

## ***Interactive comment on “Impact of the marine atmospheric boundary layer on VSLs abundances in the eastern tropical and subtropical North Atlantic Ocean” by S. Fuhlbrügge et al.***

**Anonymous Referee #3**

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### Summary

This paper presents some measurements of the halogenated very short-lived substances (VSLs), and data analyses focusing on the correlations of VSLs abundances and meteorological parameters. The measurements would be an important addition to the available dataset of those compounds. However, I find substantial flaws in the interpretation applied by the authors, and suggest major revision before publication.

### Comments

1. The observational result, “highest VSLs mixing ratios were found near the Mauritanian coast and close to Lisbon” is consistent with the well-known finding of much higher

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fluxes of those compounds from the coastal waters than from the open ocean (for example, Quack et al., 2003). Nevertheless, the authors conclude marine atmospheric boundary layer (MABL) height variations are an important driver for VSLs mixing ratio variations, only based on the correlations of VSLs abundances and meteorological parameters. Correlation is not sufficient for “cause-and-effect” relationship. I would encourage the authors to carry out further study taking account of the VSLs fluxes.

2. Too little information is given for the VSLs measurements, in spite that much space is devoted to the description of meteorology. How stable were the VSLs in the canisters? How did the authors estimate the analytical precision to be on the order of 5%? How were the standard gases prepared?

3. What is “the so far observed missing VSLs sources in this region”(p. 31206 line 21)?

4. What is “similar characteristics in the surface water” (p.31216 line 4)? If VSLs concentrations were similar in the surface water at the six diurnal stations, that should be stated clearly.

5. The authors state “higher VSLs concentrations obviously coincide with a lower MABL height and vice versa”(p.31222 line 11-12). But, Figs. 7~9 show “higher VSLs concentrations coincide with coastal sites and vice versa”, and Fig. 12 show no significant correlation between VSLs concentrations and MABL at each fixed station (cf. the VSLs mixing ratios from station 1 seem to be constant for the variable MABL heights of 700m – 1100m.)

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