Review of the paper: "Variability of dimethyl sulphide (DMS), methanethiol and other trace gases in context of microbial communities from the temperate Atlantic to the Arctic Ocean"

by Valérie Gros et al.

General comments

The authors have undertaken an in-depth revision and have improved considerably most of the article. However, the writing could still be improved throughout, and I recommend a thorough check of English (grammar and orthography) and the References. The work looks solid from a technical standpoint, but I encourage the authors to report whether cross-calibration between underway and Niskin samples was performed. If not, please add a note of caution because Niksin sampling and underway systems can yield somewhat different concentrations, especially in the case of gases (at least DMS) that respond quickly to mechanical stress induced by underway pumping on cells.

A final note: this paper contains at least 2 different stories, and the one about DMS and MeSH has been treated more in depth and could make a separate paper. Of course this is the authors' decision.

Specific comments

L18: please indicate months-year.

L42: please support the "lifetime of 1 day" with a reference

L70: this new sentence is a bit repetitive, as the previous already said oceans can be a sink for OVOCs.

L90: maybe Simó et al. (2022), which is cited in the Discussion, is an appropriate citation here

L111: please check the excitation emission wavelengths, they look very weird. Chlorophyll does not absorb much at 325 nm. Rather, it has an absorption peak in the blue, at around 430 nm, and fluoresces in the red, at around 680 nm.

L122: please specify material.

L277, section 3.1.2: I suggest first mentioning the clear separation between bacterial communities from Atlantic and Polar water masses indicated by NMDS (Fig. 3).

L474: the studies of Kettle and Lawso reported mean DMS/MeSH ratios of around 5.5. This corresponds to a MeSH / (DMS + MeSH) of 15%, higher than the <10% indicated by the authors.

L486: cyanobacteria are well-known DMSP consumers, and are especially competitive under sunlight compared to heterotrophic bacteria. So It's not inconceivable that they produce MeSH as a DMSP assimilation by-product. Citations:

Malmstrom, R. R., et al. (2005). Dimethylsulfoniopropionate (DMSP) assimilation by Synechococcus in the Gulf of Mexico and northwest Atlantic Ocean. *Limnology and Oceanography*, *50*(6), 1924-1931.

Vila-Costa, et al. (2006). Dimethylsulfoniopropionate uptake by marine phytoplankton. *science*, *314*(5799), 652-654.

Ruiz-González, C., et al. (2012). Sunlight modulates the relative importance of heterotrophic bacteria and picophytoplankton in DMSP-sulphur uptake. *The ISME journal*, *6*(3), 650-659.

Technical corrections and typos

L80: Please correct: "This impact of sea-ice has been shown to DMSP"

L196: please check writing

L201: allows

L309: "for surface values" → "near the surface"

L333-341: check writing