Communication proposed for the 2nd Task Force on measurement and Modelling

Ozone levels over Western Europe : a first comparison between EMEP and the french model CHIMERE Continental results

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CHIMERE Continental is a new three dimensional chemistry transport model developed by a french laboratory (CNRS/LMD) to compute ozone levels in western Europe.

Actually, the code has been designed regarding two main operational goals :

- First the ability to realize long term simulations of large scale ozone distributions and real time forecasts without the use of supercomputers,
- Second, the calculation of appropriate boundary conditions delivered to smaller scale models (urban models)

The points which will be developped in this communication are the following :

- A short description of the scientific concepts making CHIMERE Continental : it covers the western part of Europe with a mesh size of 0.5° in the horizontal plane. Five layers are described in the vertical direction. The model is based on the numarical approximation of the solution of the mass continuity equation for the chemical species. CHIMERE offers the option to include different gas phase chemical mechanisms. The original scheme is quite similar to the EMEP mechanism for the hydrocarbons degradation.
- Description of the inputs : the emission data base is built from the EMEP data for 1997. They have been adapted following the framework proposed by the EUROTRAC/GENEMIS project. Meteorological informations are taken from the ECMWF computations and forecasts. Boundary conditions are stated using the results computed with the MOZART global scale model.
- First results obtained with this tool will be finally proposed. Indeed, comparisons between ozone concentrations obtained with CHIMERE and those measured by the EMEP network (stations located in the CHIMERE domain) have shown the interesting qualities of the model. Moreover a comparison analysis with the EMEP computations will be presented. Sensitivity studies have also been realized for several parameters (emissions, boundary conditions, reaction rates) using the adjoint version of the CHIMERE model.

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