

Interactive comment on “Oxygenated volatile organic carbon in the western Pacific convective centre: ocean cycling, air–sea gas exchange and atmospheric transport” by Cathleen Schlundt et al.

Anonymous Referee #2

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General comments:

The authors reported shipborne observations of a series of oxygenated VOCs (OVOCs) in the western tropical Pacific. The spatial and temporal distributions and the air-sea fluxes of five OVOCs were presented and discussed. For some species, these data were published for the first time. I appreciate their effort. The authors also tried to explore the uplifting of these OVOCs to the upper troposphere by using the FLEXPART model. I found the paper well organized and written in general, putting both atmospheric and oceanic perspectives. This paper would be a nice piece of work contributing to the groups looking at the air-sea exchange of organics. In addition to

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the comments from another reviewers (with which I agree on most comments), I only have several minor and/or technical comments that the authors can consider before publication, as listed below.

Minor comments:

FLEXPART analysis, Fig 6-9: To be honest I found the analysis with FLEXPART is a bit premature and resulting implications are speculative, as the data number is so limited and the authors cannot deal with mixing with the Lagrangian model, while the authors noted it (P11, L26-28). My question here is how well the Lagrangian-type model works in this hot and humid atmosphere in the tropics. Backward trajectories often fail in tropical MBL, so I wonder if there is the same issue or not.

P1, L32: "relatively" high

P8, L36: Did Whelan et al. test both macroalgae and phytoplankton, and find that only macroalgae produced VOCs? Or did they only test macroalgae? Please clarify.

P11, L1: The "on" average

P11, L23: "release trajectories" sounds a bit odd to me, perhaps say "release particles" or "start trajectories"? Anyway consider to rephrase.

P11, L6-8; Table 3: One literature data is missing here. There is a literature data of acetone flux in the western North Pacific by the gradient method. Tanimoto et al. (2014) reported the acetone flux to be $2.7 \pm 1.3 \mu\text{mol}/\text{m}^2/\text{day}$, for the western North Pacific (15-20N, 137E) in 2010. Please add it into here.

Reference:

Tanimoto, H., S. Kameyama, T. Iwata, S. Inomata, Y. Omori, Measurement of air-sea exchange of dimethyl sulfide and acetone by PTR-MS coupled with gradient flux technique, Environ. Sci. Technol., 48, 526-533, 2014.

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