

Interactive comment on “The 1-way on-line coupled atmospheric chemistry model system MECO(n) – Part 1: The limited-area atmospheric chemistry model COSMO/MESSy” by A. Kerkweg and P. Jöckel

Anonymous Referee #1

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This manuscript (MS), by coupling the COSMO model to MESSy system already coupled to the global circulation model ECHAM, addresses an important issue for atmospheric sciences: bridging the scales, from local to global level, in a consistent way. The MS describes the two coupled models and, as validation tests, shows comparisons between COSMO/MESSy and ECHAM/MESSy simulations. I suggest to the authors to add in the conclusions more general evaluations regarding the technical problems (such as variable names, dimensions, time, etc) and conceptual problems (such as projections, physical processes representation, etc) encountered. This information is

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of great interest for the researchers that will want to do similar work. Answers at questions such as: the modified MESSy produced here will replace the MESSy version in ECHAM/MESSy? MESSy can be coupled to any model? will also help to understand the extension and usefulness of the work done from a more general perspective.

Specific comments:

- title of MS can be more precise. For example: “Part 1: Description and validation of the limited-area...”
- the acronym MECO(n) have to be explained somewhere in the text
- the sections 3.1 to 3.7 should have a more explicit title such as “SWITCH/CONTROL interface for including submodels”
- a re-assuming table with the changes operated in COSMO and MESSy models will be very useful for reader to understand the amount of work performed at a glance. The Table does not have to include all the details given in the Supplement.
- pg. 1306, Abstract, please add prior to the following phrase “This model is as consistent as possible, with respect to atmospheric chemistry ...” an explanation for which the consistency is required such as the use of boundary and initial conditions by the limited area models.
- pg. 1306, Abstract, “Here, the connection of the MESSy infrastructure to the COSMO model is documented.” - this phrase is not in agreement with the content of the MS: Section 3 shows the implementation of the infrastructure but Section 4 shows the implementation of the submodels. Please, be more clear in differentiating between infrastructure and submodels.
- the words “Section ?? “ appear several times in the MS.
- Fig. 3 is not readable as it is.
- Section 5.2, after the first phrase have to mention that the simulations shown in the

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MS were performed using the online coupling of COSMO/MESSy and ECHAM/MESSy presented in Kerkweg and Jockel (2011, Part 2)

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