

PS New Insights into the Mesozoic Tectono-Stratigraphic Evolution of the Platform to Basin Transition in the Southern Adriatic Sea Area: Searching for Stratigraphic Traps*

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Abstract

The architecture and depositional processes characterising the transition from the Apulian Platform to the Southern Adriatic Basin have been extensively studied onshore in the area of the Gargano peninsula. By contrast, the southward offshore extension of this margin has received less attention. The acquisition and interpretation (2011/2) of 2D seismic data in Zone F, together with the integration of a regional tectono-stratigraphical study has enabled an improved understanding of the area and helped identify new exploration targets.

Middle-Late Jurassic extensional tectonics induced the formation of a steep escarpment separating the platform and basin. This escarpment was controlled by NW-SE extensional faults and E-W trending extensional faults with a significant oblique-slip component, the latter probably resulting from reactivation of Triassic or older discontinuities. These two fault sets were likely formed under the same stress field (NE-SW extension).

Analyses of seismic data provide evidence for erosion, and re-sedimentation of outer platform facies, most likely in the Cenomanian, as also observed in outcrops in the Gargano area. These deposits appear associated with the NW-SE trending margins producing large lobate features in the basin adjacent to steep embayments within the shelf edge. The geometry of the mapped re-sedimented carbonates indicates relatively high transport capacity. Talus type deposits are probably absent, suggesting mud or fine grained sediments dominated these types of flows.

This interpretation suggests Cenomanian debris flows to hyper-concentrated density flows are associated with platform over-steepening and the collapse of outer platform facies following the development of transgressive to early highstand systems tracts. These sequences are overlain by concentrated to hyper-concentrated density flows during a highstand period in the Late Turonian.

Evidence for re-sedimented carbonates during the Late Cenomanian-Early Turonian lowstand is absent; however, this does not preclude such deposition in this complex depositional system. A thin organic rich shale deposited in the basin could be referred to the Late Cenomanian-Early Turonian interval and may represent an equivalent of the Bonarelli level.

The Early and Late Cretaceous (Cenomanian-Turonian) platform margin in this area does not appear to be controlled by active faulting but rather platform sequences aggrade on the Late Jurassic fault controlled margin, although tectonic activity in the area is considered a likely trigger mechanism for the deposition of re-sedimented carbonates.

Newly identified exploration targets in the area include large stratigraphic traps defined by the pinch-out of porous re-sedimented carbonates towards the platform, a good analogue for these kinds of traps is the Mescalero Escarpe Field in New Mexico.

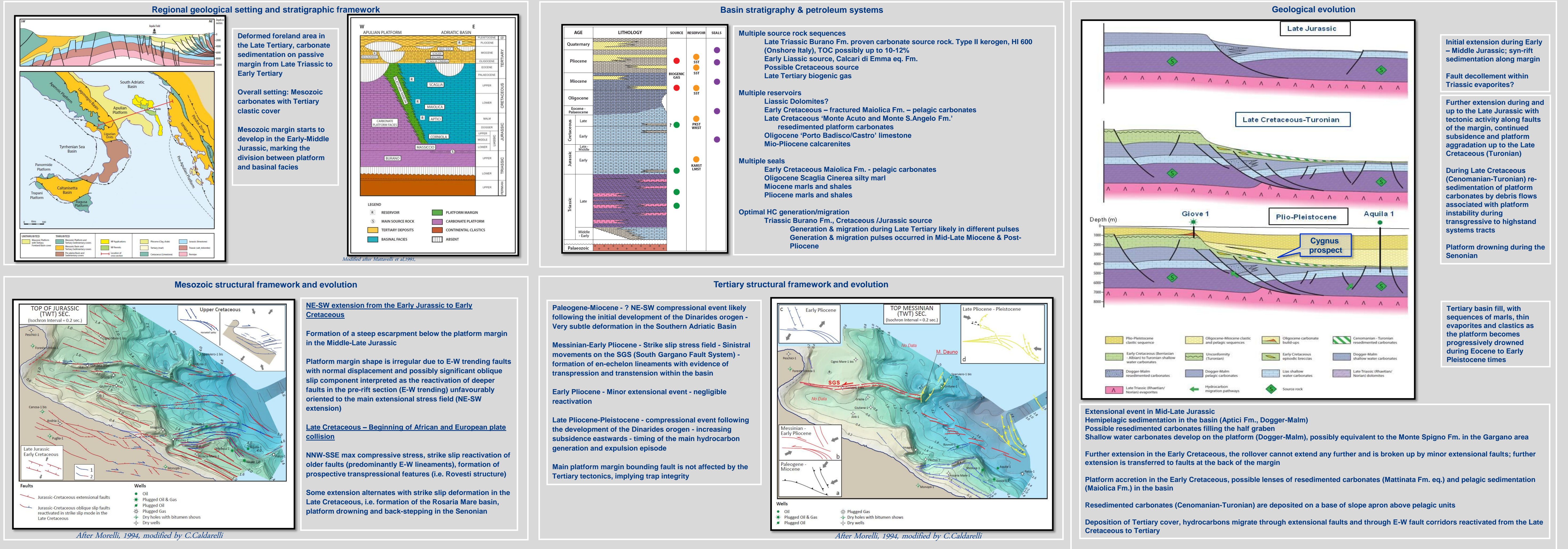
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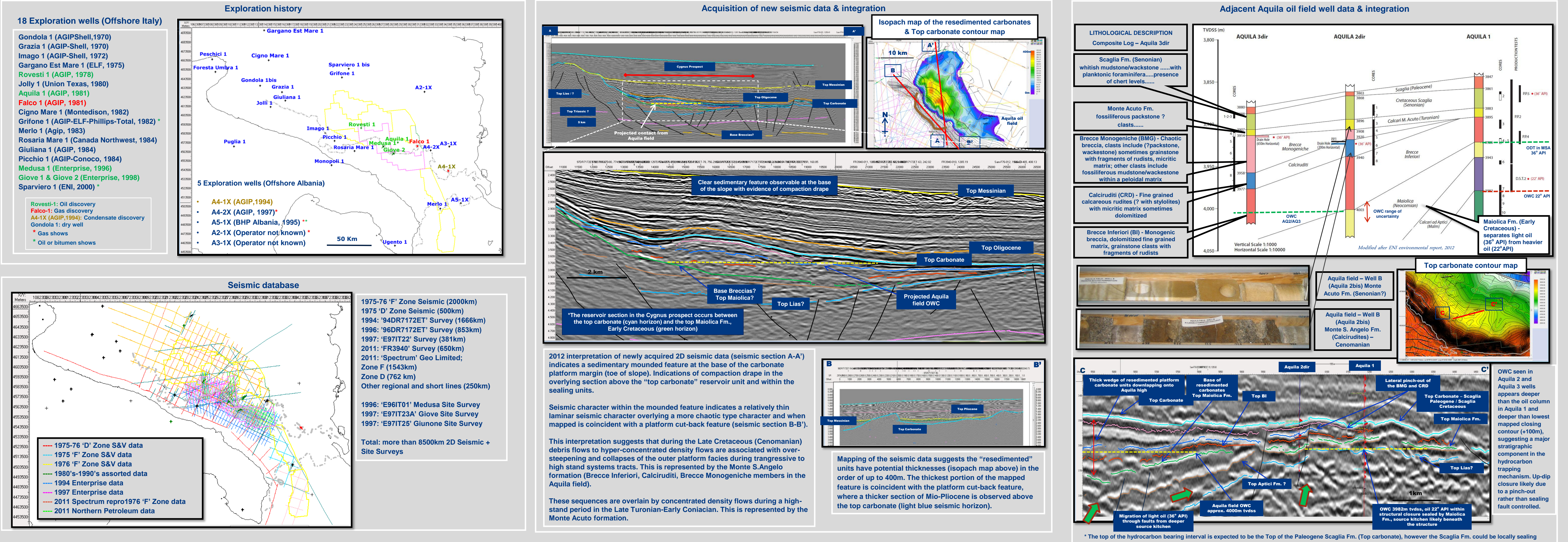
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1. Southern Adriatic – Regional geology & Structural framework



2. Southern Adriatic – Data analysis & Key findings



3. Southern Adriatic – Searching for stratigraphic traps – Newly identified oil exploration prospects

