

Morphostructural evidences of active tectonics in the southern Abruzzi Periadriatic region

Simone Racano (1), Giandomenico Fubelli (2), Ernesto Centamore (3), Mauro Bonasera (2), and Francesco Dramis (1)

(1) University of Roma Tre, Rome, Italy, (2) University of Torino, Turin, Italy, (3) La Sapienza University, Rome, Italy

The structural setting of the southern Abruzzi peri-Adriatic region is characterized by deep-seated, northeast verging thrusts masked by a thick cover of Late Pliocene-Middle Pleistocene marine deposits. Most authors consider this area tectonically inactive while only few of them support the hypothesis of its recent activity from the analysis of the river network pattern. Geological and geomorphological investigations carried out in the area showed the occurrence of surface deformations resulting from the continued activity of compressive tectonics up to recent times. A geological survey coupled with facies analysis has been performed in the Abruzzi peri-Adriatic sector, showing a Plio-Quaternary complex interaction among uplift, tilting, eustatic variations, climatic changes and faulting. Morphostructural analysis of a 10 m resolution DTM confirmed and supplemented field observations. The values of Stream-Length Gradient (SL) and Normalized Steepness Index (Ksn) indices show significant increases in the central part of the study area and along the coastal belt. In addition swath profiles, carried out along the valley divides, show the displacement of the Middle Pleistocene summit surface. Particularly significant in this context, are the lateral diversion of river courses uphill of the grown up highs, and the topographic setting of the alluvial strath terraces that developed across the buried thrusts. In some cases surface faults have lowered the terrace treads into graben troughs or have displaced them until assuming an uphill trend. Moreover, along the Alento and Foro rivers, crossing the grown up topographic highs, the long profiles of alluvial terraces bend eastward and the difference in height between terrace orders, basically related to the late Quaternary regional uplift, strongly increases. This recent tectonic activity should be taken in account in assessing the seismic hazard of the study area.