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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Short-lived brominated species – observations in the source regions and the tropical tropopause layer" *by* S. Brinckmann et al.

Anonymous Referee #3

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This manuscript presents the results of measurements of short lived halogenated gases from 3 field studies. One field study is in the North Sea and coastal. The second is on board the Sonne in the Western Pacific. The third is a balloon study in Brazil with samples from the tropopause. The data are useful and should be published. However, I reservations regarding this manuscript.

The authors attempt to determine correlations and universal ratios between the different short-lived species that can then be used to assess emissions if only one or two of these gases is actually measured. Why should these ratios be constant? Also, given the differences in degradation rates in and out of the water as well as the need to cross

the air-sea boundary, why should atmospheric concentration ratios relate to production or emission ratios? Production ratios may differ in coastal and open ocean waters. Degradation in the surface waters in coastal areas is important for bromoform, but it may not be in a different region. The exchange between the surface water and the atmosphere may impart changes in the ratios of the gases after production in the surface water and thus impact their atmospheric concentration ratios. While I think the data are important and these gases are significant sources of bromine to the stratosphere in regions with rapid transport, I don't think that the concentration ratios are ever going to be suitable for using one of the VSLS gases as a proxy for another VSLS gas.

My other main issue with this paper is the difficulty in reading it. I found more grammatical mistakes that I am willing to tabulate here. This paper needs a significant revision before it can be published. I hope the authors do this because the data do need to be published and the impact of these gases on stratospheric bromine needs to be better quantified.

Interactive comment on Atmos. Chem. Phys. Discuss., 11, 22199, 2011.