service (C3S) combines observations of the climate system with the latest science to develop authoritative, quality-assured information about past, current and future states of the climate in Europe and worldwide.

Sample of data from C3S:

Surface air temperature (°C)



Anomalies in surface air temperature for February 2018 with respect to February averages for the period 1981-2010. **Source:** ERA-Interim. (Credit: ECMWF Copernicus Climate Change Service)



The Copernicus Atmosphere Monitoring Service (CAMS)

The Copernicus Atmosphere Monitoring Service (CAMS) provides continuous data and information on atmospheric composition to help policymakers, businesses and citizens address these environmental concerns.

Sample of data from CAMS:

Fine particulate matter (PM10) ($\mu\text{g}/\text{m}^3$)



European air quality forecast for 4 April 2018 with respect to fine particulate matter (daily mean). **Source:** CAMS. (Credit: ECMWF Copernicus Atmosphere Monitoring Service)

Find out more

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climate.copernicus.eu
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copernicus.eu
ecmwf.int

Twitter

@CopernicusECMWF
@CopernicusEU
@ECMWF

Copernicus Communication

copernicus-communication@ecmwf.int

Media Enquiries

silke.zollinger@ecmwf.int