

REPORT OF HYDROLOGICAL YEAR 2007-2008
AT MID & HIGH ALTITUDE FOR LOMBARD ALPS

Update n° 12

December 2007

An anonymous month for glaciers

By the end of November, Lombardy's mountains, at last, were covered by a white blanket of snow over 1800 m a.s.l., though of irregular thickness at higher altitudes. The high winds soon reduced the beneficial effects of the snow cover, confirming their bad habit of working against our glaciers. The month of December resulted worse than November, due the extreme dryness caused by the constant presence of an anticyclone and related eastern streams.

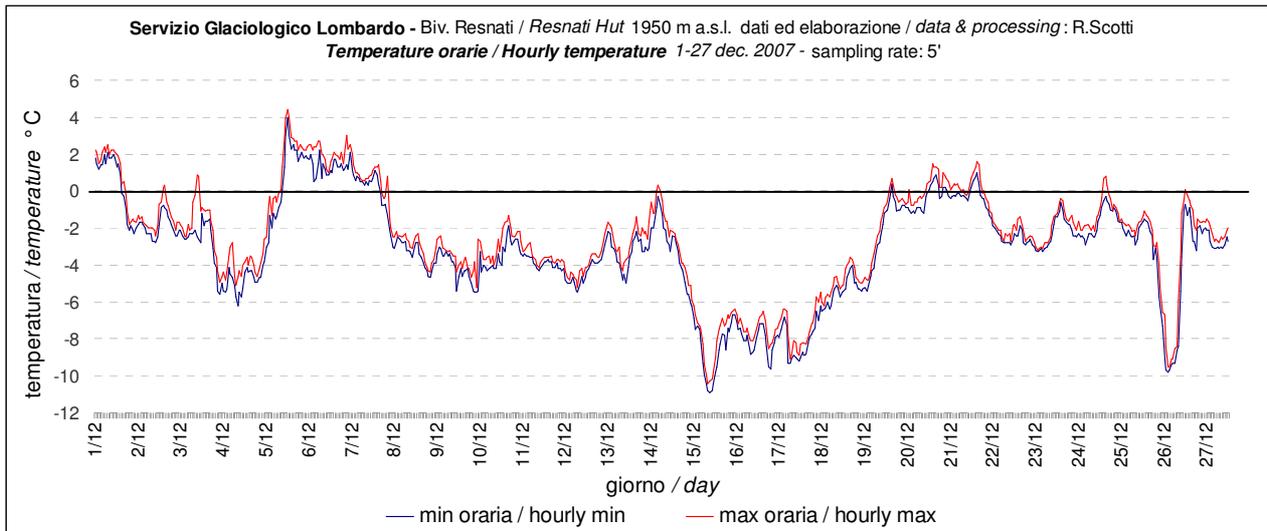


Photo 1 - 1 December.

The Preda Rossa has large areas of ice still uncovered. Most of the November snow (1 m) was blown away by the wind, leaving a few inches of unevenly distributed snow. (photo: R. Scotti).

The month started with a weak disturbance, bringing scant snowfall above 1000 m. Snow thickness was minimal (approx. 2-3 cm). Incredibly, this would remain the only relevant precipitation of the whole month. Total accumulation amounted to less than 10 mm of water equivalent everywhere.

After 4 December, some föhn wind accompanied the anticyclone, next followed by fog over plains and blue skies over mountains. Temperature was rising, with a mean value for the first 10 days at 3100 m a.s.l. in free atmosphere, slightly exceeding the average for the period (+0,6 °C).



Pic.2 - Temperature at the Resnati Hut (1950m) in Val d'Arigna (Orobic Alps). Notice the cold intrusion of 14-15 December, lowering temperature by 10° C in 24 hours. A video of data downloading at the Resnati Hut is available on the net at www.meteovaltellina.it/video/20071227resnatiMV.wmv

From 15 December, after a series of northerly winds, the overall atmospheric circulation changed; air streams turned to the eastern quadrant, bringing in cold air from the East and lower temperature. While Central and Southern Italy had to deal with cold and snowfalls at low altitude (with record snow storms even in the Sardinian Island), Western and Central Alps were affected by cold and dry air.

Between 15-16 December, the temperature at 3100 m of altitude in free atmosphere dropped to - 17 °C while the S.G.L. weather station at the Resnati Hut measured - 10,9 °C. Altogether moderate values if 3 days later the temperature was to move back to the average value, thanks to a strengthening anticyclone.



Photo. 3 – Big hoar frost crystal found at 1500 m a.s.l. in Val d'Arigna on 27 December; cold air and stable anticyclone conditions have fueled the growth of such large crystals. (photo: M. Gianatti).

The high pressure over Lombardy continued until the end of month, with thermal inversions bringing fog over the plains and warm, sunny days over the Alps.

This long spell of dry and good weather produced a gradual transformation of the snow cover, through reforming processes particularly negative for its cohesion and mechanical resistance. Hoar frost, both below and above the snow cover, reached unusual dimension producing, under favourable conditions, very large crystals (photo 3).

	3100m (MI)	Average deviation	Resnati Hut
	°C	°C	°C
1-10 dec	- 5,9	+ 0,7	- 1,5
11-20 dec	- 11,5	- 4,7	- 4,5
21-31 dec*	- 7,1	+ 0,1	- 2,1
month	- 8,1	- 1,2	- 2,7

Figure 4 – Average temperature at 3100 m of altitude (in free air from radio soundings at Milan-Linate) and at the Resnati Hut. * The third 10-day period data stop on 27 December.

Milan Linate's data from <http://weather.uwyo.edu/> were processed by G.Catasta

December 2007 ended with a very severe precipitation deficit while temperature remained around the average values (+0,6 °C at 1798 m a.s.l. at Sils/Maria (CH) over the 1864/2006 average and – 1,2 °C below the 1982/2005 average).

The snow falling in the first days of 2008 has turned Northern Italy white, reversing December weather conditions. Though this may not change the season's trend, it is nevertheless a good beginning for the new year, hoping that 2008 will turn out to be less negative than previous years.



Photo 5 – This picture well summarizes the cold and dry December. Sils Lake in the Engadin Valley (CH) is completely frozen but has no snow cover (photo: R. Scotti).

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