



## **Temporal variability and origin of black carbon in snow at Sodankylä, Finland, north of the Arctic Circle**

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The climate effect of black carbon (BC) particles deposited on Arctic snow is potentially large because of the sensitivity of the snow and ice albedo feedback mechanisms to surface albedo changes.

Here, we present new results for 2009-2013 on BC contents of natural seasonal snow during snow time at FMI Arctic Space Center in Sodankylä (67°22 N, 26°39 E), north of the Arctic Circle, with the focus on the temporal variability and origin of BC on surface snow. The snow sampling for the chemical thermo-optical analysis takes place on a weekly basis always from the same area. Our first results of black carbon (BC) and organic carbon (OC) in Sodankylä seasonal snow (for 2009-2011) were presented in Meinander et al. (ACP, 2013), with the focus on spectral albedo of melting snow.

The modeling results show that increased surface snow BC concentrations (> 30 ppb) were due to air masses originating from the Kola Peninsula, Russia. Modeling was performed with SILAM (System for Integrated modeling of Atmospheric composition, <http://silam.fmi.fi/>). This is in accordance with our previous results. In springtime, increased BC concentrations were also observed towards seasonal snow melt with a seasonal pattern repeating from year to year.

Acknowledgements to the Academy of Finland “Assessment of Black Carbon in the Eurasian Arctic: From Historical Concentrations and Sources to Future Climate Impacts (AKA NABCEA, 2016-2020)” –project, and Ministry for Foreign Affairs of Finland (Black carbon in the Arctic and significance compared to dust sources (UM IBA-FIN-BCDUST, 2019-2020)” -project.