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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Heterogeneous reactions of mineral dust aerosol: implications for tropospheric oxidation capacity" *by* Mingjin Tang et al.

Anonymous Referee #4

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The authors summarized heterogeneous reactions of mineral aerosols and emphasized its implications for oxidation capacity in the troposphere on the basis of substantial publications. Generally, this is an interesting topic although a lot of review articles in this field have been published, followed by the first work reported by Usher et al. (2003). Especially, the authors tried to compare heterogeneous uptake lifetime of oxidative species (O3, H2O2, HONO, HCHO, and N2O5) to ones by other loss pathways in the atmosphere, which is the valuable information to the researchers. Finally, the authors supposed mineralogy of dusts, RH, temperature could play the important roles in the heterogeneous process, and recommended that simulated experiments should be performed under more actual conditions.

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Discussion paper

Specifically, the manuscript suffered from some small flaws: (1) As a review-type article, it's better if the authors supply time span of the literatures, since many review paper have been published in this field.

(2) In the fraction of "1.1 Mineral dust in the atmosphere", I found it is little relationship to oxidation capitation in the troposphere.

(3) The authors should list a total table to compare the loss lifetime of the key species by the heterogeneous process and gas-phase process.

(4) Although the paper was well organized and written, I still found some English errors, such as: Line 41 "in the atmospheres" , line 80 "and etc", line 222 "...in reporting and interpreting kinetic data", line 247 "...the first major primary source", line 1742 "the roles these heterogeneous reactions play in...".

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