

Atmos. Chem. Phys. Discuss., referee comment RC3
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Comment on acp-2021-891

Anonymous Referee #2

Referee comment on "Oceanic emissions of dimethyl sulfide and methanethiol and their contribution to sulfur dioxide production in the marine atmosphere" by Gordon A. Novak et al., Atmos. Chem. Phys. Discuss., <https://doi.org/10.5194/acp-2021-891-RC3>, 2022

The paper entitled "Oceanic emissions of dimethyl sulfide and methanethiol and their contribution to sulfur dioxide production in the marine atmosphere" is novel, interesting and falls within the scope of ACP. The authors report the first direct eddy covariance flux measurements of MeSH oceanic emissions and perform a comprehensive analysis of the implications of this findings with the help of a chemical model.

In general, the paper is well written and I have only a few minor comments:

- Section 1.1 It would be nice if the authors include the reference to some more recent studies elucidating the methanethiol production pathways by Sun et al. (2016)
- The work of Sun et al. (2016) should also be discuss the study in the discussion line 353ff.
- Section 1.3 Can the reaction mechanism be displayed in some form of graphic/schematic? This is a little hard to follow
- Methods section: I seem to be unable to find the section where the meteorological measurements and the equipment used for the eddy covariance flux system are described. Can the authors add this description?
- Line 449 the recent ship cruise in the Arabian Sea was not the first study dimethyl sulfone DMSO₂ has also been reported in marine air masses in Antarctica. Berresheim et al. 1998 reported it <https://doi.org/10.1029/97JD00695>

Relevant references

Berresheim et al. 1998 Measurements of dimethyl sulfide, dimethyl sulfoxide, dimethyl sulfone, and aerosol ions at Palmer Station, Antarctica Journal of Geophysical Research: Atmospheres **Volume103, IssueD1** Pages 1629-1637

Sun et al. 2016 The abundant marine bacterium *Pelagibacter* simultaneously catabolizes dimethylsulfoniopropionate to the gases dimethyl sulfide and methanethiol *Nature Microbiology* volume 1, Article number: 16065 (2016)