



The tectonic evolution of the Vallo di Diano Quaternary basin (Southern Apennines, Italy): an integrated geological and geophysical study

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We present the first results of an integrated geological and geophysical study of the Quaternary basins along the axial ridge of the Southern Apennines, that represents one of the most important seismically active areas of the Italian Peninsula. In particular, unpublished seismic reflection profiles are interpreted in order to better understand geometry and kinematics and rate of normal faults that bound the studied intra-mountain basins. A significant example is supplied by the Vallo di Diano basin, a wide tectonic depression located in the axial portion of the Lucanian belt. Although the valley is well-known in the scientific literature, the authors disagree about the genesis and the evolution of the basin: a debated question is the role played by the N120° trending, strike-slip faults on the recent tectonic evolution, and their relationships with a set of N150° normal faults, bordering the eastern side of the basin. By integrating surface and deep geological data with the interpretation of the seismic profiles, we reconstruct the contour map of the bedrock, as well the internal geometry of the basin-filling sediments. From this analysis, the onset and evolution of the basin is recognised as driven by a set of N150° trending, SW dipping normal faults, bordering the eastern side of the basin, that we named the Vallo di Diano Fault System (VDFS). The VDFS consists of three main fault segments, controlling the depocentres of the basin, imaging an *én-échelon* pattern. The normal faults dissect the pre-existing compressive and transcurrent features: the latter structures play a passive role, influencing the present-day geometry of western side of the basin, which results from the interference of the

Quaternary normal faults, driving the subsidence of the hanging-wall block with the pre-existing structural highs.

The achieved results are also important for their implications on the seismotectonic setting of the area. In fact the VDFS segments are favourably oriented respect to the active stress field of the region, dominated by SW-NE extension.