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Atmos. Chem. Phys., 9, 9083-9099, 2009

www.atmos-chem-phys.net/9/9083/2009/

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Bromocarbons in the tropical marine boundary layer at the Cape Verde Observatory – measurements and modelling

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Abstract. A new gas chromatograph was used to make measurements of halocarbons at the Cape Verde observatory during late May and early June 2007. The instrument demonstrated its potential for long-term autonomous measurements. Bromoform (CHBr_3) exhibits the most variability of all the halocarbons observed, ranging from a background concentration of about 4 ppt to a maximum of >40 ppt during the course of the measurement period. CH_2Br_2 correlates well with bromoform, suggesting a common regional source. Methyl iodide does not correlate with these bromocarbons, with base levels of around 1–2 ppt and some periods of much higher mixing ratios. Using published bromocarbon emission rates, our chemical transport model studies, presented here, do not reproduce the observations. Local emission magnitudes and $\text{CHBr}_3:\text{CH}_2\text{Br}_2$ ratios must be increased more in line with the recent observations of Yokouchi et al. (2005) to improve the model to measurement comparison. Even when the model reproduces the observed bromocarbons, modelled BrO is much less than recent tropical observations (Read et al., 2008). A sea salt source seems the likely explanation. When high BrO is reproduced, the model agrees much better with the observed ozone changes, including diurnal variation, during the measurement period but it is suggested that a representation of iodine chemistry in the model is also required.

[Final Revised Paper](#) (PDF, 8282 KB) [Discussion Paper](#) (ACPD)

Citation: O'Brien, L. M., Harris, N. R. P., Robinson, A. D., Gostlow, B., Warwick, N., Yang, X., and Pyle, J. A.: Bromocarbons in the tropical marine boundary layer at the Cape Verde Observatory – measurements and modelling, Atmos. Chem. Phys., 9, 9083-9099, 2009. [Bibtex](#) [EndNote](#) [Reference Manager](#)

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