



Co-ordinated by
ECMWF



CoCO2

Prototype system for a
Copernicus CO₂ service

SUPPORTING CITY-SCALE GHG INVENTORIES - OPPORTUNITIES AND CHALLENGES

Introduction

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This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 958927.

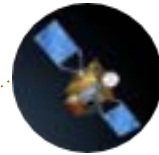




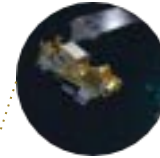
Copernicus monitoring in support of climate mitigation



Sentinel 5p



Sentinel 4



Sentinel 5



CO₂ Mission

SATELLITE MISSIONS

CO₂ TASK FORCE GUIDANCE DOCUMENTS



2015



2017



2019

2018



2017

RESEARCH AND PREPARATORY PROJECTS



ICOS Cities



2022

2021

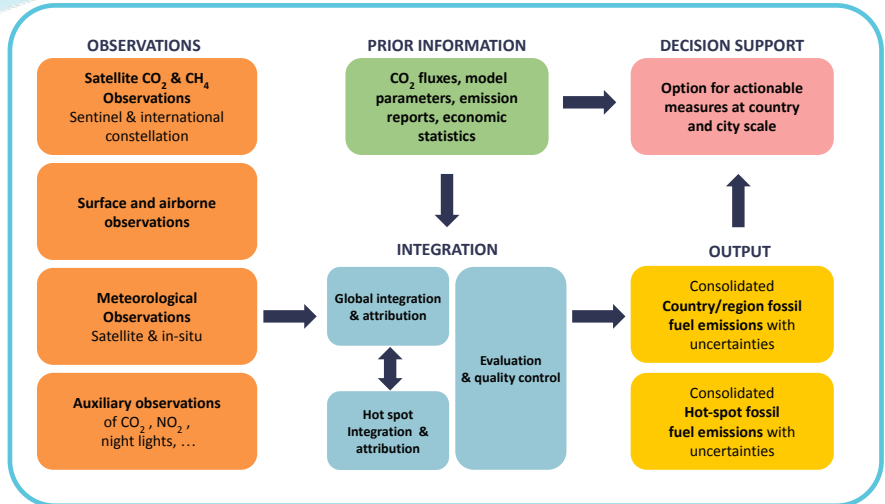
Operational ramp-up in CAMS

Air Quality emissions 2025

2026

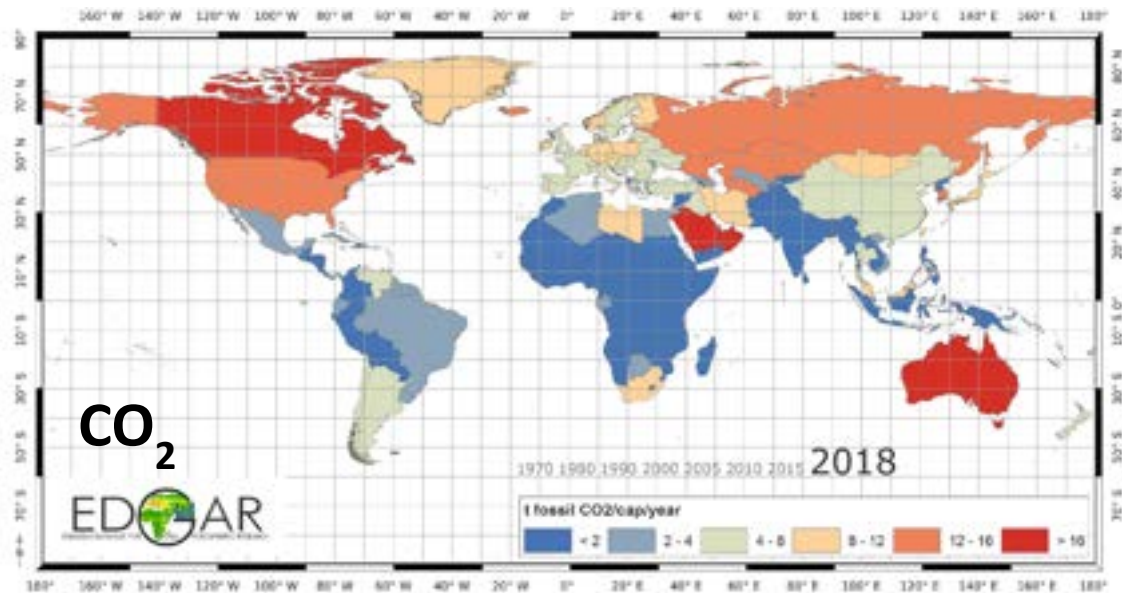
CO₂ Monitoring & Verification Support (CO₂MVS)

SERVICE COMPONENTS





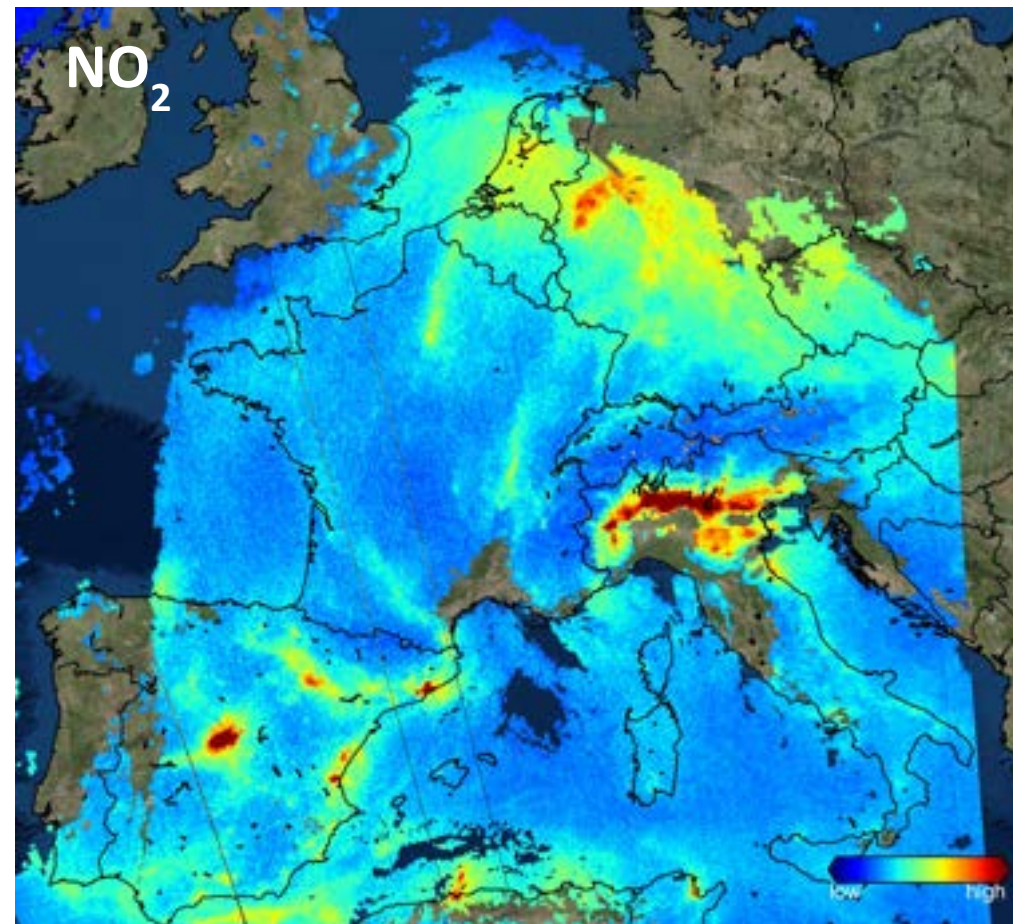
Understanding our emissions and how they change



CO₂ emission estimates based on nationally reported data

Observing atmospheric composition from space is a rapidly developing field. Many exciting new instruments, large and small, are being developed and launched.

Can we use Earth observations to improve our knowledge of anthropogenic emissions?

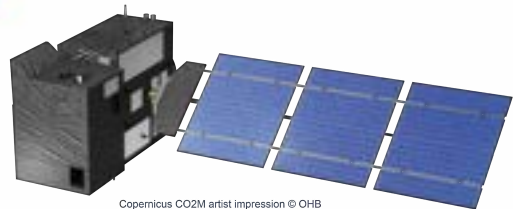


contains modified Copernicus Sentinel data (2017), processed by KNMI/ESA
NO₂ tropospheric columns observed by Sentinel-5p





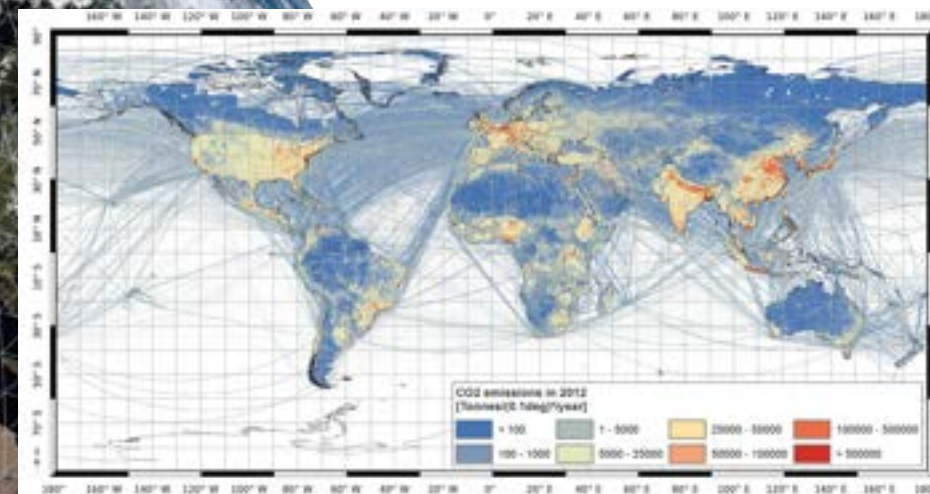
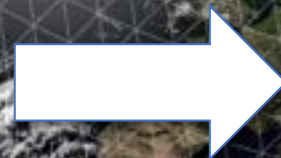
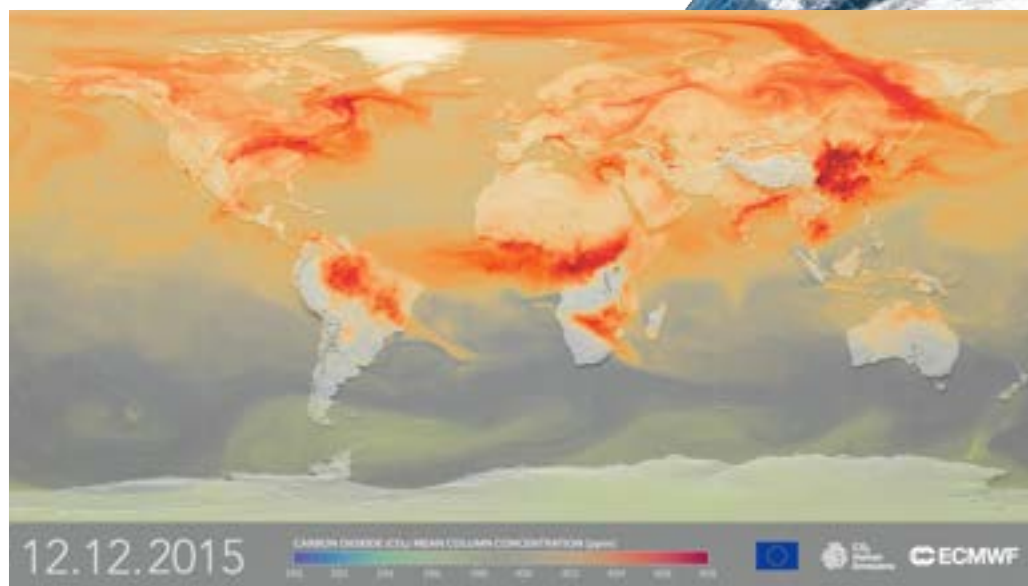
Challenges of observation-based emission monitoring



Copernicus CO2M artist impression © OHB

1. Satellites do not measure emissions directly; they measure the impact of emissions on the atmosphere.
2. Satellites see only the total impact of anthropogenic and natural effects.

Earth System models are used to translate the observations into emission estimates.



Greenhouse gas emissions monitoring capacity



OBSERVATIONS OF
ATMOSPHERIC CO₂ AND CH₄

**INTEGRATION AND
MODELLING**
Using computer models of the
Earth system, the data are
combined to provide timely
emission estimates.

OUTPUTS

WHAT WE
ALREADY KNOW



**EMISSION
MONITORING DATA**



USER SUPPORT



POLICY TOOLS



GLOBAL
Supporting the Paris Agreement



LOCAL
Supporting green cities



INDUSTRY



**GOVERNMENTS AND
POLICYMAKERS**



USERS
Consistent, reliable
information
Supports policy and
decision-making
processes

SCIENTIFIC COMMUNITY

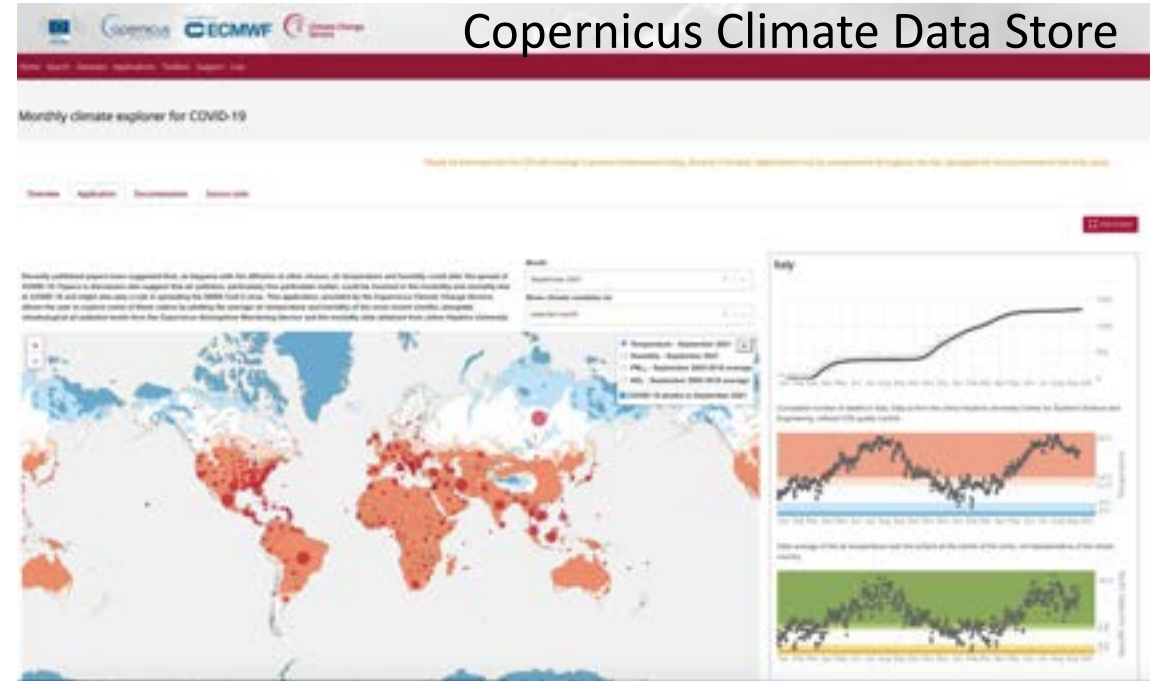
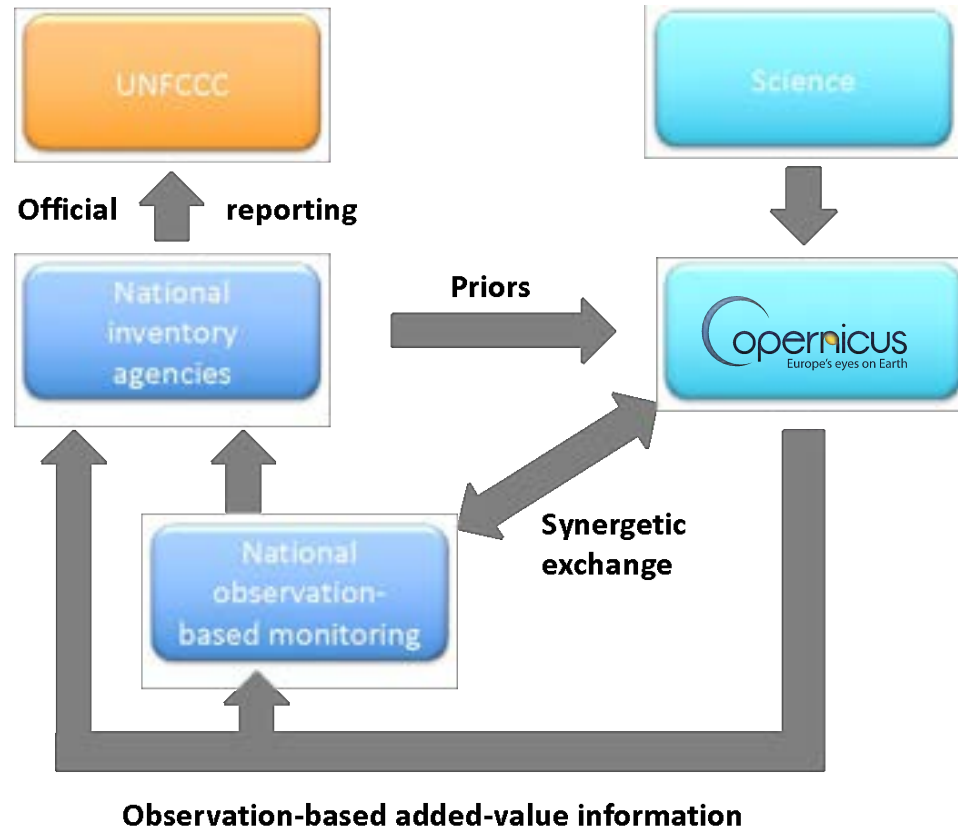


THE PUBLIC





User engagement for co-designed user services



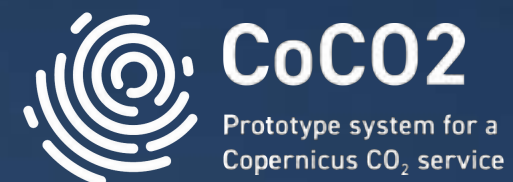
International standard for Urban GHG Monitoring and assessment





United Nations Framework Convention on Climate Change

Support with or provision of:

- Inventory-based emission data at high spatial and temporal resolution
- Satellite and (to some extent) in-situ data
- Added-value data products using observations and atmospheric models
- Scientific evaluation of estimates from different sources
- Interpretation of results



This presentation reflects the views only of the author, and the Commission cannot be held responsible for any use which may be made of the information contained therein.

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