

## **Antarctic peninsula aerosol particle composition regarding free and combined amino acid influenced by the sea surface microlayer**

C. Breitenstein, M. van Pinxteren, S. Zeppenfeld and H. Herrmann

Atmospheric Chemistry Department (ACD), Leibniz-Institut für Troposphärenforschung e.V. (TROPOS), Leipzig,  
04318, Germany

Associated conference topic: Polar ocean and sea ice

Presenting author email: breitenstein@tropos.de

Over the ocean, wind and wave driven physical mechanisms for particle mobilisation lead to the formation of sea-spray aerosol particles (SSA). SSA contains organic matter (OM), the second largest mass fraction consisting of amino acids (AA). AA contribute massively to the global nitrogen cycle and have impact on cloud chemistry and microphysics. We developed a robust hydrophilic interaction liquid chromatography mass spectrometry (HILIC-ESI-TOF-MS) and applied it to Antarctic size segregated aerosol particle samples and sea surface microlayer (SML) samples from two Antarctic ship campaigns. The measurements showed a higher variation and concentration of free AA than reported in previous literature. Further insights were gained on enrichment, chemo-selective transfer and degradation processes. Additionally, the influence of different air mass origins on the composition of AA and comparisons between AA on the aerosol particles and in the SML will be shown.