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## Chemical composition of the snowpack during the OASIS spring campaign 2009 at Barrow, AK

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During the OASIS spring campaign 2009 at Barrow, AK, the chemical composition of the snowpack was investigated. More than 110 snow samples including all snow types normally encountered in the snowpack of Alaska's Arctic Coastal Plain were collected and analyzed regarding major and minor sea salt components. For all species neither distinct temporal trends nor vertical profiles could be determined. However, a clear relationship between the composition and the snow types becomes obvious. All species show lower concentrations in fresh snow or surface hoar / diamond dust snow samples compared to blowing snow or older deposited snowpack types like windpacked snow or depth hoar. Sea salt components like chlorid, sodium, and potassium exhibit concentration ratios similar to standard seawater ratios throughout most of the samples. Blown and older deposited snow types are depleted in sulfate and enriched in magnesium and calcium compared to standard sea water. While the enrichments are probably due to additional input from continental dust, the sulfate depletion may be caused by the precipitation of mirabilite during sea ice formation. Bromide concentrations are higher than the standard sea water ratio in the fresh snow and surface hoar / diamond dust samples, but also in the depth hoar. A fraction of the deposited snow types show signs of bromine depletion. Nitrate and ammonium concentrations are much less variable compared to the sea salt components. This different behavior of the investigated species point to different sources like sea salt aerosols from marine sources, dust from continental sources, and deposition of volatile species from the gas phase.

### Please list some keywords

Snow types - composition - Barrow 2009

**Primary author:** JACOBI, Hans-Werner (Laboratoire de Glaciologie et Géophysique de l'Environnement LGGE)

**Co-authors:** VOISIN, Didier (Laboratoire de Glaciologie et Géophysique de l'Environnement LGGE); JAF-FREZO, Jean-Luc (Laboratoire de Glaciologie et Géophysique de l'Environnement LGGE); COZIC, Julie (Laboratoire de Glaciologie et Géophysique de l'Environnement LGGE)

**Presenter:** JACOBI, Hans-Werner (Laboratoire de Glaciologie et Géophysique de l'Environnement LGGE)

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