Copernicus & COVID-19

The EU Earth observation initiatives

Directorate-General for Defense Industry and Space
European Commission

European Centre for Medium-Range Weather Forecasts (ECMWF)
European Space Agency (ESA)
Rapid Action on COVID-19 and EO
Rapid Action on COVID-19 and EO

Objectives

• Provide public EO info on the state of European society and economy
• Using European EO: Copernicus Sentinels and Third Party Missions
• Leveraging on European companies capabilities and using AI powered latest platforms technology

Focus areas

• **Climate**: greenhouse gas concentrations
• **Environment**: air and water quality evolution
• **Economic** indicators: industry, shipping, construction, trade, traffic
• **Agriculture**: asparagus, red fruits etc.
Achievements

Single source of truth – EO data from Copernicus Sentinels and Third Party Missions
Made in Europe, combining ESA expertise with European industrial skills and EO Platforms leveraging AI4EO
Straightforward to use by non-technical users
Informative for general public and decision makers
Communicates the effects of the lockdown on the environment and the economy, observable from space
Engaging public and community via the EuroDataCube contest

66 ECONOMIC €
28 AGRICULTURE
35 ENVIRONMENT
31 COMPANIES

100,000 visitors!
Showcases real examples of the pandemic’s effects in 200+ representative Areas of Interest across the EU* through 129 Indicators* such as air and water quality, agricultural production, travel, manufacturing or trade.

*as of 01/09/2020

From idea to launch in 2 months
Next Steps

**New Data**
Dashboard will be expanded with new data throughout the economic reboot

**Increased Coverage**
Coverage of additional Member States, provision of new indicators, and transfer to operations, building on success

**International Cooperation**
The Dashboard is coordinated with international cooperation efforts
Recent addition: daily “COVID-19 emissions” scenario runs + advanced “Air Control toolbox”

What would be today’s forecast of NO2 (PM10, PM2.5) under normal circumstances? What would be today’s forecast of NO2 (PM10, PM2.5) with emissions changed because of COVID-19 related measures? What is the difference between the two?

Crude hypotheses at this stage: -60% for road traffic, -30% for industrial, +20% for residential, and no change for agricultural activities or maritime shipping as well as for natural sources. Powered by Ineris (France).
Maps and animations of the latest situation in Europe.

Forecast model estimate of reduction in air pollution is expected on a daily basis accounting for weather effects.

CAMS currently contributes to a number of epidemiological studies trying to evaluate the links between air pollution and COVID-19 (effects of long- and short-term exposure; fine particulate matter as a potential vector in air for the virus?...)

Air pollution across Europe compared to 2017-2019 and as a function of lockdown measures.

How consistent are surface and satellite measurements?

CAMS IN ACTION : CAMS COVID-19 MINISITE


CAMS regional air quality forecasts: Météo-France, Ineris (FR)
CAMS COVID-19 scenario forecasts: Ineris (FR)
CAMS website: ECMWF
CAMS IN ACTION: SENTINEL-5P, AIR QUALITY FROM SPACE

NO₂ Total Column

Mid-March to mid-April 2019

Mid-March to mid-April 2020

S-5P is the 1st satellite to provide credible measurements of air quality.

CAMS also showed that erroneous use of S-5P data led to think that effect of restriction measures on US air quality were earlier and stronger than in reality.
C3S helps health experts explore how temperature and humidity affect virus spread

Recent research suggests that the spread of the new coronavirus (SARS-CoV-2) could be affected by temperature and humidity, so the C3S has worked with environmental software experts B-Open to develop an application that maps mortalities against temperature and humidity data. The application allows health authorities and epidemiology centres to explore the claims that temperature and humidity could affect the spread of coronavirus.
Earth Observation Training, Education, and Capacity Development Network

CEOS - Coordination Group for Meteorological Satellites

GEO - Global Earth Observation System of Systems

CGMS - Committee on Earth Observation Satellites

EOTEC DevNET

UNOOSA - United Nations Office for Outer Space Affairs

WMO - World Meteorological Organization

EO-related capacity building activities (UN-SPIDER, ICG, PSA...)

UN Climate Change Paris Committee on Capacity Building Network

CGMS Virtual Laboratory Training & Education in Satellite Meteorology

GEO Capacity Development Working Group

CEOS Working Group on Capacity Building & Data Democracy

Coordination Group for Meteorological Satellites - CGMS
Thank you for your attention

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