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Abstract: While the primary goal of ICESat is to measure elevation changes of the vast polar ice sheets, large temperate mountain glaciers (e.g. Alaska, Patagonia), which are sensitive indicators of climate change, can also be studied. These mountain glaciers, however, generally have rougher surfaces and steeper regional slopes than the ice sheets for which the ICESat design was optimized. Rather than averaging over large regions or relying on crossovers, we worked with individual ICESat footprint returns to estimate glacier elevations and surface characteristics. In the northern hemisphere at latitudes less than 59N, in the southern hemisphere outside of Antarctica, and during Laser 1 operations, the ICESat tracks do not generally repeat within 100 meters unless the ground track was specifically targeted. This makes it difficult to use ICESat to ICESat measurements to estimate elevation change. However, for the region between 60N and 60S, SRTM derived 90 meter DEMs from Feb. 2000 are available (C-band SRTM, JPL Farr and Kobrick, 2001). As we show in this paper, a regional SRTM derived DEM can be used along with ICESat to detect general patterns in elevation change for surfaces with variable slope and roughness with near repeat ICESat tracks. We report results from the Malaspina Glacier of southern Alaska to illustrate the applicability of using ICESat and SRTM to discern elevation change.