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Comment

## ***Interactive comment on “The nitrate aerosol field over Europe: simulations with an atmospheric chemistry-transport model of intermediate complexity” by M. Schaap et al.***

**M. Schaap et al.**

Received and published: 13 May 2004

Response to Referee comment:

We would like to thank the anonymous reviewer for his effort and his valuable directions on the structure of the manuscript. We are pleased that the reviewer acknowledges that the paper should be published after some revision.

The reviewer raised three major issues that needed to be addressed:

The title

The abstract

The structure of the paper

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We agree with the reviewer that the focus of the paper is broader than on nitrate alone. There-fore we have changed the title of the MS to:

Secondary inorganic aerosol simulations for Europe with special attention to nitrate

We feel that the new title captures the contents of the revised paper in which we describe simulations for secondary inorganic aerosols with a focus on nitrate, well. In addition, we have added some more information on the secondary components in the abstract and clarified the goal of the paper in the last paragraph of the introduction.

Concerning the structure of the paper the reviewer suggests that the original paper should be split into two: one on a detailed multi component validation of the LOTOS model and one on the climate impacts of the calculated aerosol fields. We agree with the reviewer that the paper should be focussed and that the climate impact of the aerosol fields could be discussed in a separate MS, which is now in preparation. Therefore we have deleted the results of the radiative forcing calculations from the paper. In our opinion, comparison of modelled aerosol optical depth to retrieved values provides important information on the performance of a model, which is complementary to the information obtained by using only in-situ observations. The AOD gives information on the column integrated aerosol burden with a high spatial resolution. Therefore, the paper would be weakened by excluding the AOD results as the reviewer suggests. We admit that the fact that we used the AOD data for validation purposes was not very clearly written down in the paper, which caused AOD to appear as a stand alone subject in stead of an integral part of a model validation. Thus, we have clarified the text on AOD in section 4 and the discussions. The abstract has been changed to reflect the contents of the current paper and the suggestions of the reviewer were incorporated. All minor remarks by the reviewer were incorporated in the revised MS.

We sincerely hope that our revised version of the Manuscript lives up to your expectations and would be very pleased to see our work published in your journal,

Yours sincerely,

Martijn Schaap and co-authors

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Interactive comment on Atmos. Chem. Phys. Discuss., 3, 5919, 2003.

**ACPD**

3, S2669–S2671, 2003

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