

Recent evolution of the largest debris covered glacier of the Italian Alps: Miage Glacier (Mont Blanc Massif, Italy)

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This contribution focuses on the recent (last 30 years) evolution of Miage debris covered Glacier (Mont Blanc Massif, Italy) derived from historical maps, remote sensing measurements and field investigations.

Historical cartography (1975 and 1991 maps) was processed by GIS and DEMs were calculated; in addition 2003 aerial photographs were analysed to obtain an orthophoto and a DEM to be compared with the others from cartography. The volume and area changes from 1975 up to 2003 were calculated and their accuracy was evaluated

Dedicated Differential GPS (DGPS) field campaigns were carried out from 2002 summer up to now to evaluate the glacier surface velocity; the measurement network was constituted by 12 benchmarks located on the glacier surface along a longitudinal profile (from 1850 to 2350 m a.s.l.), in addition during the last summer season other 30 points, placed on the glacier surface along transversal profiles, were surveyed. At these locations also the glacier ablation and the debris cover thickness were measured.

Miage debris covered Glacier in the period 1975-1991 showed a volume increase, it was followed by a strong volume loss occurred between 1991 and 2003.

The surface velocity measured along the whole glacier tongue show higher values in the upper sector (range 60-90 m/y) and smaller ones in the lower sector close to glacier lobes (range 20-5 m/y). These data results in agreement with previous ones from literature. The 2006 velocity data confirm this pattern and permit further evaluations on glacier dynamics.