

The Atmospheric Chemistry Ether Group : Expertise and database Particular IASI Activities

The atmospheric chemistry data base Ether has been developed for : 1) the French scientific community involved in atmospheric chemistry studies, 2) end-users, 3) International scientists through cooperation agreements.

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1) The Ether database

Main purposes of Ether :

Ether is the focal point for French and foreign scientists for studying mesoscale to global scale processes from the troposphere to the stratosphere, within a wide temporal range (from the minute to the decade).

Goals :

- ✓ assist the scientific community to locate, access and interpret atmospheric chemistry data,
- ✓ provide data processing software and tools,
- ✓ provide information on the data collection,
- ✓ promote the creation of different expertise networks on varying atmospheric chemistry topic.

Ether stores various products derived from ground-based, balloon-, air- and space-borne measurements :

- o tropospheric experiments : MOZAIC Campaign, IASI-Balloon, IASI...
- o stratospheric experiments : ODIN (OSIRIS and SMR data),...

but also modeled and assimilated constituent fields (results from MIMOSA and REPROBUS Models).

References of data archived on other databases can be found in Ether. Users can also order these data (e.g. NDSC data,...).

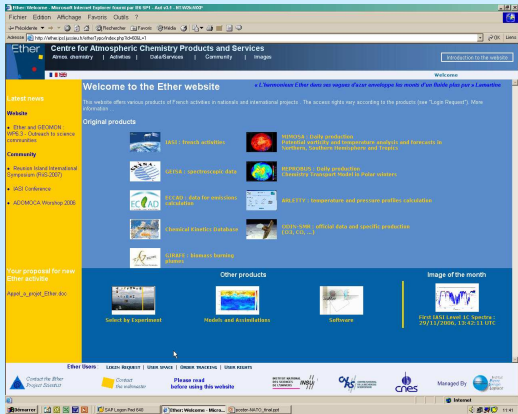
Data is archived or referred in Ether according to scientists requests. A standard was used to reference the data.

Ether develops and manages with scientists, specific database like the spectroscopic database GEISA

Access rules are controlled by the Ether administrator.

Available Software : scientists can run specific software based on scientific algorithms

- ✓ T,P simulation at every geographic point, from 0 to 100 km : ARLETTY software (through an interactive interface) developed by French laboratory and a company.
- ✓ Data visualization software (206 datasets for 20 experiences).
- ✓ Potential Vorticity fields production using MIMOSA software through an interactive interface.
- ✓ Conversion software (data format, units, temporal and geographical references).



Ether Production :

- ✓ Potential vorticity and temperature fields : daily analysis and forecasts production (Mimosa model, North and south Hemisphere and tropics)
- ✓ 50 atmospheric constituent fields (O3, ClO, NO2, N2O, BrO,...) : daily analysis production (REPROBUS model)
- ✓ Level 2 ODIN/SMR data production (Moliere software)

and external production of assimilated fields (ADOMOCA project)

Ether facilities :

All scientists can offer their own data and software to be included in the Ether database

Scientists owning data according to Ether objectives, have the opportunity of providing level 2, 3 and 4 data to the Ether database. Scientists should provide information about the data and specify their access rules. They can deliver different versions of data.

Policy : The Ether users' committee will decide whether these data will be integrated in Ether. It also decides of the new software to be developed. This software must be of interest for all scientists using Ether database.

Ether administrator assures the technical quality of the scientific software. A scientist who provides a software is responsible for their scientific accuracy .

Standards :

Data suppliers can deliver data whatever the format. Ether normalization has been defined to help data management (e.g. files format, units, nomenclature). Users can order the files with Ether standards or in their original format.

Particular projects

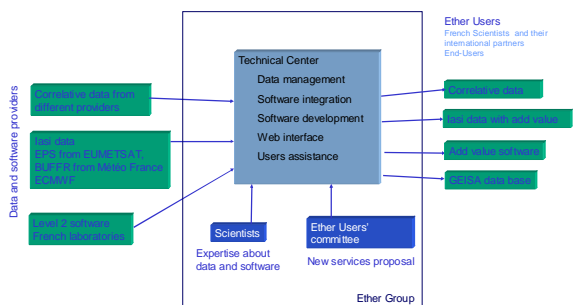
Forecast and analyse plumes trajectories, GIRAFE software: This software had been used during AMMA campaign to forecast of burning biomass plumes (using real time satellite maps and trajectories (FLEXPART model). This software is implemented in Ether data base and can be used for all region in the world

ECCAD Ancillary Database Dedicated to Emission Calculation : (developed in relation to ACCENT activities) The goal of this project is to provide the scientific community with a series of digital maps and time series of different data for global change studies (population, biomass burning, fire studies and vegetation maps). The ancillary database integration inside Ether system is in progress.

MOZAIC database contribution : Specification and realization of a new MOZAIC database. Interoperability between MOZAIC and Ether systems is implemented . It will use for IAGOS project.

GEISA spectroscopic data base

2) Ether organization for IASI data and expertise about data and software



Data Access

Ether collects L1 and L2 data through Météo-France. Files format is BUFFR, with one file per scan.

French scientists can pick up data on Ether system using web services

IASI Software and data base

- L1B et L2 readers
- Determination of Temperature and Pressure using ECMWF data in accordance with IASI measurements
- Implementation of cloud contamination software. Using this software scientists will obtain new level 1 data without some specific cloud contamination.
- Add value data production
- Ether will product level 3 data (Monthly average) derived from Eumetsat level 2 data.
- Spectroscopic data base GEISA-IASI
- Near future :
 - o tools to select data using criteria : (time, geographic area, spectrum range)

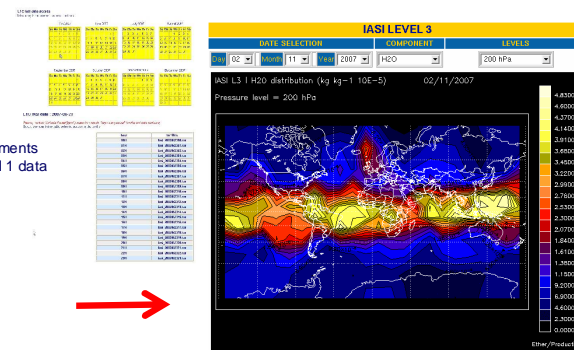
Development facilities

Space calculation to process data on Ether computers

Other projects

To archive and to distribute

- validation data (balloon data, other satellite data,...)
- L2 data produced by French laboratories with their own retrieval software



3) Ether objectives

for IASI

✓ Be a reference centre for scientific IASI data what will be not produced in the EUMETSAT data production centre.

Other activities

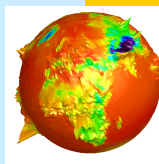
✓ Become an European system, like a Technical Assembly Center

✓ Develop interfaces with international systems (e.g. with GEOMON project).

✓ Become a provider for different french data (NDSC, Balloon, ...)

✓ Contribute to the planet security

- o Help to data validation and intercomparison with the aim of increasing the reliability of knowledge,
- o Manage CHIMERE model data (pollution data) to combine them with modelling data and satellite data.



Compound image with CO data and Pressure data calculated with MOCAGE model

Conclusions

Ether is the good way to use IASI data and to develop add value services and data

More generally Ether makes possible mutual contribution of scientists to :

- ✓ define common tools in order to answer to International Announcement of Opportunity,
- ✓ design methods or prepare software to mix information from different origins, either from different spaceborne instruments, from airborne or ground based instruments,
- ✓ analyze the accuracy of the measurements,
- ✓ and their added-value with respect to the objectives of atmosphere monitoring.