

Decadal elevation changes of the Greenland ice sheet

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Objective:

to estimate spatial and temporal variability of the Greenland ice-sheet surface elevation from satellite radar altimeter measurements

Used dataset

- ERS-1 (April 1992 - May 1996)
- ERS-2 (May 1995 - June 2003)
- Envisat (October 2002 - December 2008)

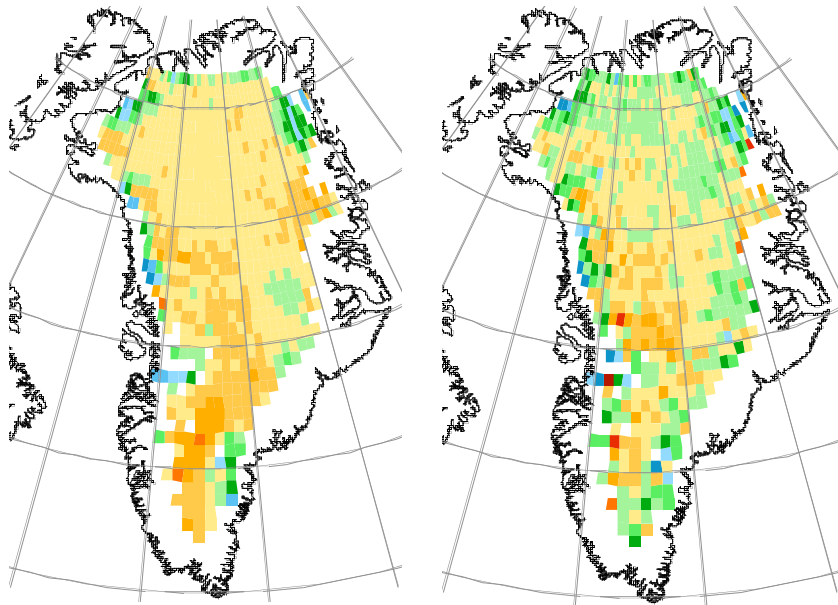
Approach

Creating time series of elevation changes over 1° lon. \times 0.5° lat. grid cells on the basis of crossover analysis

Corrections and data processing

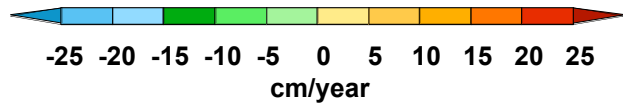
- Corrections applied to individual range measurements: instrument, atmospheric, tide, surface slope, retracking
- Inter-satellite biases were estimated and applied to corresponding crossover differences for creating continuous time series
- Elevation time series were adjusted for changes of the ice sheet surface scattering characteristics

Elevation change rate from merged ERS-1, ERS-2 and Envisat satellite altimeter measurements from 1992 to 2008

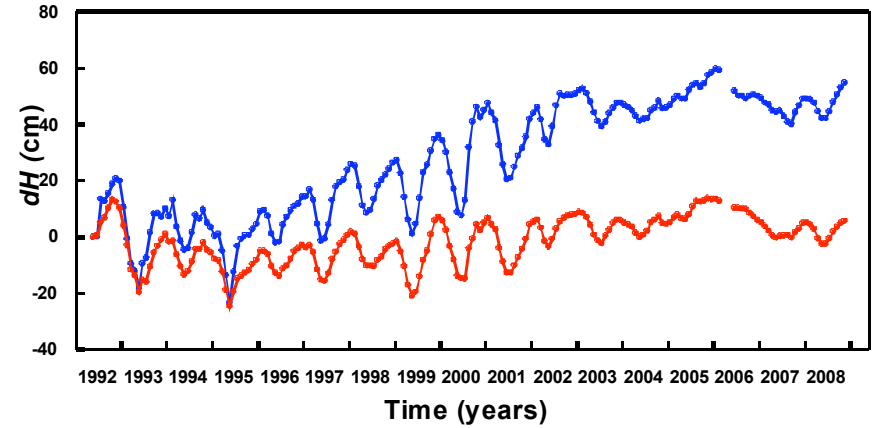


2.5 ± 0.2 cm/year

0.1 ± 0.2 cm/year



Interior area (above 1500m)



Margin area (below 1500m)

