

Interactive comment on “Coral reef origins of atmospheric dimethylsulfide at Heron Island, southern Great Barrier Reef, Australia” by Hilton B. Swan et al.

Anonymous Referee #1

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The paper by Swan et al., "Coral reef originals of atmospheric dimethylsulfide at Heron Island, southern Great Barrier Reef, Australia" is an analysis of the contribution of corals to DMS atmospheric loading. It is well known that the microbial community in the ocean is an important source of DMS to the marine atmosphere. The same types of physiological processes that produce DMS in the microbial organisms also occurs in corals, but the contribution of corals to atmospheric DMS is less well-known. The authors discuss that the areal extent of coral reefs might be small, but the size of the living organism is large and, therefore, the potential emissions of DMS might be important. A field study during two different seasons illustrates the magnitude and environments factors influencing DMS emissions from corals around Heron Island. There is a clear

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indication that the corals are important emitters of DMS, especially during low tide and when stressed. The need to understand the larger area, as well as other coral reefs in the world oceans, is evident. The manuscript is a useful contribution to the general knowledge on DMS cycling in the Earth System. It is well written and the conclusions are largely well drawn from the evidence presented. I think the manuscript should be accepted after the minor revisions, described below, are addressed.

Specific Comments: 1) Figure 1b is really a great figure and compelling for the point of the paper, but not discussed at all. 2) The wind compass in Figure 2 is a bit confusing. It would be easier to read and comprehend if it was in a wind rose format. 3) The description of the GC sampling could be more detailed. I see that the authors cited a previous methods paper, I would still like to know more about this particular experiment. What size tubing? How fast was the sample pumped? How was it pumped? Why was the air trapped 14 mins? 4) I don't like the units of nmol/m³ and appreciate when ppt units also mentioned. Can this be done throughout? 5) Style of the discussion sections seems a bit off - I miss a general description of the results. Instead, the manuscript seems to delve right into the spikes and the effect of tides. 6) How do the authors know that the large spike found during the dry season (shown in figure 6a) is not an instrumental problem? Why should there only be biological shock during the dry season (it seems that there are periods during the wet season also without rainfall and with low tide)? 7) Why didn't the authors play a bit with their results, for example looking at forward trajectories to see where the DMS ends or scaling up to the entire GBR? 8) How was H (or MLD??) actually determined? And why do the authors call it MLD? This is terminology used more for water mixed layers. Why not always say H? Or are these values somehow different?

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