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Hazard and potential damage evaluation in a web-gis as support for risk management

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Profiling the potential destructive events that could occur in a study site, inventorying the assets (social and economic features) and estimating the physical effects due to the impacts are the basic issues for defining indicative risk scenarios. Moreover, the necessity of sharing and accessing available information is one of the most important component of risk management. GIS activity, modeling and analysis can improve results and scientific development, but most of end-user and disaster reduction components does not have a high level of this background knowledge. In disaster risk management the capacity of quickly actions for planners, administrators, engineers, end.-users, architects, technicians, etc... is one of the most important matter. For this reason the best way to proceed was the possibility to create user-friendly instruments and devices, based on a geographical platform to share available information and supply requisite activities. In the work it was proposed a CartoWeb solution as a simple and ready-to-use open-source Web-GIS instrument (based on GNU License) as well as a convenient framework for building advanced and customized applications, following the necessity of disaster management experts. It is highly modular, customizable for its object-oriented architecture and based on hierarchical structure (to manage and organize blocks of information of each step required and used in risk assessment). Different switches for every package has been defined and more kind of menu and organization types of data has been structured (susceptibility map and vulnerable element with related data at different scale); for every layer many tools of query, printing, searching and surface analysis are improved, following the necessity to compare maps at different scale and for real-time interpretations. First goal of this activity was the comparison between a traditional GIS system to manage every information and an open source WebGIS platform; an user-friendly solution was provided and applied at local scale as testing issue, while next goal in future will be fit the structure with same switches of data to all municipalities of the study area and implement WMS connections to existing services for data sharing. With this kind of technique the capacity to access to other data packages and sharing updated information will increase (cadastrial maps, buildings maps, personal data, available resources in case of event, etc...).
The study site is a Mountain Consortium of Municipalities (Valtellina di Tirano, Lombardy Region) located in Northern Italy. In particular, the village of Tresenda (municipality of Teglio) was chosen as a test-site among “critical” zones in the entire study area: it is a highly susceptible/hazardous area with the presence of vulnerable elements. A local risk scenario was pointed out, in which prospective direct damage has been assessed.