



## **Concurrent High Resolution Mass Spectrometric Measurements of Aerosol and Gas Phase Sulfuric Acid and Methanesulfonic Acid in the Coastal Marine Atmosphere**

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Time of flight aerosol mass spectrometry (TOF-AMS) measurements at Mace Head Atmospheric Research Station on the west coast of Ireland have provided detailed insight into the constituents of aerosols in the marine coastal atmosphere. In particular, methanesulfonate and non sea salt sulphate are continuously monitored in the aerosol, however, the variability of their abundance in relation to their corresponding gas phase constituents is not well defined. Since May 2010, with the addition of a chemical ionization mass spectrometer (CIMS), high time resolution measurements of sulphuric acid ( $\text{H}_2\text{SO}_4$ ) and methanesulfonic acid (MSA) are conducted concurrently, allowing for a detailed analysis of the relationship between sulphate and aerosol MSA seen by AMS and the gas phase abundances of sulphuric acid and gaseous MSA. Observed correlations between the individual components and their concentration ratios in the gas and aerosol phase will be presented for both marine and continental air masses and different seasons. In particular, the role that ambient humidity may have in affecting gas/particle partitioning will be examined.