#icesat-2_bathymetry

Project goal: Identify where ICESat-2 data crosses a stationary location (e.g., a river) or a moving location (e.g., a melt pond) and then use ICESat-2 returns to calculate bathymetry.

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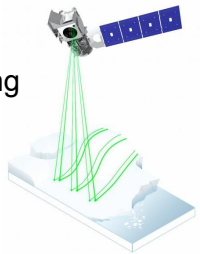
What worked:

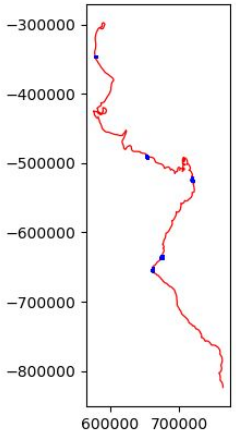
Chat-JP™

- Developed a workflow that is able to track a moving point over time to see if at any point ICESat-2 moved over and was able to measure the moving target.
- This has many potential uses such as remotely measuring pond depth on ice flows and other stuff

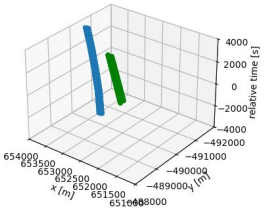


What didn't work:

- Extracting bathymetry in highly turbid inland waters
- Calculating volume based on depth values for small inland lakes.
- Trying to search 1,000 buoy locations at once for matching ICESat-2 crossovers.
- Precisely isolating lake bottom photons using only KDEs/histograms.

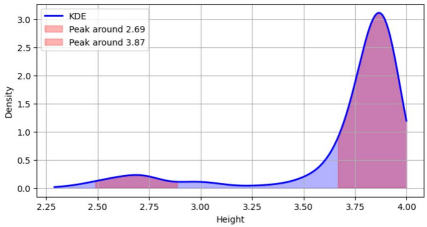


Result: No direct overpass of ICESat-2 over melt pond target. Closest distance: ~few hundred meters

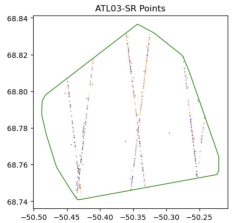


Future Plans:

- Narrow down the ICESat-2 search for minimum turbidity by using visible band satellite imagery.
- Hackweek2025 can be used to look at the new ATL24 product.
- Use code snippets for our own projects.



Further refinement is needed to identify photons corresponding to the lake bottom



Not enough ICESat-2 passes to interpolate bathymetry and calculate volume for small inland water bodies