



The geometry of the Alto Tiberino Basin

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We studied the geometry of the Alto Tiberino basin, located in the sector comprised between 43.50° and 43.55° longitude, by the interpretation of a set of commercial seismic profiles cutting longitudinally (NW-SE) and transversally (WSW-ENE) the basin. In the Umbrian belt the extension is represented by the normal east-dipping master fault and its antithetic conjugates: the whole system is responsible for the Valtiberina half graben and for the Neogene intramountain basins aligned in a general NNW-SSE pattern. The geometry of the master fault (Alto Tiberina Fault -ATF-) has been clearly shown by the CROP 03 seismic line where a well marked reflector dips toward east interrupting the stratigraphic markers up to 13 km depth. The dataset analysed consists in 16 seismic reflection lines acquired in the 80' by ENI-Agip for oil exploration in the area. The interpretation of the seismic profiles allows a 3-D reconstruction of the basin's shape and of the fault geometry at depth. The good general resolution of the seismic reflection lines has allowed the individuation both of the basin's bottom and internal geometrical details of the continental deposits, beside two splays of the ATF and a reflector dipping westward and reaching the ATF at near 1.5 - 2.0 s (TWT). In particular, the deepest reflector, the more dissected, shows the base of the valley: it reaches 1.2 s in TWT, about 1200 m depth. The deeper part of the basin is easternmost in respect to the center. It has been possible to detect significant details of the deposits infilling the Valtiberina basin. Others two seismic markers can be traced with continuity: all three reflectors present upward concavity, underling the internal geometry of the quaternary deposits, and sharp interruptions both in the western and in the eastern side of the basin against the fault traces. The eastern side of the Sansepolcro valley is bordered by a normal fault, strike N150, dipping, near 40° , toward west. Concerning the ATF, it delimits the western side of the valley in the whole dataset and dippings toward ENE to a depth of near 1.5 - 2.0 s (TWT).