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A geo-database for the assessment of landslide damage evolution in a calabrian study area (Italy)

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The present work concerns one of the study areas of the European project Riscmass (http://www.riscmass.eu). The area has a surface of about 100 km^2, is located in southern Italy (Calabria), and includes seven municipalities of the Cosenza province. For this area, a historical database has been organised in order to collect data concerning damage induced during the past Centuries to building and lifelines by mass movements. At the same time, in 2006, in order to outline any risk modifications tied to recent urban development, a survey has been carried out to detect the present conditions of buildings located in the landslide areas.

The first phase of the historical research has been performed using existing databases, scientific publications and newspaper articles. However, the great part of the data has been obtained from a detailed research in State and Municipal archives and in the unpublished documents of provincial Civil Engineer Archive.

Documents have been analysed in order to obtain, for each damaging phenomenon, the following data: date of occurrence, municipality and exact localisation (if available) where damage occurs, type of process inducing damage, possible triggering causes, damaged elements, severity of damage (classified as low, medium or high), amount of financial refunding for owners of damaged buildings (when available).

Among the collected data, the cases of damage exactly localised have been entered in a GIS, using as geographical base the cadastral maps of the seven municipality of the study area.

At the same time, the other researchers working on Riscmass Project entered in the same GIS the landslide map of the area. Therefore, the overlay of landslide map and historical data localisation allow us to assign each historical record to a specific land-

slide of the study area. In this way, also the frequency and temporal distribution of damage induced by the different landslides have been obtained, outlining the evolution of landslide activity.

Finally, a survey has been carried out in 2006 in order to evaluate the current distribution of landslide damage both on previous urbanised sectors and on new expansion areas.

For this survey, a data sheet created by the National Seismic Service, modified by the National Civil Protection has been used. Data concerning the location of the buildings, their main characteristics and damage to different parts of the structure have been collected, entered in the GIS and compared to landslide map and historical damage locations.

The results of the analyses, synthesised by the GIS products, give a picture of sectors currently affected by landslide damage. Therefore, the evolution of landslide risk is outlined also taking into account the anthropogenic modifications related to urbanisation of new sectors.

For local administrations, the implemented GIS can be helpful in defining strategies for emergency planning and risk reduction based on dissemination of results aiming to discourage new investments in damaged areas or encouraging citizens to stipulate insurance policies.