Report on the Task Force on Modelling and measurement activity

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Main activities in 2012

- **Monitoring strategy** :
  - Implementation of the revised monitoring strategy with special care to intensive observation periods
  - Links and consistency with the EU Air Quality Directive
- **Pilot studies on heavy metals**
- **Modelling activities**
  - Grid transformation of EMEP models
  - EMEP models development and national expertise
  - EURODELTA 3 model intercomparison project
- **Black carbon issues**
- Improving **communication**, interaction with other groups and projects and how to send key messages to policy or decision makers

- **Annual meeting held in Gozo, Malta (May 2012)**

Implementation of the revised EMEP monitoring strategy (i)

- **Funding** issue remains a recurrent concern, as the sustainability of historical sites where long term time series are available

- **Level 2 and level 3 sites largely supported by research infrastructure projects** (,ACTRIS, ICOS, GMO..) . Worthwhile approach considering funding and scientific aspects (standardization of methods) but involvement of Parties that are not EU research project partners should be enhanced (access to data…)

- **Lack of coordination between the various research initiatives** which might be confusing for the policy makers who receive this information (see current review of the EU research projects)

Implementation of the revised EMEP monitoring strategy (ii)

- **Consistency with the EU monitoring strategy** needed. CLRTAP is one of the stakeholder of the AQD revision process and is involved in a number of assessment initiatives. Consistency seems to be no longer a sensitive issue

- JRC presented the status of a document prepared by the AQUILA group (national reference laboratories) within the AQD revision process. Consistency between AQD and EMEP strategies is looked for (reference methods) although full convergence should be difficult to reach on a limited number of items
  - VOC measurements in urban /suburban areas according to the AQD
  - Mercury
  - ...
- Should not be obstacles for the implementation of the EMEP monitoring strategy

Intensive Observation Periods (i)

- Under the coordination of CCC : level 3 contribution to the monitoring strategy
- CCC reported on the preparation of the new IOPs (2012-2013)
- **High resolution, and extended measurements of aerosols and its precursors, with a special focus on mineral dust.**
- **Better geographical coverage than in the previous campaigns**
- **Contribution to the development of methodologies and protocols; evaluation of new instruments (ACMS or "mini-AMS)**
- High involvement of national experts and good cooperation with research projects (ACTRIS, CHARMEX, PEGASOS)

Key points to be considered

- How to establish an overall and consistent assessment with the wealth of data produced. Strong coordination of various (and sometimes individual) initiatives needed
- National representatives expressed their need to get a clear list of basic compounds (VOC, PM species) that should be measured
- Link with the modeller s could be improved. Consider for future an appropriate process
- Availability of the data for the national experts and EMEP assessments. Link with research projects should not slow this process

Heavy metal pilot studies

- Launched in 2010 under the coordination of MSC-East : in-depth investigation of inconsistencies between heavy metals emissions, measurement and modelling

- Currently pilot studies involve 3 volunteer countries involved: Croatia, the Czech republic, the Netherlands

- **Successful initiatives which allowed to highlight country-specific issues for a better management of air pollution**
  - Croatia: complexity of the terrain and need for accurate meteorological parameters; influence of the transboundary transport
  - The Netherlands: significant improvement with high resolution modelling; resuspension issue
  - Czech Republic: identification of specific sources to help in emission regulation

- In-depth involvement of national experts: such studies could be extended to other countries and for other pollutants

Modelling activities

- **Grid transformation of the EMEP model**
  - Downscaling modelling exercise to assess the impact of finer resolution on model results
  - Three national teams (DE, NL, F) + MSC-W involved
  - Process launched and achieved in 3 months thanks to the enthusiasm of the participants and a huge amount of work
- **Status of the EMEP modelling systems**
  - MSC-E: On-going development of the GLEMOS system (multi-scale and multi-media modelling for HM and POPs). Investigations on inverse modelling (HM). Code to be prepared for open dissemination
  - MSC-W: Comparison of the PM compounds predictions with available results from the IOPs to assess updates of the organic and inorganic schemes
- **EURODELTA3 project**
  - Launched in spring 2012

EURODELTA3: Overall objectives & background

- EURODELTA is initiated by the Task Force on Measurements and Monitoring
- Historically : EMEP, RCG (DE), LOTOS (NL), CHIMERE (FR), MATCH (SE) and TM5 (JRC)

- Model inter-comparison for improving and understanding processes
- Improvement of the EMEP model
- Uncertainty assessment (multi model approach)
- Previous steps
  - Evaluation (met. year :1999, 2001)
  - Intercomparison of country reductions responses
  - Intercomparison of sectoral reductions

The new Exercise

A. Evaluation on the EMEP field campaigns (« Scientific issues »)
   - 2006: 01/06 - 30/06
   - 2007: 08/01 - 04/02
   - 2008: 17/09 - 15/10
   - 2009: 25/02 – 26/03

B. Retrospective analysis (« Policy issue »)
   - Capacity of current models to reproduce monitored changed in air quality
   - Retro. analysis 2008 → 1999 →1990

Pre-crisis yr.
Current period

Signature of the GP.

Baseline yr GP.

   - Response of models to sharp emission trend (**1990- 1999** – 2008)

➢ Common set of input data , domain

EURODELTA participants

- **Met.No –** UNECE (**EMEP**)
- **SMHI –** SE (**MATCH**)
- **TNO –** NL (**LOTOS**)
- **INERIS –** FR (**CHIMERE**)
- **FUB –** DE (**RCG**)
- **PSI / RSE –** CH/IT (**CAMx**)
- **Univ. Brescia -** IT (**TCAM**)
- **ENEA/Arianet -** IT (**FARM**)
- **HZG -** DE (**CMAQ**)

Field campaign analysis
Retro. runs

-MT works on pre-processing
-INERIS provide the 2009 input data
-INERIS/JRC defines the common netcdf format

4/4/2012

INERIS works emissions & BC

31/05/2012

Production phase for 2009
MT run 2009 field campaign

30/06/2012

MT send the data to JRC/INERIS

20/08/2012

-INERIS provides the 2006, 2007 and 2008 input data

30/09/2012

Next meeting?

Production phase for 2006, 2007 & 2008
MT deliver the outputs

30/11/2012

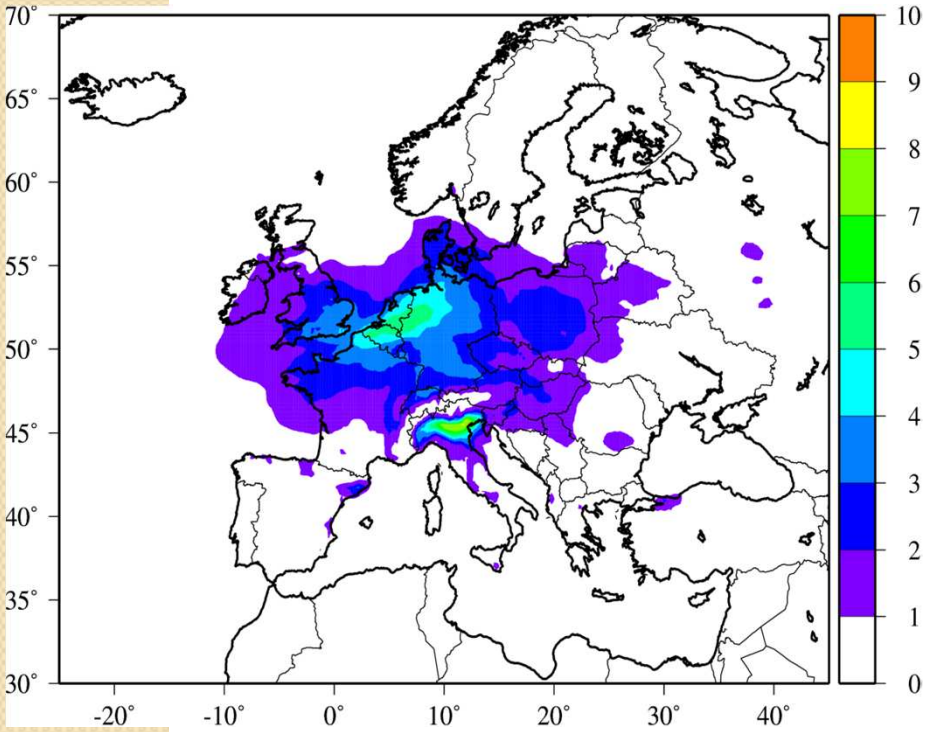
MT start their runs

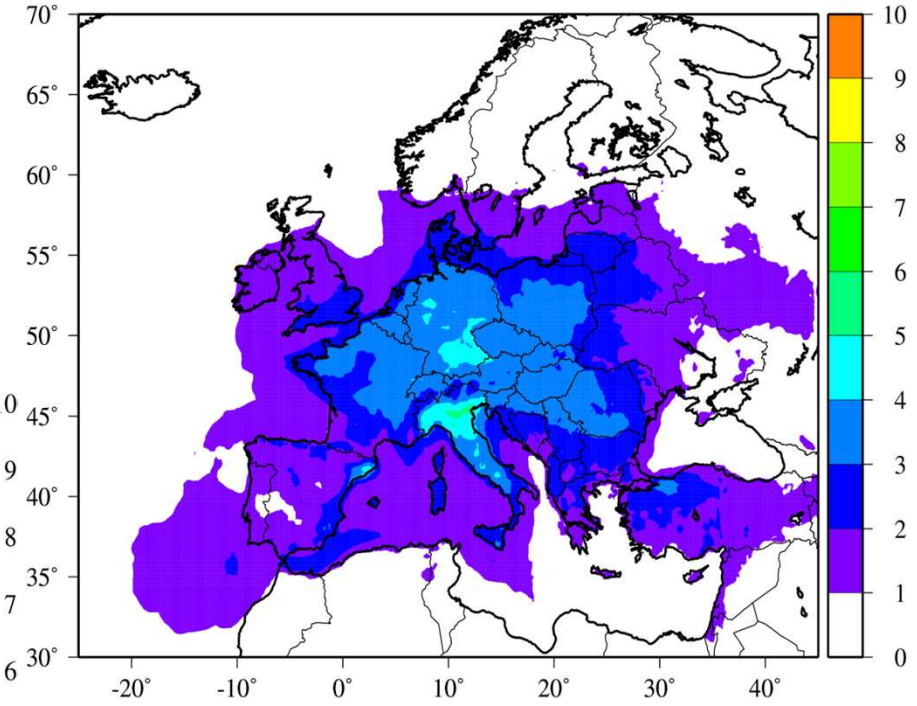
MT : Modelling Teams

Results for nitrates (CHIMERE and LOTOS)

- Anthropogenic NO3 (µg/m3) over the 2009 field campaign (25 Feb. – 26 Mar.)

CHIMERE





LOTOS

The black carbon issue : request for framing future assessment

- There is a concern for linking **emissions/modelling/measurement activities** because the term « BC » does not mean the same
  - Emission inventories generally refer to Elemental carbon
  - BC designs the light absorbing portion of carbonaceous particle: no standard method for measurement
  - Elemental carbon measured with thermo-optical techniques
  - What is modelled and how to compare with available data ? Model evaluation remains very difficult

- The GAW Scientific Advisory Group emitted some recommendations to use a more appropriate terminology according to the type of instrument used
- It **must be reminded that there is no standard method for measuring light absorption coefficient**

TFMM Work plan for 2012

- Follow and assist the Parties as far as possible, for the implementation of the monitoring strategy .

- Support the implementation of future EMEP IOPs (summer 2012-winter 2013) and help in their promotion. Encourage dissemination of results for national assessment and linkages with the modelling community

- Support and provide assistance for the follow-up of the heavy metals pilot studies ; contribute to their promotion; identify future studies

TFMM Work plan for 2012 (ii)

- Support the EMEP model grid transformation process; follow-up of the “downscaling exercise”
- Coordinate and promote the EURODELTA3 project
- Improve cooperation with the WGE
- Contribute to the promotion of the EMEP results : assessment reports
- Support and contribute to a better communication about the EMEP/TFMM activities: publication of a news letter, flyers, etc ....