Geophysical Research Abstracts
Vol. 12, EGU2010-14329-2, 2010
EGU General Assembly 2010

Living together flash-floods: the Versilia (Italy) case study

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The phenomena involved in extreme flash-flood events are complex and their prediction is affected by a given degree of uncertainty that makes the warning communication very difficult to achieve. The promotion of the natural hazards perception and the improvement in warning communication, aimed at human life losses reduction, became extremely important to accomplish.
As a case study the Versilia river basin, in North – West Tuscany, Central Italy, prone to frequent flash-flood events, is considered. In the area, as stated from Santini (a local historian of XIX century), since 1386 existed special statutes, imposing rivers maintenance for protection against floods. Historical data testify also that the biggest flood events have occurred in the years 1774, 1885, 1902 and 1996. The last event is the one deeply analyzed and better documented. It was exceptional, the consequences on the population were dramatic, and the effects on building and infrastructures were catastrophic.
With reference to the Versilia region, a geographic database for flood risk assessment, integrating diachronic data with the results of hydrological and sedimentological modeling, and integrating different competencies, is implemented. The purpose is to provide valuable aid to flash-floods prediction, risk assessment, structural and non-structural mitigation measures.
As a first attempt, the combination of all the information available on the history of floods of Versilia region and model results, together with human exposure to flash-flood risk, is also explored. The aim is to investigate the detailed hydrometeorological circumstances that lead to accidental casualties and to better understand the predominant physical factors of risk.
In the framework of enhancing natural hazards perception, a very particular educational experience, dedicated to the personnel that work on the territory with different roles and in different fields (i.e. municipal and provincial police, national forest body, voluntary associations, etc.), that in the early warning and in emergency states can be involved in the warning system and the Civil Protection Activities, is also described.
The Versilia area, in the days around last Christmas (25-28 December 2009), has been hit again by a series of intense weather events. The rainfall and instability data, as well as the interventions, of these last events, have been acquired and are being processing. The aim is to analyze and verify the impacts on the territory and on the population, also in terms of communities' behavior, risk perception and capacity to cope.