New insight on the sedimentary record related to the late-Quaternary tectonics of the western segment of the “Livorno-Sillaro” (Northern Tuscany, Italy).

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The “Livorno-Sillaro” line represents one of the most important transversal structure of the inner Northern Apennines. It has been described in the literature as a major strike-slip fault (e.g., Bortolotti, 1966; Carmignani et al., 1994; Pascucci, 2005; Pascucci et al., 2007), and it is divided into two segments, eastern and western.

A stratigraphic-sequence frame for the late-Quaternary deposits has been developed by using the different facies associations defined through a large subsurface database analysis. Moreover, a correlation has been done between subsoil deposits and the outcropping sediments on the hilly areas (Livorno, Pisa and Cerbaie hills) surrounding the Arno valley.

Additionally, a morphotectonic analysis of the hydrographic networks and relief distribution has been done the Lidar data (DTM), supplied by the Tuscany Region, at the 2 m and 10 m of resolution. Specifically, the river system is particularly sensitive to deformation processes. The fluvial streams are in fact characterized by low geomorphological inertia and, therefore, by response times of a few hundred thousand years to the tectonic processes in progress.

As a result of the integrated multidisciplinary analysis, it was possible to highlight a tectonic activity in the middle Pleistocene -Holocene interval of the western portion of the “Livorno-Sillaro” lineament neglected in the geological literature until now.

References


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