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## The post-Messinian translation of the Southern Apennines-Calabrian Arc in the Bradano basin (Northern Ionian Sea)

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In Northern Calabria, the Southern Apennines orogenic wedge bends and passes to the Calabrian Arc while they are both colliding with the subducting Apulia plate. The boundary between Southern Apennines and Calabrian Arc is commonly placed along the NW-SE trending Sangineto Lineament whose offshore prolongation is not clearly defined. A multi-scale seismic reflection dataset combined with exploration wells and seafloor bathymetry allowed us to define the post-Messinian tectono-sedimentary evolution of the Bradano Basin adjacent to the orogenic belt.

After Messinian times, two main tectono-sedimentary events deeply modified the Bradano Basin. During the first event (early Pliocene-early Pleistocene), a left-lateral transpressive system, about 20-30 km wide, was part of an oblique convergent margin along which the Southern Apennines and the Calabrian Arc collided; remnants of this transpressive system are now buried under the western portion of the Bradano Basin near the Calabrian margin. Shelf to deep marine turbiditic deposits were prevailing during this first event. Around the Pliocene-Pleistocene boundary (2.58 Ma), a sudden and widespread basin rearrangement occurred. During the second event (early Pleistocene-Present) the orogenic front of the Southern Apennines and the earlier transcurrent systems were suddenly translated to the NE of about 50 km and the left-lateral transpressive boundary between the Southern Apennines and Calabrian Arc became part of the orogenic wedge. During this second event, both upper and lower converging plates were shortened together along multiple detachments levels and out-of-sequence thrusts. The second tectono-sedimentary event is characterized by prograding deltaic and shelfal deposits that seal the earlier transpressive system and pass to deep marine deposits in the central part of the Bradano basin.

The study reveals that the eastern boundary between Southern Apennine and Calabrian Arc is a wide deformation belt including the Sangineto Lineament while the Messinian-Pliocene orogenic transpressive system is buried and translating toward the NE since Early Pleistocene.