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Reconstruction of past scenarios and diachronic data processing for natural hazards assessment

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The Italian territory, geologically young but historically ancient and highly urbanized, is strongly prone to hydrogeological hazards. Due to the density of the inhabited zones, the vulnerability of the territory needs to be investigated with great accuracy. The data of past floods can be considered as a preliminary index for the vulnerable areas assessment and at the same time suitable elements of validation for physical models. Given in fact the elevated frequencies of alluvial phenomena, the documentation on past events constitutes one of the greater sources of information on the presence and on the extension of the events and a preliminary indication of the susceptible hazardous areas. A geographic database for flood risk assessment, integrating diachronic data, is proposed here, considering as study area the Versilia river basin (North - West Tuscany), prone to frequent flood events. Particularly, beginning form cadastral maps of the first half of the XIX century, the diachronic data of land use have been processed, and the soil hydrologic characterization has been carried out. The analysis deals with the integration of current cartographic data and historical data, as described above extracted from ancient maps and documents recently discovered in the archive of the Regional Office for Territory Protection, of Lucca (Italy). The ancient folder holds, in a detailed way, the studies carried out by the technicians of the “Royal Civil Engineers Corp” of Lucca, for the Versilia river basin recovery, after a disastrous flood event occurred on September 25th, 1885. The analysis points out the recognized significance of the knowledge of past events and history of the territory and the importance of a multidisciplinary approach, connecting the instruments of historical geography with those used for applied sciences.