

## Chemical characterization of polar compounds in marine aerosol

**C. Müller**, Y. Iinuma and H. Herrmann

Leibniz-Institut für Troposphärenforschung

Permoserstr. 15, D-04318 Leipzig, Germany

E-Mail Adresse: [muellerc@tropos.de](mailto:muellerc@tropos.de)

Marine aerosol is a multicomponent mixture of inorganic and organic compounds. The marine aerosol is typically made of a brine core which is covered with an organic layer. There are two ways to form an organic film on the particle surface. One way is by the so-called bubble bursting process and the other way is by the condensation of semi-volatile organic compounds from the gas phase onto the particle surface. The existences of organic layers on sea salt particles have different effects on their properties. For example, it can reduce the evaporation of water from the brine core, thus influencing the particle growth. This reduction in the water evaporation can have consequences for the cloud formation capacity of the marine aerosol. To understand the effect of organic compounds on sea salt particles and the change in physicochemical properties, the chemical composition of the surface organic layer must be known.

All the chosen compound classes for the method development are of biogenic origin and were produced in the ocean, for example, by algae. The aim of this work is to find a connection between the chemical composition of the marine aerosol and the ocean surface microlayer, hence to obtain insights into the importance of the organic film formation for the marine aerosol.

To analyze a wide variety of compound classes in saline medium, several analytical methods were developed. For the determination of free amino acids from the sea salt particles high performance liquid chromatography (HPLC) with UV detection were compared with the hyphenated technique HPLC/ESI-MS (electrospray ionization mass spectrometry). This technique was also applied for the analysis of carboxylic acids. Additionally, the high performance anion exchange chromatography (HPAEC) with electrochemical detection was used for the carbohydrate analysis. Here, we report the suitability of developed analytical methods for the analysis of highly saline medium.