



Disturbed basal ice seen in radio echo images coincide with zones of big interlocking ice crystals.

Dorthe Dahl-Jensen (1), Sivaprasad Gogineni (2), and Christian Panton (1)

(1) University of Copenhagen, Niels Bohr Institute, Copenhagen, Denmark (ddj@gfy.ku.dk), (2) University of Kansas, Center for Remote Sensing of the Ice Sheets, Nichols Hall, 2335 Irving Hill Road, Lawrence, Kansas 66045, USA

Improvement of the depth sounding radio echo sounding (RES) over Antarctica and Greenland Ice Sheet has made it possible to map the near basal layers that have not been 'seen' earlier due to the very high demand of attenuation needed to reach through more than 3000m of ice.

The RES internal reflectors show that the near basal ice at many locations has disturbed layering. At the locations where ice cores reach the bedrock both in Greenland and Antarctica studies of the ice crystal size and orientation show that the near basal ice has big and interlocking ice crystals which suggests the ice is not actively deforming.

These observations challenge the often used constitutive equations like Glens flow law in ice sheet modelling. A discussion of the impact of the RES findings on ice sheet modeling and the quest to find the oldest ice in Antarctic based on the anisotropy of the basal ice will follow.