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maîtriser le risque pour un développement durable

The air control toolbox and other CAMS policy products for air quality

Augustin COLETTE, INERIS

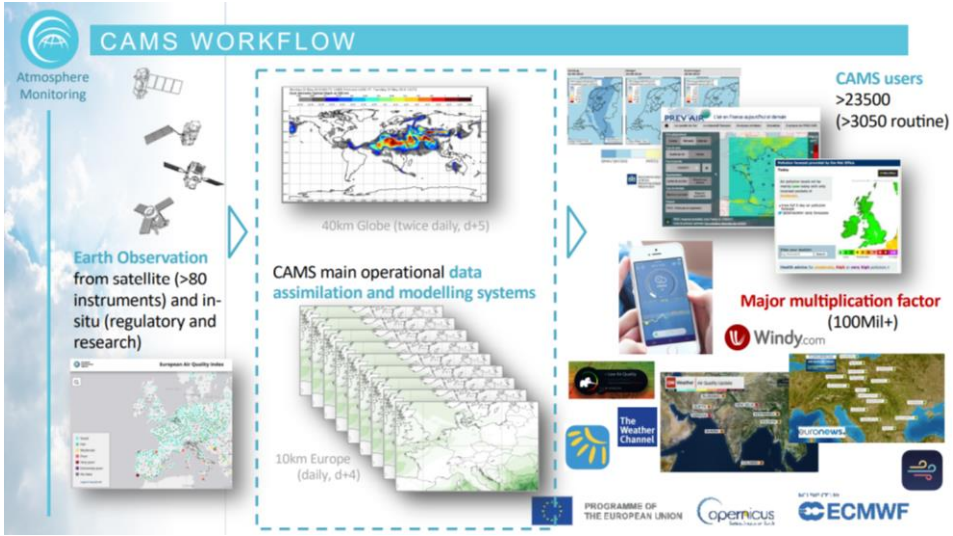
Concawe Symposium, January 10th, 2024.

Copernicus Atmosphere Monitoring Service

The Copernicus Atmosphere Monitoring Service provides time critical, detailed, consistent, quality-controlled full, free and open information on air pollution and health, solar energy, greenhouse gases, and climate forcing anywhere in the world.

Copernicus is the flagship Earth-observation component of EU's space programme. The European Centre for Medium-Range Weather Forecasts (ECMWF) has been entrusted by the European Commission to operate CAMS (and C3S). To achieve this, CAMS relies on a number of contractors.

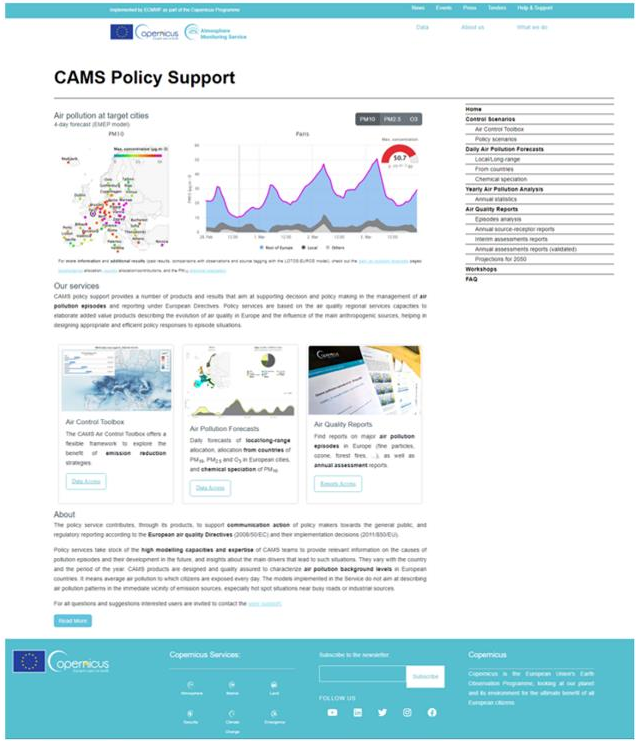
INERIS is one of those contractors, responsible for the production of European Forecast Production (with Météo-France) and the for the Policy Service (with Met Norway, NILU, and TNO).



policy.atmosphere.copernicus.eu

The one-stop shop for public and free access to:

- Annual reports on the state of air quality
- Detailed analysis of major air pollution episodes in Europe
- Policy tools to better understand the drivers of air pollution
- Forecasts updated on a daily basis and relying on state of the art numerical models



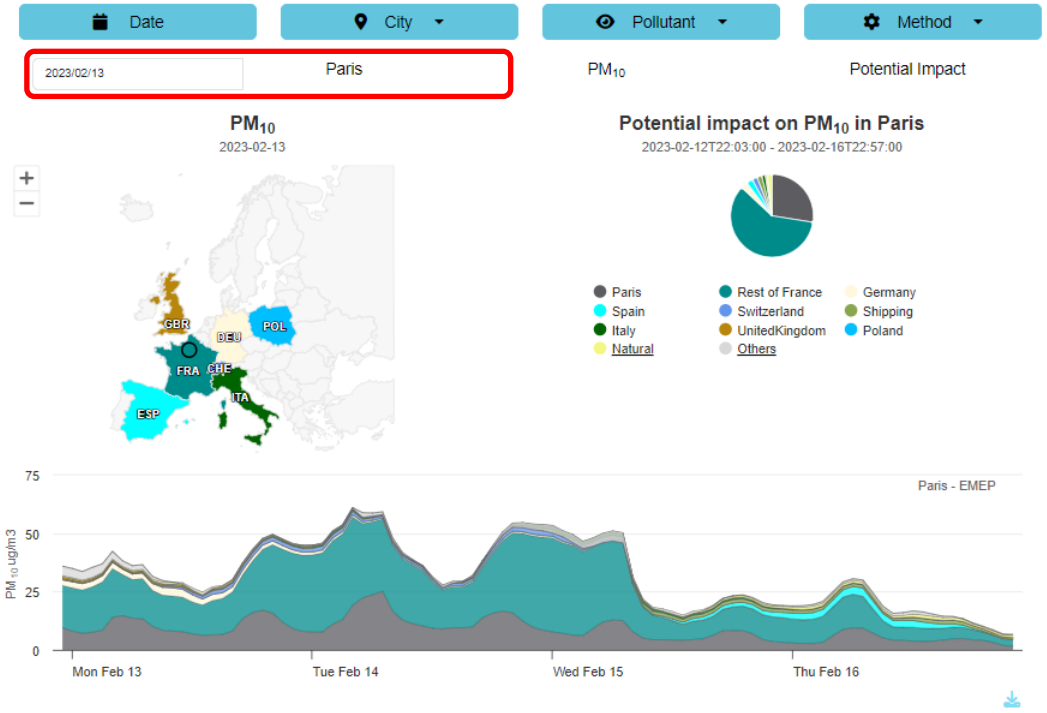
Visit our website!

CAMS Source Apportionment Tools

An interactive visit on the CAMS Policy Products website

Selected examples for Particulate Matter

Anthrop. Episode / PM_{10}



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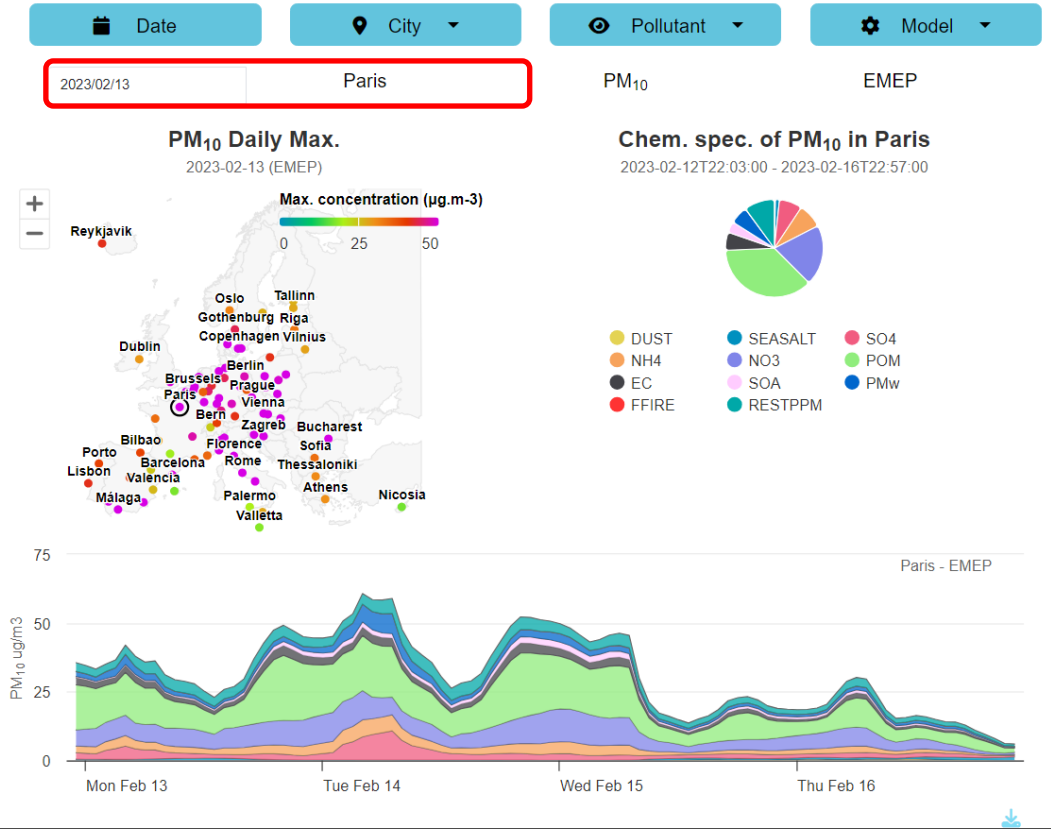
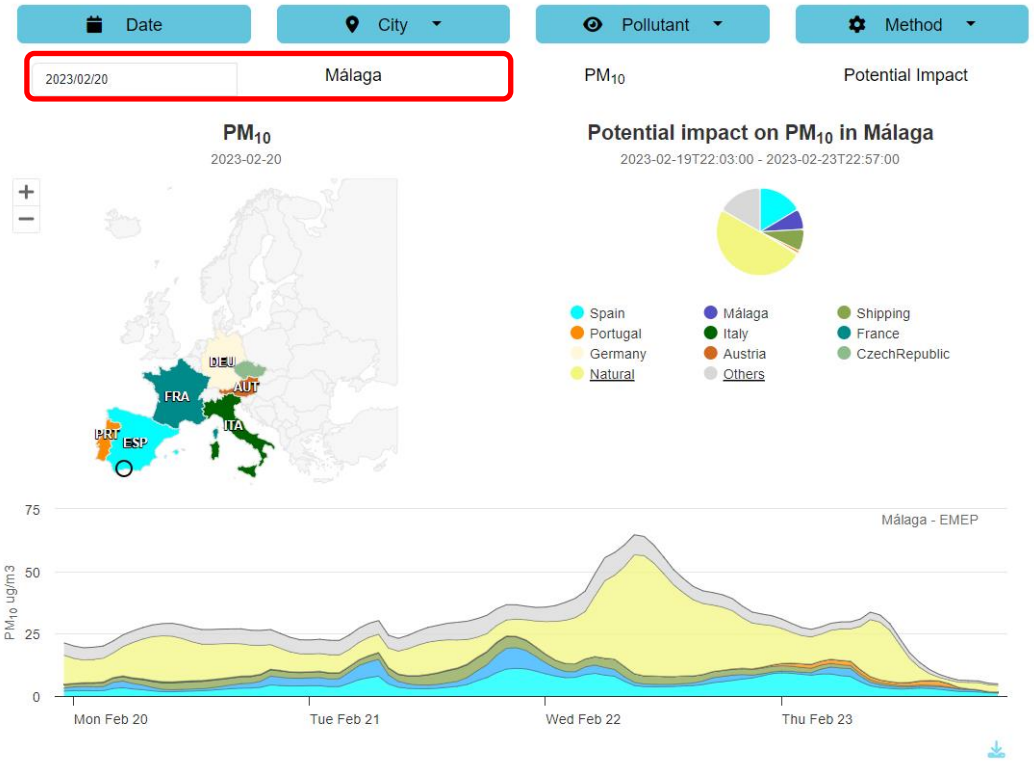


Saharan Dust Episode / PM_{10}



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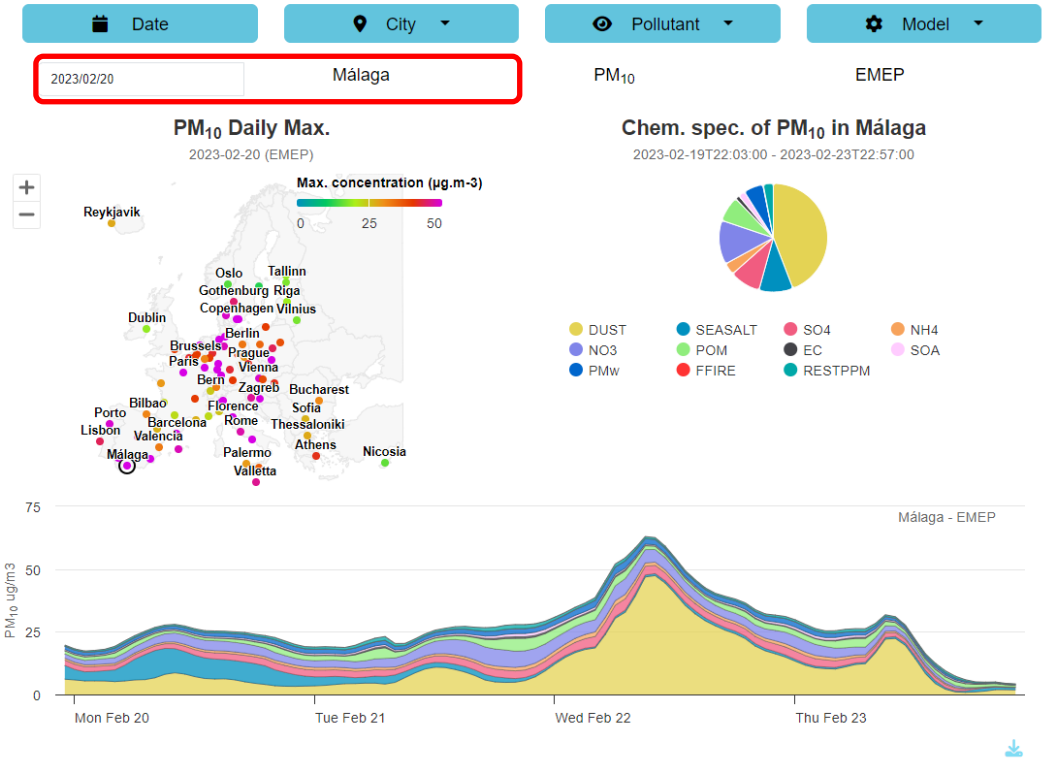
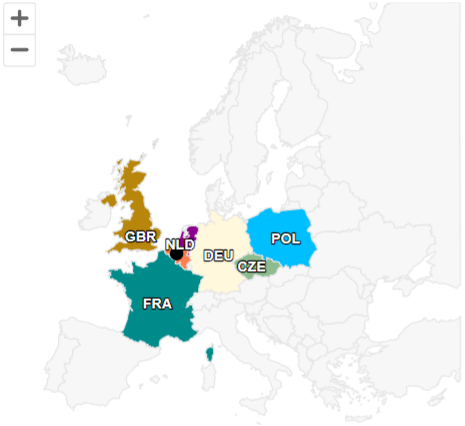
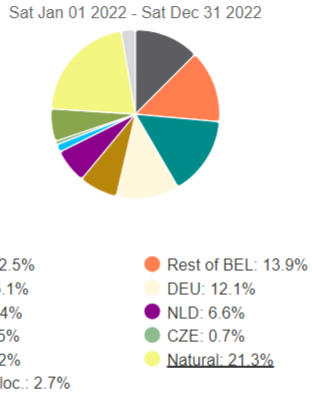


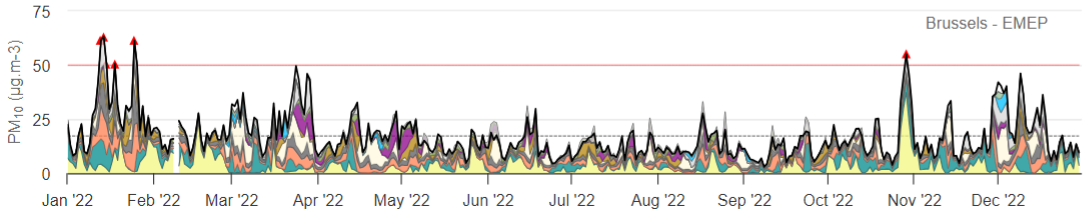
Annual / PM_{10}

Year | City | Pollutant | Method

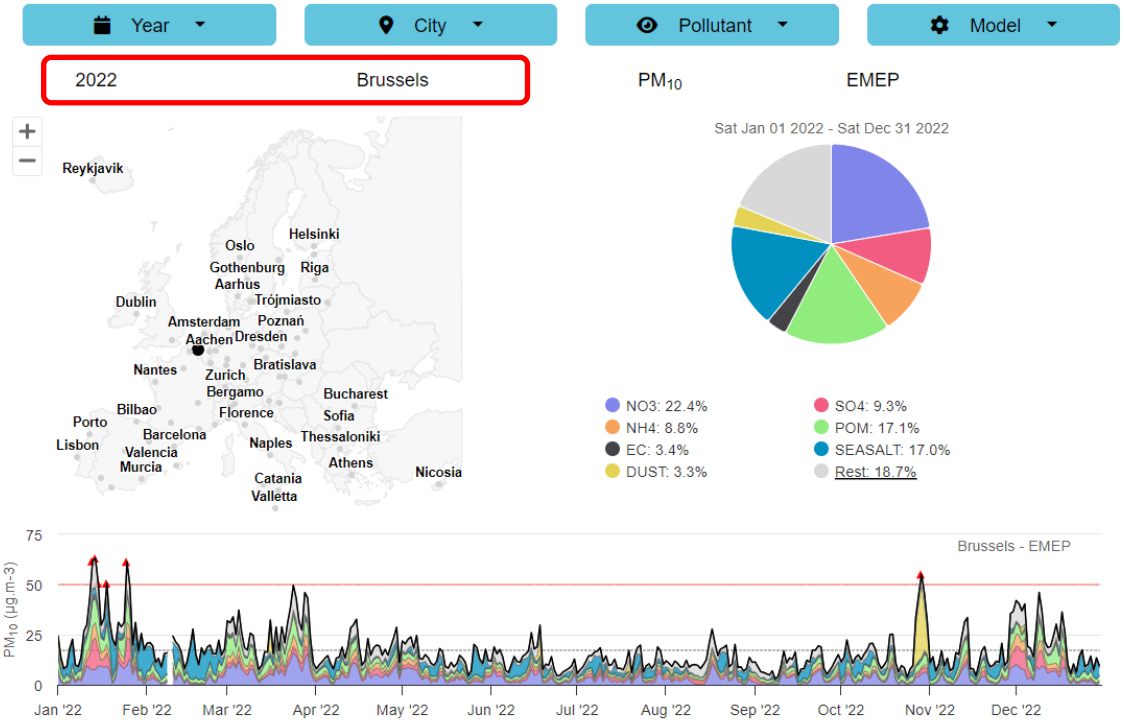
2022 | Brussels | PM10 | Potential Impact







Annual / PM_{10}



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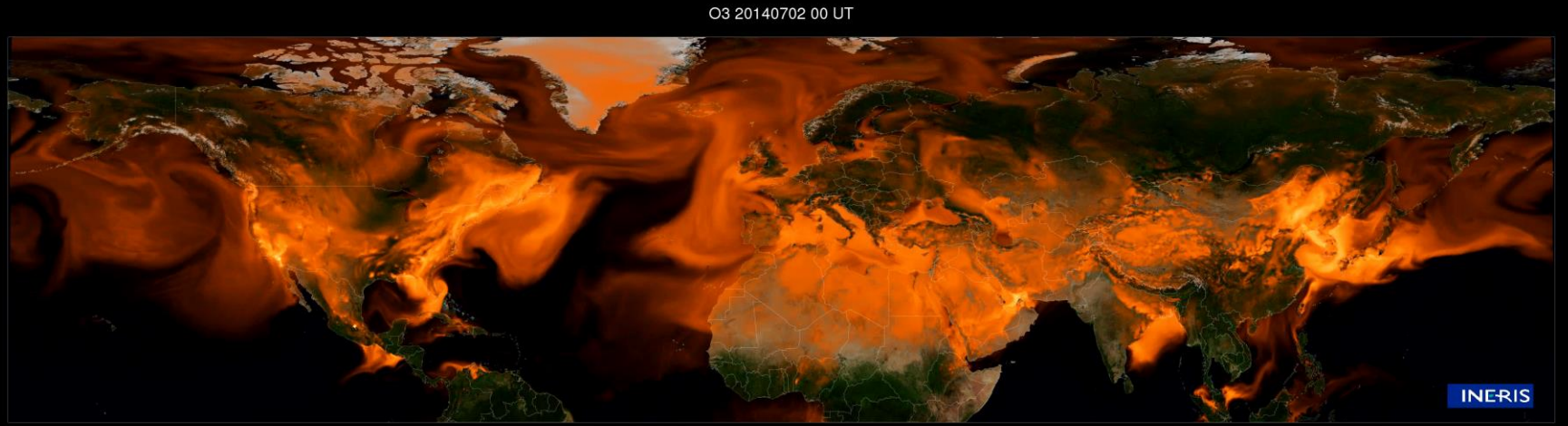
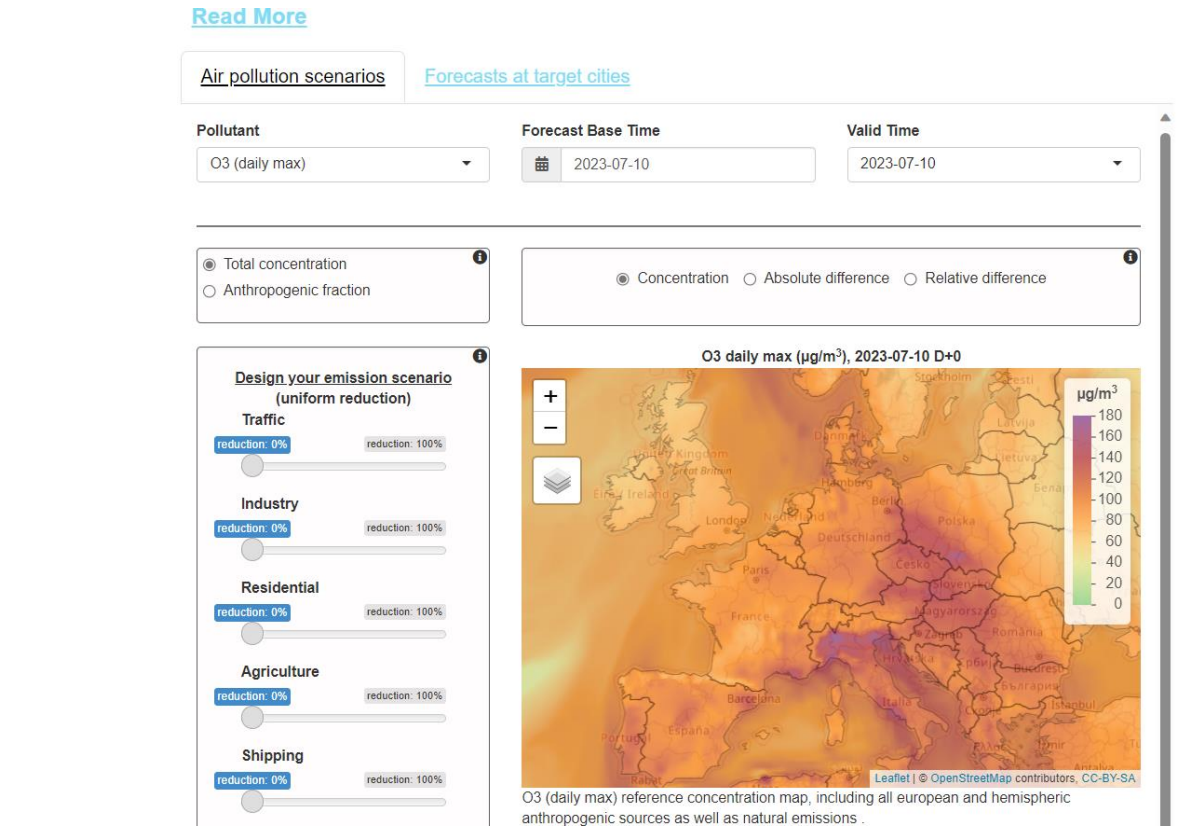
Focus on Ozone

NO_2

Ozone



Air Control Toolbox



O3 (daily max) reference concentration map, including all european and hemispheric anthropogenic sources as well as natural emissions .

Air Control Toolbox

Air pollution scenarios | Forecasts at target cities

Pollutant: O3 (daily max) | Forecast Base Time: 2023-07-10 | Valid Time: 2023-07-10

Total concentration / Anthropogenic fraction

Concentration / Absolute difference / Relative difference

Design your emission scenario (uniform reduction)

Traffic — reduction: 0% / reduction: 50%

Industry — reduction: 0% / reduction: 100%

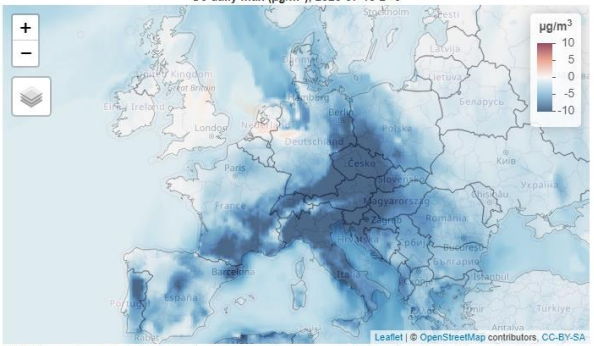
Residential — reduction: 0% / reduction: 100%

Agriculture — reduction: 0% / reduction: 100%

Shipping — reduction: 0% / reduction: 100%

Other sectors — reduction: 0% / reduction: 100%

O3 daily max (µg/m³), 2023-07-10 D+0



O3 (daily max) map including the main anthropogenic sources (agriculture, industry, traffic, residential heating, shipping and other) with an Europe-wide uniform emission reduction of: agriculture: 0 % ; traffic: 50 % ; residential: 0 % ; industry: 0 % ; shipping: 0 % ; other: 0 % . The natural emissions (such as dust or sea salt) as well as other hemispheric sources are excluded.

Get map

-50% Road Traffic

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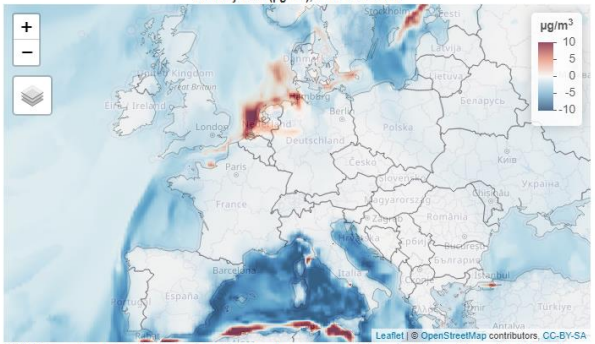

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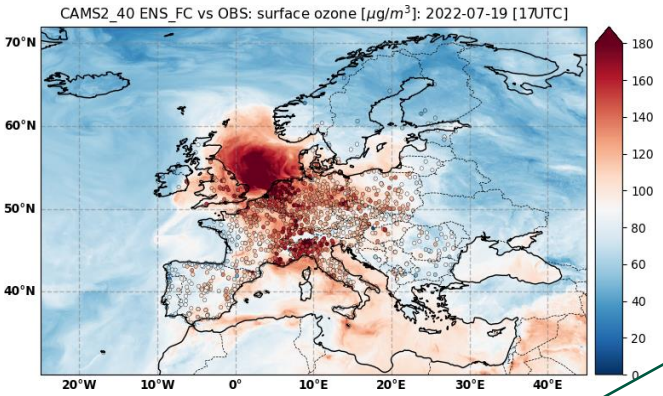
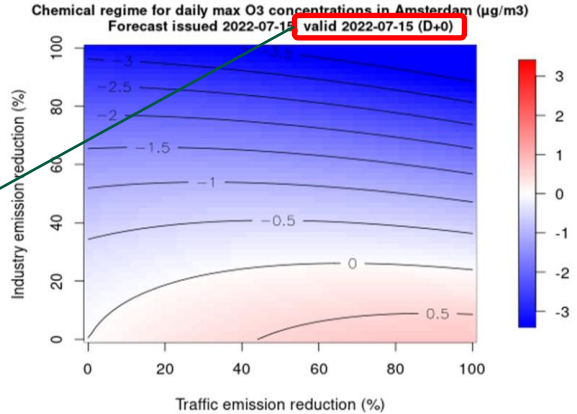
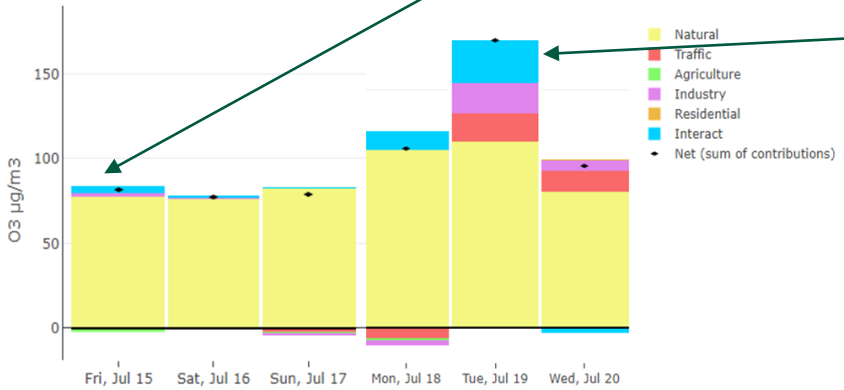
-50% Shipping

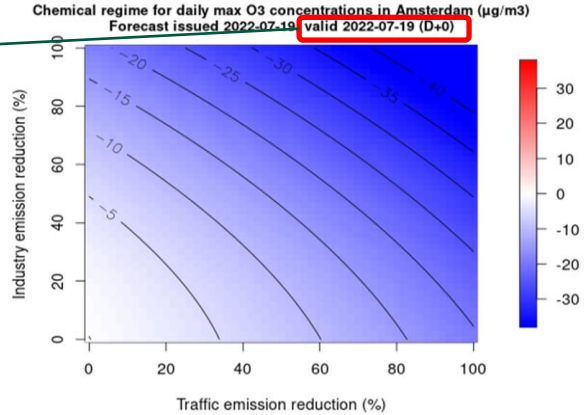
Ozone Episode





Amsterdam, July 2022

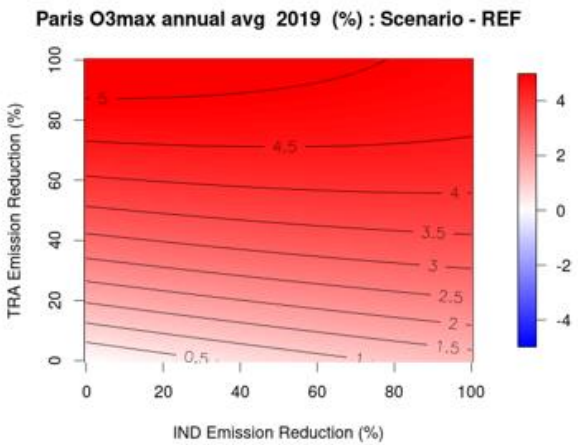




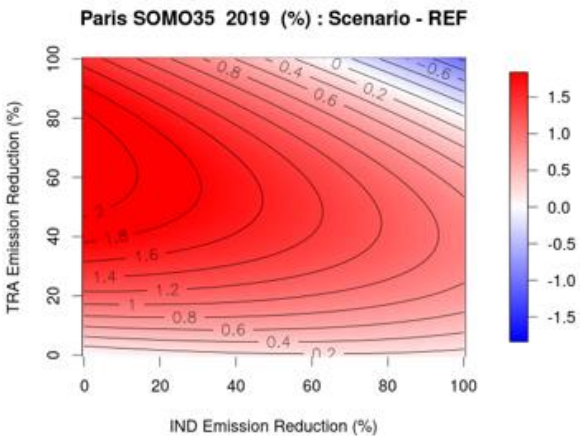
Paris

INERIS study, supported by Concawe
To appear in Atmos. Env.

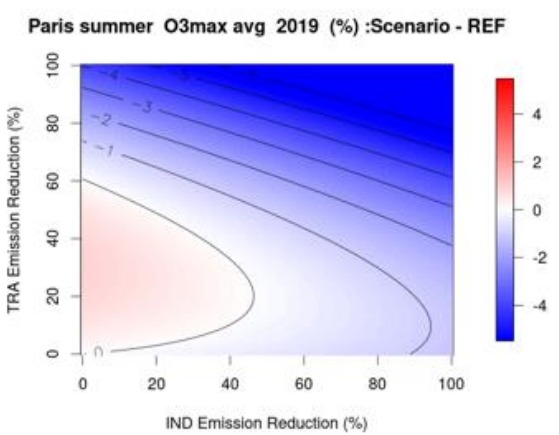
Annual max average – 2019



SOMO35 – 2019



Summer max average – 2019



The response depends on the day, the location, and the ozone indicator

But overall, reducing Traffic/Industrial emissions mitigates more efficiently the peak than background ozone

22 European cities

INERIS study, supported by Concawe
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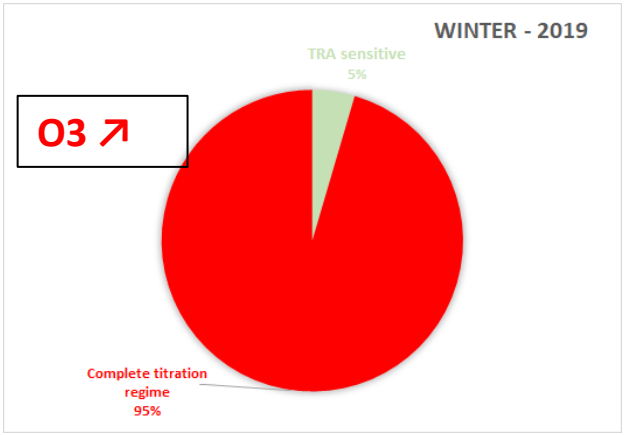

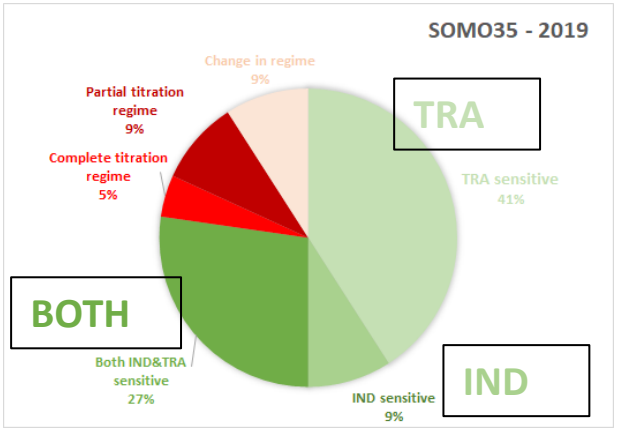

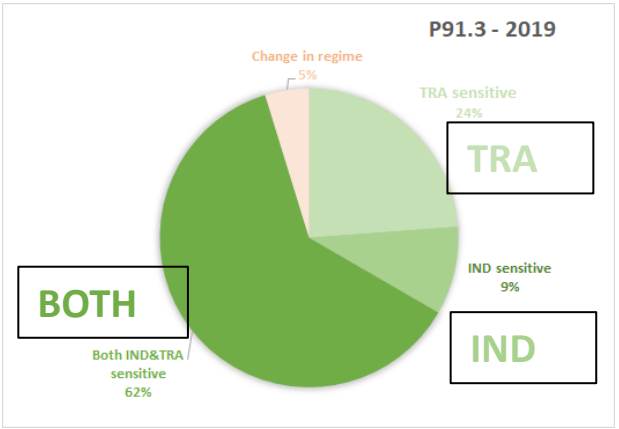

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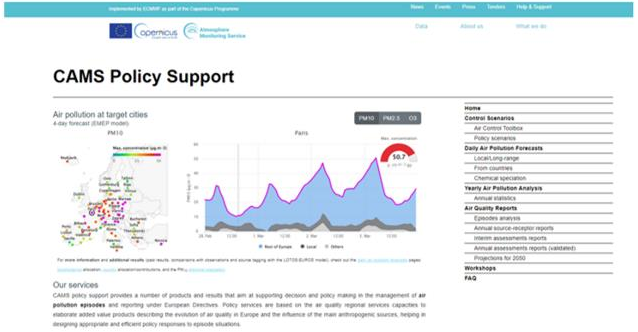
Conclusion

A variety of modelled source apportionment diagnostics have been developped recently

Some of them are produced on a daily basis in operational forecast systems (CAMS)

These diagnostics can be used :

- To guide the interpretation of air pollutions episodes
- To design efficient mitigation policies
- To help improving the numerical models



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