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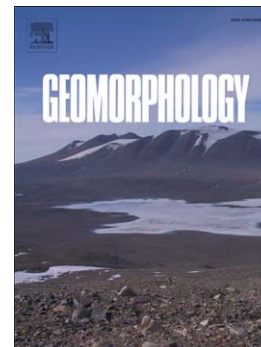
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## Geomorphic evidence of Quaternary tectonics within an underlap fault zone of southern Apennines, Italy

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### Abstract

A composite seismic source, the Irpinia - Agri Valley Fault zone, located in the axial sector of the fold-and-thrust belt of Southern Apennines, Italy, is investigated. This composite source is made up of a series of nearly parallel, NW-striking normal fault segments which caused many historical earthquakes. Two of these fault segments, known as the San Gregorio Magno and Pergola-Melandro, and the fault-related mountain fronts, form a wedge-shaped, right-stepping, underlap fault zone. This work is aimed at documenting tectonic geomorphology and geology of this underlap fault zone. The goal is to decipher the evidence of surface topographic interaction between two bounding fault segments and their related mountain fronts. In particular, computation of geomorphic indices such as mountain front sinuosity ( $S_{mf}$ ), water divide sinuosity ( $S_{wd}$ ), asymmetry factor (AF), drainage basin elongation ( $B_s$ ), relief ratio ( $R_h$ ), Hypsometry (HI), normalized steepness ( $K_{sn}$ ), and concavity ( $\theta$ ) is integrated with geomorphological analysis, the geological mapping, and structural analysis in order to assess the recent activity of the fault scarp sets recognized within the underlap zone. Results are consistent with the NW-striking faults as those showing the most recent tectonic activity, as also suggested by presence of related slope deposits younger than ~38 ka. The results of this work therefore show how the integration of a multidisciplinary approach that combines geomorphology, morphometry, and structural analyses

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