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Validation of swath processed Cryosat-2 SARin data with different validation datasets at four different locations.

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Monitoring the Ice Sheets and ice caps in the polar region is important in a changing climate, and especially the coastal regions, which is the area that is most sensitive to changes in the climate and contributes to the global sea level rise (Gardner et al., 2013).

In this study, swath processed CryoSat-2 ice surface elevations are validated at four different locations with four different types of validation datasets; The Petermann Glacier and Nioghalvfjærdsfjorden Glacier in Northern Greenland, the Helheim glacier in the Eastern Greenland, and the ice cap of Austfonna located in Svalbard. The validation data consist of X-band radar data, Operation ICEBridge, ICESat-2 laser data, and Airborne Laser Scanner data respectively.

Swath processing improves the radar data coverage compared to conventional retracking, though, the extra amount of data leads to lower signal-to-noise ratio (Foresta et al., 2018), making validation of the swath processed data immensely important. Using different validation datasets allow us to investigate how the validation is impacted by the different platforms' ability to measure the surface topography.

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