

New morpho-stratigraphic constraints for the evolution of the alluvial fan system along the northern slopes of the Taburno-Camposauro Mountains (Calore River basin, Southern Italy)

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The Lower Calore River Valley is a morphostructural depression located in the inner sector of the Campanian Apennine, between the Taburno-Camposauro and the Matese carbonate massifs. The river is the main left tributary of the Volturno River, it has a meandering channel partially structural-controlled.

Numerous morphotectonic clues and historical seismicity data suggest that this part of the Apennine chain was particularly active during the late-Quaternary.

In detail, the valley is E-W oriented and presents an asymmetry of the opposed valley slopes. The left side, corresponding to the northern flank of the Camposauro massif, is characterized by a steep slope (70° - 35°), partially controlled by a \sim E-W oriented fault system, and by a wide less-inclined piedmont aggradation zone. The latter started growing since middle Pleistocene, with the deposition of alluvial fans and slope deposits over the well cemented early Pleistocene breccias of Laiano Synthem. The alluvial fan deposition has been active until present giving rise to three main generations of alluvial fans. The right side of the valley, instead, is characterized by seven orders of fluvial terraces, both of erosional and depositional origin.

The quaternary morpho-stratigraphic evolution of alluvial fans and fluvial terraces has been strongly conditioned by the interaction of tectonic phases and climatic variations.

A detailed geomorphological study (1:5.000 in scale) was carried out with the aim to map the main depositional and erosional fluvial landforms and to identify the main tectonic lineaments of the area. A detailed field survey allowed to better define the stratigraphic and paleoenvironmental context in which the alluvial deposits developed and also to find chrono-stratigraphic markers. Tephra-stratigraphic analyses were performed on pyroclastic deposits interbedded into the alluvial fan and fluvial successions.

At the moment the age of the first generation of alluvial fans is still under consideration and is only tentatively constrained to the end of Middle Pleistocene on the base of one sample. Instead the second and third generation of alluvial fans can be constrained to the Late Pleistocene and Holocene, based on interbedded tephra layers referred to Campanian Ignimbrite (39 Ky BP) and the Neapolitan Yellow Tuff (15 Ky BP).