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# Fabric measurement along the NEEM ice core, Greenland, and comparison with GRIP and NGRIP ice cores.

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Fabric (distribution of crystallographic orientations) profile along the full NEEM ice core, Greenland, is presented in this work. Data were measured in the field by an Automatic Ice Texture Analyzer every 10 m, from 33 m down to 2461 m depth. The fabric evolves from a slightly anisotropic fabric at the top, toward a strong single maximum at about 2300 m, which is typical of a deformation pattern mostly driven by uniaxial compression and simple shearing. A sharp increase in the fabric strengthening is observed at the Holocene to Wisconsin climatic transition. A similar strengthening, toward an anisotropic single maximum-type fabric, has been observed in several ice cores from Greenland and Antarctica, and can be attributed to a positive feedback between changes in ice viscosity at the climatic transition, and the impact of a shear component of stress. Centimeter scale abrupt texture (fabric and microstructure) variations are observed in the bottom part of the core. Their positions are in good agreement with the folding hypothesis used for a climatic reconstruction by Dahl-Jensen and co authors (2013). Comparison is made to two others ice cores drilled along the same ridge; the GRIP ice core drilled at the summit of the ice sheet, and the NorthGRIP ice core, drilled 325 km to the NNW of the summit along the ridge, and 365 km upstream from NEEM. The fabric profile clearly reflects the increase in shear deformation when moving NW along the ridge from GRIP to NorthGRIP and NEEM. The difference in fabric profiles between NEEM and NorthGRIP also evidences a stronger lateral extension associated with a sharper ridge at NorthGRIP.

References:
Dahl-Jensen, D. and 120 co-authors. Eemian interglacial reconstructed from a Greenland folded ice core, Nature, 493, 489–493, 2013.