SEEDS and expectations from CAMS – 2023 update

Vincent-Henri Peuch (ECMWF)

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CAMS SCOPE

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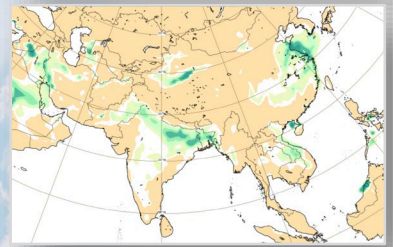

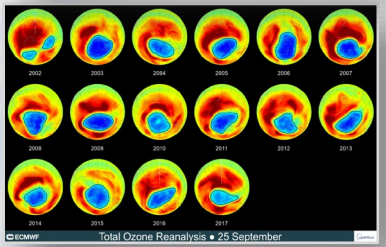

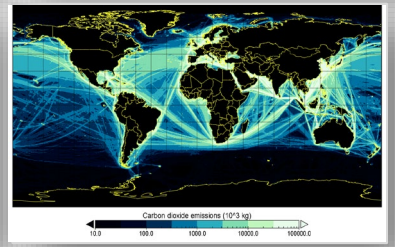

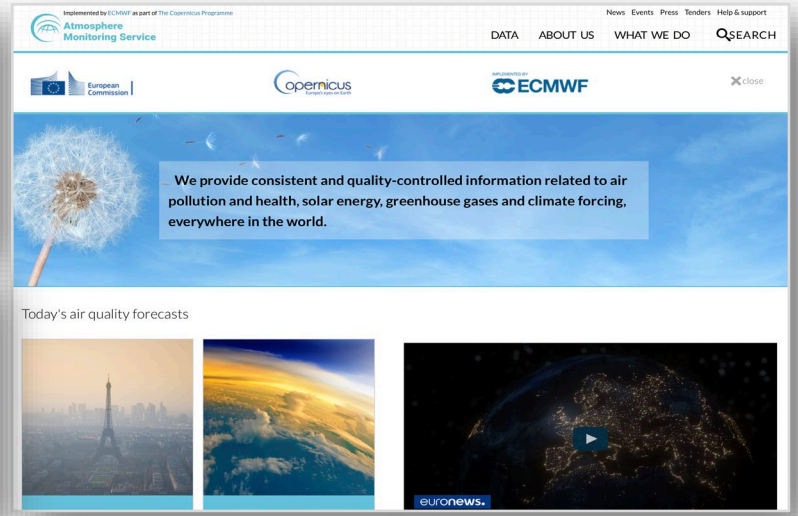

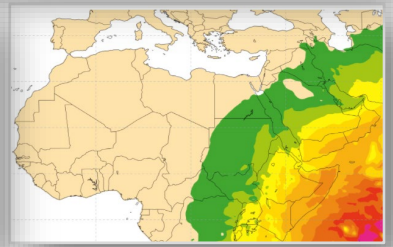

CAMS provides open & free information products based on Earth Observation about:

- past, current and near-future (forecasts) global atmospheric composition;
- the ozone layer;
- European air quality;
- emissions and surface fluxes of key pollutants and greenhouse gases;
- solar radiation;
- climate radiative forcing.

SEEDS

http://atmosphere.copernicus.eu
http://ads.atmosphere.copernicus.eu

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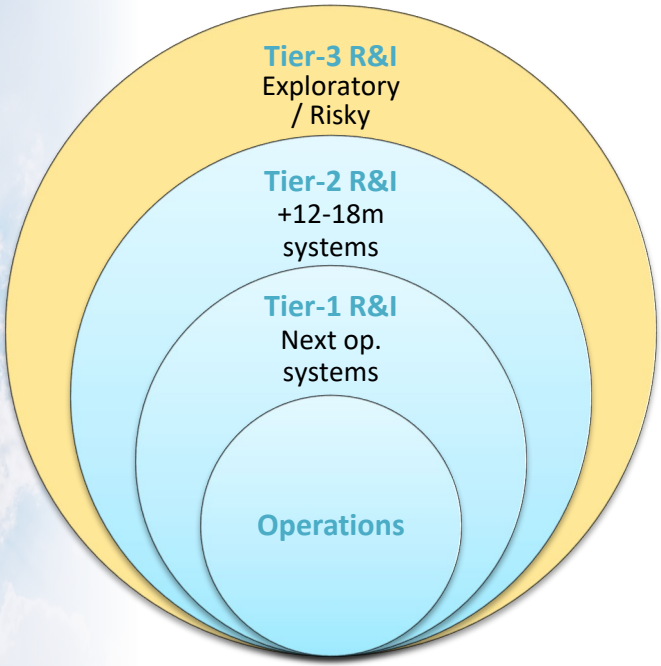
WHY R&I IS IMPORTANT FOR COPERNICUS



- Copernicus is not a project, it is a long term programme and investment from the EU. No need to cut corners: we need to be collectively ambitious
- R&I is essential to consolidate operational production streams, expand where needed, and benchmark/evaluate
- There is never enough user consultation/interaction and it is probably best done with realistic prototypes/demonstrators
- What is important is as much the research outcome as the R2O plan that goes with it (esp. important for the 3rd year of SEEDS)

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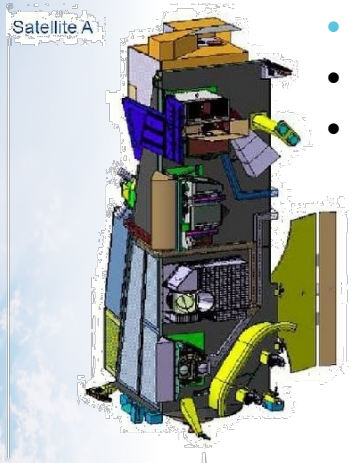
DRIVER: EVOLUTION OF THE OBSERVING SYSTEMS

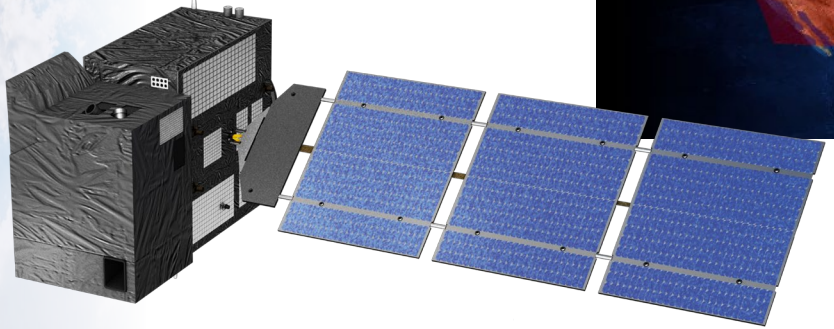
MetOp-SG-A



- Sentinel-5
- IASI-NG
- 3MI

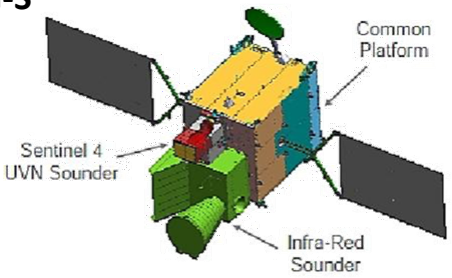
EUMETSAT

esa

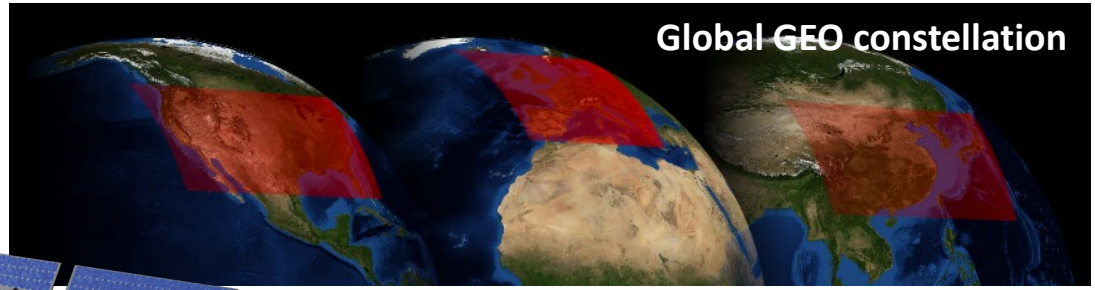


CO2M

MTG-S



- Sentinel-4
- IRS



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HORIZON PROJECTS FEEDING INTO THE EVOLUTION OF CAMS

"Legacy" CAMS aspects

SEEDS: obs. based emissions

Batch 1 **CAMEO**

- DA preparation for S4,S5 and MetOp-SG payload
- Uncertainty with all products

Batch 2 Call closed earlier this week

- Aerosol (esp. modelling)

Batch 3 TBA

- Surface/Vegetation/Atmosphere

CO2MVS aspects

CHE: preparatory studies

VERIFY: preparatory studies

CoCO2: CO2MVS prototype

CORSO

- Can APO and radionucleides help with disentangling CO_2 emitted by different sources?
- … (talk by A. Agusti-Panareda)

Call closed earlier this week

- Improving numerical representation of transport processes

TBA

- Emissions from wildfires

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QUICK FEEDBACK

- Really good progress (Block 1-3 yesterday and report), SEEDS is really delivering on all fronts. Crucial importance and value of TROPOMI (but not only).
- Hot Spot / Large Point Source monitoring is particularly interesting. Synergies with CO_2 and CH_4 efforts.
- Great value of the benchmarking of methods: “direct” (divergence), “DA” (inverse modelling) and “advanced bottom-up”. Specific case studies are particularly interesting (e.g. case of Barcelona).
- Sectorial approach (industry, cities, fires, agriculture, deposition, surface) is really meaningful as is user engagement. Departure from ”processing” viewpoint, which is excellent.
- Interest of independent/innovative approaches (HCHO for fire emissions), helping also to stimulate revision of emission factors, etc…
- Detection of “unknowns” and “unknown unknowns”.
- Very impressive technical developments on visualisation.

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WAY FORWARD

- Already convinced that SEEDS is a success in itself
- Important to plan transition: some aspects in CAMS, CAMEO, CORSO, etc… But more widely, outstanding research needs
- Same for SEEDS valuable user engagement activities
- Sit down together when ready
- Last, think of what Sentinel-4 will change and how we can highlight most rapidly the value of geostationary observation over Europe