Comparing changes observed by CryoSat-2 & ICESat-2 over **Greenland Ice Sheet**

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Motivation:

- Altimetry signals tend to have uncertainty caused by variability in snow and ice densities which affect the depth up to which the altimeter signals penetrate the surface
- Currently, satellite altimeters operate using radars and lasers and due to the differences in wavelengths, they reflect off at different depths; and understanding these differences can help address the aforementioned uncertainties
- Greenland was chosen as the region due to it's significant inter-annual variability of surface elevation changes due to changes in surface processes. Some initial results are presented here.
- **Period: Oct 2018 to Mar 2022 (3.5 years)**
- Data: CryoSat-2 L2i & ICESat-2 ATL06 products 2.
- Method: Plane fit with a quadratic model for surface topography, based on McMillan et. al., 2016 3.
- **Elevation changes averaged over 30-day epochs** 4.







Scatterplot

Histogram









Elevation Change time series over the ice sheet, inside & outside the CS2 mode mask







Next Steps:

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• Analyse differences in the signals seen both in the maps and dh time series • Explore role of SMB in explaining the differences between the two observations Investigate effect of interpolation and smoothing and account for its errors Analyse the effects different spatial sampling and temporal sampling





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References

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