

## ***Interactive comment on “The impact of a deep convection on sulfate transport and redistribution” by V. Spiridonov and M. Curic***

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We thank Dr. Mihaela Mircea for her very constructive comments and recommendations. We shall try to answer them and clarify some important points in regard to our manuscript. The general idea of the present research is focused on the three main objectives:

1) Model formulation and testing in simulation of the 3-d mixed phase microphysics and redistribution of gaseous and particulate compounds in the atmosphere by a convective cloud (Summer Case). 2) Testing the model against the measurements, the impact of transboundary dust transport on the convective scale processes (Spring Case). 3) Performing a number of sensitivity model tests in order to examine the relative contribution of various terms included in our chemical model.

\* The reason while we did not perform numerical simulations running a three-

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dimensional version of the cloud-chemistry model is very simple: the lack of technical configuration, easy performing simulations, time spending during numerical integration and efficiency in interpreting the results. But we absolutely agree with the expert remark for the inconsistencies in that view and promise (with our available technique) that it should be done in the revised paper.

\*Since the novel aspect of the present study is the set of 3-D model runs with mixed phase microphysics we rather show the results through the presentation of time evolution of trace and aerosol transport and redistribution, than in conventional quantitative form.

\*We have already prepared new pictures with more evident illustration of the fields representing absorption processes and the role of the oxidation processes in the sulfate production and subsequent deposition.

\*The gas-phase chemistry would be our next task. In regard to presentation of the integrated mass of pollutant between 4 km and cloud top presently it is not included in our research since our general idea is based on different background with other focuses.

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