

SEISMIC ROCK-FALL SUSCEPTIBILITY IN CARBONATE MOUNTAINS OF THE SOUTHERN APENNINES (ITALY)

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Rock falls are the most common type of slope movement that is triggered by seismic events. Location of inhabited areas and communication routes at the foothills of steep mountains has resulted on the occasion of moderate to strong earthquakes in severe damage and many casualties throughout the world. Steep rock slopes, heavily fractured rock material, high relief, freeze and thawing cycles, and seismic activity are the main factors favouring the occurrence of rock falls in the Southern Apennines of Italy, where intensely deformed carbonate rock units form the highest peaks in a very complex geologic environment. Seismic susceptibility of rock slopes was studied along the eastern border of the Sele valley, in the epicentral area of the November 23rd, 1980, Irpinia earthquake ($M = 6.8$). After an historic analysis, aimed at collecting information about the occurrence in the past of seismically-induced rock falls, a detailed surveying was carried out to investigate characteristics and properties of fractures and joints in the rocks; several measurement stations were investigated, paying particular attention to the sites where rock falls occurred during the 1980 earthquake. Surveyed features were organized in a data base, and used for applying two known empirical methods aimed at evaluating the seismic susceptibility to rock falls at a regional scale. On the basis of the results obtained, a susceptibility map was produced, showing a zonation of the territory in different classes of susceptibility to rock falls; this map could represent an useful tool for mitigating the risk related to seismic rock falls.