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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Spatial distribution of the source-receptor relationship of sulfur in Northeast Asia" *by* M. Kajino et al.

Anonymous Referee #1

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General comments:

This is a useful paper describing a detailed model-analysis of source-receptor relations in East-Asia. The approach is not new, but the results are of interest, also in view of possible abatement strategies and policy

Specific comments:

On page 30093 a short description is given of the one-dimensional cloud model " based on RADM", and the box submodel. Based on the results discussed further of the wet fluxes of sulphate, it is suggested to present a more detailed description of this part of the model, and the possible sensitivity of the model results to the approach taken On page 30095 it is stated that monthly values of biogenic VOC-emissions are used.

When this is the case, the rather poor model performance for ozone are not a surprise. Could the authors comment on this, and explain why not the biogenic emissions are calculated on an hourly basis. On page 30098 the grid resolution is given as 60 km, the resolution of MM5 is 45 km (page 30094). Why is there a difference in grid resolution? On page 30099 the overestimation of the precipitation, and the underestimation of the wet deposition flux of S is presented. This would mean that the conversion to sulphate is much too low. Could this be caused by the approach described on page 30093, see mmy first remark On page 30104 the deposition is given in kTS/yr, per region. Because the size of the regions differ, it would be informative to give the results also in ktS/ha/yr. The S-deposition to the ocean is given on page 30105. It is unclear whether ship emissions are included in the model calculations. Considering all percentages given, could something be said about the overall uncertainty of the results.

Technical corrections

-page 30092, line 3: diesel instead of diasel -page 30094 line 10, were chosen for the simulations, so add " the" -table 3. The subheader Annula deposition does not belong here

Interactive comment on Atmos. Chem. Phys. Discuss., 10, 30089, 2010.