



Deep geometry of Laga basin (Central Apennines, Italy)

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The Laga Basin, developed during the Messinian, is one of the most extended and well exposed basin of the Central Apennines. The present map pattern has a triangle shape: the inner edge, to the west and to the south consists of two regionally important thrust fronts which are, respectively, the Mt. Sibillini thrust front, trending NE-SW and the Gran Sasso thrust front, trending E-W. Eastward, the Montagna dei Fiori anticline trends N-S and can be considered the external edge of the basin.

The basin is filled by a siliciclastic turbiditic sequence (Laga Formation, Messinian age), overlapping onto the back limb of the Montagna dei Fiori anticline. The hanging wall of the Gran Sasso thrust comprises Triassic–Miocene carbonates deposited in the Latium–Abruzzi platform, whereas the hangingwall of the Mt. Sibillini thrust is largely made of Mesozoic carbonates deposited in the Umbria–Marche Basin. Coeval pelagic sequence widely outcrops in the Montagna dei Fiori anticline and also constitutes the substratum of the Laga basin.

This area has been analyzed on available seismic lines dataset, calibrated by borehole data. Seismic datasets comprise profiles which are part of surveys made in 1983–1985, for a total length of about 200 Km. The data allowed the reconstruction of the whole geometry of the Laga basin, and to define the main detachment depth. The main structures recognized in the basin are: the Acquasanta anticline, trending N-S, which crops out in the central part of the Laga Basin and the M. Gorzano normal fault, which developed compressional structures in its hanging wall. In the western part of the area, seismic lines go across an array of outcropping anticlines and synclines which progressively rotates their axis from E-W to N-S and that have been interpreted as to

be the transfer zone between Sibillini and Gran Sasso thrust fronts. The geometry of this complex area has been defined by combining field data with the available seismic dataset. Depth conversion of selected composite seismic profiles supplies geological cross sections balancing and restoring to provide available shortening value.