

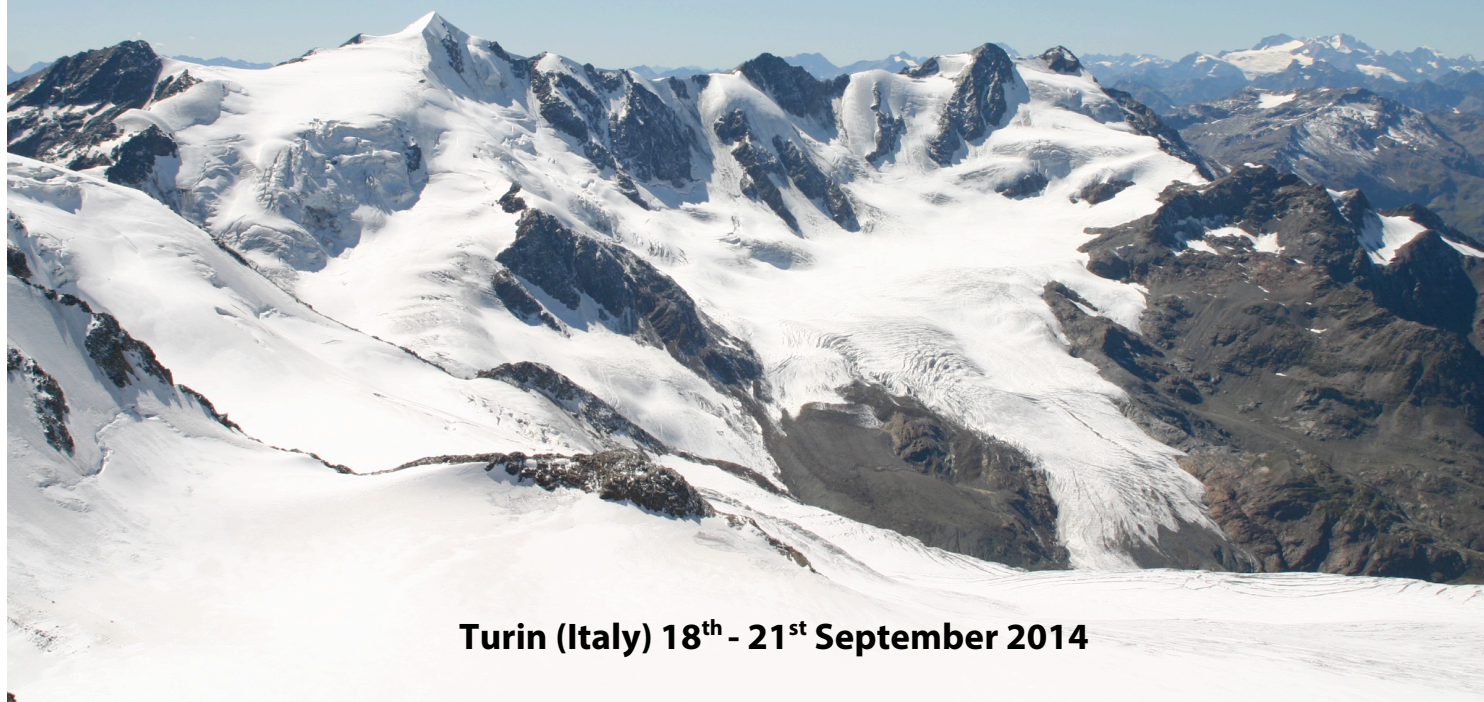


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Preliminary results of the research on permafrost and periglacial environment in Piedmont Alps and future perspectives.

Luca Paro¹ and Mauro Guglielmin²

¹ Dept. Geologia e Dissesto, ARPA Piemonte, ITALY.
(luca.paro@arpa.piemonte.it)

² Dept. Theoretical and Applied Science, Insubria University, ITALY.
(mauro.guglielmin@uninsubria.it)

ABSTRACT

Landslides and debris flow occurred in recent years in Piedmont sometimes were triggered in high altitude areas involving touristic resorts reaching even the urbanized valley areas. These paroxysms highlighted the need to expand towards higher mountain areas the climate and ground monitoring in order to analyse the potential relationships among climate change, periglacial environment and permafrost degradation, which could cause an increase in geological hazard of large mountain areas.

With this aim, ARPA Piemonte (Regional Agency for Environmental Protection) in collaboration with the University of Insubria, launched since 2006 a series of activities designed to enhance and deepen the knowledge on these issues, by establishing a network of permafrost monitoring stations distributed throughout the regional Alps. The activities, which enjoyed of a strong impulse during the European Alpine Space project "*PermaNet - Permafrost long-term monitoring network*" in the 2008÷2011 period, are now integrated in the institutional objectives of the Agency. The main results obtained are represented by: the updated regional inventory of permafrost morphological indicators, maps and models of the potential distribution of alpine permafrost, thermal monitoring stations in vertical boreholes (5 to 100 m deep) and in ground surface (steep rockface, debris and soil). Moreover, BTS (Bottom Temperature of the Snow Cover) measurement campaigns, geophysical surveys and some detailed studies (in collaboration also with Torino University) aimed to evaluate the relationship among atmosphere, geosphere, cryosphere and biosphere have been carried out.

In this work a synthesis of all activities conducted so far are presented with preliminary results at regional level, and the next future research on the topic of Piedmont Alps cryosphere will be delineated.

Keywords: permafrost monitoring, periglacial environment, Piedmont Alps.