Geophysical Research Abstracts
Vol. 19, EGU2017-16451, 2017
EGU General Assembly 2017

The roughness of grounded ice sheet beds: Case studies from high resolution radio echo sounding studies in Antarctica

Duncan Young (1), Donald Blankeship (1), Lucas Beem (1), Marie Cavitte (1), Enrica Quartini (1), Laura Lindzey (1), Charles Jackson (1), Jason Roberts (2,6,2), Catherine Ritz (3), Martin Siegert (4), Jamin Greenbaum (1), and Bruce Frederick (5)

(1) University of Texas Institute for Geophysics, Austin, United States (duncan@ig.utexas.edu), (2) Australian Antarctic Division, Hobart, Australia, (3) Laboratoire de Glaciologie et Géophysique de l'Environnement, Grenoble, France, (4) Grantham Institute, Imperial Collage, London, United Kingdom, (5) University of Kansas, Lawrence, United States, (6) University of Tasmania, Hobart, Australia, (3) Laboratoire de Glaciologie et Géophysique de l'Environnement, Grenoble, France

The roughness of subglacial interfaces (as measured by airborne radar echo sounding) at length scales between profile line spacing and the footprint of the instrument is a key, but complex, signature of glacial and geomorphic processes, material lithology and integrated history at the bed of ice sheets. Subglacial roughness is also intertwined with assessments of ice thickness uncertainty using radar echo sounding, the utility of interpolation methodologies, and a key aspect of subglacial assess strategies. Here we present an assessment of subglacial roughness estimation in both West and East Antarctica, and compare this to exposed subglacial terrains. We will use recent high resolution aerogeophysical surveys to examine what variations in roughness are a fingerprint for, assess the limits of ice thickness uncertainty quantification and compare strategies for roughness assessment and utilization.