



A Study of the role of halogen radicals in the oxidation of gaseous elemental mercury

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During the 2009 Ocean-Atmosphere-Sea Ice-Snowpack experiment at Barrow, AK, we conducted measurements of gaseous elemental mercury, RGM, aerosol Hg, and molecular halogens and halogen radicals. The OASIS team also measured a wide range of supporting species, e.g. ozone, VOCs, water vapor, as well as meteorological measurements characterizing radiation, airflow and boundary layer structure and turbulence. These measurements have enabled us to calculate steady state concentrations of the most likely Hg oxidizers, i.e. Cl, Br, and BrO. Here we report on and discuss these data, and the analysis, indicating the relative importance of each radical species, and the chemical and meteorological conditions that lead to switching between the dominant oxidizer. These data show that chlorine atoms are often much more important than previously believed.