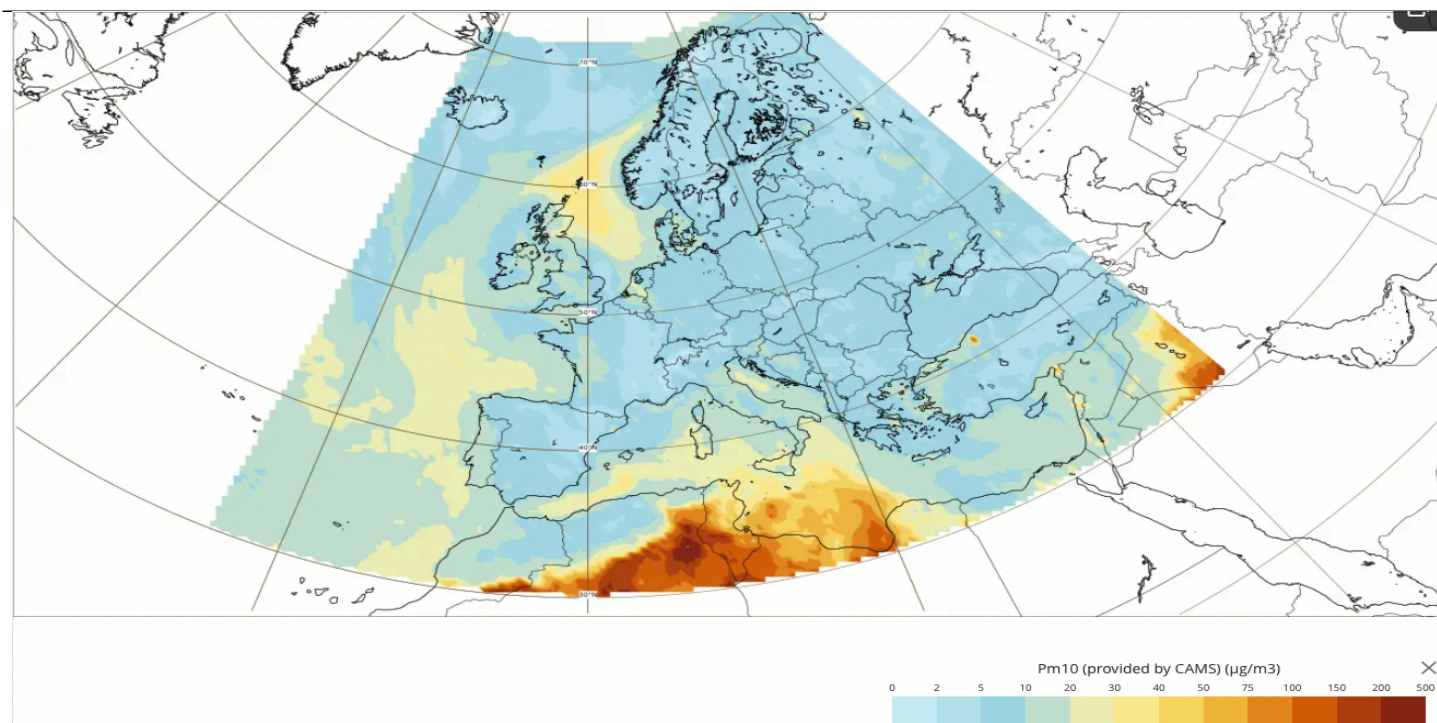




## **Observer: Copernicus data supports Member State compliance with EU air quality regulations**



The European Union is paving the way towards adopting one of the world's most ambitious air quality regulations. The revision of the Ambient Air Quality Directives is moving forward, and Member States will have to set strict monitoring and evaluation standards. The new Directives explicitly mention Copernicus, the Earth Observation component of the EU Space Programme, and particularly the Copernicus Atmosphere Monitoring Service (CAMS), as relevant tools to support Member States in their monitoring obligations.

The [revised European Ambient Air Quality Directives \(AAQD\)](#) are on track to be approved after the European Parliament adopted a revised political agreement with the EU Member States on the AAQD on 24 April 2024. The deal with the EU Council was a key step towards adoption. The legislation will be published in the EU Official Journal once both Parliament and the Council adopt it, after which EU Member States will have two years to transpose the Directives into national law.

## What changes in the revised AAQD?

The revised Ambient Air Quality Directives set new, more restrictive, standards for several key air pollutants including particulate matter (PM<sub>2.5</sub>, PM<sub>10</sub>), ozone (O<sub>3</sub>), nitrogen dioxide (NO<sub>2</sub>) and sulphur dioxide (SO<sub>2</sub>). For example, the limits for PM<sub>2.5</sub> and NO<sub>2</sub>, considered to be the most harmful substances for human health, will be very significantly reduced from 25 µg/m<sup>3</sup> to 10 µg/m<sup>3</sup> and from 40 µg/m<sup>3</sup> to 20 µg/m<sup>3</sup> respectively.

The Directives also establish new target values for pollutants and a new framework for alert and information thresholds, long-term objectives, evaluation, and monitoring. The new limits and targets are expected to be reached by 1 January 2030 and shall be reviewed at least every five years, or earlier if recommended by new scientific findings, with the objective of zero pollution by 2050.

The AAQD provisions are considered more protective of human health and environmental protection levels and in better agreement with the latest [World Health Organization Guidelines](#), published in

The revised Directives place an unprecedented emphasis on the development of strong air quality monitoring, providing better support to local authorities in their efforts, setting up a scientific framework and calling for monitoring tools that provide accurate, reliable, and comparable air quality information across Member States.

## **A pivotal role for the Copernicus Atmosphere Monitoring Service**

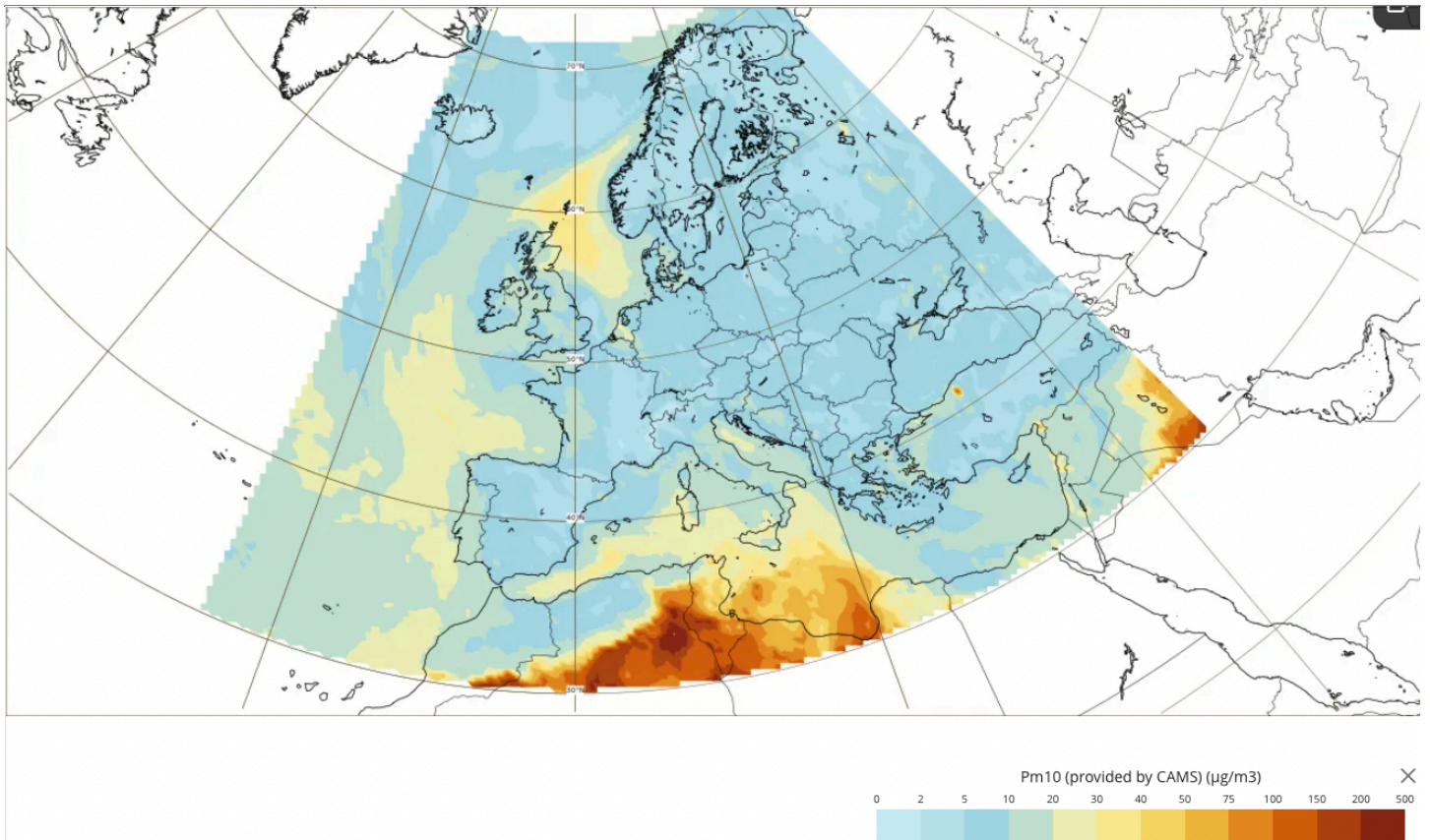
When it comes to air quality, Europe has a wide variety of regional and local organisations with responsibility for air quality monitoring, however not all of them possess the same level of measurement infrastructure.

Air pollution knows no borders, and the new Directives stress the importance of modelling applications as tools to better understand the geographical distribution and concentrations of air pollutants and the development of air pollution episodes, including emission sources, geographical and meteorological conditions, and transboundary exchanges.

To support such assessments, the Directives encourage the use of the information products and supplementary tools provided by Copernicus, and particularly those of the Copernicus Atmosphere Monitoring Service (CAMS):

*'Where applicable, modelling applications should be applied to enable point data to be interpreted in terms of geographical distribution of concentration of pollutants, which can help to detect breaches of air quality standards, and to inform air quality plans and air quality roadmaps and the placement of sampling points. In addition to the requirements for air quality monitoring laid down in this Directive, for monitoring purposes, Member States are encouraged to exploit information products and supplementary tools, such as by regular evaluation and quality assessment reports or policy online applications, provided by the Earth Observation component of the Union Space Programme, in particular the Copernicus Atmosphere Monitoring Service.'*

'The Directives show a full understanding of the latest developments in air pollution sciences and in atmospheric chemistry,' said Laurence Rouil, Director of CAMS. 'In addition, the new regulations seek to further improve monitoring and modelling to boost scientific progress for some pollutants of emerging concern. The reference to CAMS in the Directives shows the strong standing reached by the service in recent years. As an operational service with a decade of experience, it is fully ready to support national and local actors in the implementation of the AAQD, complementing the excellent work made by the Joint Research Centre of the European Commission, the European Environmental Agency, and many national actors.'



An example of CAMS daily regional forecasts for PM10 available on the CAMS [charts page](#). Credit: European Union, Copernicus Atmosphere Monitoring Service data

## Flexible, actionable data for policymakers and experts

In addition to products and services for the wider public in the form of CAMS charts and downscaling with third-party applications such as Windy.com in addition to the raw data freely available to all in the Atmosphere Data Store, CAMS delivers operational data and several products that can support local and national operators in their air quality monitoring and management strategies.

## CAMS Policy Support Portal

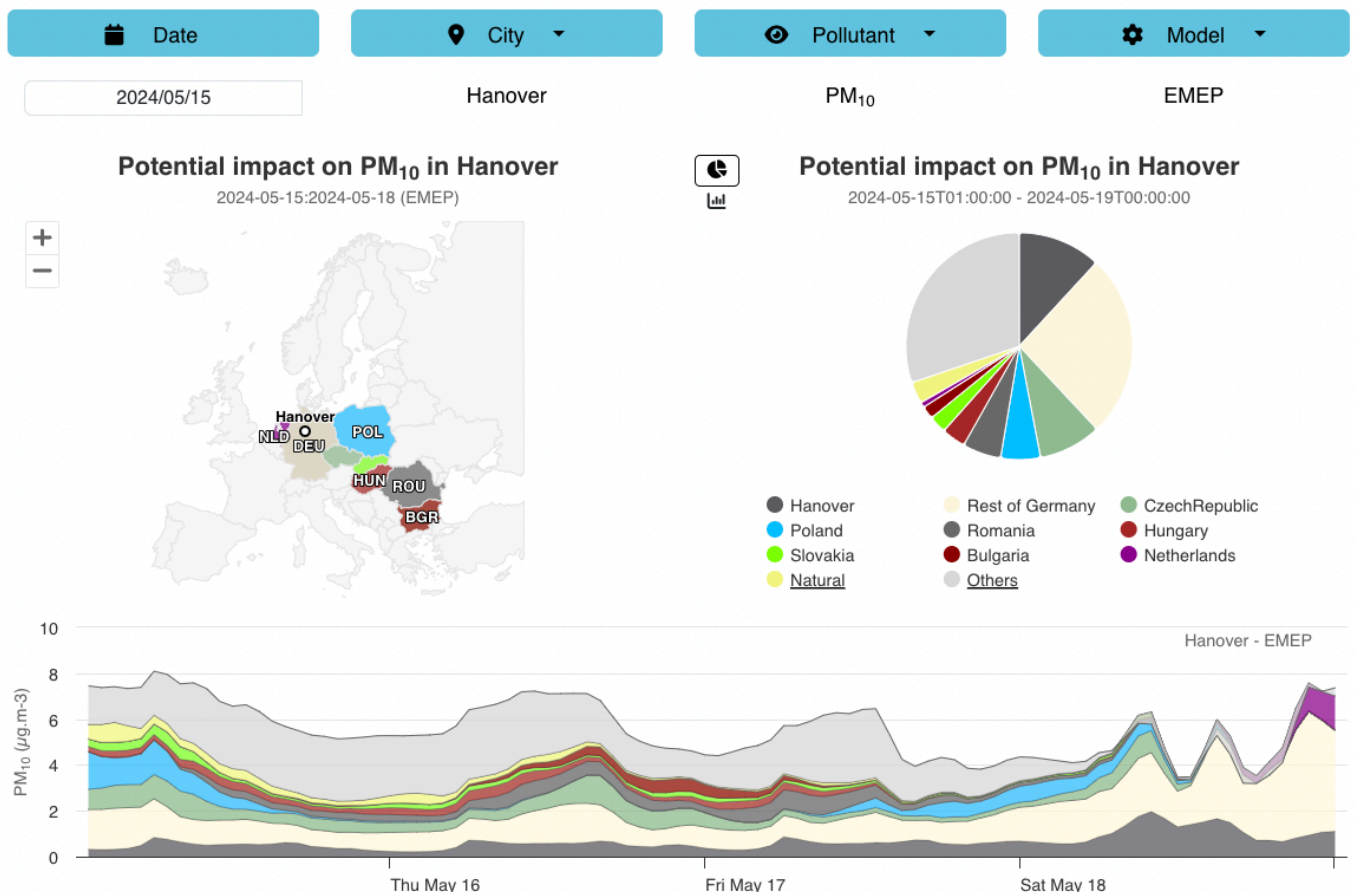
The CAMS website provides forecasts of particulate matter (PM), ozone (O<sub>3</sub>) and nitrogen dioxide (NO<sub>2</sub>) at [European](#) and [Global](#) scales. The platform can contribute to reporting the influence of dust and sea salt (natural sources) in the overall concentrations of PM during pollution episodes.

Moreover, the services dedicated to policy support, also available on the CAMS website, have been recently updated with new features. [The policy service page](#) provides easy-to-use and intuitive maps and charts to support decision making in the management of air pollution and to facilitate reporting under the European Directives.

The page provides daily forecasts and yearly assessments of source attribution analysis for about 70 major cities in Europe, making it possible to better understand transboundary patterns, the contributions of neighbouring countries, cities, or economic sectors such as shipping, road transport, or residential heating, to air pollution patterns that occur in the city. Reports are also produced for the most intense air pollution episodes.

'Our contractors have worked really hard to build this tool based on CAMS data. I am sure that it can be really useful for air quality monitoring, evaluation, and reporting activities,' said Rouil. 'It's a perfect fit for the purpose. Many local and national actors don't necessarily have access to sophisticated models and monitoring tools or need complementary data, like boundary conditions, to run their own tools. With the CAMS offer, we can provide these state-of-the-art data to every national air quality body. This was one of the main *raison d'être* of the implementation of the policy platform, and now that the new European regulatory framework seems closer to coming into force, we are fully ready to offer this service.'

What is the potential impact of local and country emissions reduction on PM<sub>10/2.5</sub>, ozone and NO<sub>2</sub>? ?



View of the CAMS Policy Support interface. Credit: European Union, Copernicus Atmosphere Monitoring Service

## The National Collaboration Programme

CAMS supports the uptake of its products in EU Member States via the [National Collaboration Programme](#), an initiative of the European Commission's Directorate-General for Defence Industry and Space (DG DEFIS) to enhance cooperation between the Copernicus services and national agencies. This initiative is already bearing fruit only a year after it was launched.

The Bulgarian meteorological service is now using CAMS data to make air quality forecasts for Bulgaria and Italy is adapting CAMS data to be used to initialise national forecasts at higher

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resolution, to name two examples.

An example of the use of CAMS data at the local level can be found in France, where a consortium of local air quality agencies [is already working with CAMS data](#) on pollens for five regions.

Laurence Rouil said: 'The National Collaboration Programme has taught us to better cooperate with our users and understand what they need from us in terms of products. This fantastic collaboration is an asset that helps us improve our global offer. The effort to adapt to users' requests is a constant in CAMS and it has been a key priority for me, from the moment I took over as CAMS Director in February 2024, as it was for my predecessor Vincent-Henri Peuch.'

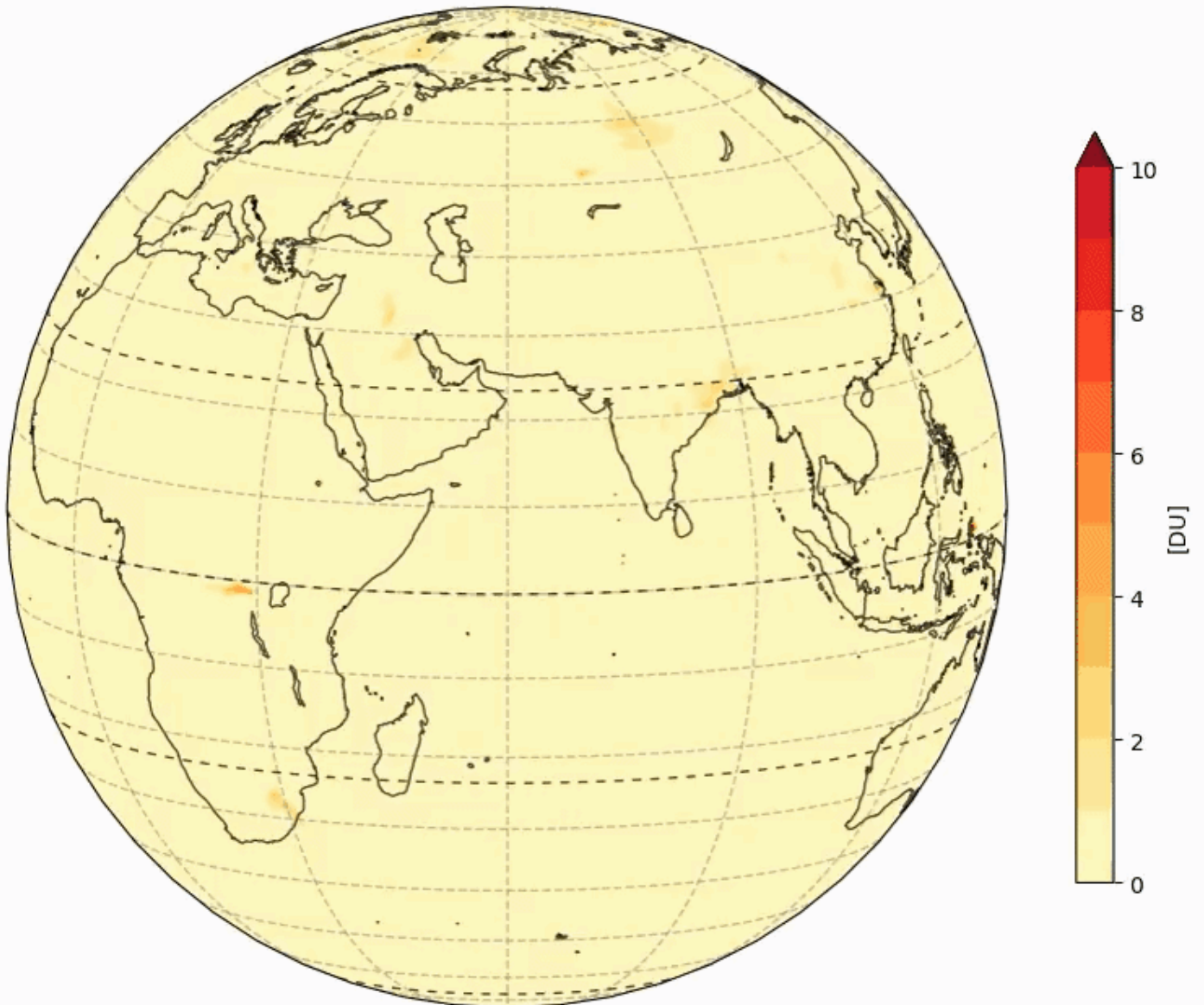
## **CAMS: Ten years of providing global and European air quality data**

Air pollution remains [a key cause of preventable deaths in the EU](#), despite the significant [progress made in recent years](#), with around 300,000 premature deaths per year.

In 2014, CAMS was launched to provide continuous data and information about regional and European air quality and atmospheric composition, complementary to the work performed by the European Environmental Agency and national and local actors.

CAMS is based on a unique integrated approach combining a large panel of observation datasets (in situ monitoring networks and Earth observations) and the most up-to-date global and European chemistry transport models which simulate the concentrations, transport, and transformation of pollutants.

CAMS Analysis Total Column SO<sub>2</sub>  
20240416T00



PROGRAMME OF  
THE EUROPEAN UNION



IMPLEMENTED BY



*An animated data visualisation showing the sulphur dioxide (SO<sub>2</sub>) released into the atmosphere after the eruption of the Mount Ruang volcano in Indonesia on 16 April, 2024. Credit: European Union, Copernicus Atmosphere Monitoring Service data*

All CAMS products, including air pollutant forecasts and reanalyses, are routinely verified against in situ observations to ensure their reliability and accuracy and their fitness for policy purposes. The [global](#) and [regional](#) validation portals are available on the CAMS website.

The global atmospheric composition forecasts and analyses are initialised with satellite observations and computed by an atmospheric chemistry modelling suite based on the ECMWF Earth-system model Integrated Forecasting System (IFS). The European air quality ensemble combines eleven

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European models, delivering 4-day air quality forecasts daily for all of Europe.

The models rely on specific emissions datasets and are driven by high resolution ECMWF weather forecasts. The data is available for free and for any purpose via the [Charts pages](#) on the CAMS website and through the [Atmosphere Data Store](#).

Like the other services in the Copernicus family, CAMS evolves according to user needs and requirements and users are encouraged to provide feedback at regular workshops and via the CAMS support pages.