



## **ICESat-Derived Elevation Changes on the Lena Delta and Laptev Sea, Siberia**

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We employ elevation data from the Ice, Cloud, and land Elevation Satellite (ICESat) Geoscience Laser Altimeter System (GLAS) to investigate surface changes across the Lena Delta and sea ice of the coastal Laptev Sea, Siberia during winters of 2003 through 2008. We compare ICESat GLAS-derived elevation changes on sea ice and the Bykovskaya and Sardakhskaya Channels with datum-corrected tide gauge height measurements from Danai, Sannikova and Tiksi stations. We find the coastal sea ice and large inland ice covered channels elevation changes are in phase with the tide-height changes on a same-month-year and datum controlled basis. Furthermore, we find elevation change on tundra drained lake basins to be  $+0.03 \pm 0.02$  m, on average. These findings indicate ICESat GLAS is capable of detection of tide fluxes of ice covered coastal rivers and with a small error range is suitable for investigations of active-layer and permafrost dynamics associated with seasonal freezing (heave) and thawing (subsidence) using repeat-location profiles.

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