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The NW sector of the Sicily Channel: geometry and evolution of inverted structural lineaments

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The 3-D trend of anticline axial planes, fault planes and surfaces has been reconstructed in the offshore area between the Egadi Islands and the Sciacca High from the interpretation of multichannel seismic reflection profiles and well data (available from the VIDEPI project database). In particular, isopach maps generated for the five seismic units of age between Cretaceous and Quaternary allowed highlighting the space-time migration of the tectonic processes. The western portion of the studied area covers the submerged prolongation of the inner sector of the Sicilian-Maghrebian chain, limited in the NW and in the SE by two tectonic lineaments running along the western and eastern margins of the Adventure Bank: the Maghrebian Thrust Front and Adventure Thrust Front, respectively (see Argnani et al., 1986). The eastern portion is characterized by transpressive zones orientated NNE-SSW identifying the Separation Belt that partly corresponds to the foreland area which contains the Gela Nappe Thrust.

Age constraints indicate that contraction related to the Sicilian-Maghrebian fold and thrust belt migrated progressively towards the southeast. The emplacement of the western front is attributable to the Middle-Upper Miocene while that of the eastern front is Plio-Pleistocene. Within this tectonic framework, two tectonic basins were identified on the basis of the different trend, age and evolution. The Adventure foredeep exhibits the maximum thickness of 500 m in correspondence of the Adventure Plateau. Here, the younger Gela foredeep displays minor depth showing a thickness increase towards the Gela Nappe and the Pantelleria graben.

Positive inversion structures form by the Plio-Pleistocene compressional reactivation of preexisting structures limiting the Saccense and Trapanese domains were recognized the offshore sector between Mazara and Sciacca. Moreover, a correlation between the Campobello di Mazara-Castelvetrano alignment as proposed by Barreca et al., 2013, Ferranti et al., this meeting, and the tectonic units recognized in their offshore prolongation has been recognized. Therefore, we propose that in this area contractional tectonics is still active (see also Pepe et al., this meeting), and occurs on high-angle, NW-dipping crustal ramps (Monaco et al., 1996).

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