



FINNISH
METEOROLOGICAL
INSTITUTE

New COST Action:

***Towards a European Network on
Chemical Weather Forecasting and
Information Systems***

Proposer:

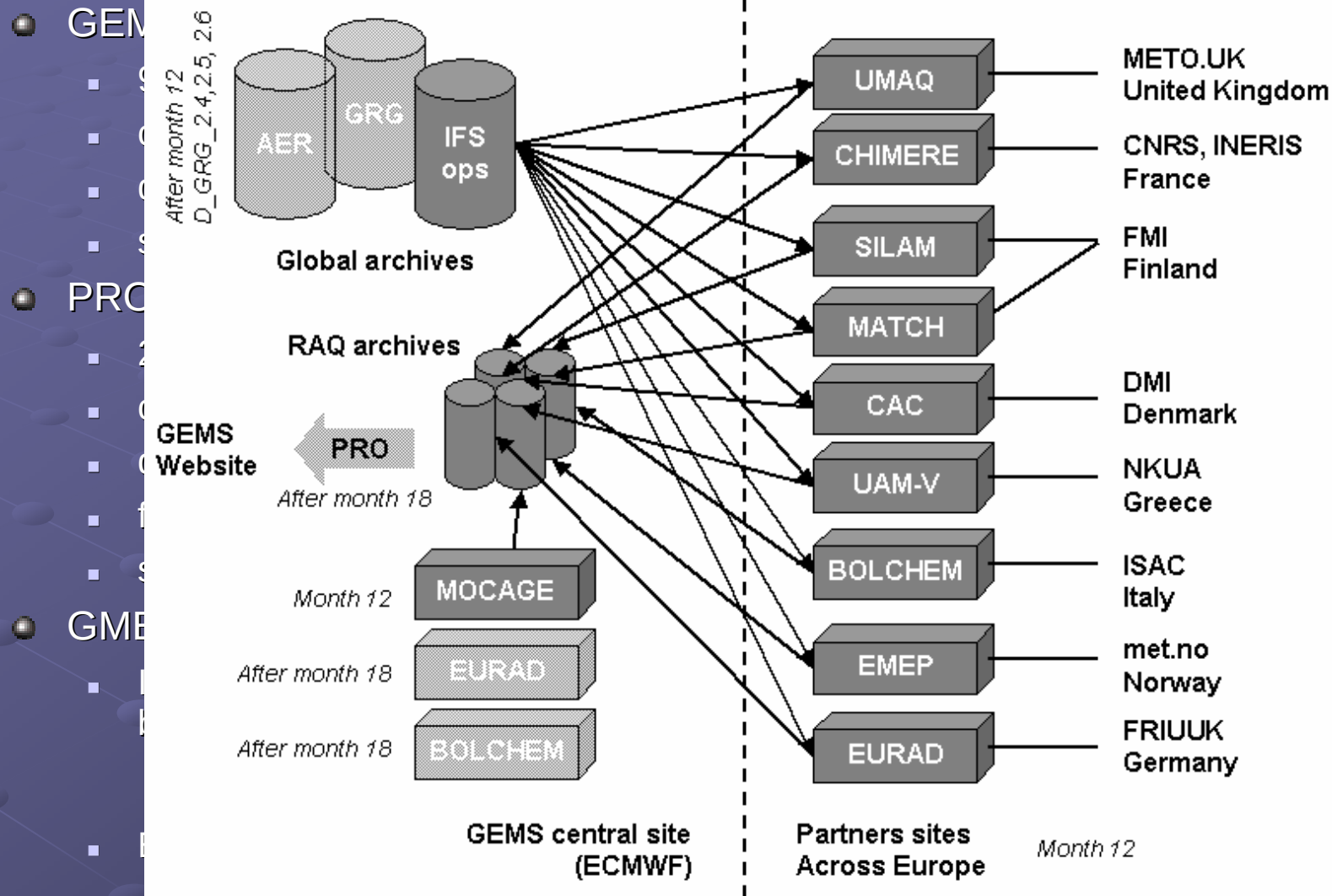
Mikhail Sofiev

Finnish Meteorological Institute

Historical background

- EUMETNET Workshop on Ground-level Ozone Forecasting (2000) initiated by WG-Env
 - A suggestion of a feasibility study of ground-level ozone forecasting in Europe
- A first draft of a feasibility study: 2002
- Renewed interest (2004)
- WG-ENV and EEA joint workshop on Air Quality forecasting (Copenhagen, 6-7 April 2005)
 - a decision to undertake a COST action

And life was going on...



 **SILAM v3.8**

[Main page](#)
Model documentation, validation, runs examples

[Related projects](#)

[Remote access via graphical user interface \(GUI\)](#)

[Air quality forecasts \(research purposes only\)](#)

[SILAM internal pages](#)

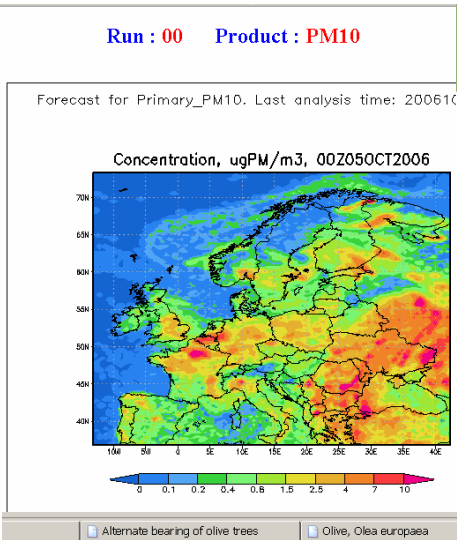
[Get the model code](#)

[Useful links](#)

European Area:
SO2: [00](#)
SO4: [00](#)
Primary PM 10: [00](#)
Primary PM 2.5: [00](#)

Maps for Valid Time European Area
[+06h](#)
[+12h](#)
[+18h](#)
[+24h](#)
[+30h](#)
[+36h](#)
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Maps of TRIAL forest fires forecasts
[Fire map](#)
[PM 2.5 concentrations](#)



European Environment Agency 

site map accessibility faq glossary

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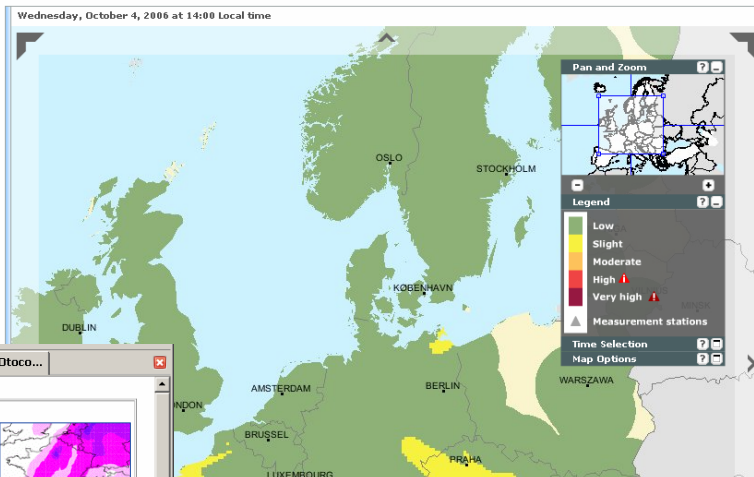
You are here: >> Map

Welcome Map Comparison About ozone Ozone and health Ozone and legislation What can I do? Find out more

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Place name/Post code:
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Wednesday, October 4, 2006 at 14:00 Local time



Pan and Zoom
Legend
Low
Slight
Moderate
High
Very high
Measurement stations
Time Selection
Map Options

Amsterdam Berlin Warsaw Paris Luxembourg Prague London Brussels

[Ferns-template](#) [Alternate bearing of olive trees](#) [Olive, Olea europaea](#) [ESA project PROMOTE, PROTOCO...](#)

<http://www.gse-promote.org/> Go EEA



Overview
Pollutants
Air quality
Chemograms
Weather
Meteograms
Analysis
Database

Main Forecast

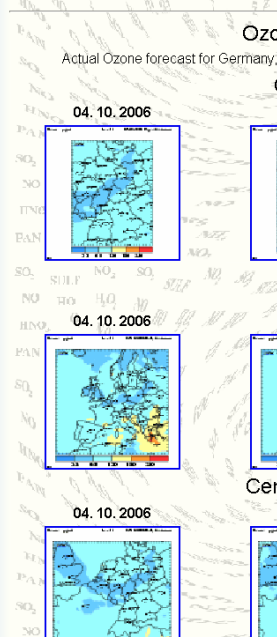
Air Quality

This site
Wednesday

[Forecast of Air Quality](#)

[Detailed Air Quality Forecast](#)

[Weather Forecast](#)



PREV-AIR Air quality forecast

PREV-AIR air quality forecast for France and Europe

The PREV-AIR system delivers daily air quality forecast, based on numerical near-real time air quality observations. Forecast maps are delivered up to three (ozone only), European (all pollutants) and over France (ozone and NO2). Map PREV-AIR also delivers numerical air quality forecast data to air quality monitoring.

Latest results

PREV-AIR ozone forecast over Europe
Ozone: pic en ug/m3
Prévision du 2003/2006 pour le jour-même
Ozone peak (mg/m3)
Forecast issued on 03/20/2006 18:00 UTC
© Avril 2003

PREV-AIR PM10 forecast over Europe
PM10: moyenne journalière en ug/m3
Prévision du 2003/2006 pour le jour-même
PM10 daily mean in ug/m3
Forecast issued on 03/20/2006 18:00 UTC
© Avril 2003

Archives
PREV-AIR ozone forecast archive : [2003-present](#) (use calendar)
PREV-AIR NO2 forecast archive : [2003-present](#) (use calendar)
PREV-AIR PM2.5 forecast archive : [2004-present](#) (use calendar)

Central Europe
04. 10. 2006
05. 10. 2006
06. 10. 2006

PROMOTE

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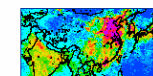
Services
Ozone
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GHG-Aerosol

eesa

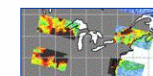
Air quality service

The PROMOTE air quality service contains the following elements:

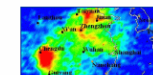
Trace gas monitoring with GOME and SCIAMACHY



Global tropospheric NO₂

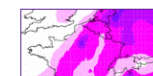


Tropospheric NO₂ from nadir-limb matching



Sulphur dioxide from GOME and SCIAMACHY

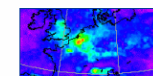
Air quality forecast



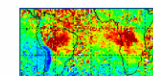
PrevAir (France and Europe)



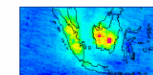
YourAir (England, street-level)



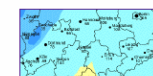
Regional tropospheric NO₂



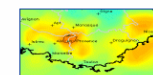
Carbon monoxide from SCIAMACHY



Formaldehyde from GOME

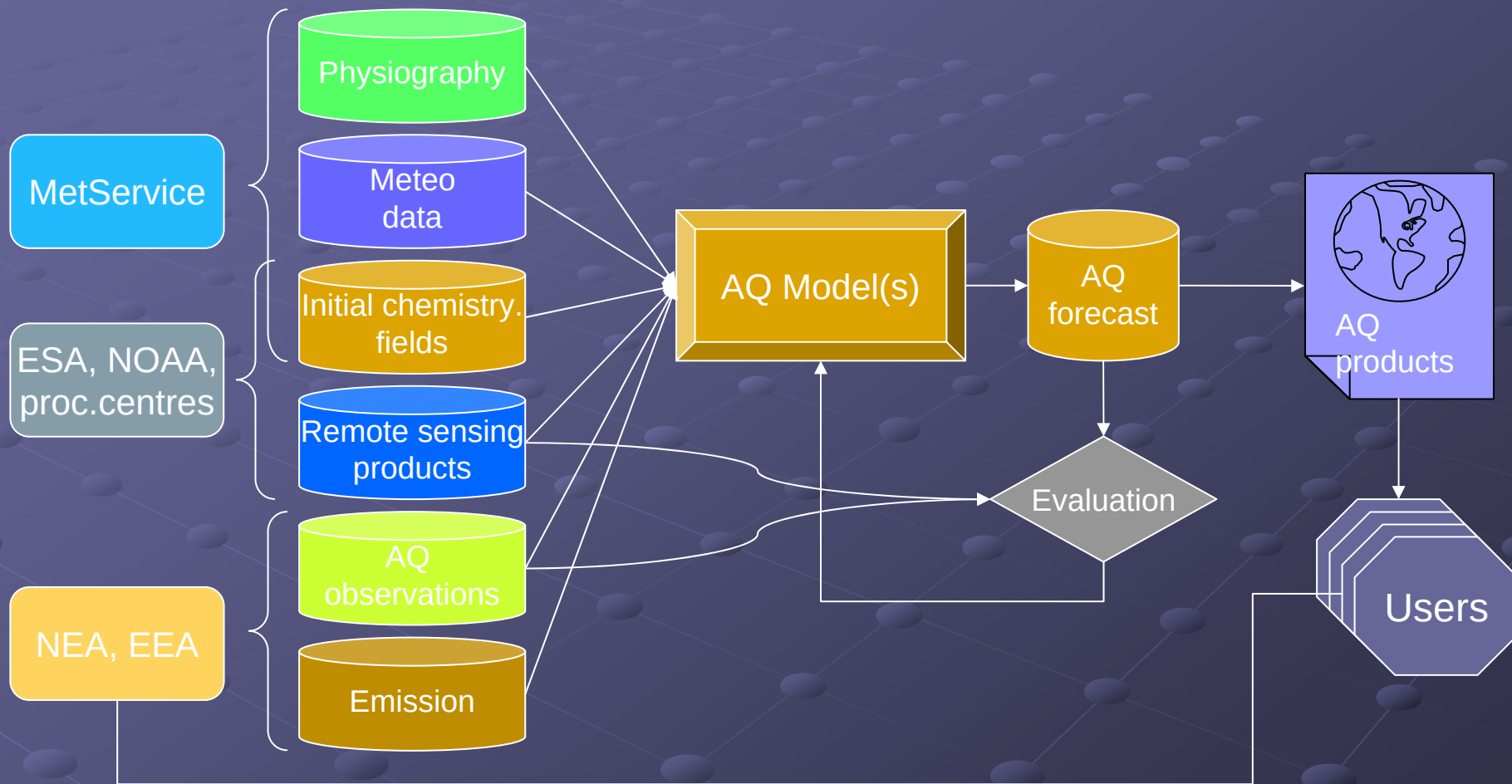


EURAD (Europe, Germany and Northrhine-Westfalia)



AIRE5 (South-East France)

Motivation (2): structure of AQ forecasting system



Motivation (3): Needed actions and relation to COST

● Needed:

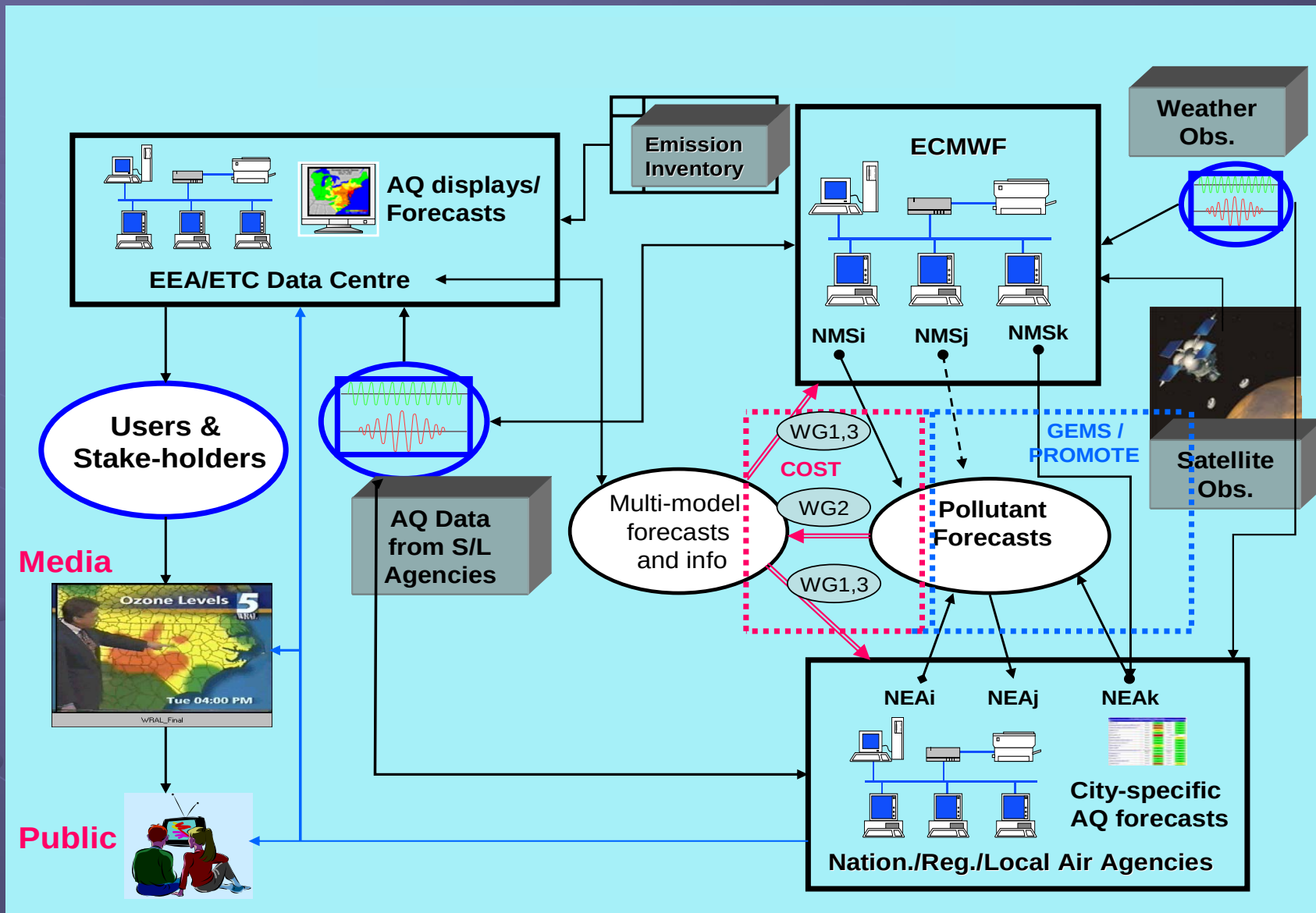
- a European-wide “system of systems”, bringing together all players in the field and allowing for near-real-time (NRT) interactions and data flows, finally leading to an operational CW forecasting network
- Requires enhanced and structured dialogue, collaboration between the main actors involved
- COST is a suitable neutral forum for the dialogue and for developing the basis of a chemical-weather forecasting “system of systems” in Europe

Objectives

To setup a forum for benchmarking, harmonizing and developing approaches and practices for chemical weather forecasting network and near-real-time information systems in Europe.

- Identify needs for the optimisation and harmonization of exchange of AQ data & integration of modelling systems;
- Find out the gaps of existing knowledge and practices;
- Review the potential for and means of multi-model ensemble and chemical data assimilation;
- QA/QC criteria for CW forecasting systems;
- Assess visualisation and dissemination platforms, arrangements, formats and protocols;
- Build up on current systems, enhance cooperation and coordination between providers, operators, and users for improving the science and application of CW forecasting;
- Establish and/or strengthen links with similar ongoing national and international activities and dedicated projects

ENCWF: scope and interactions



Scientific Programme

- WP1. Exchange of AQ forecasts and input data:
 - requirements on data exchange frequency, formats, existing infrastructure. Combining forecast data and NRT observations in a single system. Provisions for quality checks.
- WP2. Multi-scale forecasting, multi-model ensemble, boundary data
 - Multi-model AQ assessments and forecasting. QA/QC issues. Ensemble. Feasibility of emission scenarios (short term abatement). Multi-scale CW forecast and assessment
- WP3. Dissemination and visualization:
 - Dissemination of AQ information to users. What to display, harmonization possibilities: separate pollutants vs. AQ index. Inventory of national systems, other activities and organisations.
- A cross-cutting activity: to coordinate with other organizations (EEA, EUMETNET/WG-ENV, WMO, etc.) and ongoing activities (GEMS, PROMOTE).

Scientific Programme (2)

- NOT included into the Action scope
 - development of the “system of systems” or any of its elements
 - forecasting of the chemical weather
- Included into the Action scope
 - inventory, analysis and benchmarking of the existing and planned systems
 - proving a forum for discussion of the issues behind the creation of such a system
 - elaboration and dissemination of the best practices and experience

WG1: Exchange of AQ forecasts and input data

Identify problems related to both observational and model data and their exchange in near real time

Major areas and key tasks:

- Identification of requirements for data exchange (all kinds of data needed for CWF)
- Investigation of infrastructure needed to meet the identified demands.

Deliverables

- Catalogue of available forecast data with characteristics (resolution, domain, frequency, etc) in different European countries.
- A list of input variables, meta-data and quality information to be kept in databases.
- Assessment of measurement data (including satellite data) necessary for model validation and assimilation in cooperation with WP2.
- Specification of harmonized data format and exchange protocol for CW forecast data
- Recommendations for infrastructure needed to handle the NRT data exchange, storage and processing

WG2: Forecasting, model development, boundary data

Key areas and tasks

- existing operational forecasting tools
- QA tools, methods, criteria, experience, requirements for measurement data
- ensembles (single- / multi-model), existing / developing, experience;
- NRT data assimilation into AQ models;
- experience in short-term emission abatement, possible network contribution
- boundary conditions for meso- or local-scale applications.

Deliverables:

- Evaluation of existing AQMs, their scores, formats, tools, requirements to input data;
- Assessment of multi-model ensembles for CW forecasting and guidelines for their interpretation;
- Assessment of possibilities and gains of data assimilation (in-situ / remote-sensing);
- Recommendations on scientific and technical issues regarding the multi-scale forecasts;
- Recommendations on the network contribution to the short-term emission reduction measures

WG3: Dissemination and visualisation

Tasks

- Assess how various organisations or systems select the data and information on display, and by which means, platforms and format.
- Identify which data collection protocols to use and which models and data are readily available.
- Delineate relevant temporal and spatial resolution: hourly data(?), rural & urban data, next day O3 forecasts; Details about used models.

Deliverables

- A specification of the network features with regard to presentation of the information for different users communities
 - Maps vs. time series, mean vs. exceedance/percentile
 - harmonised scheme for display: Graphics, colours, languages.....
 - Special user requirements (children, elderly, ...)
 - Universal welcoming front page vs. national pages containing a map of Europe, perhaps similar to the current EEA web page;
 - interactive public-facing website vs. password-protected

Cross-cutting activity

- Coordinate the efforts with other organisations (EEA, EUMETNET/WG-ENV, WMO, etc.) and especially ongoing activities (such as GEMS and PROMOTE, COST Actions)
 - both within Europe and outside (e.g. the US AirNow)
- Performed by each WG within the area of expertise
 - if needed, a coordination group may be formed

Time table, Management, Dissemination

Phase 1: Planning, operational arrangements, establishment of WGs and inventory activities (year 1);

Phase 2: Main assessment, benchmarking and development work to be conducted by all WGs (years 2, 3);

Phase 3: Final conclusions and recommendations to be formulated in reports and final publications (year 4).

Participation / contributions: EoC

Web-site: continuous updating: reports & selected results

Workshops with proceedings;

Dedicated attention to relevant international organisations concerning the process, solutions and outreach in order to achieve a broader impact, e.g.: the UN-ECE, WMO, EEA, DG-ENV, ...

Participants

- From each country:
 - met-service
 - environmental agency (or other AQ forecast provider)
- EEA
- Key on-going European activities in the field
 - GEMS (Global and regional Earth-system Monitoring using Satellite and in-situ data), lead by ECMWF
 - involvement of **WMO** through ECMWF
 - PROMOTE (Near-Real-Time delivery of the satellite products of GMES system), project of ESA lead by DLR
 - involvement of **ESA**