



Greenland spatial variability of impurity deposition and accumulation: the NEEM to EastGRIP 2015 traverse

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In 2015 6 shallow firn cores were drilled in Northern Greenland during a traverse from the ice core drilling site NEEM to the ice core drilling site EastGRIP. The cores are all ~10m long and the most eastern ones from the lowest accumulation area cover the time period 1960-2015, while the core from NEEM (North-west) span only the period 1997-2015 as a result of higher accumulation west of the divide.

The impurity content of the cores were measured by continuous flow analysis (CFA), water isotopes were determined for 2 cores and the annual layers were determined for all cores and used to constrain the annual accumulation at the 6 sites by using also the densities measured in 55 cm mean sections. The results have been compared to re-analysis data of precipitation. Further the temperature at 10 meter depth representing the annual mean were determined in the borehole.

Spatial changes in the annual cycles of chemical impurity deposition (peroxide, sodium, ammonium, acid and insoluble dust) is investigated and show that the inter core variability is larger than that between cores for all impurities but peroxide. The relationship between peroxide measured in the cores and the accumulation at site temperatures have been investigated, showing a significant in peroxide concentration with accumulation.