



Summer energy balance in the ablation zone of the Greenland ice sheet

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In the response of the Greenland ice sheet to climate change the so-called ablation zone is of particular importance, since it accommodates the yearly net surface ice loss. Surface melting is controlled by the surface energy balance, which is primarily divided between radiation and turbulence fluxes. In this study we use data from three Automatic Weather Stations (AWS) located between the lower ablation area and the equilibrium line. We analyze the primary surface energy balance fluxes during three consecutive summer seasons. Results from recent studies are included concerning calibration corrections for the net-radiometers used at the AWS, spatial and temporal variations of momentum roughness lengths, and a new parameterization for scalar roughness lengths typical over rough ice. By combining these results with stake measurements from 5 other locations in the ablation area we additionally estimate the spatial variation of the energy balance fluxes throughout the ablation area. The results from this analysis will be used in the near future to test the model outcome of a regional climate model that is currently being developed.