

# NILU's research on atmospheric composition and climate change mitigation

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# Norwegian Institutt for Air Research

## Vision

Research for a clean atmosphere

## Values

Integrity - Competence – Social benefit



Kjeller



Tromsø (The Fram Centre)



Oslo (CIENS)

# About NILU

- ✓ **Founded in 1969**
- ✓ **Independent research foundation**
- ✓ **Total budget: ~ 21 MEuros**
- ✓ **170 employees from 20 nations**
- ✓ **95 researchers**
  - **70 with PhD-degree**
- ✓ **~ 150 «peer review»-articles every year**



# NILU's organisation

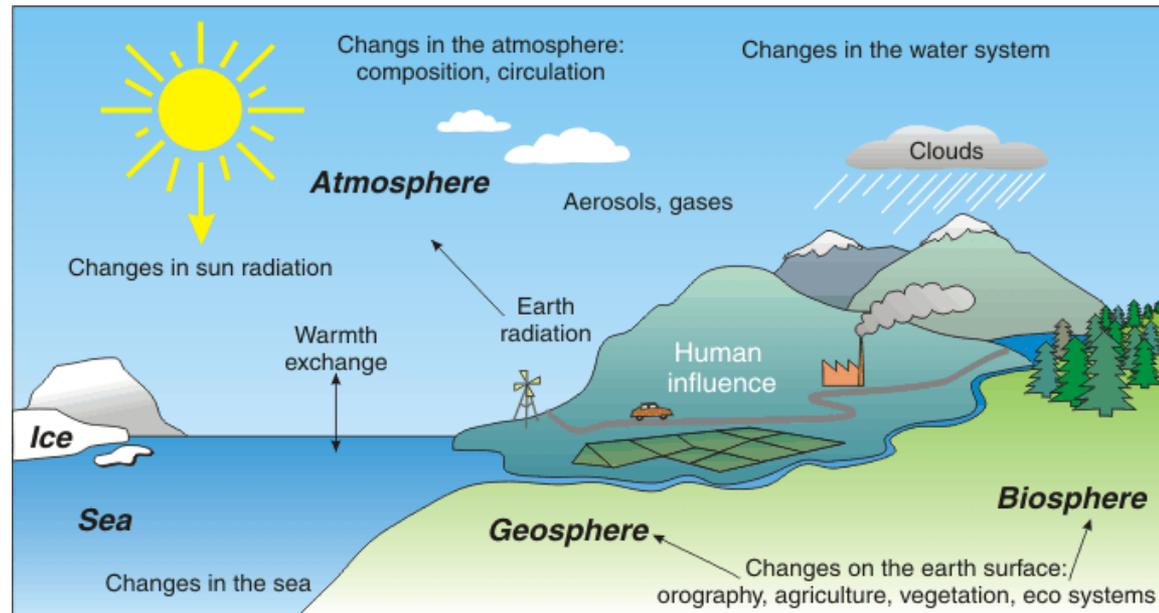


# Our research

**Aims at understanding of processes and consequences related to:**

- Atmospheric composition
  - Air quality
  - Climate change
  - Hazardous substances
- and their environmental effects

## Atmosphere and the Earth system



# Observatories from pole to pole

NILU is monitoring climate change and long-range transport of air pollutants at four observatories:

- Zeppelin in the Arctic
- Troll in Antarctica
- Birkenes and ALOMAR in Norway

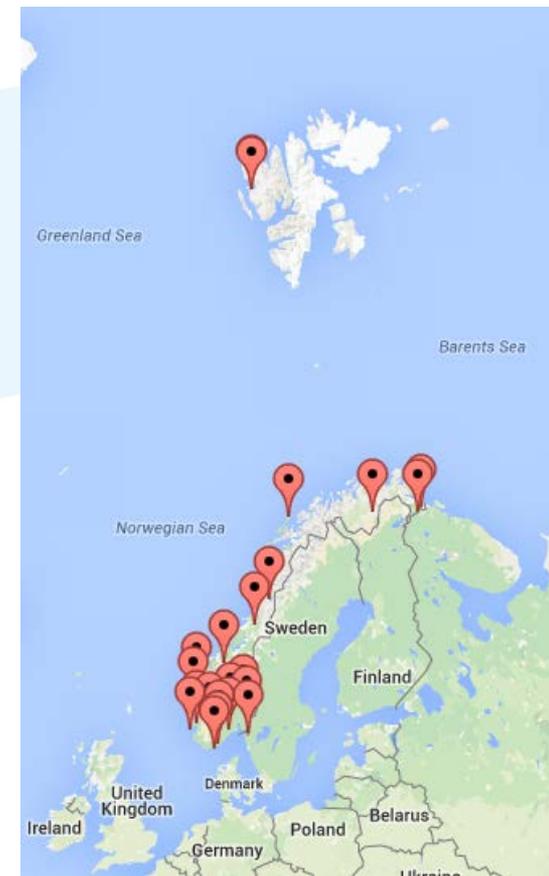
Responsible for:

- National reference laboratory for AQ
- Chemical Coordinating Centre EMEP
- European Topic Centre on Air Pollution, Transport, Noise and Industry for the European Environmental Agency



# Air Monitoring

- Norwegian monitoring of heavy metals and Persistent Organic Pollutants (POPs) in precipitation and Air (environmental contaminants)
- Maintains one of world longest time-series of POPs at Zeppelin/Svalbard
- Norwegian monitoring of inorganic compounds in precipitation and air (acidification, eutrophication)
- Active sampling techniques for monitoring
- Additional use of passive samplers for POPs, PAHs, PFC, NO<sub>2</sub>, SO<sub>2</sub>, Ozone, etc. for screening studies
- Several new compounds in 2017 and onwards: Siloksanes, bis-phenols, ftalates, new PFAS, etc.



# NILUs laboratories

- National Reference Laboratory
- Chemical laboratories accredited according to EN ISO/IEC 17025
- Health effect laboratory (GLP registered) – effects on human cells

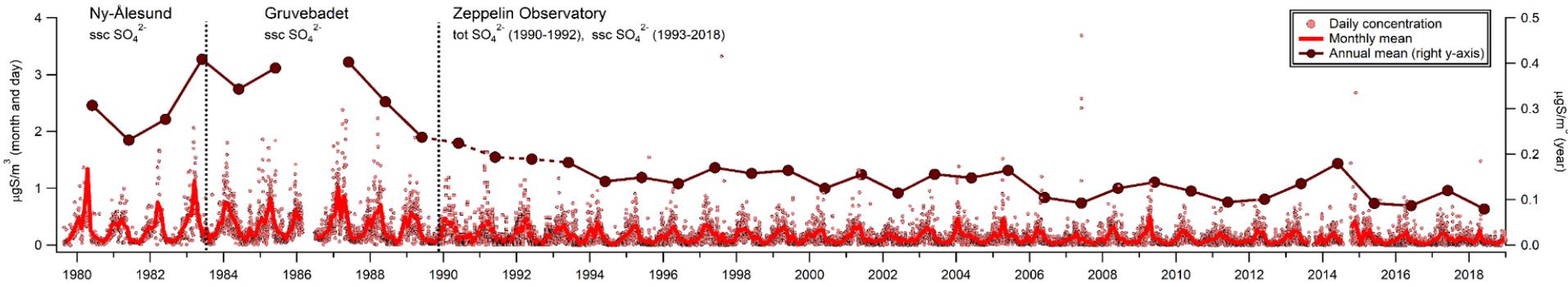
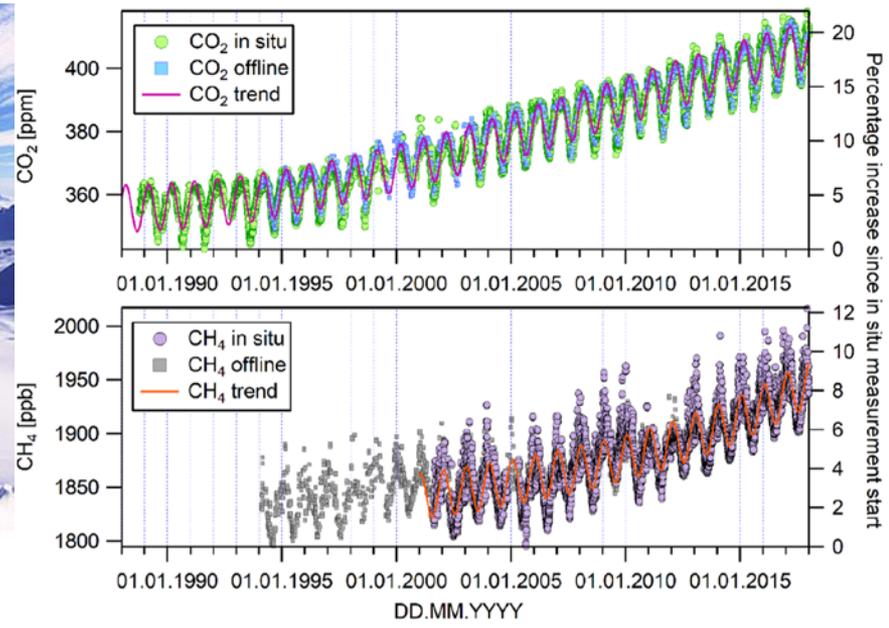


# Major international NILU clients

- The European Commission (EC)
- European Environmental Agency (EEA)
- World Bank (IBRD)
- World Meteorological Organization (WMO)
- World Health Organization (WHO)
- United Nations Environment Programme (UNEP)
- United Nations Economic Commission for Europe (UNECE)
- Environment Agency - Abu Dhabi (EAD)

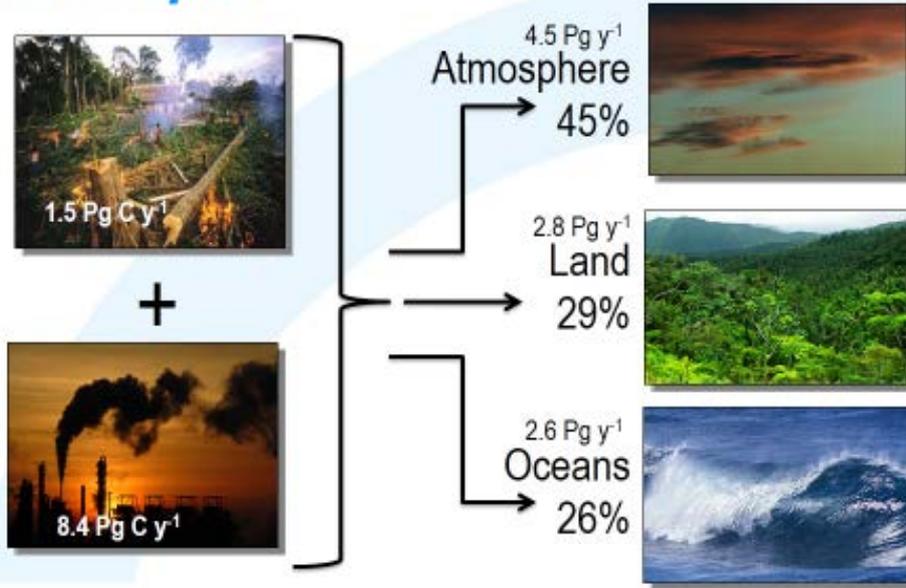


# Monitoring changes in atmospheric composition in the Arctic



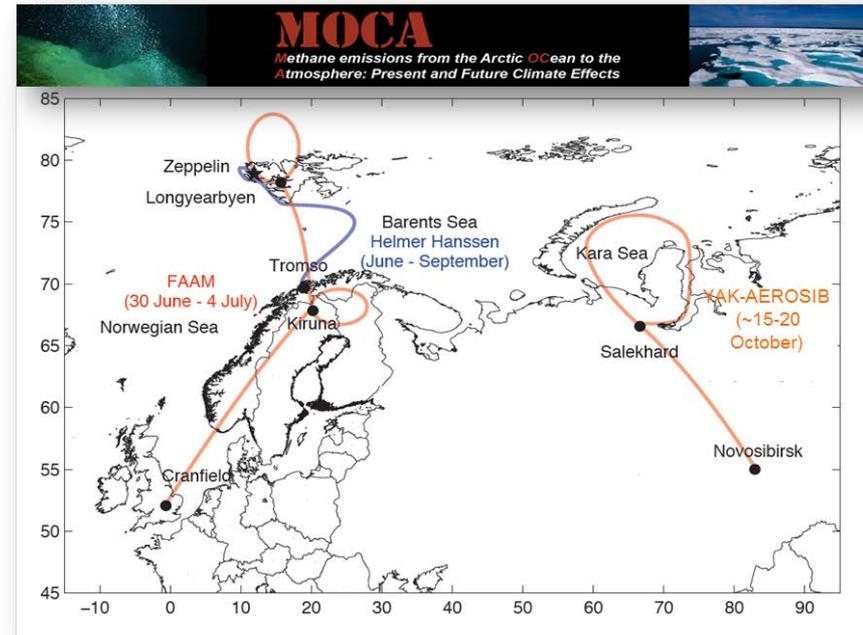
# Climate system: carbon cycle, N<sub>2</sub>O...

## Carbon cycle



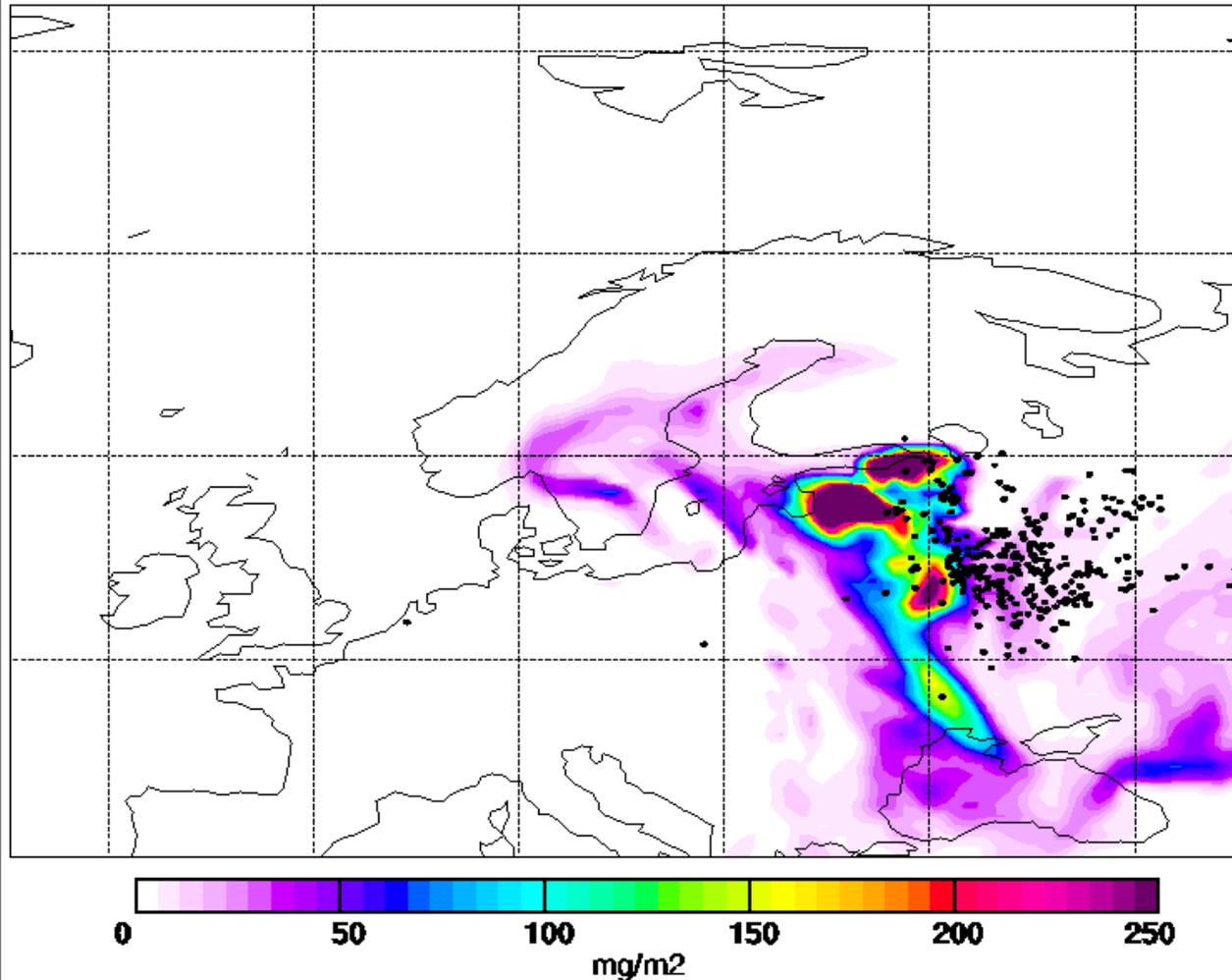
Canadell et al., PNAS, 18866-18870, 104, 47, 2007

ICOS Integrated Carbon Observ. Syst.  
(CO<sub>2</sub>, CH<sub>4</sub>, CO) Research infrastructure



# Example of inverse modelling to determine the origine of pollution

Simulation start 20060407. 0 Actual time 20060425. 0



# NILU's work on air quality for EEA

- ✓ Reporting under the AQ Directives (monitoring, modelling , AQ plans)
- ✓ AQ & exposure assessment
  - Combining monitoring, modelling, sensors, satellite & other data
- ✓ AQ & emission trend analysis
- ✓ Quantification of health effects
- ✓ Combined pressures (AQ, noise, climate)
- ✓ Evaluation of policies and measures from european to local level
- ✓ Support to policy design (e.g. assessment and review of directives)



Thank you  
for your attention!

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