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Informative system for floods hazard evaluation in alpine catchments

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The SIBCA (Catchments and streams information system) is an output of the Catchrisk Project (Interreg III B – Alpine Space), a project, ended last year, which tried to create a common approach for the definition of the hydro-geological risk in alpine catchments. SIBCA is a typical example of a geographic information system used in the field of specific sector applications. In this case the GIS has been used to achieve and enhance the territory related knowledge in order to set predictable risk possibilities, to evaluate the effectiveness of possible defense works and to plan specific interventions. The SIBCA application allows to rebuild hydrographical basins identifying a closing section chosen on a digital terrain model, and to calculate its capacity and its magnitude. Topographic, land cover, geological, hydro-geological, meteorological information and data about the land stability are actually used by the SIBCA informative system, but it could use every informative layer eventually available. The result of processing is a database called the Catchment Database, which contains all the information put together by the informative system about the catchment area considered. The data collected by the Catchment Database may be displayed in the format of a summary report. The option to choose the cut-off point for the catchment area makes the system very versatile, so it can serve various purposes. First of all, if it is used in “standard” mode, that is where the catchment areas empty out into the valley floor, it provides basic data for the assessment of hydro-geological danger levels and risk scenarios in alluvial fan areas where there are often villages or where there are important roads. Thorough analysis of the numerous small catchment areas within a macro-catchment area, and comparison with the data on existing landslides, also allows for differentiation between hydro-geological danger levels in the catchment areas, as well as the production of hazard maps on a macro-catchment scale.