(Note: author responses are in italics)

L215 Why using 80 % overlap ? Sounds like a lot of repetitive data? Were other values tried (no need to reprocess anything if not)?

High along-track spacing was desired in order to capture abrupt elevation changes, such as the cliff face in track gt3r. However, a short segment length provides fewer photons for the linear fit and is more sensitive to along-track variations in photon density. A longer segment length results in a smoother profile, at the cost of capturing small-scale features. A 10-m segment length 2-m posting was chosen to strike a balance between these two considerations to give a smoothed profile with dense along-track sampling. We note that this 80% overlap does mean that consecutive along-track elevation segments are not independent of each other. The specific values were chosen due to providing a good visual fit with the underlying photon data. We acknowledge that future work would benefit from experimenting with different segment lengths and postings.

L231 "*We identified the intersection between each ICESat-2 track and the corresponding imagery- derived shoreline and compared the shoreline positions and north-south retreat estimates derived from Planet and the two ICESat-2 boundaries*" I have one doubt: were the retreat from Planet and ICESat-2 calculated along the same direction (the only one possible being the ICESat-2 track) for the comparison?

Rather than report the along-track retreat from ICESat-2, we calculated only the change in the north-south (vertical) component of the ICESat-2-derived shoreline position.

L275 "*(-70.1 m of shoreline change)*" this made me think: could tides and waves have an impact on the shore detection (depending on the tide, wave amplitude and the bathymetry)?

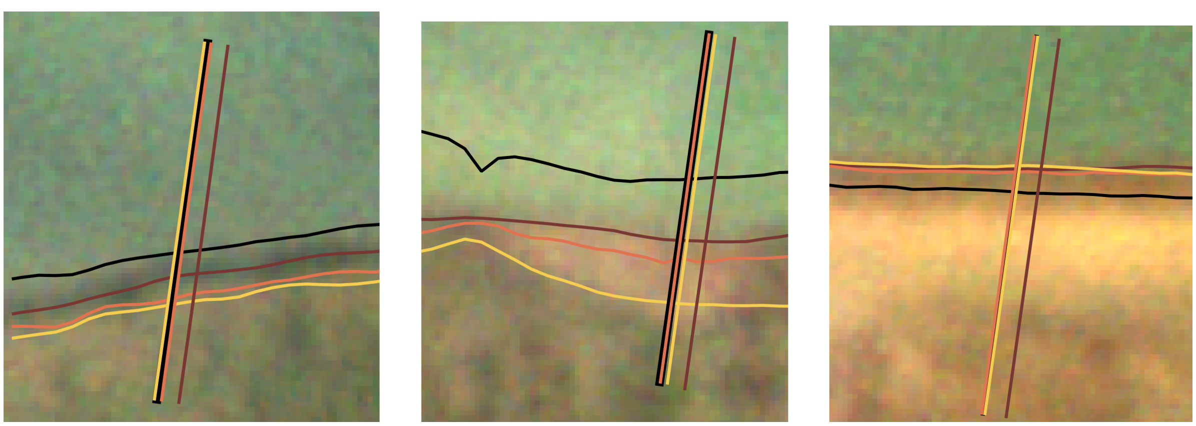
We thank the reviewer for bringing this to our attention. We note that the tides in this region tend to be less than 0.2 m, while storm surges can result in temporary relative sea level increases of up to 1.4 m (Jones et al, 2018). However, given that most of this region consists of steep bluffs with narrow, or no beaches (Gibbs and Richmond, 2015), changes in the local relative sea level are not expected to have a large impact on the observed land-water boundary. We expect that some variations in the shoreline due to changes in the instantaneous water level are captured in our uncertainty analysis (L179-L187). We will update the text to include this explanation.

L306 “*that may correspond to toppled bluff material*” anything visible on the Planet imagery to back this hypothesis?

Planet imagery shows very little retreat at the site of the ICESat-2 location (-3.7 m c) as well as across the surrounding region (-7 m (± 3.1 m) across Region 1), which would be consistent with the presence of collapsed bluff material. However, due to the resolution and image quality of the Planet imagery, we are unable to pick out small features such as toppled blocks, such that we can’t directly confirm this hypothesis with Planet imagery.

Figure 6 It could be useful to show a Planet image as background on the left panel. It is a bit confusing to see the shoreline more advanced into the sea, even more with the 2024 copyright date. Maybe as well zooming in a bit more? It is hard to get information from the background image at this resolution.

We note that at the current spatial scale in the left hand side of figure 6, Planet appears over-zoomed, making it hard to distinguish small-scale shoreline features. Included below are examples of a Planet Image (from 7/25/2020, shown in figure 3a) plotted at the current zoom window of figures 6a, 6b, and 6c. Imagery from Google Earth was used as a higher-resolution alternative to provide a more detailed view. The 2024 copyright date is printed on the image to comply with Google Earth’s attribution guidelines, but we acknowledge this is a bit confusing. We will add an additional annotation to each subfigure to denote that the source imagery was taken in 2018. The zoom level was set to be consistent across all 3 plots, and needed to be wide enough to include the entire drained lake basin in Figure 6c.



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