

Deformation of NEEM, Greenland Basal Folded Ice

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Deep Greenland ice cores and airborne radio echo sounding (RES) images have recently revealed that basal ice flow of the Greenland Ice Sheet is very unstable. In many locations, a basal layer of disturbed ice is observed. At the NEEM, Greenland site this folding occurs at the boundary between the Eemian and glacial ice regimes, indicating that differences in physical properties of the ice play a role in the disturbance. Past work in metallurgy and ice suggests that impurity content controls grain evolution and therefore deformation. We hypothesize that the differences in ice flow seen deep in the NEEM ice core are controlled by differences in the impurity content of the ice layers. Here we present results of fabric, grain size, impurity content, and deformation studies from samples above and below this unstable boundary in the ice sheet.