Geophysical Research Abstracts, Vol. 9, 06825, 2007
SRef-ID: 1607-7962/gra/EGU2007-A-06825

Coastal and open ocean sea-air fluxes of volatile halocarbons in the Atlantic Ocean

C. E. Jones, K. E. Hornsby and L. J. Carpenter

Department of Chemistry, University of York, Heslington, York, YO10 5DD, UK
(cej103@york.ac.uk / Fax: +44 1904 432516 / Phone : +44 1904 434472)

There is evidence to suggest that low molecular weight iodocarbons such as CH_2I_2, which are emitted into the troposphere from the surface ocean, may play an important role in both catalytic ozone depletion and new particle formation. Whilst a number of previous studies have undertaken to monitor levels of halocarbons in either air or seawater, very few datasets exist in which these species have been measured simultaneously in both air and surface seawater. Consequently, there is currently considerable ambiguity associated with attempts to estimate the scale of halocarbon sea-air fluxes. During the MAP (Marine Aerosol Production) cruise in the eastern North Atlantic Ocean during summer 2006, we measured a range of volatile reactive brominated and iodinated organic compounds, including $CHBr_3$, CH_2ICl and CH_2I_2, simultaneously in surface seawater and in marine air using two GC-MS systems calibrated with a common permeation-based method. CH_2ICl and CH_2I_2 were ubiquitous in the surface seawater (2 m depth) in both coastal and open ocean regions. The resulting sea-air fluxes have been categorized as either coastal or open ocean, and the magnitude of open ocean fluxes are compared to those in coastal waters. On average, emissions of halocarbons to the marine boundary layer were greater in the coastal zone, with the mean average coastal flux of CH_2ICl of the order of 10 times greater than the typical open ocean flux of this species. However, open ocean sea-air fluxes of CH_2I_2 were considerable, suggesting that this molecule may provide an important source of I atoms to the remote marine troposphere.