



Analysis of factors controlling inter-annual variability and trends in surface melt over Greenland

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Melt over Greenland and its effects on ice sheet dynamics and sea level rise have been addressed in numerous studies. Nevertheless, deeper apprehension between weather conditions that drive the melt, and the intensity and extent of melt, is still to be acquired. This study focuses on the understanding of such links between weather conditions and extensive melt.

Essential variables (origin of the air-masses, surface energy budget, cloud cover, ice surface temperature, albedo, large-scale circulation indices, cyclon statistics) influencing the spatial extent of melt and the length of the melt-season are identified and compared.

We present Greenland ice surface temperature (MODIS data), heat fluxes based on reanalysis (NCEP-CFSR) as well as air mass trajectories calculated with the HYSPLIT model based on NCEP-CFSR wind fields for some clearly defined strong melt events in 2010 and 2012. This will be followed by a more statistical analysis over the longer time-period 2000-2011 and assessing seasonal dependencies.