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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Meteorological constraints on oceanic halocarbons above the Peruvian Upwelling" *by* S. Fuhlbrügge et al.

Anonymous Referee #1

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This paper presents a new dataset of halocarbon observations along the Peruvian coast and the upwelling region nearby. The observations add to a scant dataset of halocarbons and helps in completing the global picture in addition to explaining some local differences. Additionally the fluxes calculated will undoubtedly be useful to modelling groups, which have been struggling with getting a complete emission inventory for several of the compounds measured here.

I recommend the manuscript is published in ACP, after the authors have addressed a few points that are detailed below.

Major comments:

1) Although the authors mention that the fluxes are different to the other locations,

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such as the Mauritanian upwelling, there isn't much discussion about the reasons for this. One reason that is mentioned is the difference in the wind speed and the ocean-atmosphere gradient. Why do the authors rule out biological processes? Maybe some light can be shed on this using ocean colour data, and/or phytoplankton speciation data.

2) The authors have mentioned that the transport paths might explain the elevated IO observed by Schönhardt et al. However, the transport paths take about 5-8 days, which is much longer than the lifetime of CH3I and hence its contribution should not be as high. Very low concentrations of IO have also been observed at the Galapagos Islands, although higher CH3I was observed. Closer analysis of the CH3I data had indicated a local source rather than transport from the Peruvian upwelling region (Gomez-Martin et al., 2013).

3) The quantitative analysis of the dependence of the flux is only limited to doing Spearman correlations and the dependence between boundary layer and concentrations is shown in a figure. Considering the low spearman's coefficients and high P values (0.05), I suggest that the authors conduct a two dimensional principal component analysis of the dataset considering all the different parameters measured. This will help in better understanding the major driving factors, rather than doing simple correlation coefficient calculations, especially, which do not high a high significance (<0.01). Several of the measured parameters could correlate, but that does not necessarily show any causality as evidenced in table 3.

Minor comments:

1) Please mention the P values for the correlation coefficients in section 3.5 2) The Martin et al 2013 reference should be Gomez-Martin et al, 2013

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