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MASS BALANCE AT A REGIONAL SCALE – THE CASE STUDY OF LOMBARDY GLACIERS: PRELIMINARY RESULTS

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The aim of this project is to estimate the total amount of meltwater produced yearly by Lombardy glaciers. In 2007 a 48-ablatometric-stake network has been positioned on 15 glaciers, which are intended to be representative of 8 ranges of elevation. The total amount of meltwater released by every glacial sector was measured for the years 2007, 2008 and 2009 by using ortophotos to draw the glaciers boundaries and Landsat images to define the snow coverage at the end of the season. The accumulation factor of the massbalance for 2007 and 2008 is almost null, while it seems to be quite important in 2009, even though it has not been calculated yet.

The measurements made yearly on each stake were analysed in order to verify their consistence. An ablation value was associated to every altimetric range, averaging the measures made on the correspondent stakes.

The spatialization of the data was made by geometrically dividing the glacier limits (drawn on 2006 ortophotos) using the altimetric boundaries, then multiplying the area of every polygon by the correspondent ablation value. Accumulation areas were subtracted from the glacial surface before calculating the meltwater volume. The glaciers surface was corrected by using Landsat image to indentify the snow coverage limit, and confirmed by using the monitoring pictures taken every year at the end of the season for every glacier by the SGL volunteers.

Lombardy glaciers result to have released 208.635.311 m³ W.E. in 2007, 161.796.595 m³ W.E. in 2008 and 92.916.654 m³ W.E. in 2009.

A geodetic mass balance has been measured for some years on three Lombardy glaciers: Suretta Sud (Spluga Lei), Lupo (Orobie) and Campo Nord (Dosdè-Piazzzi-Livigno). These data, which have not been used to measure the glacial discharge in this project, were used as a double check.