The Copernicus Atmosphere Monitoring Service (CAMS)

Status and Plans

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Atmospheric composition is a pivotal between human activities and the Earth Environment

aerosol



Atmospheric composition and its changes affect our heath and well-being

CAMS focus

A significant heritage for CAMS

- A decade-long series of R&D projects and an internationally respected European achievement (GEMS, MACC, -II, -III)
- An equally long experience in engaging with users and potential users in Europe and across the world (PROMOTE, MACC, -II, -III)

Strategy

GLOBAL MONITORING FOR ENVIRONMENTAL SECURITY

Changes in the global environment, such as those related to global warming, reduction in biodiversity, describitation and others are of direct concern to Europe and will influence a growing range of Community policies. As a result the Community actively participates in the setting up of international conventions on the protection of the environment and on the trustational teasures.

The importance of those innex has also been explicitly recognized by a group of agencies and organizations involved in the development of space technologies for earth observation. On May 19,1998 – during the annual User Seminar of the Space Applications Institute of the Jost Research Center is Baveon, Italy - a number of agencies and organizations involved in space activities' restfigured their will be contributed as a common European vision and strategy rewards glebal environment mentioning. They recognized the importance of contributing to the great and the second of the contribution of the contri

The present Manifesto draws the attention of policy makers in the European Union to the importance of extending European interests to global environmental security insues. A key point emphasized by the Manifesto in the fact that the establishment of global environment "intelligence", supported by an independent and internationally recognized information gathering system, has acquired even greater importance in the context of the Convenion on Climate Change. More specifically, the Manifesto proposes that supporting the commitments made by the Community in the context of the 1997 Kyoto Protocol on the reduction of greenhouse gates represents a specific policy for the context of the context of the context of the property of the community in the context of the 1997 Kyoto Protocol on the reduction of greenhouse gates represents a positively for deep

The Manifesto calls for an examination of the inues associated with the elaboration of a common agenda towards plobal monitoring of the environment. Such as initiative will serve as a reference framework against which specific actions—at the Union level and in Member countries—can be evaluated in terms of their contribution to the common objectives.

The coate:

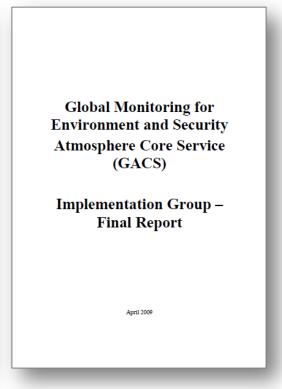
Global environmental information will increasingly be at the core of the decision making process of political entities withing to play a role in world affairs. Access to relevant and timely information provides an economic administip in a wide range of sinations related to industrial competitiveness, access to markets, easy regionations, development aid, critic intervention prevention measures and disaster mingation. The strategic value of guaranteeing access to independent sources of information on environmental security issues is that increasingly exception. This

BNSC, CNES, DLR, ESA, EUMETSAT and EUROPEAN COMMISSION

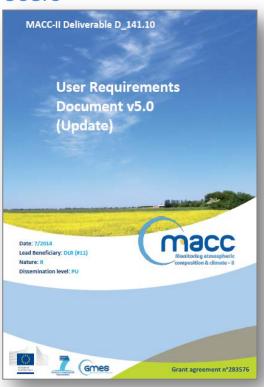
Socio-economic impact

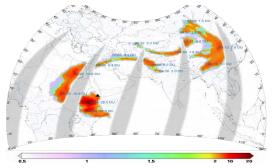


Experts

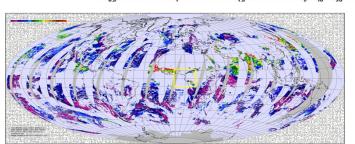


Users

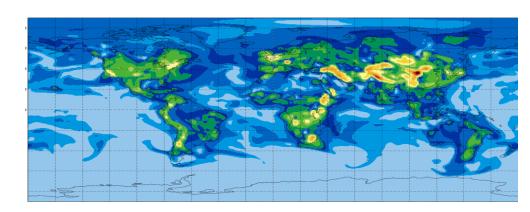


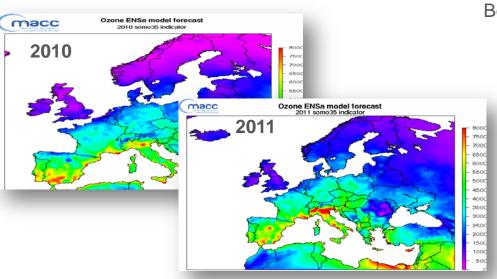


How? From Earth Observation to policyquality products

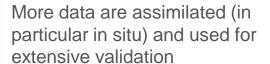


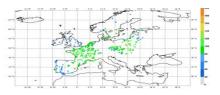
Over 70 EO instruments are assimilated in the global system

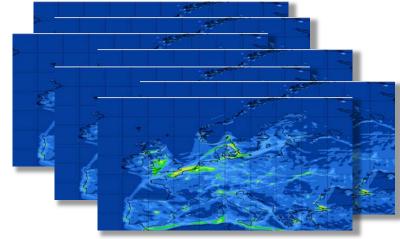




Boundary conditions feed an <u>ensemble</u> of highresolution European AQ systems (in order to assess uncertainties)







Policy-relevant (here health indicator for ozone) products are delivered. They are "maps with no gaps", which observations alone don't provide and are essential to assess impacts.















In-Situ Observations

Global Production

ECMWF Global Model

Assimilation of satellite observations

Regional Production

Ensemble of European AQ Models (7+) Data assimilation of AQ observations & satellite obsrvations

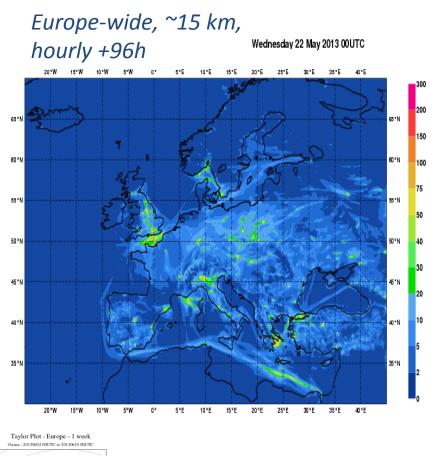
Supplementary Services

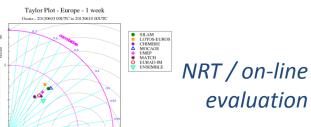
Policy support Solar Energy Climate forcing GHG fluxes **UV** index

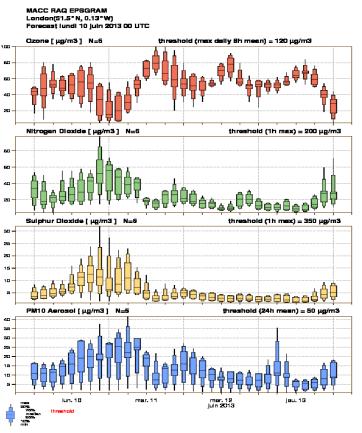
Activities in support of production: Validation, Emissions

Communications, Training, User Interaction, Use cases

Ensemble of AQ Forecast by regional European models





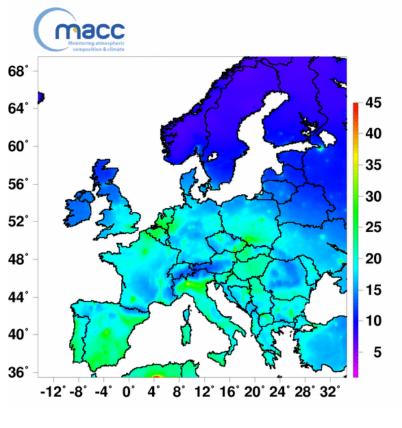




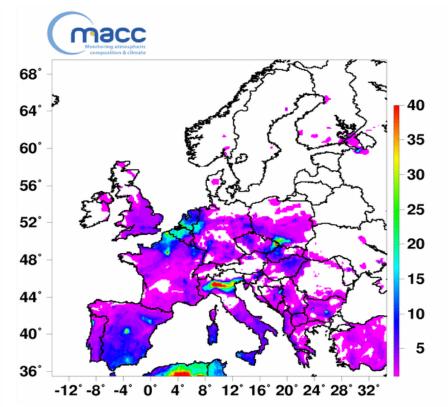
Multi-model spread as a measure of forecast uncertainty

250 "power users" downloading daily air quality information

Luftgüte Einschätzung nach EU Vorgaben



PM10 Jahresmittel



Anzahl der Tage mit Ueberschreitung des Tagesmittels von 50ug/m3 (PM10)

Basiert auf
Ensemble
von reanalysis von
regionalen
Modellen

(AQ Boden Stationen assimiliert)

Are "coarse" (10-15km res.) forecasts useful?



Islington Arsenal Urban Background

Urban Background station





Imperial College

Assend Background Station:

Assend Station:

Assend Station:

ObsStreet Station:

ObsStr



Address: Islington Ecology Centre, 191 Drayton Pk Grid Ref: 531325, 186032

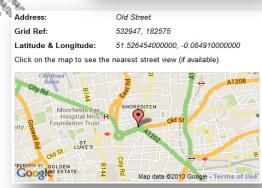
Latitude & Longitude: 51.557895000000, -0.106989000000

Click on the map to see the nearest street view (if available).

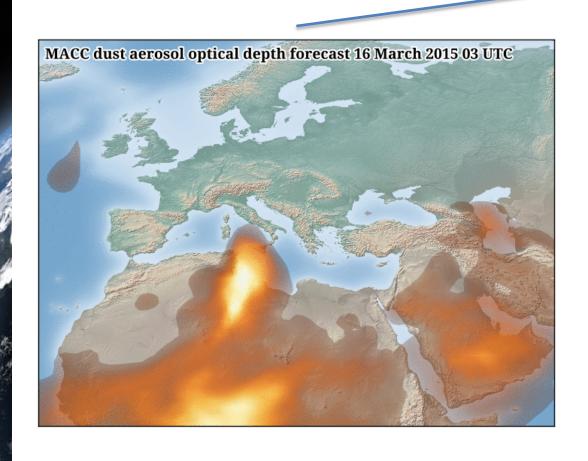


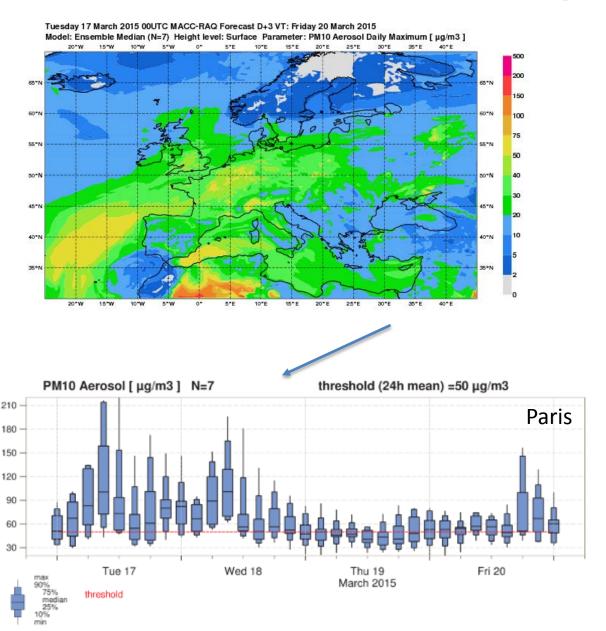
Date

Certainly: "boundary" or "background" values are an essential component of AQ variability, including in cities!

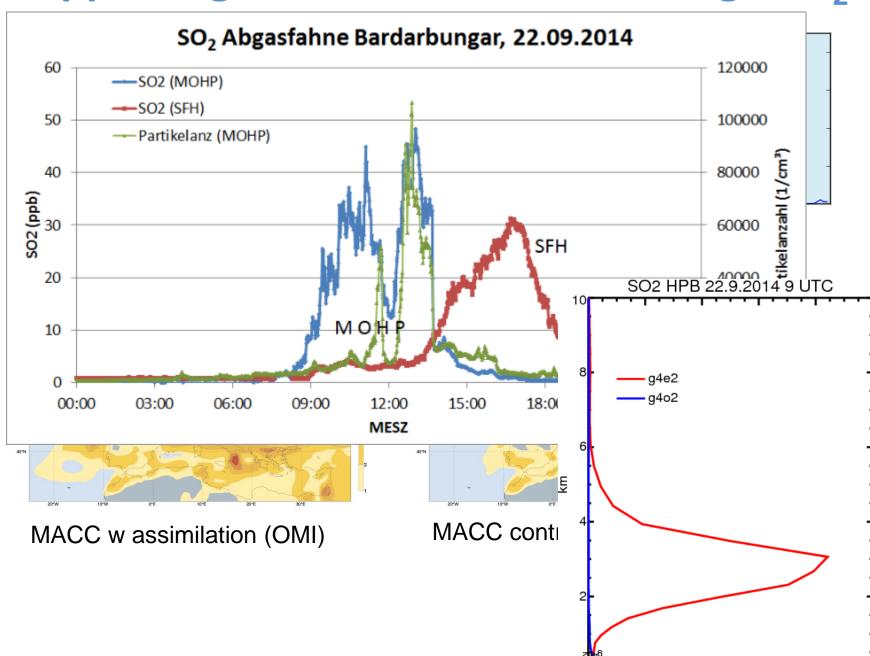


Supporting Policy Implementation and Decision Making





Use case: supporting French authorities on high SO₂ episode



CAMS products for air quality applications

- Global model forecast to account for long range transport of pollutants
- Assimilation of global satellite observations in global forecast
- Global NRT forest fire emissions (0.1 x 0.1)
- Daily AQ forecast by ensemble of regional models
- Re-analysis of atmospheric composition at global and European scale
 - European ensemble of re-analysis using AQ observations
 - NRT, Interim (3month) and fully validated (1+ year) re-analysis
- Timely validation reports based on in-situ data
- Resilient and long-term operational commitment

C3S is user driven

Please let us know your feedback, requirements ideas ...

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Thank you





