climate change initiative

LONG-LIVED GREENHOUSE GAS PRODUCTS PERFORMANCES

CNR-ISAC activities on GHGs

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ISAC - Roma

ISAC – Lamezia Terme

Observatories

3 areas of research

Climate and meteorology, modelling and Earth observation

Impacts on environment, cultural heritage and human health

Atmospheric composition, climate forcing, air quality

CAMEO

Topics

Water cycle

Climate and weather extremes

Climate hotspots

Climate variability and changes

Atmospheric circulation

Activities

Climate modelling

Climate monitoring in Italy

Meteorological modelling

Observations

IMPEACH

Topics

Protection of cultural heritage and landscape at risk

Human health related issues

Impact of weather and hydro-geological extreme events

Support to policy and decision makers

Activities

Alternative energy sources, innovative materials and environmental sustainability

Development of health-related air quality metrics

Impact of pollution, climate and microclimate changes

In-situ and remote sensing of environmental parameters

Integrated meteo-hydro-geological and air-quality modelling for risk mitigation

Risk assessment for cultural heritage and landscape

Topics

Aerosol-cloud-radiation interactions

Observations of atmospheric composition changes

Atmospheric composition in hotspot areas

Planetary Atmospheres

Activities

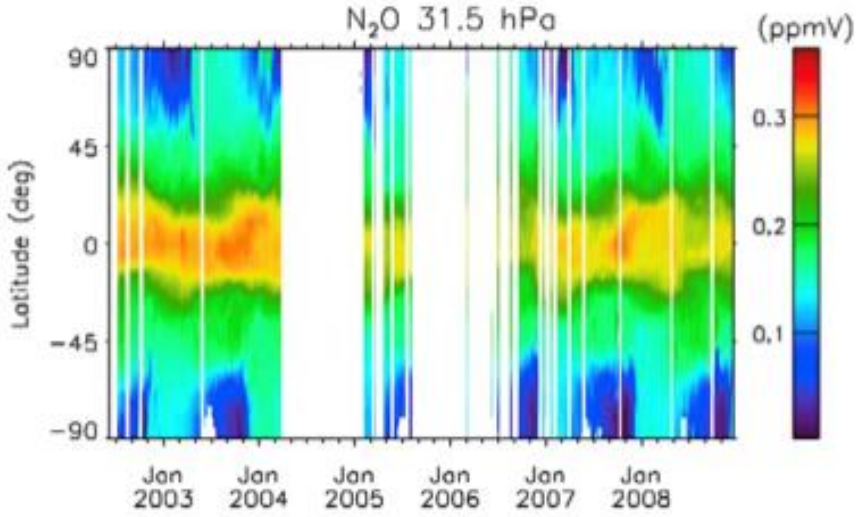
Atmospheric Composition Modelling

Satellite Observations

Ground Observations

ISAC GHGs from satellites and models

CNR-ISAC activities on GHGs:

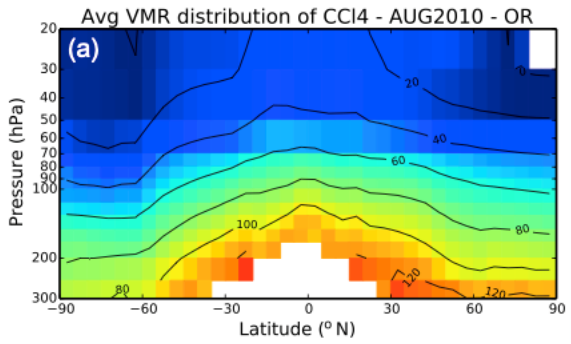


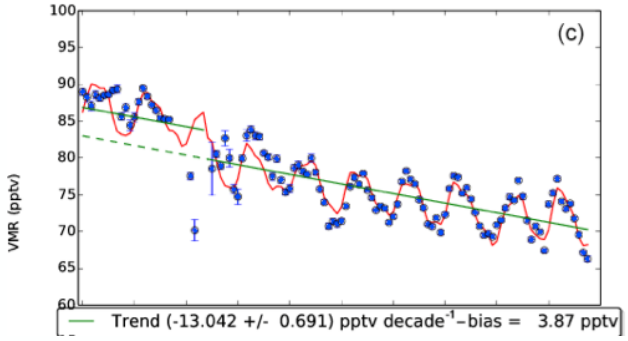
Dinelli et al.,2010

GHGs profiles from ISAC satellite datasets:

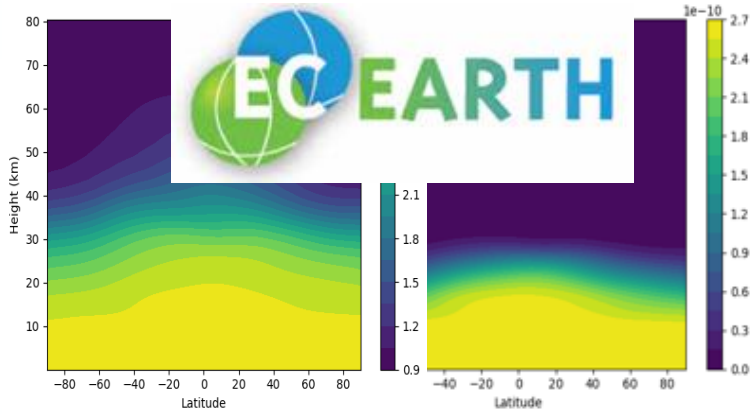
GHG Satellite datasets from MIPAS
Used also for trends investigations
(Dinelli, Papandrea, Castelli, Pettinari)

GHGs in Climate models applications:
(Fabiano)





Valeri et al.,2017



N_2O climatology in EC-Earth and CFC-11 climatology used also for CFC-12 and other minor GHGs

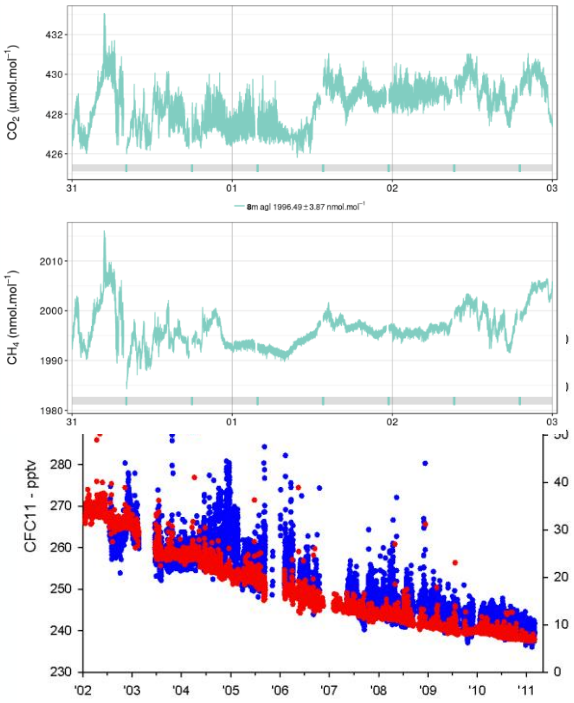
ISAC GHGs Ground-based measurements: in-situ measurements

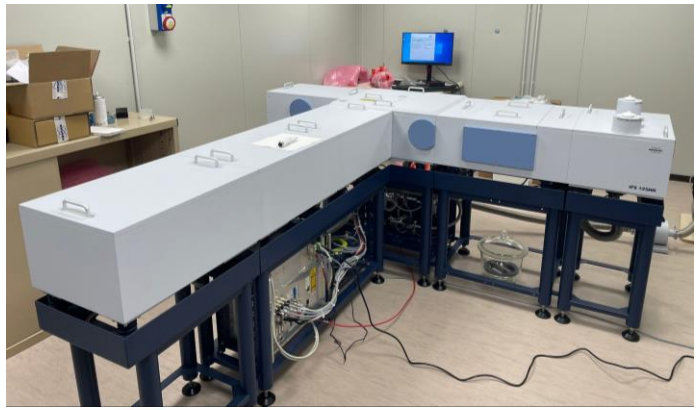
ICOS INTEGRATED CARBON OBSERVATION SYSTEM

CNR-ISAC activities on GHGs:

GHGs measurements from ISAC observatories:

- **In-situ** measurements of CO_2, CH_4, CO, N_2O, SF_6, CFCs, HFCs at the ICOS/AGAGE/GAW-WMO site Mt. Cimone (P. Cristofanelli from ISAC and M. Maione from UNIURB) + CO_2 and CH_4 from Bologna.
- **Remote sensing** measurements from Bologna:
  1) COCCON vertical columns of CO_2, CH_4, CO from Bologna (2024-) (E. Castelli)
  2) NDACC and TCCON vertical columns of CO_2, CH_4, CO, N_2O form Bologna (2025) (E. Papandrea)





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