

Interactive comment on “Contribution of atmospheric processes affecting the dynamics of air pollution in south-western Europe during a typical summertime photochemical episode” by M. Gonçalves et al.

Anonymous Referee #2

Received and published: 18 December 2008

This paper describes a model-based process study of a summertime pollution episode over Spain, contrasting a hilly area with a flatter region. The model setup is appropriate and the scientific approach is rigorous. Although most of the key results are qualitatively familiar from previous, similar studies of other regions (e.g., that ozone is titrated directly in the main NO_x source regions and peaks downwind of these), the quantitative assessment for the characteristics of this particular region is of sufficient value for designing mitigation approaches that it definitely merits publication in ACP after several minor revisions.

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Nearly all of my technical comments were adequately addressed in the ACPD access review stage, and most of the other points I would make have already been covered very well by referee #1, and answered appropriately by the authors in the online discussion. I only have the following few additional minor comments:

Language:

Throughout there are several minor grammar errors. The first referee and I have noted many of these (see also below), but probably not all - it would be worthwhile having a colleague, particularly a native english speaker, go through the final version before submission for publication in ACP.

Abstract:

it would be helpful to indicate here what altitude range is meant by "high levels", where gas-phase chemistry contributes to O₃ in the coastal domain.

"advective flows sets the maximum O₃", replace "sets" with "determines"

Introduction:

The importance for health is pointed out - isn't this also a region with notable agriculture, especially downwind of the populated regions, where ozone peaks, and may have a detrimental influence on agriculture as well? The authors should check this. and if it is correct, mention it here.

Methods:

The spatial resolution noted for the model (1 km²) is appropriate for a study of this nature. The temporal resolution is indicated to be 1 h. What exactly is meant by this? Normally a timestep of 1-5 seconds is used with WRF at this resolution, so it is probably either a typographical error that needs to be fixed (note that it is repeated two paragraphs later), or something other than the timestep is meant. In any case, this should be clarified.

p. 18463, point 1: "It considers horizontal and vertical advection sum" should be "It considers the sum of horizontal and vertical advection"

Conclusions:

p. 18478, line 25: "permits to test the mass" should be "permits testing of the mass"

p. 18479, line 10: reword this to "but with the chemical formation becoming important at low levels."

p. 18479, line 23: change "involves" to "implies"

Interactive comment on Atmos. Chem. Phys. Discuss., 8, 18457, 2008.

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8, S10002–S10004, 2008

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