ICESat Altimetry - Lots of Data, Lots of Details

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Since ‘first light’ in early 2003, NASA’s Ice, Cloud, and land Elevation Satellite (ICESat) has enabled determination of surface elevations from ~86°N to 86°S latitude. Altimetry data have been acquired in seven discrete observation periods in repeated track patterns using all three Geoscience Laser Altimeter System (GLAS) lasers. This paper will focus on ice sheet and ice shelf elevation data that were obtained from 2003 into 2005; data acquisition continues in October/November 2005.

This poster illustrates the elevations across both polar regions, illustrates the technique's resolution for specific ice features, quantifies the relative accuracy and precision of the resulting ice sheet elevations using data from Antarctica, and discusses some factors impacting change detection and ice sheet mass balance assessments from this data. Currently, the relative accuracy of ICESat elevations is about 16 cm based on the standard deviation of low-slope crossover differences and its precision is nearly 2 cm using Laser 2a, Release 21, GLA12 data.