

Bed topography and subglacial landforms of the North East Greenland Ice Stream

Steven FRANKE,¹ Daniela JANSEN,¹ Tobias BINDER,¹ Nils DÖRR,¹ Veit HELM,¹ John PADEN,² Daniel STEINHAGE,¹ Olaf EISEN^{1,3}

¹*Alfred Wegener Institute, Helmholtz Centre for Polar and Marine Research, Bremerhaven, Germany*

²*Center for Remote Sensing of Ice Sheets (CReSIS), University of Kansas, Lawrence, KS, USA*

³*Department of Geosciences, University of Bremen, Bremen, Germany*

ABSTRACT. The North East Greenland Ice Stream (NEGIS) is an essential part of the mass balance of Greenland. It reaches up to the central divide, and has a catchment area which covers 12% of the ice sheet. To improve the accuracy of sea-level projections, the processes governing the effective, localized transport within ice streams from the interior of ice sheet towards the margins and finally to the ocean have to be investigated. To better understand the ice flow dynamics and subglacial properties of NEGIS, it is essential to improve the knowledge of geometric boundary conditions. Here, we present a record of more than 8000 km of radar survey lines of multi-channel, ultra-wideband radio echo sounding data covering an area of 24 000 km², centred on the drill site for the East Greenland Ice-core Project (EGRIP) in the upper part of the NEGIS. Our data yield a new detailed model of ice-thickness distribution and basal topography in the region. We compare our data set with previously published data products and discuss subglacial landforms such as elongated structures in ice flow direction and features indicating erosion and deposition of sediments, and reflection patterns in terms of the activity of the NEGIS.