



Atmosphere Monitoring

CAMS Policy Support Service

QA/QC for Planning Applications

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FAIRMODE Plenary Meeting, Rome, 3 March, 2023





- ☐ Reports
 - Air pollution maps
 - Regulatory and health indicators
 - Trends
 - Case studies for episodes (inc. NRT)

- ☐ Source allocation services for daily forecasts and annual assessments
 - ☐ Air Control Toolbox (ACT)
 - Influence of the activity sectors
 - Interactive tool to explore scenarios
 - Chemical regimes

 - ☐ S/R City + Country Allocation
 - Influence of LRT in the cities
 - Chemical speciation of PM

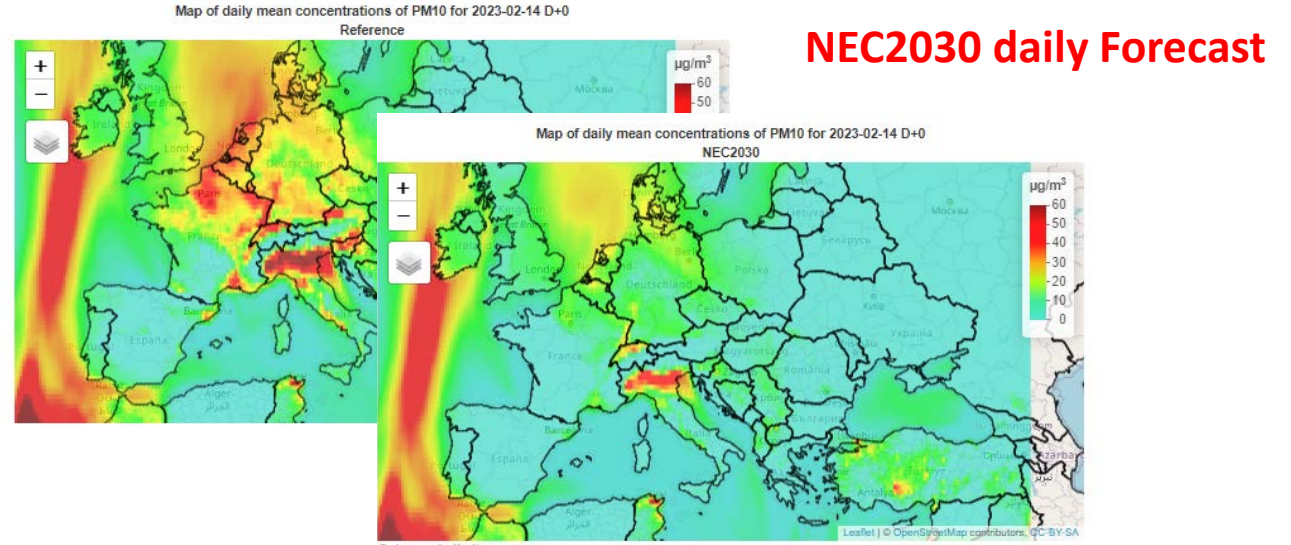
- ☐ Mitigation policies
 - Custom emission inventories (Condensables)
 - Modelling of 2030 & 2050 future projections

The screenshot displays the Copernicus Policy Support website interface. At the top, there is a navigation bar with links for News, Events, Press, Jobs, and Help & Support. The main content area is titled "CAMS Policy Support" and features a "4-day forecast (EMEP model)" for PM10, PM2.5, and O3. A map of Europe shows air pollution levels, and a line graph for Paris shows a peak of 50.7. Below the main content, there are three service cards: "Air Control Toolbox", "Air Pollution Forecasts", and "Air Quality Reports". The footer includes a "Copernicus Services" section with icons for Assessment, Model, and Land, a "Subscribe to the newsletter" form, and a "FOLLOW US" section with social media icons. The Copernicus logo and the European Commission logo are also present in the footer.

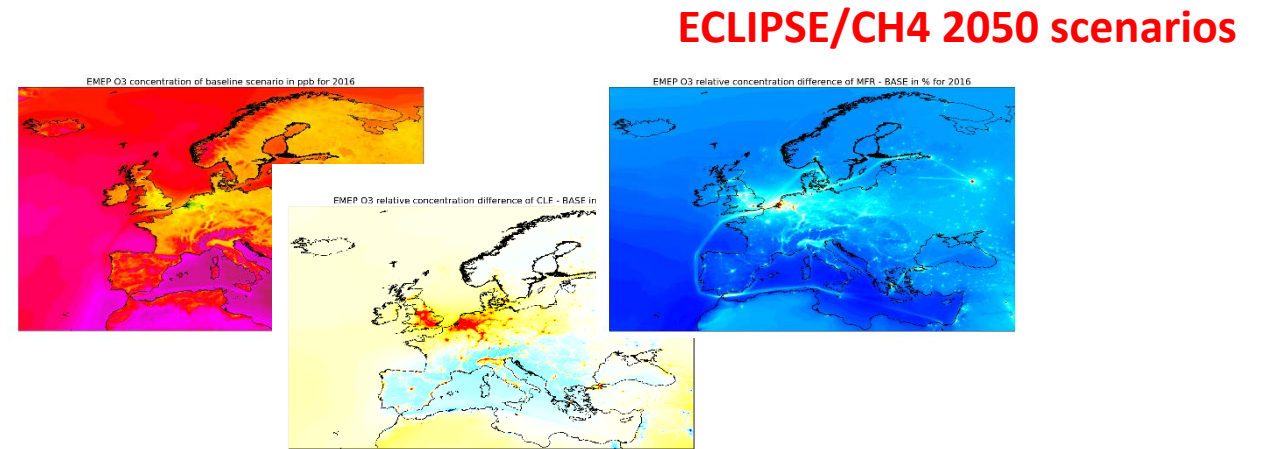


Planning Applications

- Future Scenario Modelling
 - On a daily basis: how would be today's AQ forecast under NEC2030 targets?
 - Long term: annual indicators of 2015/2050 under ECLIPSE CLE/MFR and CH4 scenarios



https://policy.atmosphere.copernicus.eu/policy_scenarios.php



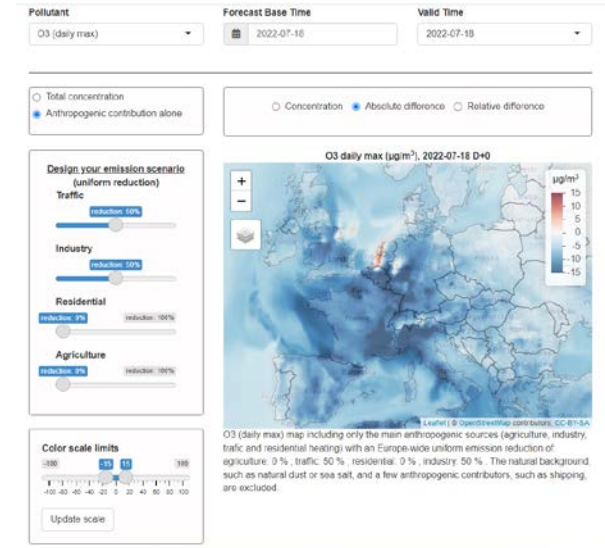
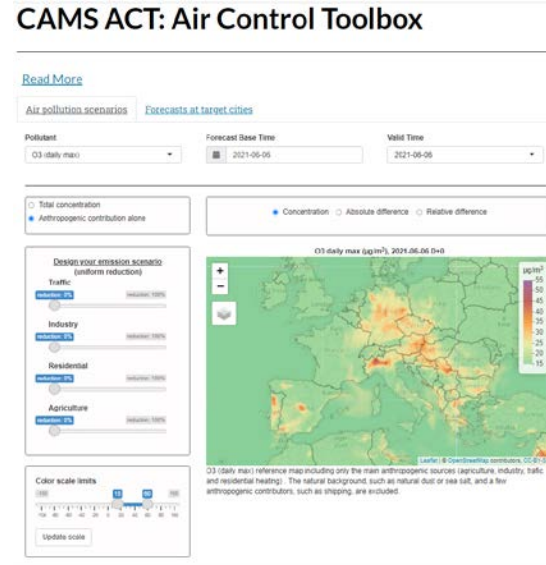
https://policy.atmosphere.copernicus.eu/reports/CAMS2_71_2021SC1-1_D4.1.1-2022P2_AQProjections_202211_v1.1.pdf



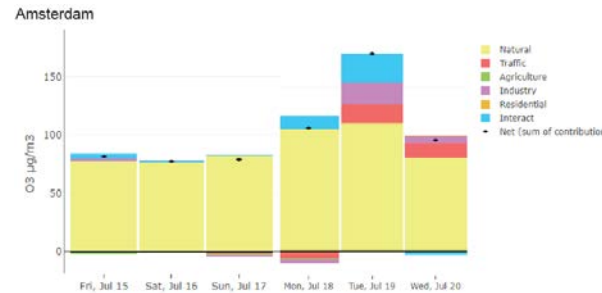
Planning Applications

- Custom Scenario Modelling
 - Web-based fast response scenario forecasting based on surrogate chemistry-transport modelling (CHIMERE)
 - Applies to every-day forecast
 - Accounting for the complexity of atmospheric chemistry & long-range transport

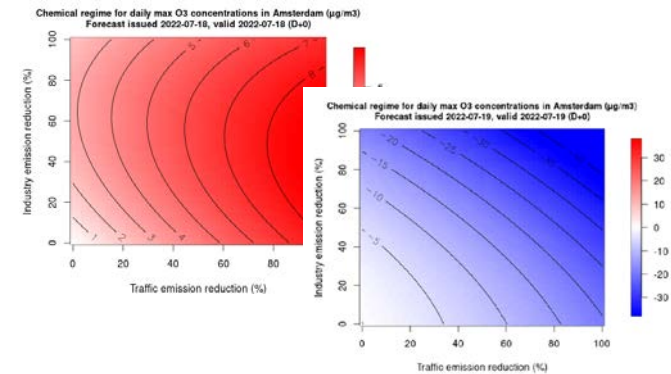
- Products
 - Allow a user to explore « on the fly » any mitigation scenario for Traffic, Industry, Agriculture, Residential (+ soon shipping)
 - Source Apportionment (allocation, ~brutefore on a daily basis)
 - ‘Chemical’ Regimes with Activity Sector



Source allocation of sector contributions



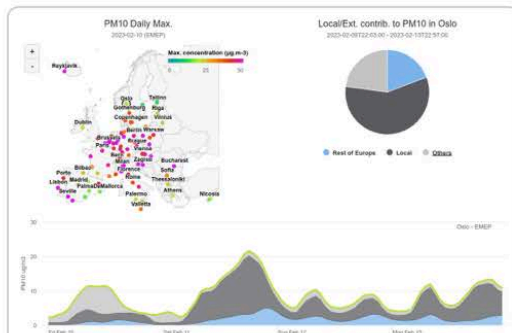
« Chemical » Regime



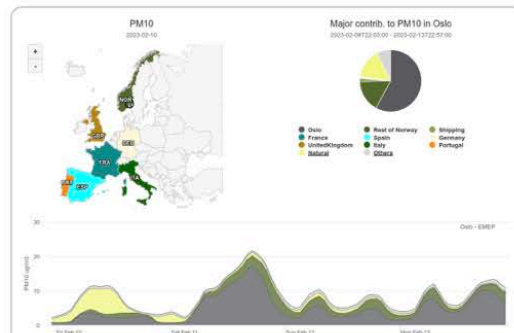


Planning Applications

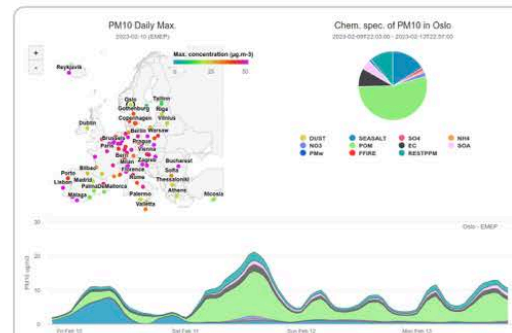
- Source/Receptor Contribution/Allocation
 - Identification of local (city) versus background (EMEP)
 - Share of individual countries (EMEP+LOTOS)
 - Speciation of PM composition (EMEP+LOTOS)
 - Both for daily forecast, and annual reports



Local/Long range



From countries



Chemical speciation



QA/QC CAMS Policy Products

QA/QC for Assessment/Source App

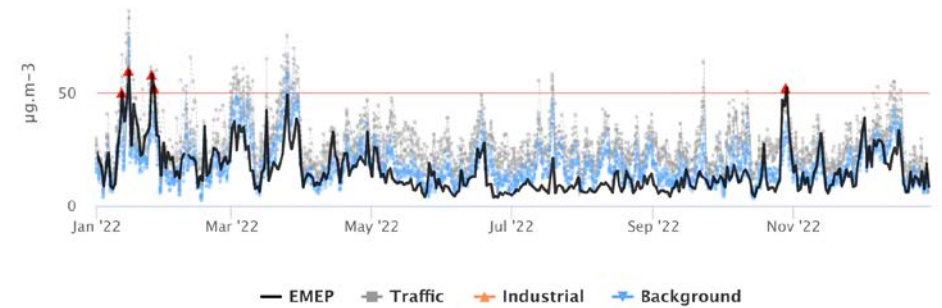
- Full Evaluation and Quality Control of all CAMS models in dedicated services: CAMS2_83
- NRT overlay of observed total PM with S/R Tools
- Forthcoming
 - Chemistry PM Composition
 - Annual basis (done)
 - NRT (ACTRIS/Ri-Urbans): first for « simple species » EBC, then for SIA/SOA (ACSM)
 - Source apportionment
 - CAMEO/Ri-Urbans/LIFE-REMY

<https://atmosphere.copernicus.eu/regional-services>



Quarterly report on the evaluation of the ENSEMBLE NRT productions (daily analyses and forecasts)
September 2022 - October 2022 - November 2022

Issued by: Norwegian Meteorological Institute
Date: February 3, 2023
Ref.: CAMS(2022)05(EN)1.01.14.1-2022(04)2022(EN)EMEA.ECOC.Report.v4.pdf



Atmosphere Monitoring

QA / QC for CAMS policy products CHEMICAL SPECIATION

CAMS61 evaluation 2018 at non-urban sites

		WORLD - All			NMB (%)
		CHIMERE	EMEP-hm1xKz	LOTOSUROS	
SO4	EBAS-d	-5.0	-29.6	-27.7	
INO3	EBAS-d	-9.7	-13.4	17.8	
ONH	EBAS-d	-4.0	-12.7	-3.1	
SS_PM10	EBAS-d	4.9	-12.2	2041	
EC_PM25	EBAS-d	17.8	13.4	205	
OC_PM25	EBAS-d	-99.5	-32.7	13.4	

Example SA product 2022 for Rome Lotos-Euros

Sat Jan 01 2022 - Sat Dec 31 2022

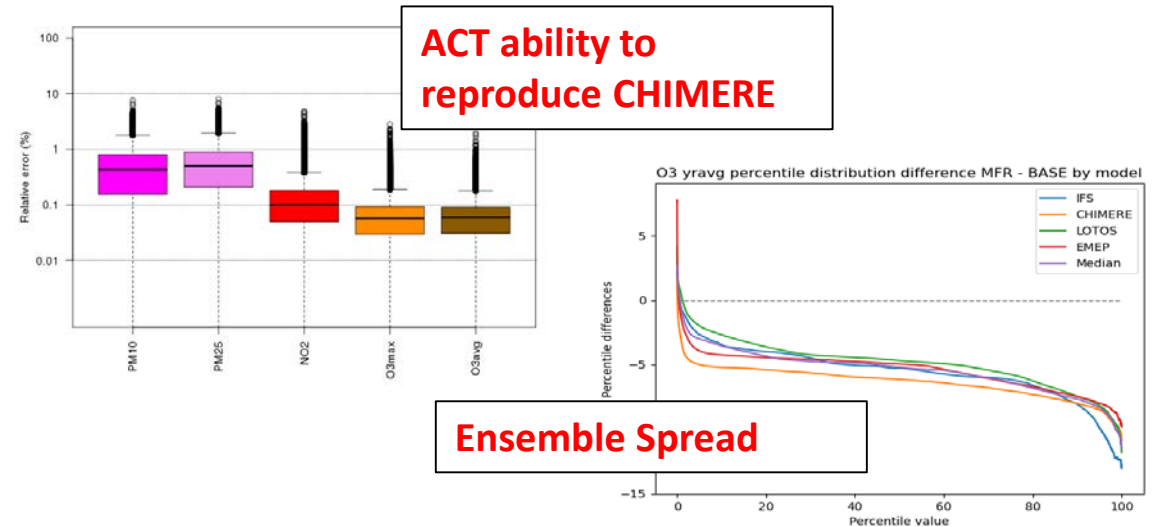
Sat Jan 01 2022 - Sat Dec 31 2022



QA/QC CAMS Policy Products

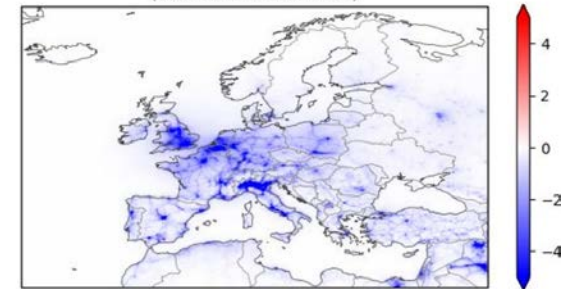
Planning

- Much more difficult!!
- Surrogate Model: Air Control Toolbox: 1% error compared to full CHIMERE CTM (for QA/QC of CHIMERE.. Go to previous slide)
- Scenario analysis:
 - Multi-model framework, checking the spread of CHIMERE/EMEP/LOTOS-EUROS/IFS
 - Scope for ACT contribution to CT9 platform ?
- Looking for opportunities with « Interventions »
 - Covid
 - 2022 Energy Crisis
 - Long term trends

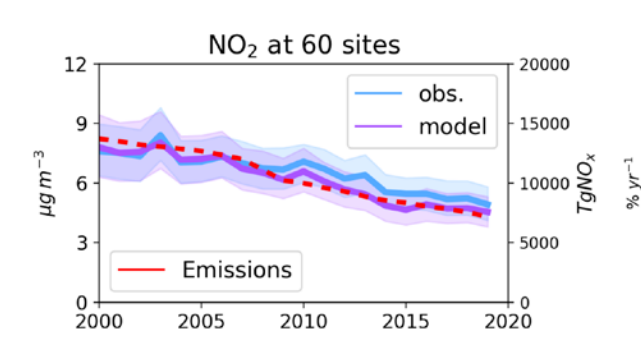


Covid/Lockdown

NO2 concentration mean difference, ENSEMBLE (absolute diff. in ug/m3) Lockdown scenario minus Reference (2020-03-01 to 2020-04-30)



Trends: EMEP





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Monitoring

THANK YOU FOR YOUR ATTENTION

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