Geophysical Research Abstracts
Vol. 17, EGU2015-13048, 2015
EGU General Assembly 2015

Geodiversity, geoheritage and cultural landscape: an example from the Messinian geosites of the Piemonte region (NW-Italy)

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The Piemonte region (NW-Italy) contains a remarkable diversity of landscapes, some of them included in and protected by the World Heritage list, as well as some recently proposed geosites which testify the dramatic paleoevironmental, paleobiological and paleoclimatic event that occurred in the Mediterranean area around 6 Ma ago during the so-called Messinian Salinity Crisis (MSC). However the link between landform, geodiversity, geoheritage, and cultural landscape has not yet fully explored. The aims of this study, promoted by the multidisciplinary research project 'PROGEO-Piemonte' (PROactive management of GEOlogical heritage in the Piemonte region), are: 1) to analyse the link between geosites and recent landscape modification, 2) to reconstruct the landscape evolution and, through geotourism, 3) to promote geological knowledge in an area with great potential for tourism. The study area is located in the SE part of the Cuneo plain, at the foot of the Langhe hills, where heterogeneous landforms, mainly related to the Tanaro river piracy, are observed. The sediments recording the MSC event, mostly consisting of thick gypsum layers, have been recently studied by a multidisciplinary approach and the results allowed the detailed reconstruction of the MSC evolution in this region.
Two maps have been produced to disseminate the geodiversity knowledge (the geological - landscape map) and to promote geotourism fruition (the geotouristic map). The geological - landscape map deals with different geological and geomorphologic issues thanks to illustrations of the main features of the Messinian deposits, their depositional environments and the exposed landforms. To underline the high geodiversity of the area, it has been divided into several geomorphologic sectors based of their characteristic landforms and evolution. In each of these sectors, geosites have been identified to clarify the comprehension of the related topics at the widest public: particularly, the geosites help to reconstruct the stages of the MSC and to understand the implication of fast environmental changes on the living beings. The geotouristic map describes the geological and geomorphologic features with a simpler language and shorter form than the previous one. Trails, viewpoints and museums are reported on the map to facilitate the comprehension of the landscape and to create a link between scientific issues and human activities (i.e. use of gypsum in the building industry). Moreover the geomorphologic analysis of the present landscape allows to decipher its recent evolution and to evaluate the risks connected with the tourist fruition, thus improving the potential safe use of anthropogenic landforms for geo-environmental education. Here the MSC is dealt with through the stages of scientific discoveries that led to the formulation of the current theories.
In conclusion, the produced maps may help both to improve people knowledge and awareness on environmental modification and past climate variability and to address the crucial question whether they could happen again in the future.