

Review of: "Online coupled regional meteorology-chemistry models in Europe: current status and prospects".

The paper aims at presenting an extensive review of existing efforts with regards to development of on-line atmospheric chemistry models in Europe. I think the paper is potentially a very good source of information for researchers and students and the effort of synthesis and coordination proposed by the authors should be acknowledged. There have been a number of comments in the open discussion to the papers. Given my review is coming very late, I will just add a few points. Overall and after the most constructive points raised in the on-line discussion have been addressed, I think the paper deserves publication in ACP.

P12547 : Direct effect includes also an increase of radiative diabatic warming due aerosol absorption.

For table 2 : LW scattering by large particles like dust could be also relevant.

*Longwave Scattering Effects of Mineral Aerosols, Jean-Louis Dufresne, Catherine Gautier, Paul Ricchiazzi, Yves Fouquart, J. Atmospheric Science, Vol. 59, N.12, pp.1959-1966, 15 June 2002.*

In table 2: precipitation and land surface conditions also affect dry deposition of soluble traces species. Generally the determining role of land use parameterization should be more emphasized beside meteorological drivers.

P12621 : Evaluation of methodologies and data

One of the important targets of the paper (and the underlying COST action) is to assess the added value of the on-line approach for NWP. The authors suggest that to demonstrate the benefits of including a feedback, long integration should be performed for statistical significance (note in this case we are getting out of the "episode scale"). I would add that ensemble approaches are also necessary (e.g. varying the initial boundary conditions), even for the study of a one week event. Besides just proving that a model is sensitive to a perturbation by running just a control and a perturbed run, ensemble simulation allow a better characterization of the robustness of the response to the physical perturbation, as well as quantification of the range of magnitude of this response in a given meteorological situation.

Limited area models:

The paper outlines the constraint of boundary conditions for accuracy of chemical field, this can be also a constraint for studying a dynamical feedback since the perturbation is 'lost ' in the buffer zone. This might be relevant for longer time scale integration, or in particular geographical/weather situations though.