



Snow drift and Snow Accumulation over Greenland, Simulations with the coupled Model System SNOWPACK/LM

H. Hebbinghaus (1), G. Heinemann (2)

(1) Meteorologisches Institut, University Bonn (2) University of Trier, Fac. of
Geography/Geosciences, Dept. of Climatology

Snow drift contributes to the accumulation and redistribution of snow, thus influencing the mass balance of, e.g., the Greenland ice shields. The measurement of snow drift and its contribution to the mass balance is difficult. Snow drift strongly depends on snow characteristics as density, temperature and microphysical properties which amongst others characterise the bond between snow particles. Usage of a snow model as SNOWPACK, which simulates the snowpack taking into account the microphysical development of the snow, allows a more realistic representation of the snow drift than usage of simple parameterisations.

To assess the amount of snow drift as well as its influence on the Greenland mass balance simulations with the snow model SNOWPACK from the Swiss Avalanche Institute (SLF) coupled with the atmospheric mesoscale local model (LM, version 3.5) from the German Meteorological Service (DWD) are performed for a time period of 10 days in July 2002 (3rd till 12th) during which ground measurements of atmospheric parameters have been performed within the IGLOS experiment. The atmospheric results of the model system are validated against measurements, yielding a good representation by the coupled model system. The simulated snow drift is used to calculate the accumulation of snow due to snow drift for the Greenland ice sheet and its influence compared to evaporation and sublimation of snow.