Copernicus Atmosphere Monitoring Service (CAMS)

Vincent-Henri Peuch

Vincent-Henri.Peuch@ecmwf.int







A SIGNIFICANT HERITAGE

- 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 A MANIFESTO FOR A NEW EUROPEAN COURSE OF ACTION

Changes in the global environment, such as those related to global warming, reduction in biodiversity, describination and others are of direct concern to Europe and will infiltence a growing range of Community policies. As a result the Community actively participates in the setting up of international conventions on the potention of the environment and on the sustainable use of natural resources.

The importance of times issues has also been explicitly ecoopsised 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 Joint Research Centre in Baveson, Isby - a number of agencies and organizations involved in space activities reaffirmed fusite will to courribute to a common European triains and strategy rewards global arrivament measuring. They recognized the importance of combining to the goals set up by a series of international convenious and agreed on the useful for Europe to act if it wants to maintain a leading position in the development of monitoring techniques for a better understanding of environmental changes, resource depiction and environmental changes, resource depiction and environmental changes, resource

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 enablishment of global environment "intelligence", supported by an independent and internationally recognized districtation gathering system, has acquired even greater importance in the content of the Convenion on Climate Change. More specifically, the Manifesto proposes that supporting the commitment made by the Community in the content of the 1997 Kyron Protocol on the reduction of greenhouse gazes represents a pricinity of so-day.

The Manifesto calls for an examination of the issues associated with the elaboration of a common agends towards global monitoring of the environment. Such as initiative will zerve as a reference framework against which specific action at the Union level and in Member countries—can be evaluated in terms of their contributions to the common objectives.

The context

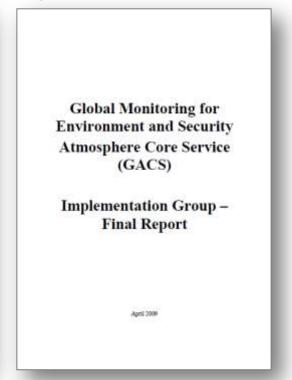
Global environmental information will increasingly be at the core of the decision making process of political entiries withing to play a role in world affairs. Access to relevant and timely information provides an economic advantage in a wide range of situations related to industrial competitiveness, access to markets, respiranciations, development and, crisis intervention prevention measures and disaster mingation. The strategic value of guaranteeing access to independent sources of information on environmental security insures in thus increasingly econogried. This is

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

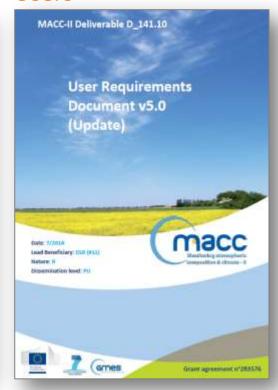
Socio-economic impact



Experts



Users



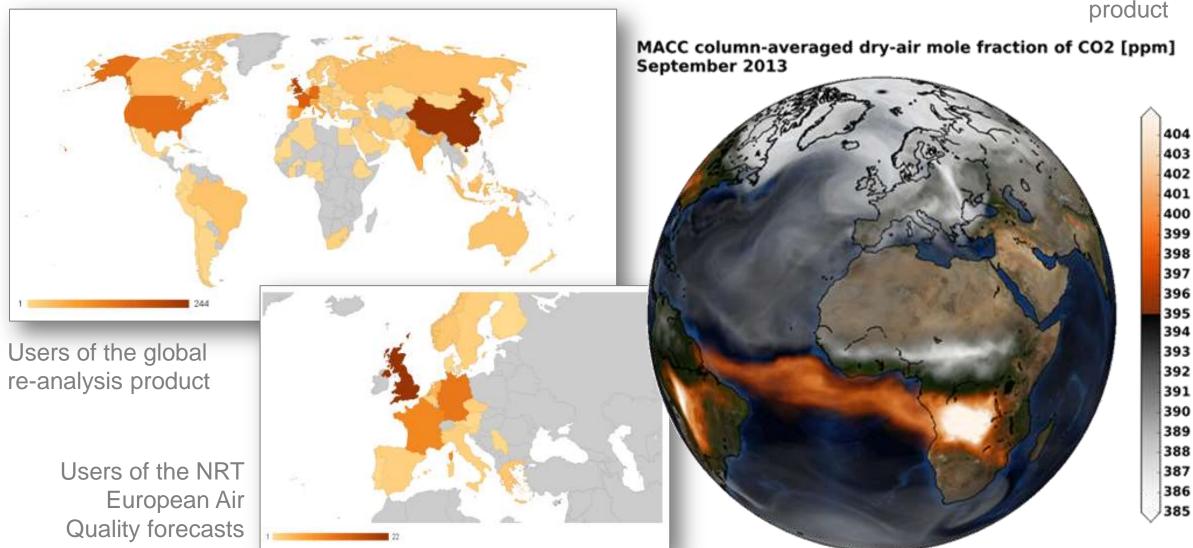






EXISTING USERS, PRE-OPERATIONAL PRODUCTS

A sample product



opernicus





CAMS PRECURSOR PORTFOLIO



AIR QUALITY AND ATMOSPHERIC COMPOSITION

European air quality analyses, forecasts and assessments in support of reporting and policy making, pollen forecasts, global transport of constituents/pollutants...



CLIMATE FORCING

Distributions of aerosol components and their radiative impacts, *other radiative* forcings...



OZONE LAYER AND UV

Monitoring and forecasting of the ozone layer / hole, UV index, UV radiation (crops, ecosystems)...



SOLAR RADIATION

Estimates of solar irradiance at surface, improved potential yield assessments for solar plants...



EMISSIONS AND SURFACE FLUXES

Estimates of human emissions globally and in Europe (high-resolution), emissions by wildfires, surface fluxes of CO₂, CH₄ and N₂O...

Copernicus Operations...

...New Opportunities

New providers
User expansion
New downstream applications





















In-Situ Observations

Global Production

Regional Production

Supplementary Services

Activities in support of production: Validation, Emissions

Communications, Training, User Interaction, Use cases

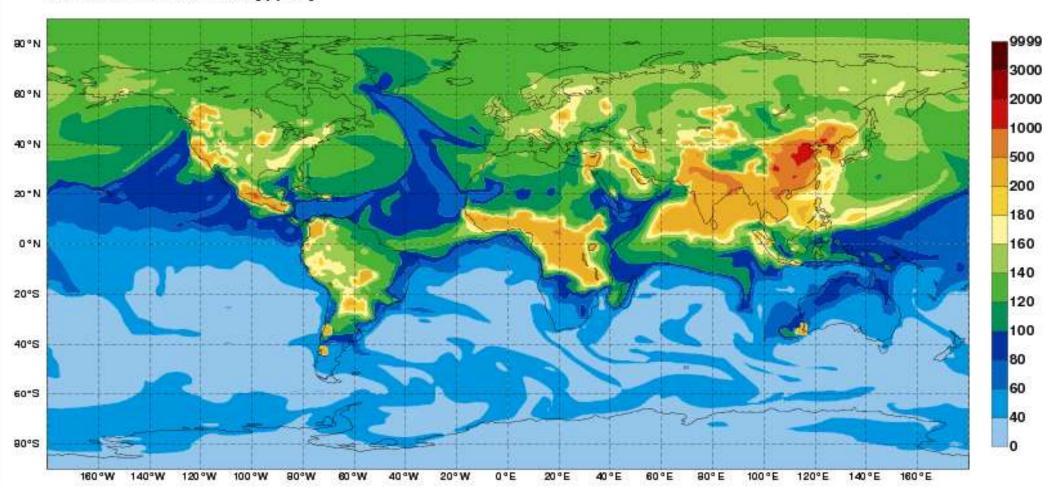






CAMS ARCHITECTURE ELEMENTS (GLOBAL)

Sunday 1 February 2015 00UTC MACC Forecast t+036 VT: Monday 2 February 2015 12UTC Surface Carbon Monoxide [ppbv]



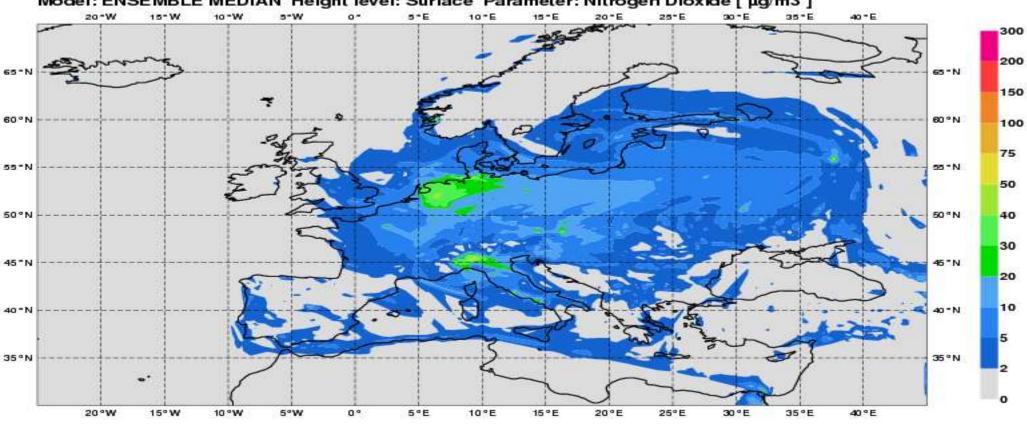






CAMS ARCHITECTURE ELEMENTS (REGIONAL)

Sunday 1 February 2015 00UTC MACC-RAQ Forecast t+005 VT: Sunday 1 February 2015 05UTC Model: ENSEMBLE MEDIAN Height level: Surface Parameter: Nitrogen Dioxide [μg/m3]

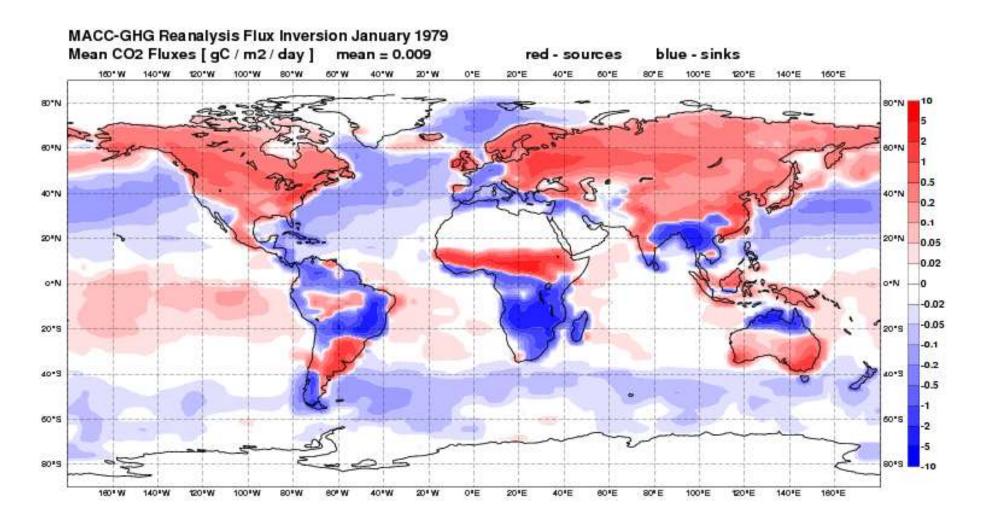








CAMS ARCHITECTURE ELEMENTS (SUPPLEMENTARY SERVICES)



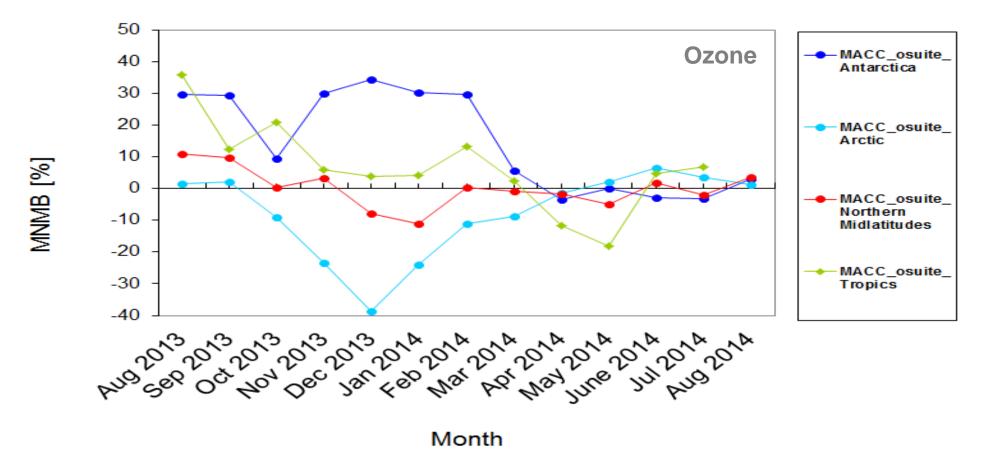






CAMS ARCHITECTURE ELEMENTS (OTHER ASPECTS)

Free Troposphere 2013-2014









CAMS ORGANISATION & FUTURE PROCUREMENTS

- Most CAMS architecture elements are procured within this phase for a duration of 3 years. In this period, there will be a few additional procurements (multiple, smaller size): use cases; activities in support of communications and training; (additional) satellite data processing. A second phase will follow in 2018.
- CAMS cross-cutting aspects will be handled by a service-level board comprising ECMWF management and one responsible person for each contract (monthly teleconference or meeting).
- Yearly timescale: plan & budget, activity reports...
- Yearly gathering event foreseen (contractors, users, stakeholders, community...)
- Continuity of service for the users will be ensured by the current MACC-III providers until the operational contracts are in effect.





