



Analysis of meteorological data and surface energy balance of Venerocolo Debris-Covered Glacier (Adamello Group, Italy)

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Analysis of meteorological data is reported for the period 9 August– 11 October 2007, from an automatic weather station(AWS) on Venerocolo Glacier, Adamello Group, Italy, aimed at studying the relationship between meteorological conditions and ablation on debris-covered ice. Venerocolo Glacier situated on the north side of Adamello, represents a recent debris-covered glacier and the first one in the Central Alps. Expansion of supraglacial debris cover(a few mm to 97 cm thick) is associated with the recent glacier shrinkage. The AWS (2621 m a.s.l.) is located on the debris-covered ablation area where the energy fluxes at the ice-debris-air interface are analyzed.

The weather station on the glacier measured an average temperature of 4.4°C and wind speed of 1.7 ms⁻¹. A mean albedo value of 0.2 was calculated and the liquid precipitation amount was of 250 mm. A network of 10 ablation stakes distributed in two cross and a longitudinal profiles on the debris-covered area were used to evaluate the measured ablation rates and to compare the results. Also thermistors were located at stakes to measure surface temperature of debris cover (max values of 30°C).

The application of ablation models on debris-covered ice represents a challenge and a difficult task with varying characteristics of debris cover evidenced by meteorological data recorded at the glacier surface.