



## **Comparative analysis of rainfall and landslide damage for landslide susceptibility zonation**

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In the present work we applied a methodology tested in previous works to a regional sector of Calabria (Southern Italy), aiming to obtain a zonation of this area according to the susceptibility to develop landslides, as inferred from the combined analysis of past landslide events and cumulate rainfall which triggered them.

The complete series of both historical landslides and daily rainfall have been organised in two databases.

For each landslide event, damage, mainly defined in relation to the reimbursement requests sent to the Department of Public Works, has been quantified using a procedure based on a Local Damage Index.

Rainfall has been described by the Maximum Return Period of cumulative rainfall recorded during the landslide events.

Damage index and population density, presumed to represent the location of vulnerable elements, have been referred to Thiessen polygons associated to rain gauges working at the time of the event.

The procedure allowed us to carry out a classification of the polygons composing the study area according to their susceptibility to damage during DHEs. In high susceptibility polygons, severe damage occurs during rainfall characterised by low return periods; in medium susceptibility polygons, maximum return period rainfall and induced damage show equal levels of exceptionality; in low susceptibility polygons, high return period rainfall induces a low level of damage.

The results can prove useful in establishing civil defence plans, emergency management, and prioritizing hazard mitigation measures.