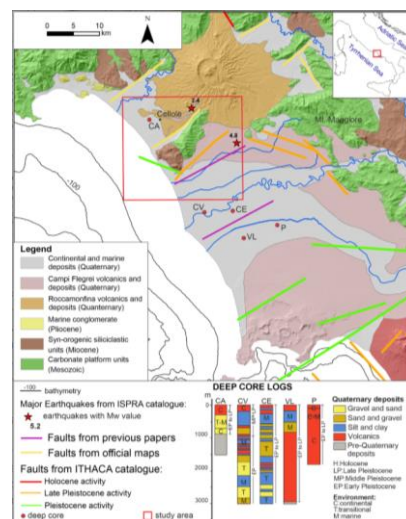


Reconstructing active tectonics from land–sea correlations based on cross-interpretation of core and seismic data for the Tyrrhenian coastal segment in southern Italy

Summary

The current setting of most Tyrrhenian coastal plains in central-southern Italy is the result of the interaction between sedimentary inputs, tectonic movements, and sea level changes during the Quaternary. Based on a comprehensive review of data from the literature on the stratigraphic setting of the coastal plains of Volturno and Garigliano Rivers, and with the final output being a validated 3D geological model, this study provides new elements for improved definition of the chronological intervals of fault activity. Specifically, the ages of tectonic deformations and/or subsidence are crucial for future estimates of coastal hazards induced by both seismicity and coastal inundations. Our multidisciplinary approach includes (i) definition of the Late Quaternary sedimentary architecture by revision of a large amount of core data, (ii) acquisition of offshore seismic reflection data and their correlation with sedimentary bodies of the coastal plains, and (iii) structural analysis of the main faults. These investigations were conducted on the marine segment offshore Mount Massico and on contiguous portions of the Volturno and Garigliano alluvial–coastal plains. The acquisition of seismic and core data enabled the definition of the sedimentary architecture of the coastal sectors of the plains. The Mt. Massico ridge (northern Campania), comprising Mesozoic–Cenozoic units of the orogenic chain and morphologically separating the two plains, was the subject of mesostructural analysis of fault orientation and kinematics. The seismic lines were calibrated correctly using two close stratigraphic core logs from the Garigliano Plain. The identification of correlatable and/or coeval stratigraphic/seismic units reveals land–sea correlations. These units are clearly affected by recent faulting expressed by complex deformation patterns, such as flower structures and strike-slip faults.



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