

The role of historical agricultural terraces in geo-hydrological risk reduction: a case study from the Bisagno Stream Catchment (Genoa, Italy)

Francesco Faccini (1), Paola Giostrella (2), Guido Paliaga (1), Pietro Piana (3), and Alessandro Sacchini (1)

(1) Department of Earth, Environmental and Life Sciences, University of Genoa, Genoa, Italy (faccini@unige.it), (2) National Research Council (CNR), Research Institute for Geo-hydrological Protection (IRPI), Perugia, Italy (paola.giostrella@irpi.cnr.it), (3) University of Nottingham, Sir Clive Granger Building, University Park, Nottingham, England

Terraces, traditionally sustained by dry stonewalls, occupy about thirty percent of the territory of Liguria. If constantly maintained, they effectively contribute to slow down the natural slope erosion. When no longer managed, terraces are recognized as one of the reasons for increased geomorphological risk along the slopes and, consequently, at the bottom of the valley.

This study concerns the terraced landscapes of the Bisagno Stream catchment, internationally known for the recent and recurring floods which affected the city of Genoa. The Bisagno Stream catchment is an example of historical evolution of the territory both in terms of land use change and geo-hydrological risk.

The catchment, whose highest point is Mount Candelozzo (1034 m), has a total area of 95 km². In its terminal stretch the stream flows across the eastern part of Genoa city centre.

It is a typical valley of the Genoa metropolitan area, with steep slopes and short times of concentration. Here the signs of the tragic floods which have affected the area since 1970 are still visible. The most recent and tragic geo-hydrological event in Liguria took place in the Bisagno Valley in October 2014.

The study was carried out with a multi-temporal comparison of the terraced areas using aerial photographs and regional cartographic information. A further step will involve the analysis and classification of the terraces based on their maintenance condition and hydrogeological effectiveness, using some representative areas of the valley as cases study.

The comparison between the distribution of terraces in the Bisagno valley and applied geomorphological cartography suggests the need of measures to reduce the risk according to a suitable set of priorities, including the recovery of the terraced areas and connected structures aimed to limit the accumulation of solid material along the main waterway.