

Atmos. Chem. Phys. Discuss., author comment AC1
<https://doi.org/10.5194/acp-2021-1025-AC1>, 2022
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Reply on RC1

Mathieu Lachatre et al.

Author comment on "Modelling SO₂ conversion into sulfates in the mid-troposphere with a 3D chemistry transport model: the case of Mount Etna's eruption on 12 April 2012" by Mathieu Lachatre et al., Atmos. Chem. Phys. Discuss., <https://doi.org/10.5194/acp-2021-1025-AC1>, 2022

We thank the reviewer for his remarks on our manuscript, and will bring a full comment on all the issues that are raised. However, before this, we would like to clarify a matter that was judged critical by the Reviewer.

- It seems that there is a significant flaw in the model as it allows negative mass for OH radicals.

- Figure 3e: Negative mass?! This is wrong and challenges the whole study

Since the caption of Fig. 3 is indeed not clear enough, we would like to clarify right away that there are no negative masses or concentrations in our simulations. The time series in Fig. 3(a,b,c,d and e) represent the difference of each of the simulations compared to the background simulation (without considering volcanic emissions).