



Surface state of Thwaites Glacier and implications for its stress state from airborne laser altimetry and radar sounding

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Thwaites Glacier, West Antarctica, has the highest mass flux in Antarctica, and has significantly negative mass balance [Rignot et al. 2004, *Ann. Glac.* 39]. In 2004/05 the University of Texas, in collaboration with the British Antarctic Survey, conducted the first comprehensive aerogeophysical survey of the catchment of Thwaites Glacier. A DHC-6 Twin Otter, instrumented with ice penetrating radar, laser, gravity meters and a magnetometer surveyed the entire catchment with a 15 km grid (about seven times the typical ice thickness) and targeted longitudinal flow line transects. Initial bed elevation results derived from radar sounding are presented in Holt et al., in review; the main results being the explicit control of feeder tributaries by deep valleys and lack of obstruction between the mouth of Thwaites Glacier and the deep interior. Here we present an initial airborne laser altimetry derived DEM, and from this derived maps of driving stress and hydraulic potential, and compare the stress state of Thwaites Glacier to Bindschadler Ice Stream in the adjacent catchment. We also compare the new ICESat DEM to our new DEM.