



## **Surface energy and mass balance in the ablation zone of the west Greenland ice sheet**

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We present four years of surface energy and mass balance observations from the ablation zone of the west Greenland ice sheet ( $67^{\circ}$  N). Data were collected using three automatic weather stations located at 6, 38 and 88 km from the ice sheet margin at elevations of 490, 1020 and 1520 m asl. At the lowest station, snow is redistributed by the wind in crevasses and gullies, leading to very little measured winter accumulation. As a result, glacier ice with an albedo of 0.55 is at the surface throughout the melting season. At 1020 m asl, the winter snow cover typically disappears in mid to end June. At 1520 m asl, superimposed ice only briefly reaches the surface at the end of the ablation season. The ice sheet margin experiences continuous (day and night) melting in June, July and August. Sensible and latent heat fluxes are also greatest there. The sum of these effects is that melt energy increases sharply towards the ice sheet margin. To resolve this correctly requires high-resolution climate models, in the order of 10 km or better.