Atmospheric Chemistry and Physics Discussions

Atmos. Chem. Phys. Discuss., referee comment RC2
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Comment on acp-2021-615

Anonymous Referee #2

Referee comment on "Marine gas-phase sulfur emissions during an induced phytoplankton bloom" by Delaney B. Kilgour et al., Atmos. Chem. Phys. Discuss., https://doi.org/10.5194/acp-2021-615-RC2, 2021

The paper entitled "Marine gas-phase sulphur emissions during an induced phytoplankton bloom" by Kilgour and co-workers presents wind tunnel measurements of the emissions of marine reduced sulphur species during phytoplankton blooms.

The paper is well written and discusses two important points.

Firstly, the authors report that during the pre-bloom period non-DMS species contribute significantly to the reduced sulphur budget. Methanethiol and benzothiazole were found to be the largest contributors to non-DMS sulphur emissions. The authors discuss the implications of this new finding for the marine sulphur budget, in particular the implications benzothiazole emission on new particle formation in marine environments.

Secondly the authors propose that the ratio DMS:MeSH is driven primarily by methionine aminopeptidase which catalyses cleavage of amino acids from proteins and peptides. The propose that salinity is not the main driving force for the DMS:MeSH ratio.

The paper falls within the scope of atmospheric chemistry and physics and is well written. I recommend the paper for acceptance subject to minor revisions.

Minor revisions suggested:

- The authors cite an unpublished work Franklin et al. 2021. I am not sure what the journal policy in this matter is, but it may be good if the paper can be deposited as a

preprint in a repository so that it becomes accessible to the reader.

- The authors also cite and AGU abstract, which is not a peer reviewed source to support one of their points Kiene et al. 2017. This is not ideal. Have the authors checked whether the relevant data has been published since, possible under a different title or is available in some repository.
- The Sander reference for Henry's law constants appears to be incomplete Atmos. Chem. Phys., 15, 4399–4981, 2015 doi:10.5194/acp-15-4399-2015