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# Pre-survey of the 79°N Glacier (Nioghalvfjerdsbrae), Greenland, using airborne radio echo sounding and laser altimetry

Daniel Steinhage (1), Veit Helm (1), Maria Belke-Brea (1,2), and Angelika Humbert (1)

(1) Alfred Wegener Institute Helmholtz Centre for Polar and Marine Research, Bremerhaven, Germany (daniel.steinhage@awi.de), (2) University of Bremen, Germany

The 79°N Glacier is an outlet glacier of the only large ice stream of Greenland, the North-East Greenland Ice Stream. In contrast to tidewater glaciers this glaciers forms a floating tongue which is comparable to the ice shelves in Antarctica. In 2016 a field campaign aims to derive the basal melt rates and to investigate if warm water masses are draining from the Fram Strait underneath the floating tongue of the 79°N Glacier. In preparation for the future field campaign a combined radio echo sounding and laser scanner survey was flown in 2013 along the floating tongue and upstream the grounding line. Here, we present an analysis of the radio echo sounding from that airborne campaign and previous datasets acquired using a 150 MHz system. We infer the location of the grounding line and the ice thickness. Additionally, we have used laser scanner data to determine the local DEM. Using the laser scanner data, we also estimated the surface roughness of the ice, as the floating tongue is experiencing an extended summer melt season in which rivers and ponds form. Furthermore, we present the plans for the field campaign in 2016.