



Sulfur-bearing aerosol precursor gases in the marine boundary layer: measurements of sulfuric acid, methane sulfonic acid, and sulfur dioxide on a research ship cruise in the north atlantic

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During the so called Intensive Observing Period (IOP) of high biological signal within the framework of the EU-project MAP (Marine aerosol production) the research vessel Celtic Explorer went to areas in the open Atlantic ocean with high biological productivity due to algae blooms. DMS is emitted from algae that were found in these areas. Condensable gases like sulfuric acid and MSA can be produced from the oxidation products of DMS. SO₂ as a precursor of sulfuric acid can also be one of the products in the oxidation schemes of DMS. The measurements were performed with the help of a novel measurement container developed by MPI-K Heidelberg. Gaseous sulfuric acid (GSA) and MSA were measured simultaneously with one ion trap CIMS instrument, SO₂ with a second one. GSA and SO₂ abundances were found to be very low in the marine boundary layer (mean values about 2x10⁶ molecules/cm³ and 40pptv respectively). MSA was highly variable and was substantially higher than GSA most of the time. The results of these measurements will be presented and implications of the measured trace gases for aerosol production in the marine boundary layer will be discussed.