



Geodiversity and geohazards of the Susa Valley (W-Alps, Italy): combining scientific research and new technologies for enhanced knowledge and proactive management of geoheritage in mountain regions

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Mountain regions have a range of geological and geomorphological features that make them very attractive for tourism activities. As a consequence, increased human "pressure" causes impacts on geoheritage sites and higher geomorphological risks. These effects are magnified by active geomorphic processes characterizing mountains areas, highly sensitive to climate change. In term of "human sensitivity", several sociological surveys have shown that "perceived risk", not "real risk", influences people's behavior towards natural hazards. The same approach can be applied to geodiversity and geoheritage. Based on these assumptions, we considered the possible strategic roles played by diffusion of scientific research and application of new technologies: 1) to enhance awareness, either of geodiversity or environmental dynamics and 2) to improve knowledge, both on geoheritage management and natural risk reduction.

Within the activities of the "ProGEO-Piemonte Project" (Progetti d'Ateneo 2011, cofunded by Università degli Studi di Torino and Compagnia di San Paolo Bank Foundation), we performed a systematic review of geodiversity and natural hazards information in the Piemonte Region (NW-Italy). Then we focused our attention on the Susa Valley, an area of the Western Alps where the geoheritage is affected by very active morphodynamics, as well as by a growing tourism, after the 2006 winter Olympics. The Susa Valley became one of the 9 strategic geothematic areas have been selected to represent the geodiversity of the Piemonte region, each characterized by high potential for enhancement of public understanding of science, and recreation activities supported by local communities.

Then we contributed to the awareness-raising communication strategy of the "RiskNat project" (Interreg Alcotra 2007-2013, Action A.4.3) by synthesizing geoscience knowledge on the Susa Valley and information on slope instabilities and models/prevention measures/warning systems. Visual representations and digital evolutionary models have been prepared for didactic trails and virtual laboratory, for contributing to the popularization of geological history, climate and environmental changes, natural hazards and related risk management practices in the Susa Valley.

By combining geodiversity and geohazards knowledge, a new conceptual and operational discipline has been achieved in the management of the geoheritage of the Susa Valley. New techniques for recognizing and managing its rich geodiversity have been developed and applied to the territory of the "Alpi Cozie Geopark" (Interreg Alcotra 2007-2013, Project 2) for geosites selection, geo-trails preparation and management and dissemination activities. As final results, better recognition of the economic value of geodiversity and stronger perception of natural risks have been achieved: both valuable contributions to reduce local vulnerability to disasters and to support a territorial integrated quality management system of geoheritage, suitable for tourism and sustainable development.