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Interactive comment on “Technical Note: A fully automated purge and trap-GC-MS system for quantification of volatile organic compound (VOC) fluxes between the ocean and atmosphere” by S. J. Andrews et al.

Anonymous Referee #2

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A fully automated purge and trap-GC-MS system for quantification of volatile organic compound (VOC) fluxes between the ocean and atmosphere By S. J. Andrews, S. C. Hackenberg, and L. J. Carpenter

The manuscript describes an automated purge and trap inlet system to a GC-MS for measuring dissolved very short-lived halogenated species from seawater in discrete or continuous mode.

The description of the analytical system and its performance characteristics are well-documented and it appears that this is a system that, despite its size and complexity,

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(large GC-MS and inlet system) is readily able to go to sea, as the authors report that it has collected good quality data on 6 cruises. I think it is a nice contribution to the body of literature on sea-going purge and trap systems and the total number of analytes captured is also impressive. It would be valuable to build large data sets of these VOC fluxes over the ocean.

I have only one major concern that I would like the authors to clarify, and a few minor comments about the text.

The paper concerns itself primarily with describing the P&T system and extraction of gases from seawater. However, the title refers to VOC fluxes, and in the last figure (Figure 6) indeed we see air-side concentrations of two VOCs.

What is not clear, is whether these air-side measurements were made with the same system or whether they require a different system altogether. I see no part of the diagram in Figure 1 where air is inlet to the system for GC-MS analysis and no discussion of air sampling to avoid VOC contamination from shipboard activities. Do you have to trap and preconcentrate air samples for GC-MS analysis of these VOCs?

If the air-side samples were collected with the same system, this should be indicated in Figure 1 and in the text with adequate description of how that was done. If those measurements require a separate method/apparatus that is not part of this system, then the authors should make that clear in the text, in Figure 6. Further, the authors should change the title of the manuscript to more accurately reflect what their system can do, something like “A fully automated purge and trap-GC-MS system for quantification of volatile organic compound (VOC) compounds in water and seawater”.

Minor comments:

3.1 Line 8: Is it not possible to obtain VOC-free water from a MilliQ system? I would expect careful distillation would have a similar effect.

3.1 Line 10: What is meant by “conditioning” of the P&T system. If this is some kind of

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system memory effect, a much more detailed description is required.

Figure 4 – Figure 4, sentence starting with “Glass water traps..” seems to be missing an adverb or something.

Page 5, lines 5-15. References indicating that the VOCs of interest are quantitatively trapped at -30 C should be included here.

Page 6, Line 5-10. You indicated PTFE valves are easily damaged. Please include the make/model of the valves that you found to work well.

Figure 6: It is not clear to me how the air concentrations were measured.

Interactive comment on Ocean Sci. Discuss., 11, 2979, 2014.

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