

Copernicus: achievements & perspectives

Empowering a strong, competitive and efficient Europe

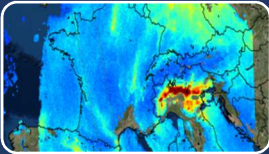
A space programme for Europe's citizens and public policies



Copernicus services assist Europe's grand challenges

Copernicus is the outcome of a common ambition of the EU, European Space Agency and the Member States to provide reliable, up-to-date, free, full and open information about our continent and our Earth. Through an investment of € 4.3 billion under the 2014-2020 EU multiannual financial framework, it provides services for land monitoring, marine monitoring, atmospheric monitoring, climate change, emergency management and security. To enable these services, it has created an autonomous European system of Earth observation, including the Sentinel satellites and data infrastructures.

Copernicus applications for our continent and world

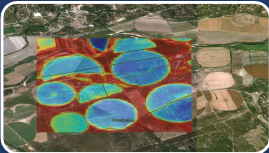


Meteorology & Climate:

Climate and weather monitoring, forecasting, projections and prediction

Air pollution monitoring:

Detailed local air quality alerts and forecasts, mapping population vulnerability

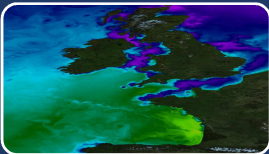


Agriculture :

Assessing agricultural land use, trends and their impacts on biodiversity and landscapes, crop conditions and yield forecasts; Support to public authorities and farmers in improving irrigation management

Resources management:

Mapping and protecting European forests, monitoring biodiversity in protected areas, fight against certain traffic (e.g wood), alerting on the overexploitation of given resources



Ocean management:

Monitoring the ice extent in the arctic, understanding the effects of global sea level rise, bathing water and harmful algal blooms or the sea plastics



Natural/ artificial hazards :

Early warning for forest fires and floods, mapping geohazards for safer planning and development, monitoring oil spills, tracking the path of volcanic plumes to make air transport safer

Crisis management:

Preparedness, risk reduction and crisis recovery, anticipation and early warning before crises



City planning :

Urban sprawl monitoring, traffic management applications

The growing impact of Copernicus

Starting deployment in 2014, seven Sentinel satellites are now in operation and delivering data (even beyond the expected volume) recognized worldwide for their unmatched quality.

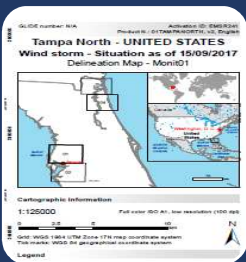
- Over 12 Terabytes of data delivered per day (something like 6,000 DVDs)
- More than 120,000 people registered as active Copernicus users
- Steeply increasing use of the information supplied by the Copernicus services
- 80 activations of the Copernicus Emergency Management Service in 2017. *Disasters covered include: storms and floods in Europe, forest fires in Spain, Portugal, Greece, hurricane Ophelia in Ireland, windfall in Poland and internationally – Hurricanes Harvey and Irma in the US and the Caribbean, earthquakes in Mexico and Iraq.*

More case studies and Copernicus success stories can be found at: <http://www.copernicus.eu>



February 2018: Floods in Lithuania

Flooding is an annual occurrence in the Silute District Municipality in Western Lithuania, but this autumn and winter it suffered the longest flooding event in decades. On 31 January, the water level rose again, reaching 105 cm on the main road connecting the district with the rest of Lithuania. The Lithuanian Fire and Rescue Department declared a State of emergency and the government of Silute Municipality requested military assistance to support the evacuation effort. The Copernicus Emergency Management Service was activated on 1 February to support the actions by mapping the extent of the flood using the Sentinel 1 all-weather satellite radar



September 2017: Hurricane Irma

US authorities (through the Office of the Spokesperson, U. S. Department of State, Washington, DC, 6 September 2017) officially thanked the European Union for Copernicus data in the crisis management during Hurricane Irma: "Since 25 August, Europe's Copernicus Emergency Management Service (EMS)...has generated up-to-date, satellite-based maps of the flood extent. In combination with U.S. satellite data, these maps are critical tools for relief operations by U.S. federal, state, and local disaster responders. With Hurricane Irma projected to reach the Caribbean Islands and the East Coast of the United States, the delivery of EMS products will shift to addressing the response to that major storm"

Copernicus a driver for Europe's leadership in Earth Observation

Through its services, data and satellite infrastructure, Copernicus has reinforced Europe's global leadership in Earth observation.

This leadership is reflected first and foremost in Europe's ability to access EO data that plays a key role in feeding the digital economy and supporting policy-making processes. It enables Europe to better address the challenges facing today's society – from sustainable agriculture to climate change. All this without relying on a non-European source.

But it also underpins the competitiveness achieved today by the European space industry in the manufacturing and export of Earth Observation systems – a market in which our space manufacturers are leaders. It is widely recognized that the expertise and know-how capitalized through the development of the Copernicus program have fuelled this competitiveness. Moreover, Copernicus adds credibility for our industry against its international competitors, thereby "opening doors" to facilitate the access to markets.







Post-2020 evolution of Copernicus

The continuity of Copernicus as a top priority

It is essential to make the sustainability of the Copernicus program a top priority, in order to ensure seamless continuity in data and services provision from space infrastructures and ground sensors.

Promoting the uptake of applications derived from Copernicus services remains vital – and we acknowledge and endorse the commitment of the European Commission in this. The expected economic, social and environmental benefits undeniably justify the investment in the development of this segment of the market.

It has to be noticed that any uncertainty regarding access to data from Copernicus in the long term would jeopardize the development of the services market and the confidence of potential investors.

Sector impacted		Cumulated benefit (2017-2035)
	ATMOSPHERE & CLIMATE <ul style="list-style-type: none"> Air quality and pollution monitoring Solar energy monitoring and forecasting Climate modelling 	Between €7.6B and €10.6B (€5.0B and €6.9B)
	LAND <ul style="list-style-type: none"> Crop monitoring Forestry protection Water resources management Wetlands monitoring CAP monitoring Ground elevation and ground motion monitoring Support to land mapping 	Between €28.1B and €61.1B (€17.7B and €38.5B)
	BUILT ENVIRONMENT <ul style="list-style-type: none"> Urban area monitoring Offshore wind renewable energy Oil & gas infrastructure management Mining and quarrying: raw materials exploration and extraction 	Between €11.1B and €31.8B (€7.3B and €20.6B)
	MARINE & OCEAN <ul style="list-style-type: none"> Coastal area monitoring Marine resources management Water quality monitoring Ice monitoring to support winter navigation/ship routing Maritime navigation 	Between €2.3B and €7.3B (€1.5B and €4.9B)
	DISASTERS & GEOHAZARDS <ul style="list-style-type: none"> Fire detection and monitoring Flood monitoring and forecasting Pandemic monitoring 	Between €25.4B and €44.5B (€16.3B and €28.4B)
	SECURITY <ul style="list-style-type: none"> Control of IUU fishing Maritime safety – Search & Rescue Oil pollution monitoring Law enforcement and international crime EU borders surveillance Support to EU external action 	Between €7.5B and €14.7B (€4.7B and €9.6B)
<i>Downstream & end-user benefit – figures produced by PwC for the European Commission</i>		

Maintaining the public dimension of Copernicus' space infrastructure

The public dimension of Copernicus' space infrastructure, has to be maintained, given the strategic nature of the program. Some services - such as monitoring climate change - are, intrinsically, not profit-oriented: the largely institutional perimeter of the data use does not support viable business models by the private sector. Preserving this public dimension is also a measure of "industrial policy", as it helps to position European industry against its global competitors.

In line with the objectives in the current Copernicus Regulation, it would be fully appropriate to reaffirm that the long-term development of a competitive European space and services

industry will remain one of the “*raison d’être*” of Copernicus after 2020. It would thus acknowledge the strategic dimension of the European space sector, as recognized by the recent “Space Strategy for Europe”.

Partnership with Europe’s space manufacturing industry

In the same way that long-term commitment is vital for the development of applications and impacts of Copernicus, such commitment is also critical for the space manufacturing industry invested in the creation and further development of Copernicus infrastructure. In addition, industry requires a stable interface between the stakeholders in charge of the development.

Furthermore, the position of Europe’s manufacturing industry is supported and impacted by the delivery of continuous and reliable data and services to users, endorsing the relevance and quality of the infrastructure it has created. In that sense, the satellite manufacturing industry benefits from the shared success of the end-to-end Copernicus.

Developing Copernicus at the service of Europe’s security

As emphasized in the *Space Strategy*, Earth Observation and Copernicus are indispensable enabling tools to improve the EU’s capacity to respond to evolving challenges in security & defence, in particular for border controls and maritime surveillance.

In this perspective, opening the way to further synergies between Copernicus and the development of a strong EU foreign and security policy is a very attractive, and sits well with the identification of “*permanent earth observation*” amongst the key capabilities mentioned in the *European Defence Action Plan*.

Reaping the full benefit of Copernicus in transversal EU policies

Making Copernicus an integrated tool at the service of the EU’s public policies, growth and the well-being of European citizens should be a collective aim shared by the EU institutions.

The programme should be considered as a transversal instrument providing operational solutions answering priorities and objectives of various DGs of the European Commission.

The proposed expansion of the Sentinels’ observational capabilities, including the quantification of anthropogenic sources of carbon dioxide, Arctic monitoring for transport and climate, enhanced agricultural and land observations, reinforces the ambition to maximize the transversal impact of Copernicus in EU public policies.

In line with this objective, and as requested twice by the European Parliament to the European Commission, a screening exercise of major legislative and non-legislative initiatives could be performed, aimed at making sure the benefits space can bring (in this case those provided by Copernicus) are taken into account.

IN A NUTSHELL

- The Copernicus programme is already delivering concrete results at the service of EU citizens and economy, within the boundary of the planned budget.
- Supporting the budgetary ambitions of DG GROW (i.e. doubling the budget dedicated to Copernicus) will be absolutely key to:
 - Ensure data are easily available to anyone, everywhere into the future
 - Develop a full ecosystem of applications and services for users, and make Copernicus a fully integrated tool at the service of other EU policies
 - Expand and extend the Sentinel satellites constellation to face evolving challenges and needs