glomerates at the base of the succession were fed from a southern source area (Voltri Group and Ligurian Alps). From the beginning of the Rupelian a new source area was activated probably in the Western Alps which gradually replaced the southern one. From the Serravallian, the source area drastically changes from southern Ligurian Alps to the Western Alps.

The role of pre-existing structures in Quaternary extensional tectonics of the Southern Apennines, Italy: the Boiano Basin case history

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This talk illustrates the results of a multidisciplinary study of the Boiano Quaternary Basin (Central-Southern Apennines, Italy) in order to define its geometry and kinematics within the Apennines orogen evolution. In detail, we investigated the relationships between newly formed NW-SE extensional faults active between Middle Pleistocene and Olocene, and pre-existing geological features (essentially E-W high angle faults and the compressive thrust stack geometry) and discuss their implications in terms of active tectonics. In the end, a comparison between this case history and similar cases in the Southern Apennines is proposed. To achieve this goal we integrated new geological (from detailed field surveys, structural analysis at the mesoscale) and geomorphological data (field surveys, interpretation of aerial photographs) with subsurface data (deep well logs, seismic reflection lines, seismicity).

This study allowed the basin geometry to be rather accurately defined, the Quaternary and active extensional fault system to be reconstructed, the relationships with pre-existing features to be traced. We identified an extensional pattern including a system of synthetic and antithetic faults with the master fault dipping to the NE at an angle of about 50°–60° and developing at least for 9–10 km of depth. In detail, at surface the synthetic faults are represented by a pattern of neoformed NW–SE-trending, NE-dipping normal faults. The deformation among them is transferred by pre-existing (Late Tortonian and Late-Pliocene p.p.–Early Pleistocene) E–W-striking faults, reactivated through both dextral--transtensional and pure dip-slip movement. The hanging-wall of the master fault hosts the Boiano Basin, partially filled by an asymmetric wedge of associated Quaternary continental deposits. The thickness of these sediments increases towards the fault reaching a few hundred metres, suggesting that the system was active during their deposition.

Furthermore, available historical data suggest that the large 26 July 1805 earthquake may well have been generated by this extensional system. At a regional scale, the Boiano Basin lays along the boundary between the carbonate platform domains and the marly–clayey–arenaceous pelagic basin domains, which compose the Central–Southern Apennines chain. This first order boundary can be followed all along the southern part of the chain, and separates the orogen into two portions characterised by different topographic elevation and landforms. This boundary also appears to coincide with the concentration of the largest earthquakes of this portion of the Italian peninsula. In this context, we discuss the hypothesis that some of the features characterising the recent tectonic evolution of the study area can be recognised in other parts of the Southern Apennines, possibly contributing to the identification of yet unknown belts of recent extensional deformation eventually associated to earthquake sources.