**Atmospheric
Chemistry
and Physics
Discussions**

Interactive comment on **"Technical Note: Implementation of prescribed (OFFLEM), calculated (ONLEM), and pseudo-emissions (TNUDGE) of chemical species in the Modular Earth Submodel System (MESSy)"** *by* **A. Kerkweg et al.**

A. Kerkweg et al.

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We thank all four referees for their support on publishing this Technical Note and their helpful comments. In the following we will answer/discuss some points brought forward by the referees. All suggestions we do not discuss in detail here will be included/taken over into the revised manuscript.

1.) Comment of referee #1:
- First Point: The sea salt emissions as given in ONLEM are emissions of dry

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sea salt mass and particle number. We will add some clarifying words into the introductory sentence. The moisture content of the aerosol is indeed calculated within the aerosol physics model.

- Second Point: The only (published) simulation so far performed with MESSy is the evaluation simulation (Jöckel et al., 2006, ACPD, Page(s) 6957-7050. SRef-ID: 1680-7375/acpd/2006-6-6957). In this simulation the chemistry was calculated from the surface up to the mesosphere, thus no ozone nudging at or above the tropopause was necessary. Nevertheless, the data of this simulation can be used to compile such nudging fields. The data are available upon request. For further details see *http://www.messy-interface.org* . We prefer, however, not to mention this explicitly in the manuscript, since TNUDGE and OFFLEM are written in a way that every database can be applied.

- Third Point: You are right. The idea of ONLEM is that every user can implement a new ONLEM emission he/she wants to use. So every user is welcome to extend ONLEM within the agreement about the usage of MESSy (see *http://www.messy-interface.org* for details). It would be useful to the user to add a short descriptive comment (e.g. "based on Kettle and Andreae (2000) and Liss and Merlivat (1986)") into the namelist: the place where the user decides which emission he/she uses. Since the code of MESSy version 1.1 is already frozen and released, it is now not possible to change the TYPE label, however, we will consider it for future releases.

2.) Comment of referee #2:

At the time being, no aerosol emissions are available as offline emissions. As OFFLEM treats all emissions in the same way, aerosol emissions can be handled by OFFLEM if the respective input fields are available. E.g., the prescribed emissions provided by the project AEROCOM could be processed (to adapt unit and format) to be read in by OFFLEM. In order to clarify this, we add a short note in the revised version.

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3.) Comment of referee #3:

We agree with all your suggestions with the exception of that for Fig.2. We can not rename BML to BM as "base model layer" is the official name for this layer within the MESSy system as defined in Jöckel et al. (2005, SRef-ID: 1680-7324/acp/2005-5-433). For the same reason, i.e. to correctly define the data flow as well as the position of the submodels within the MESSy structure, the arrow cannot go directly from the base model layer to the submodel. The arrow does not go from "somewhere in between BML and DATA" but directly from DATA. This is (we admit) not fully clear as the arrow overlaps with the arrowhead of the arrow from BML to DATA. We will change this. We agree that the dashed arrow complicates the figure unnecessarily and will remove it.

To write the emission types into the NCREGRID box would be wrong, due to the strict separation of different submodels. NCREGRID is used by OFFLEM, but the emission types are part of the OFFLEM structure. As NCREGRID is only used to import and regrid data, it does not know about different emission types.

4.) Comment of referee #4:

- First point: As the usage of NCREGRID is essential for the flexible structure of OFFLEM, we do not think this reference to NCREGRID to be too long and prefer to keep it.

- Second point: "code quality" here refers to the Fortran95 standard. We clarify this in the revised manuscript.

- To Figure 4: The Figures contain subtitles and not titles. Unfortunately the figures which were beside each other in the original draft were put in top of each other by ACPD leaving not enough space between those two figures. We will try to avoid this confusion and maybe change subtitles to titles depending on the layout provided by ACP.

- Last point: Good idea, we would like to do this, but we are not sure how, as we need to process the supplement before the final paper is typeset.

Once again thanks to all referees for their helpful comments,

Astrid Kerkweg on behalf of all Co-authors

Interactive comment on Atmos. Chem. Phys. Discuss., 6, 5485, 2006.

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