



*Supplement of*

## **Deposition of ionic species and black carbon to the Arctic snowpack: combining snow pit observations with modeling**

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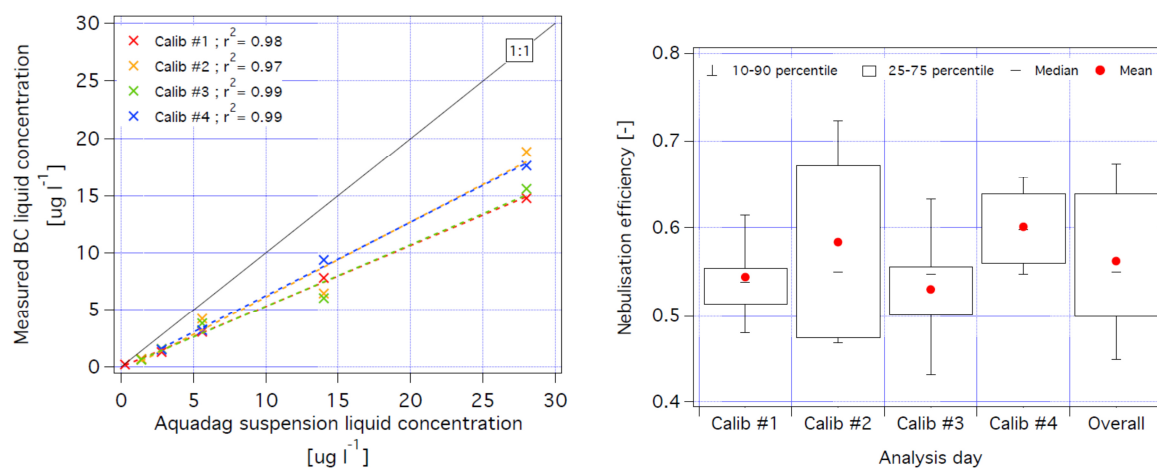
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## Supplement

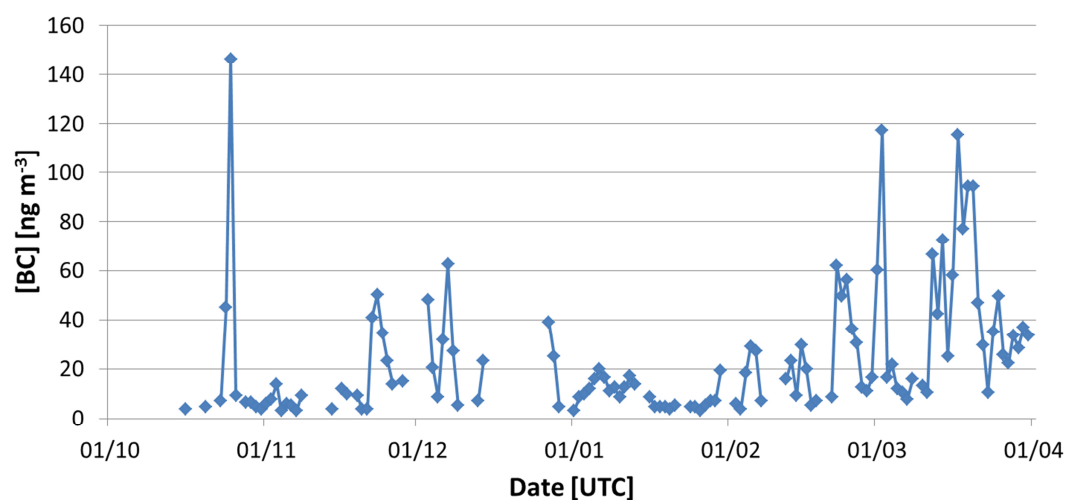
### Additional information for the SP2 measurements

The aerosolization efficiency of the nebulizer was estimated only from the mass and without a size-dependent correction. The efficiency was determined on four out of six days of measurements indicating a day-to-day variability between 53 and 60 % (Fig. S1, left). Considering the low day-to-day variability, the calculated average aerosolization efficiency of 56 % (Fig. S1, right) was applied to all samples.

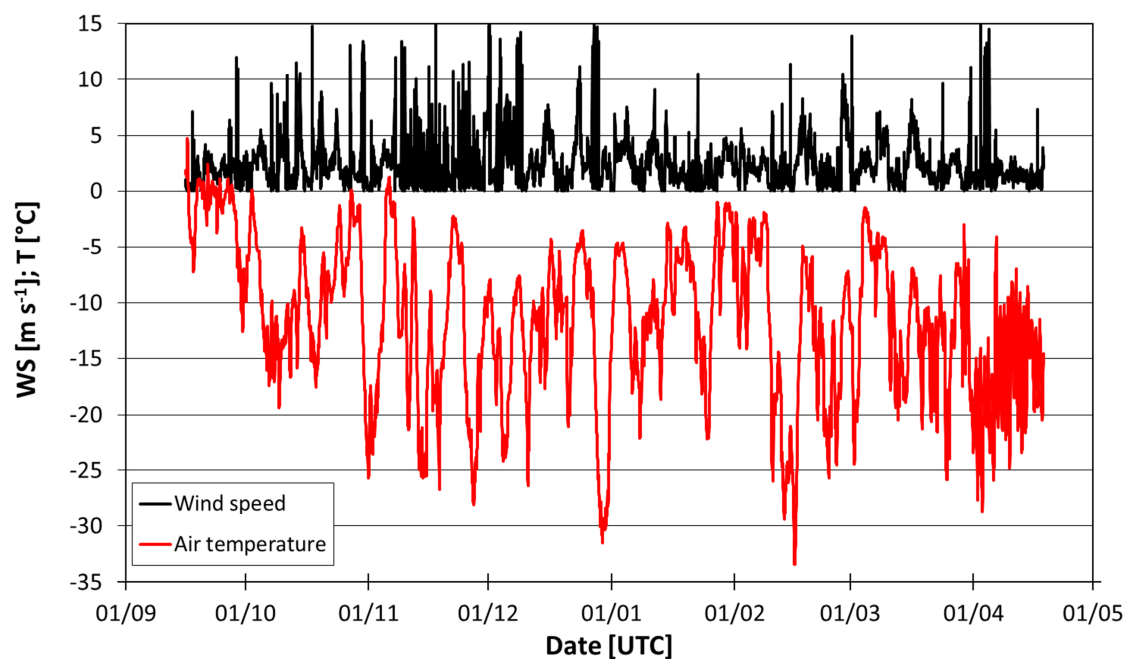
**Fig. S1: (Left) Measurements of the aerosolization efficiency of the nebulizer using Aquadag suspensions on four days (calib #1 to #4). (Right) Statistics for the calculated aerosolization efficiency for each day and for all measurements.**



**Fig. S2: Time series of atmospheric eBC measured at Zeppelin station from October 2011 to April 2012.**



**Fig. S3:** Time series of temperature and wind speed measured at the KV automatic weather station 8 from September 2011 to April 2012.



**Fig. S4:** BC vs. sodium concentrations in snow pit KV (filled diamonds) and AL (filled squares), and in aerosols (open triangles). BC in the snow pits corresponds to rBC, while the BC in aerosols corresponds to eBC.

