

Under the Antarctic ice: New data in the East, new approaches in the West

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The success of IPY and the advent of Operation Ice Bridge, coupled with new developments in technology are significantly contributing to our understanding of the Earth ice sheets. Here we review radar sounding results from the recent campaigns in West and East Antarctica, acquired with fully coherent radar sounders. In East Antarctica, the geometry of the Aurora and Wilkes Subglacial basins are being revealed by IPY and OIB airborne radar surveys; we will discuss initial results from this new dataset. A significant new finding involves a highly modified subglacial landscape, including a richly fjordized landscape, in the interior of the ice sheet with important implications both for the long-term evolution of the ice sheet and the short term structure of the underlying subglacial hydrology. We also discuss the importance of the distribution of subglacial roughness in East Antarctica, and possible implications for sediment distribution.

More mature datasets exist in West Antarctica; we report on new methodologies for analyzing these data. We compare the information content of amplitude and specularity approaches for basal analysis, and discuss the implications for survey design. We also discuss higher order interpolation methods for these data.