



A continuous IC Glaciochemical Record of the last Glacial Period from the NGRIP Ice Core

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The new NGRIP ice core record provides an undisturbed climate record from North Greenland extending back to 123,000 years before present. It adds new information about the climate of the last glacial cycle to the records from the two central Greenland deep ice cores, GRIP and GISP2.

Comprehensive chemical analysis of aerosol components over the time period from 110,000 to 10,000 years before present was performed on the NGRIP ice core. In line with high-resolution flow analysis, a continuous sampling of ice core melt water was performed at 55 cm resolution for ion chromatographic (IC) analysis of soluble ions. These records provide a unique potential for detailed investigations of conditions for source load and transport of aerosol during the last glacial period.

Here we show the NGRIP IC record of soluble sea salt and mineral dust. In general there is a good agreement with the GISP2 IC record, with higher concentrations in the NGRIP ice core for most species. However, a detailed comparison between the NGRIP and GISP2 IC records indicates strong regional effects in source contributions and transport paths for sea salt and dust aerosol. These effects can be explained by a transport path north of the Laurentide ice sheet for sea salt while the dust aerosol seems to be partly transported south of the Laurentide ice sheet. This approach is consistent

with findings from a recent detailed comparison between the NGRIP and the GRIP oxygen isotope records, which showed systematically lower glacial $\delta^{18}\text{O}$ values in the NGRIP ice core suggesting a different water cycle over Greenland during the last glacial period with a contribution of moisture to NGRIP from a transport path north of the Laurentide ice sheet.