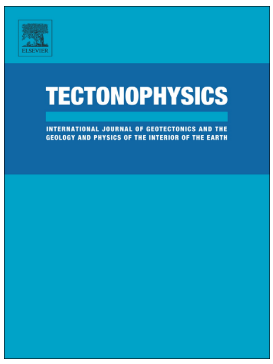

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Neogene-Quaternary evolution of the offshore sector of the Southern Apennines accretionary wedge, Gulf of Taranto, Italy

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Abstract

Southern Apennines represent a collisional orogenic belt whose compressional regime is commonly assumed to have ceased during Middle Quaternary. On the other hand, to the south the Calabria Arc is still characterized by subduction and the principal aim of the present research is to shed some light on the space and time transition from the ceased collision to the active subduction. Accordingly, we investigated the offshore sector of the Southern Apennines accretionary wedge, corresponding to the Taranto Gulf. To gain insights into the offshore accretionary wedge, we reconstructed a 3D geological and tectonic model by interpreting a grid of 40 seismic reflection lines (1100 km, 80 intersections), within an area of ca. 10^4 km^2, calibrated with 17 wells. The geometric and chronological constraints allow to document a systematic Messinian-Quaternary thrust migration from internal towards external sectors of the wedge. The migrating deformational process was essentially associated with a leading-imbricate thrust system with a general NE-younging direction, where we could recognize and distinguish some major advancing phases characterized by alternating fast thrust propagation events and strain accumulation periods within the wedge. This process is well emphasized by the jump of the foredeep and piggy-back basins. The NE-wards wedge migration was also associated with a lithospheric-scale flexural folding that generated a set of normal faults striking parallel to the coeval thrusts, likely reactivating optimally oriented structures inherited from Mesozoic events. Finally, a persisting thrust activity up to the latest Quaternary and possibly up to Present in correspondence of the externalmost sector of the accretionary wedge has been documented and