Volatility of nuclei mode arctic aerosol

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New particle formation should be extensively investigated due to its strong variability, non linear dependence on anthropogenic or natural precursors and the potential effect on climate in a regional and global scale. It has also recently emerged that at certain areas part of newly formed particles is not volatile at temperatures between 250-300°C At these temperature range particles consisting of sulphuric acid or sulphate should be fully volatile. In order to test the above described hypotheses measurements of the volatility of sub-200-nm ambient particles were conducted in the Arctic background lower troposphere, at the Ny Aalesund Zeppelin GAW site. Nyeki *et al.*, [1] have presented results for the semi volatile and refractory aerosol fractions at Ny Aalesund. A volatility tandem DMA (VTDMA) system was set-up and was operated during a period of three months. Thermal processing at three temperatures 30, 110 and 280°Cwas achieved by an improved low flow volatility tube [2]. The system monitored the volatility of particles having nominal mobility diameters (i.e., diameters dialled by the first DMA in the systme) of 18, 40, 150 and 200 nm in a continuous mode. The thermal behaviour of the nucleation mode particles was examined by selecting particles having 18 nm nominal diameter. At least two occasions of increased nucleation mode particles were detected The appearance of these particles is characterized by the absence of equivalent increase in the Aitken and accumulation mode particle number concentration. It is observed that particle numbers of the nuclei mode particles plummet at the high temperature. This is an indication that the particles consist of ammonium sulphate or bisulphate.

[1] Nyeki *et al.* (2005) *Tellus B* **57** (1) 40-50. [2] Fierz *et al.* (2007) *J. Aerosol Sci.* **38** (11) 1163-1168

Tracking nitrogen dynamics in the lower Qishon stream system (Israel) using nitrate stable isotopes

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Estuaries are presumed to have a significant role in controlling nutrient fluxes from land to sea, affecting nutrient loads to coastal waters. They may serve as a significant nitrogen sink, owing to biotic removal by assimilation, denitrification or by burial processes, and also as a source of nitrogen via degradation of organic matter.

In this research we investigate the nitrogen sources and biological mediated processes in the semi arid estuary of the Qishon Stream (Israel). This by nitrate stable isotopes measurements ($\delta^{15}N$, $\delta^{18}O$) combined with additional chemical analyses of the water column and sediment porewater. The relative importance of the above processes ultimately influence the load of inorganic nitrogen exported to the Mediterranean coastal waters.

The results indicate the dominance of different nitrogen sources at the lower and upper stream system. The upstream station is dominated by sewage derived nitrogen while the downstream stations reflect the mixture of additional local industrial sources.

Seasonal scale measurements indicate significant removal of nitrogen by assimilation in surface waters during spring, summer and fall, and denitrification in the sediments. On the other hand, high sulfate availability via seawater intrusion combined with high organic matter loading in this eutrophic system, support high rates of organic matter remineralization via anaerobic sulfate reduction, generating high flux of ammonium into the water column.