

We thank Reviewer #2 for the detailed comments. Attached are the responses to the specific comments. All critical points raised have been considered and addressed/discussed as detailed in this document (blue). Every indication of lines and/or pages refer to the originally uploaded manuscript.

1. The abstract should focus on the research results of this paper rather than its significance.

We agree and added more results from our study to the abstract (line 16):

“We found that the concentrations of DMS from the surface seawater and air in the investigated area were 1.03 ± 0.98 nmol⁻¹ and 28.80 ± 12.49 pptv, respectively. The concentrations of isoprene in surface seawater were 14.46 ± 12.23 pmol⁻¹. DMS and isoprene fluxes were 4.04 ± 4.12 μmol m⁻² d⁻¹, 80.55 ± 78.57 nmol m⁻² d⁻¹, respectively. These results are generally lower than the values presented or calculated in currently used climatologies and models.”

2. Page 1, line 30-32, ‘Here we focus on two typical marine biogenic gases, i.e. dimethylsulphide (DMS) and isoprene...’ The article discusses not only marine biogenic gases but also related sulphur compounds, I suggest to add a sentence of the relevant sulfides here.

We totally agree and added the related sulfur compounds to the sentence:

“Here we focus not only on two typical marine biogenic gases, i.e. dimethylsulphide (DMS) and isoprene, which have a significant influence on aerosols and climate in remote areas of the world (Carpenter et al., 2012; Lovelock et al., 1972), but also on two related sulphur compounds, i.e. dimethyl sulphoniopropionate (DMSP) and dimethylsulphoxide (DMSO).

3. Page 2, line 53, At the end of this paragraph, the article has been discussing the change data of radiation, and it is recommended to add a concluding sentence.

Thanks for this recommendation. We added following sentence to the end of the paragraph:

“These previous studies clearly show the importance of DMS emissions and related atmospheric oxidation products, and point to the importance of understanding how global DMS concentrations and subsequent emissions vary over the course of the year and over longer time periods.”

4. Page 2, line 55, ‘accounting for 50% of all BVOCs coming from terrestrial ecosystems.’ Is the information unclear here? Is it 50% of the species or the quantity?

Thank you for pointing out that this sentence is unclear. The 50% refer to the quantity of emissions. We changed the sentence accordingly, to be more clear:

“...accounting for 50% of all BVOC emissions coming from terrestrial ecosystems.”

5. Page 2, line 58, 'Most isoprene in the atmosphere is produced by terrestrial ecosystems...' How much is the most here? It is recommended to add data. If not, please delete 'most'.

We have modified as follows:

"Most isoprene in the atmosphere is produced by terrestrial ecosystems (>99%, Guenther et al., 2006), but isoprene is also known to be produced in the ocean as well by different species of phytoplankton, seaweed (Shaw et al., 2010, Bonsang et al., 1992), and some species of marine bacteria (Exton et al., 2013)."

6. Page 2, line 61, Add a transition sentence between the source and flux sentences.

We added following transition sentence:

"Since atmospheric isoprene in remote regions of the open ocean are directly related to surface seawater isoprene concentrations (Bonsang et al., 1992), biological marine isoprene production directly influences the magnitude of emissions to the atmosphere."

7. Page 3, line 74-75, 'Therefore, trace gas fluxes are computed using measured wind speed, measured atmospheric concentrations, and measured seawater concentrations.' It is repeated with the method below, it is recommended to delete it here.

The reviewer is right and the sentence was deleted.

8. Page 12, line 314, '...over the cruise track area are lower than the climatological concentrations,' How much percent lower is Lana's concentration?

We have calculated that our values are 2.2 ± 0.4 times lower than the values of Lana et al. (2011) in the open ocean regions of our cruise track. However, in the coastal area the describes values in Lana et al. (2011) are 1.6 ± 1.0 lower than our measured values in the same area.

9. In general, headings should not be followed directly by figures and tables.

Thanks for pointing that out. We have changed the location of figures and tables which directly follow the heading in the current version.

10. What does DOY stand for? Shouldn't it be DAY?

DOY is correct and it means "day of year". Unfortunately, we did not introduce it in this manuscript. We have added the meaning of DOY at its first appearance in the method section.

"...on 18 July 2019 (199th day of year, DOY 199),..."

References

Bonsang, B., Polle, C., and Lambert, G.: Evidence for marine production of isoprene, *Geophysical Research Letters*, 19, 1129-1132, <https://doi.org/10.1029/92gl00083>, 1992.

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Lovelock, J. E., Maggs, R. J., and Rasmussen, R.: Atmospheric dimethyl sulfide and natural sulfur cycle, *nature*, 237, 452-454, <https://doi.org/10.1038/237452a0>, 1972.

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