

The GEOmon project

- Integrated Project of the 6th EC Framework Programme
- 38 participating institutions
- 4 years' duration (started in February 2007)
- Coordinator: Philippe Ciais, LSCE, France,
- Deputy coordinator: Philippe Keckhut, SA, France
- Contact: Christiane Textor, Morag Logan, LSCE, France

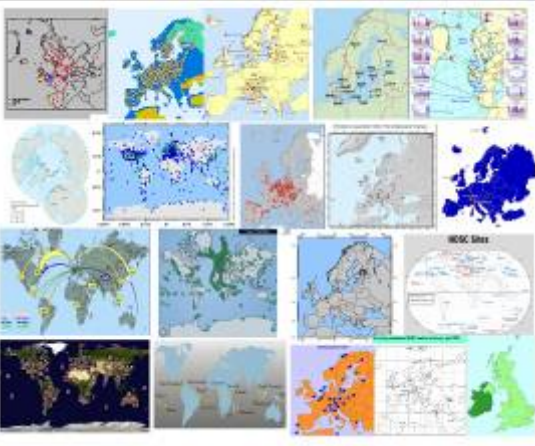
geomon.coord@dsm-mail.saclay.cea.fr

Tel: +33 1 69 08 34 07

Fax: +33 1 69 08 77 16

www.geomon.eu

Creation of a one stop shop



There are currently many sets of observations of the atmosphere in Europe. GEOmon aims to create a "one stop shop" for data on atmospheric composition in Europe.

New instruments



New instruments partly supported by GEOmon: An FTIR spectrometer for column and profiles of atmospheric composition and a Lyman-alpha hygrometer (Flash B sonde) for stratospheric water vapor profiles.

Participating Institutions

A.N. Severtsov Institute of Ecology and Evolution
Alfred Wegener Institute
Belgian Institute for Space Aeronomy
Centre National de la Recherche Scientifique
Centre National d'Etudes Spatiales
Chalmers University of Technology
Commissariat à l'Energie Atomique (Coordinator)
Danish Meteorological Institute
Energy Research Centre of the Netherlands
European Centre for Medium Range Weather Forecasts
Finnish Meteorological Institute
Forschungszentrum Karlsruhe
Institut National de l'Env Industriel et des Risques
Istituto di Metodologie per l'Analisi Ambientale
Interaction Cloud Aerosol Radiation (ICARE)
Max-Planck Institute for Chemistry
National Institute for Aerospace Technology
National University of Ireland, Galway
Natural Env Research Council, British Antarctic Survey
Netherlands Organisation for Applied Research
Norwegian Institute for Air Research
Parc Cientific de Barcelona
Paul Scherrer Institute
Royal Holloway and Bedford New College,
University of London
Royal Netherlands Meteorological Institute
Swiss Federal Labs. for Materials Testing and Research
University of Athens
University of Bern
University of Bremen
University of Heidelberg
University of Helsinki
University of Karlsruhe
University of Leeds
University of Leicester
University of Liege
University of Oslo
University of Versailles at Saint Quentin
World Meteorological Organization

Europe watches the Atmosphere:



Global Earth Observation and Monitoring

A major European initiative for monitoring atmospheric composition and climate

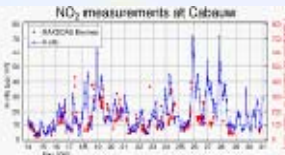
The goal of GEOmon is to sustain and analyze European ground-based observations of atmospheric composition, and their complementarity with satellite measurements. This is a first step to build a future integrated European atmospheric observing system dealing with observations of long-lived greenhouse gases, reactive gases, aerosols, and stratospheric ozone. This will lay the foundations for a European contribution to GEOSS (Global Earth Observation System of Systems) and optimize the European strategy of environmental monitoring in the field of atmospheric composition observations.

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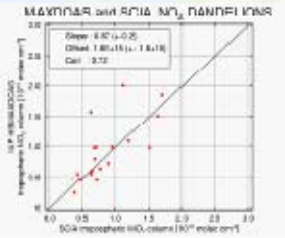


Strategy

- Deploy new ground-based remote sensing stations for satellite ground-truthing
- Integrate ground-based, aircraft and satellite observations using advanced numerical transport-chemistry models
- Build upon existing networks and improve their harmonization
- Establish the prototype of a pan-European atmospheric observing system of greenhouse gases, reactive gases, aerosols, and stratospheric ozone
- Create a 'One stop shop' data center for European atmospheric data
- Provide data storage and ongoing accessibility to data (past and present projects)



These figures come from a brief campaign called DANDELIONS which was carried out at Cabauw in 2005. Different measurements of NO₂ (from the ground and by satellite) are compared in these figures.



GEOmon will include such comparisons for a wide range of atmospheric gases and aerosols in order to increase our understanding of ongoing changes in atmospheric composition.

Scientific Questions

- What are the regional European trends and variability of atmospheric composition in relation to changes in surface emissions?
- How to validate and integrate satellite observations with ground-based and airborne observations to obtain a coherent picture?
- What are the global trends of atmospheric composition, and how to reduce the uncertainties of surface emissions and atmospheric processes?

Structure

Six complementary activities:



Greenhouse gases and Global Warming

E. G. Nisbet, Royal Holloway and Bedford New College, University of London, United Kingdom



Reactive Gases, Pollutants and Climate

B. Buchmann, Swiss Federal Laboratories for Materials Testing and Research, Switzerland



Atmospheric Aerosols and Climate

G. de Leeuw, University of Helsinki, Finland



Stratospheric Ozone and Climate

M. De Mazière, Institut d'Aéronomie Spatiale de Belgique, Belgium



Integration and Supporting Modelling Studies

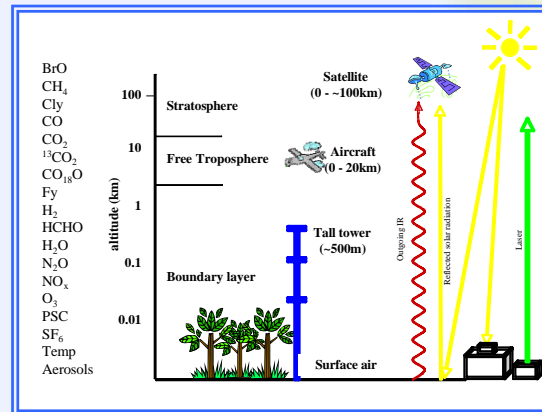
M. Schulz, Commissariat à l'Énergie Atomique, France



System Architecture and Outreach

*S. Godin-Beekmann, Service d'Aéronomie, Centre National de la Recherche Scientifique, France;
K. Tørseth, Norwegian Institute for Air Research, Norway.*

Integration of Measurements



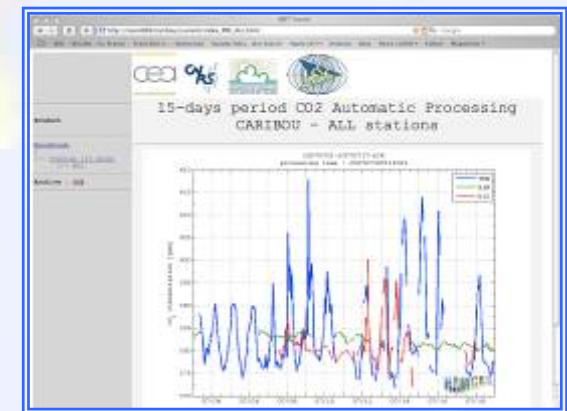
One important strategy of GEOmon is the integration of different types of measurements of atmospheric composition at different altitudes. This will enable greater understanding and application of each different type of measurement, increasing our knowledge of the atmosphere.

GEOmon uses many measuring sites and techniques



Products

- Time series of surface and vertical profile data of in-situ observations
- Time series of surface and vertical profile data from ground based remote sensing stations
- Integrated and harmonized global datasets on atmospheric composition
- Model analysis and assimilated fields
- Selection of representative stations for European air data
- Processed data & trend analysis
- New European data center for atmospheric data
- Pilot near real time data



An example of rapid delivery data from surface stations measuring CO₂. Such data is normally only available after months. GEOmon will deliver preliminary data within days of measurement, for example, data assimilation systems and scientific users. Fully validated data will be available later at the GEOmon data centre.