

Interactive comment on “A halocarbon survey from a seagrass dominated subtropical lagoon, Ria Formosa (Portugal): flux pattern and isotopic composition” by I. Weinberg

Anonymous Referee #2

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General remarks

In the manuscript interesting insights in halocarbons over seagrass meadows are presented based on measurement campaigns in a subtropical lagoon (Ria Formosa). Concentration and carbon isotopic measurements in air and water, and directly over seagrass (using a dynamic flux chamber) were conducted and emissions were diagnosed from these measurements. This way the authors are able to elucidate various impacts on the halocarbon concentrations/emissions including tides, environmental parameters on different time scales (diurnal patterns, seasonal differences) and to roughly estimate the global emissions from seagrass meadows.

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Interactive Discussion

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The study constitutes a valuable contribution to the understanding of coastal emissions of halocarbons, which are relevant for atmospheric chemistry and potentially also climate. I support publication in BG, as the topic is relevant to readers of the journal and the authors present novel interesting findings. Among other results, they for example find a tidal behavior of emissions different from previous studies, with high emission during inundation and not during air exposure.

Before publication some minor things could be improved.

I miss the discussion of the low recovery rate of bromoform in the discussion of the results. The CHBr_3 emissions from seagrass meadows appear to be very low, is how much of this is due to the method?

Furthermore, the authors mention that they rely on assumptions in the calculation of sea-air gas-exchange (e.g in the kw parametrization). What's the impact of the chosen mean water current velocity on the fluxes (how large are variations in the current velocity usually)?

Detailed remarks

- Abstract, (P10606 L25)

 Mb mention that on a global scale seagrass meadows seem to be rather insignificant emitters of CHBr_3 and CH_3I on the global scale, as done in conclusion/discussion sections.

- P10607 L6 "Furthermore, CH_3I may further-contribute to the formation of aerosols .."

 I think, it is now believed that molecular iodine is the precursor of iodine-mediated

- ultrafine particles, rather than organic iodine-containing compounds like CH₃I (see e.g. Saiz-Lopez, A.; Plane, J. M. C.; Baker, A. R.; Carpenter, L. J.; et al. Atmospheric Chemistry of Iodine, Chemical Reviews, 2012, 112, 1773-1804).
- P10613 You should mention how you get from the mixing ratio to the atmospheric concentration needed in the flux calculation (F₂).
 - P10615 L5-15 correlation coefficients:
I suggest to drop the correlation analysis. Your sample size is too small to give reliable correlation coefficients (the standard error is relatively high). With a sample size of n=9 (n=10) the standard error ($SE = \frac{\sqrt{(1-r^2)}}{\sqrt{(n-2)}}$) of the correlation coefficients would be approx. ($r^2=0.71$, 0.2) SE=0.2, 0.3.
 - P10629-10630
The importance of e.g. seagrasses as halocarbon emitters at the global can not be judged only by the absolute amount of substance emitted. It should be noted that vertical transfer in the atmosphere is spatially inhomogeneous and co-location of vertical motion in air with halocarbon emissions may make low global overall emissions from seagrass matter for e.g. ozone depletion.
 - Table 1 caption: drop "General overview". Why are there means and medians for the MR in air and only mean or median (which? specify) for the water concentrations in the table?
 - Fig 3 : Consider arranging the subplots horizontally.
 - SI P1: "The analytic procedure is based on those of Bahlmann et al. (2011):" mixture of singular (procedure) and plural (those)

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