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MORPHOTECTONIC ANALYSIS OF THE PESCARA RIVER VALLEY (CENTRAL-EASTERN APENNINE, ITALY)

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This work presents the first results of a PhD research activity aiming to characterize the morphotectonic setting of the Pescara River Valley (central-eastern Apennine, Italy). This valley represents a drainage element transversal to the Apennine axis which connects the chain's drainage system with the consequent drainage of the Adriatic piedmont towards the East, playing an important role in the Quaternary evolution of the Central Apennine.
The chain area shows a high-relief landscape dominated by resistant Mesozoic-early Tertiary (pre-orogenic) carbonates ridges (i.e., thrust ridges, faulted homocline ridges) and erodible Tertiary (sin-orogenic) siliciclastics valleys (i.e., fault line valleys), and by Quaternary continental (post-orogenic) deposits filled basins. The piedmont area fringes the easternmost ridges of the chain and is characterized by a low relief hill landscape (i.e., hogback, cuesta, mesa reliefs) carved on Mio-Plio-Quaternary terrigenous deposits, related to sin-, late-orogenic phases of the Apennines, and by Quaternary marine regressive deposits and continental deposits of post-orogenic phase.
The study is carried out at a medium scale (1:250.000-1:25.000) and at a large scale (1:25.000-1:5.000). Medium scale investigation (based on DEM and remote sensing) is focused on quali-quantitative analyses of orography and hydrography, and on computing geomorphic indices to detect geometric properties of landscape (e.g., Hypsometry, Drainage basin asymmetry). The key subjects of the large scale investigation are the geological and geomorphological field surveys preceded by photogeology analysis. Geological survey, supported by stratigraphic analysis of boreholes, is focused on continental Quaternary (post-orogenic) deposits mostly consisting of alluvial and fluvial deposits. Geomorphological survey is focused on the analysis of the morphotectonic elements (ridges, slopes, valleys, hydrographic features and fluvial terraces), outlining the presence of structural, fluvial, slope gravity landforms, and related processes.
Considering the morpho-structural setting of the area and the plano-altimetric configuration of the terrace's surfaces (top and strath) through the analysis of morphotectonic profiles (longitudinal and transverse), fluvial and alluvial deposits result arranged in five order of entrenched terraces (from Middle to Late Pleistocene) at different elevation above the Holocene floodplain, recording the drainage evolution after the emersion (Early Pleistocene) of the present piedmont. In this frame, the geomorphology of the area appear to be mainly related to the combination of alternating morphotectonic and surface processes (local tectonics, uplift, fluvial and slope processes). Finally, the reconstruction of the plano-altimetric trend of terraces joined with a geochronology analysis (from literature and unpublished data) allowed for providing a first definition of the Quaternary evolution of the area.