

# **A Closer look at evidence for subglacial drainage systems in Pine Island Bay, Antarctica**

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Pine Island and Thawites Glaciers drain approximately 300,000 km<sup>2</sup> of ice through Pine Island Bay at a rate of glacial thinning up to 3.2m yr<sup>-1</sup> (Rignot, 1998, 2001; Vaughan et al., 2001), making this one of the most dynamic portions of the West Antarctic Ice Sheet. Pine Island Bay has historically had a paucity of data due to harsh weather conditions. Lowe and Anderson 2003 identified three distinct glacial zones based on sea floor topography. New higher resolution bathymetric data from a larger portion of Pine Island Bay allows a more detailed analysis of the region.

Pine Island Bay is characterized by a rugged sea floor, with many potential pinning points, megaflutings, drumlins, mega-scale lineations and numerous channels and basins; hinting at a subglacial drainage system (Lowe and Anderson, 2003; Evans et al, 2006; Deen et al. 2007). Using the new data set, we are examining connectivity of basins and channels to assess the potential for subglacial meltwater control on ice sheet retreat. The timing of retreat is possibly marked by a distinct silt unit that is interpreted as a meltwater deposit. During an upcoming (2010) cruise to the region, we hope to better constrain both the nature and rate of grounding line retreat by mapping grounding zone wedges and sampling these features to establish their age.