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Arctic Tide Gauge observed sea level and Vertical Land Motion

Sea level observations from tide gauges are essential to observe local changes of sea level in areas where satellite altimetry is challenged by sea ice. Important for geodetic arctic research and local communities. Data on relative sea level anomalies from tide gauges and Vertical Land Movement are presented.

The following data are used:

- Monthly Arctic Tide Gauge (TG) observations from PSMSL-Permanent Service for Mean Sea Level.
- 5-min resolution for 4 Greenland TG's
- Possible to adjust for Vertical Land Movement (VLM) to get Absolute Sea Level Anomalies (comparable with SLA from Altimetry)
- VLM (yearly 5x5 km) include model results from past (GIA, Caron et al (2018)) and contemporary ice loss (Ludwigsen et al, 2020).

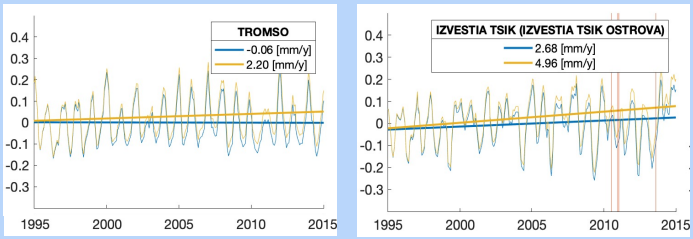

Figure 1. Tide Gauge Observed relative sea level (blue) and VLM-corrected sea level (yellow) at 2 selected stations (in meter). Red bars indicate missing data.

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Tide-Gauge data: https://catalog-intaros.nersc.no/dataset/tide-gauge-data
VLM-data: https://catalog-intaros.nersc.no/dataset/arctic-vertical-land-motion

Caron et al, 2018: doi.org/10.1002/2017GL076644
Ludwigsen et al, 2020: doi.org/10.1029/2020GL08800144

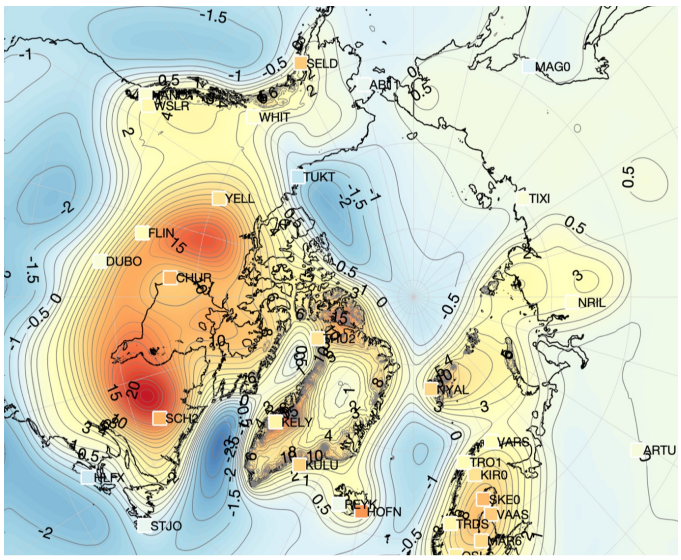

Figure 2. Vertical velocity for modelled VLM and GNSS [mm/yr]

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