

EGU2020-128

<https://doi.org/10.5194/egusphere-egu2020-128>

EGU General Assembly 2020

© Author(s) 2021. This work is distributed under the Creative Commons Attribution 4.0 License.



Characterising the bed of Rutford Ice Stream, West Antarctica, using reflection seismic profiles

Alex Brisbane¹, Andrew Smith¹, Tavi Murray², Rebecca Schlegel², Keith Nichols¹, Dominic Hodgson¹, Sridhar Anandakrishnan³, and Sofia Kufner¹

¹British Antarctic Survey, Cambridge, United Kingdom of Great Britain and Northern Ireland (aleisb@bas.ac.uk)

²Department of Geography, Swansea University, Swansea, UK

³Department of Geosciences, Pennsylvania State University, State College, PA United States

Ice stream flow is predominantly controlled by sliding over the bed, deformation within the bed and deformation within the ice column. The significance of processes at the bed, now and in the future, remains uncertain due to a lack of knowledge of conditions at the ice stream bed. In the Austral summer of 2018/19, as part of the BEAMISH Project, three holes were drilled to the bed of Rutford Ice Stream to install instruments in the ice column and at the bed, and also sample the bed. Prior to drilling, three seismic profiles were acquired across the bed access sites. These data therefore provide a rare opportunity to compare in situ measurements of ice stream bed conditions with seismic reflection data. The seismic line acquisition was also repeated one year later to investigate any changes at the bed following the drilling and connection to the bed. We will use a combination of imaging, acoustic impedance calculation and wide-angle reflection amplitude variation to characterise the bed conditions using the seismic data.