Geophysical Research Abstracts
Vol. 13, EGU2011-7519, 2011
EGU General Assembly 2011

Spatio-temporal analysis of multi-sensor observations of the Greenland ice sheet mass loss

Peter Limkilde Svendsen, Ole Baltazar Andersen, and Allan Aasbjerg Nielsen
DTU Space, Denmark (peter.limkilde@gmail.com)

Methods for studying the accelerating Greenland ice sheet mass have been investigated using spatio-temporal multisensor data.
Empirical orthogonal functions are traditionally used for analyzing remote sensing data as it provides a compact description of the temporal and spatial structures in the data in terms of orthogonal functions.
Even though the time series is limited, during the last decade dramatic changes have been observed in the melting of the Greenland ice sheet. Observations from GRACE have shown an acceleration in the amount of melting as well as in the spatial extent of the ice sheet melting. This melting has recently been confirmed by other remote sensing observations, namely ice sheet height observations from ICESat. The ice sheet melting is connected to changes in the surrounding ocean and NOAA AVHRR radiometer data has also observed relative large changes in the derived sea surface temperature around Greenland. Here we extend the traditionally EOF-based study of the Greenland ice sheet mass loss using multivariate data sets and the use of maximum autocorrelation functions for the extraction of more persistent features in time and space with special emphasis on statistical significance of the findings.