



Melt layer statistic of two firn cores recently drilled at Dye3 and South dome in the dry snow zone of Southern Greenland

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In the last couple of years remote sensing data have shown large areas of wet snow in the Southern part of the Greenland ice sheet. These melt features are attributed to the overall warming trend. Persistent warming implies changes in the firn layer as well. Even in areas of the dry snow zone one can observe sporadically a few ice lenses within the firn column indicating refrozen meltwater from warm events in the past.

In our contribution we want to close the gap between investigations of firn cores drilled in the 70's and the observational record of remote sensing data over the last decade in South Greenland. The focus lies on firn of the dry snow zone which is sensitive against changes in a warming atmosphere and cold enough to prevent a longway percolation path of meltwater to several firn layers.

To this end we had drilled two 45m-long firn cores at the former drilling sites of DYE3 (65°11'N, 43°49'W) and South Dome (SD) (63°32'N, 44°34'W) during a aircraft-supported field campaign 2012. The retrieved 3inch-firn core segments of 1m length are measured by a X-ray-scanning routine with the means of the core-scale AWI-ICE-CT. The 2d-density fields are calculated and allow to distinguish between refreezing meltwater and compacted firn. The depth-scales are converted to time-scales by using DEP (dielectric profiling) and (in case of DYE3) discrete sampled d18O measurements. Number density of melt layers and relative amount of melt show an synchronized behavior with an general increase over the last 30 years. Local maxima are observed in both sites at around 6-9m and 25m at DYE3 and 5-8m, 22m and 40m at SD.