



Chemical speciation of iodine in marine boundary layer: Measurements of iodide, iodate and soluble organic iodine in the particle phase

S.C. Lai(1), B.S. Gilfeldder(2), H. Biester(2), M. Petri(3) and T. Hoffmann(1)

(1) Institute of Inorganic and Analytical Chemistry, Johannes Gutenberg-University Mainz
Duesbergweg 10-14, D-55128 Mainz

(2) Institut für Umweltgeochemie, Neuenheimer Feld 236, 69120 Heidelberg Germany

(3) Zweckverband Bodensee-Wasserversorgung, Betriebs- und Forschungslabor, Süßenmühle
1, 78354 Sipplingen, Germany

Halogen chemistry attracts more and more attention in the marine boundary layer (MBL) in recent years. Therein, iodine is found to be important for tropospheric ozone depletion and, especially, for new particle formation in the MBL. However, the chemical complexity of the particle composition, the analytical difficulties of iodine speciation as well as the lack of understanding of the relevant atmospheric chemical mechanism obscure the full view of iodine chemistry. Here the marine aerosol samples were collected at Mace Head during the MAP (Marine Aerosol Production) campaign in 2006 and their aqueous extracts were investigated with inductively coupled plasma mass spectrometry (ICP-MS) coupled to different separation techniques for iodine speciation. Inorganic iodine species, including iodide (I^-) and iodate (IO_3^-), were observed as the minor fraction of particle phase iodine while the majority was associated with organic iodine. Yet unidentified signals in the chromatograms strongly suggest the existence soluble organic iodine in marine aerosol and their potential importance in iodine chemistry in the MBL. Therefore, considerably more effort is required on aqueous phase iodine investigation for a holistic understanding of iodine chemistry in the MBL.