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The LOTOS (long term ozone simulation) model is a 3-D Eulerian grid model which covers Europe in grids of 0.25x 0.5 latlong, with 4 vertical layers upto about 2-3 km. It has a nested version (UAM) down to 1x 1 km². LOTOS contains as chemical mechanism CBM-IV, which has recently be extended by the aerosol-module MADE/MARS.

Boundary conditions are taken from the global 3-D model TM-3, emissions are based on CORINAIR/EMEP/LOTOS information.

The aim of the model is to calculate hour-by-hour concentrations over periods of several years.

Data-assimilation is a technique that combines two sources of information that both contain errors: the model results and the measurements. The technique uses error statistics of both sources of information to find an optimal estimate, and it is doing this in a physically consistent way. In this way a better model state is created for process studies, to improve the model (e.g.parameters) and to improve the model input (e.g. emissions).

Two examples will be shown of LOTOS with data-assimilation. For ozone, and for aerosol optical depth both over august 1997. The technique used is extended Kalman Filter.

The results show that data-assimilation is a working tool which provides a wealth of coherent information. Work is needed to assess and understand the full capabilities of the method. Cooperation is looked for with other groups, institutes and initiatives like EMEP, CAFE, EUROTRAC, US-EPA etc.