



MAX-DOAS Measurements on RV Polarstern

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Reactive bromine and iodine compounds (e.g. iodine monoxide or OIO) emitted from the ocean in the atmosphere can be of great importance for the chemical balance of the marine boundary layer, even if they are present in very small amounts of only some parts per trillion. Their impact ranges from the destruction of ozone and the modification of the oxidative capacity to the formation of new ultrafine particles and possible influences on the global climate via modification of cloud optical properties.

Here we present measurements from our long-term Multi-Axis DOAS instrument aboard the research vessel Polarstern. MAX-DOAS measurements, ranging from the Arctic over tropical regions to Antarctica, have been performed aboard Polarstern for almost ten years. The data gathered on Polarstern might be useful for satellite data validation because of its spacial coverage. In 2009, the spectrometer was replaced to extend the spectral range and to improve the detection limits. The extension of the spectral range to 300-600nm allows for aerosol retrieval based on different absorption peaks of oxygen dimer O_4 . A new telescope unit was installed, which actively compensates for the roll movement of the ship.

Focusing on the Atlantic transect ANT 26/1 from Bremerhaven/Germany to Punta Arenas/Chile in autumn 2009, its capabilities are discussed and iodine oxide column densities as well as aerosol profiles obtained during the cruise will be presented. During this transect the new setup has proven to run stable. On numerous days the iodine oxide column densities were found to exceed the detection limit of $1.5 \cdot 10^{13} \text{ cm}^{-2}$. This would correspond to a mixing ratio of 0.6ppt assuming a path of light of 10km in marine boundary layer.