



## **A decade of observations and modelling of the Adamello Glacier (Italian Alps).**

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Evidences of the retreat of the Adamello Glacier, the largest glacier in the Southern Alps, have been reported in the scientific literature since the half of the XIX century. The evaluation of the amount of water resource lost or gained each year is actually a very important information for managing reservoirs and river quality downstream. To this aim an energy-balance hydrological model was applied, supported by point ice ablation and snowpack measurements, as well as by meteorological, runoff and satellite data over the period 1995-2007.

The accuracy of the model in simulating ablation at the point scale was verified versus measurements at 29 ablation stakes installed in summer 2007. Average glacier melt was verified with hourly stream flow observation downstream.

The simulated retreat of the snow covered areas during the melt season at the large scale was verified using the snow cover monitored by two ASTER images at the beginning and during the 2003 melt season, used also to estimate distributed values of snow and ice albedo.

Over the snow free areas, the melt factor at ablation stakes was estimated as 7 mm/(°C·d).

A net loss of about 2000 mm/a, on average over a decade, results from the estimated summer mass balance.