

DECADAL CHANGES OF THE GREENLAND ICE SHEET ELEVATION DERIVED FROM SATELLITE ALTIMETRY

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In order to estimate the spatial and temporal variability of the ice-sheet surface elevation, we derive time series through combining measurements from different satellite radar altimeters (ERS-1, ERS-2 and Envisat), including estimation of inter-satellite biases for both elevation and backscattered power measurements. Elevation-change estimation shows that increases in surface elevation which were observed over the high-elevation central regions of Greenland from 1995, have decelerated over the period from 2003 to 2005. In contrast, surface-elevation decreases in the low-elevation areas of ice sheet - decreases that started in 2001 - have continued due to enhanced summer melting. Indicated relationship between elevation changes with Northern Hemisphere atmospheric circulation in winter, such as Arctic, North Atlantic and North Pacific Oscillations, reveals important role of atmospheric circulation for Greenland ice sheet.