



## **COMPARISON OF TWO LANDSLIDE INVENTORY MAPS IN THE CERVARO BASIN, PUGLIA, SOUTHERN ITALY**

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Reliable and accurate landslide inventory maps are mandatory elements of any landslide hazard or risk assessment. However, the quality, completeness, resolution and reliability of the landslide inventory maps are rarely ascertained. The lack of proper information on the quality of the inventory maps and on the reliability of the techniques used to complete the inventories may compromise the hazard or risk assessment. We present the results of a comparison of two landslide inventory maps prepared for an area of 132 km<sup>2</sup>, in the Cervaro River basin, in the NW Puglia Region of Southern Italy. The two landslide maps were prepared by different techniques. The first map (Map A) was prepared through the analysis of the literature on slope movements in the study area. Single landslides and landslide areas for which information was available were identified and sites where landslides were studied or where slope failures were reported were checked in the field. Landslides were identified and mapped in the field at 1:25,000 scale. Field checks concentrated mostly in the urban areas and along the main roads. The second map (Map B) was obtained through the systematic interpretation of two sets of black and white aerial photographs, flown at a nominal scale of 1:33,000 scale, in 1954 and in 1990-91, respectively. When interpreting the two sets of aerial photographs care was taken in the identification of sites where landslides had changed (reactivations) or where new landslides had occurred. Analysis of the aerial photographs was carried out by two geomorphologists, using a discussion (or double) stereoscope. The methodology guarantees a cross check on the photo-interpretation and a more reliable landslide map. Comparison of the two landslide maps in a GIS allows for a quantitative estimate of the differences between the two inventories. Map

A shows 27 landslides, for a total landslide area of 10.51 km<sup>2</sup>, 7.96% of the study area. Map B portrays 645 landslides, for a total landslide area of 38.91 km<sup>2</sup>, 29.48% of the study area. The area mapped as landslides by both inventories (union of map A and B) is 42.87 km<sup>2</sup>, or 32.48%. Landslide areas that are common to both inventories (intersection of map A and B) extend for 6.50 km<sup>2</sup>, 4.92% of the study area. The frequency-area statistics of the two inventories are compared. The abundance of landslide areas shown in the two inventories in the seven rock types cropping out in the study area are also compared. Differences in the distribution, abundance and types of landslides in the two inventory maps are attributed to the techniques used to complete the inventories. Considerations on the resources needed to complete the inventory maps, and on the possible effects of the differences between the two landslide maps for ascertaining landslide hazard and for determining landslide risk to the built-up areas and to the transportation network are discussed.