

Title: From a comprehensive multi-temporal landslide inventory to the prediction of landslide activity and risk analysis: the Daunia Apennines, Italy case study

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Landslide events often cause economic losses and sometimes can have catastrophic effects. A compilation of accurate landslide inventories is of paramount importance for the prediction of future landslide activity, as well as the assessment and mitigation of consequences associated to such phenomena. We present an investigation of landslides in the Daunia Southern Apennines, (Apulia region, Italy), where landslides occur seasonally causing damage to public and private property and infrastructures.

The work relies on the compilation of the geomorphological and multi-temporal landslide inventory maps at both regional and municipality level. The inventories are used to: (i) improve our understanding of landslides processes in the area in relation to the geological-geomorphological environment that leads to a reliable estimation of the possible new landslides occurrence, and (ii) estimate the associated hazard and risk for the selected ten municipalities, using a heuristic method based on geomorphological interpretation.

We present a comprehensive geomorphological landslide inventory maps and multi-temporal landslide inventories for five of the ten municipalities for the period of fifty years (1954-2003). The inventories are compiled through aerial photograph interpretation using digital stereoscopic vision and field surveys.

The analysis of the data indicates a considerably higher landslide density with respect to that revealed by the majority of the pre-existing inventories. The spatial distribution and the density of landslides are closely related to the geological and geomorphological environment. The multi-temporal inventory maps show a large number of recent landslides that occur within or in the vicinity of the older and larger pre-existing landslides. All the analyzed municipal territories are largely affected by landslides and some urban centers or the built-up areas lie on old landslides bodies.

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