Architecture and Dynamics of a Maghrebian Carbonate Platform-Basin Transition Around the Triassic/Jurassic Boundary: Sciacca Zone, Sicily

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Facies architecture and the evolution of a carbonate platform-basin hinge zone through the Triassic-Jurassic boundary interval, are reconstructed in the Sciacca area (Central-Southern Sicily).

During Norian-Rhaetian times the carbonate platform was bounded by a Dachstein-type barrier reef. Prograding ooliticskeletal margins replaced the Triassic reefs during lowermost Jurassic, owing to the drastic biotic crisis coupled to sea-level fall and tectonic perturbations.

Base-of-slope facies consisting of carbonate debris-flow and turbidites were emplaced into the adjacent basin since late Rhaetian time. Clastics were provided by tectonicallycontrolled reef-margin collapses, and by oolitic-skeletal grains that were produced in the adjacent carbonate platform.

Pliensbachian drowning of the platform and the switching to pelagic carbonate productivity were coupled to tectonic reactivations of the hinge zone, as documented by large bodies of “in situ” breccias, with a Jurassic pelagic matrix, large polyphase neptunian dykes and widespread submarine magmatism. The conversion of the neritic carbonate platform to the pelagic platform gave rise to the cessation of the clastic input into the adjacent basin.

At present, the carbonate platform-basin transition is imbricated in the external zone of the Maghrebian chain, and its NNW-SSE orientation is nearly orthogonal to the direction of the Neogene thrust propagation. The observed structural relationships indicate that this paleotectonic alignment has played as major right lateral escape during the Maghrebian mountain building. Its orientation is parallel to the Malta escarpment and to the margins of the Triassic/Jurassic Streppenosa basin, in the subsurface of the Ragusa plateau. The platform-basin transition can be considered as a segment of the rifted Southern margin of the Permo-Triassic Ionian basin.

Keywords: Triassic, Jurassic, carbonate platform, reef, paleotectonics, Sicily.