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# Miocene to Recent Tectonic Evolution of the Florence Rise, Eastern Mediterranean Sea

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Detailed interpretation of ∼700 km of high-resolution multi-channel seismic reflection profiles collected across the Florence Rise in the eastern Mediterranean Sea showed the presence of three seismic stratigraphic units: Unit 1 (Pliocene-Quaternary), Unit 2 (Messinian evaporites) and Unit 3 (pre-Messinian Miocene). Mapping of the prominent structural elements in these seismic profiles revealed the following salient conclusions: (A) Regional compression during the Middle to Late Miocene resulted in the development of several major NW-SE trending and SW-verging thrust culminations in Unit 2 and Unit 3, with ramp anticlines developed above the underlying buried thrust faults. This overall structural architecture is interpreted to delineate a crustal-scale imbricate fold/thrust belt. (B) The presence of a thin veneer of Unit 2 showed that evaporite deposition took place across the Florence Rise during the Messinian. The final desiccation of the Mediterranean Sea at the end of the Miocene and the sub-aerial exposure of the sea-floor at that time resulted in the development of a major erosional surface, represented by a well-defined angular unconformity (the M-reflector) in seismic reflection profiles. (C) A fundamental change in kinematic regime occurred during the transition from the Miocene to Pliocene-Quaternary. During this period, NW-SE trending but NE-verging thrusts developed as antithetic faults to the SW-verging thrusts, creating a series of positive flower structures over the pre-existing SW-verging thrust culminations. These new structures extend from the northern portion of the Florence Rise to the southern portion of the Antalya Basin, where the seafloor is notably corrugated and shows the presence of NW-SE trending ridges and their intervening troughs. The Pliocene-Quaternary structures are interpreted as the onset of a transpressional regime along the Florence Rise. This phase is probably started as the result of the incipient collision of the Eratosthenes Seamount with Cyprus during the early Pliocene, generating the transpressional stress field. The overall data suggest that the strain is strongly partitioned in the Miocene to Pliocene-Quaternary, which created four distinct morpho-tectonic domains in the area.