



The Calcarenite di Gravina Formation: a fossil example of Mediterranean carbonate sedimentation around karstic islands

M. Tropeano (1), P. Pieri (2) and L. Sabato (2)

(1) Dipartimento di Scienze Geologiche, Università della Basilicata. Campus di Macchia Romana, 85100 Potenza (Italy), tropeano@unibas.it (2) Dipartimento di Geologia e Geofisica, Università di Bari. Via Orabona 4, 70125, Bari (Italy) p.pieri@geo.uniba.it, l.sabato@geo.uniba.it

Present day shallow-marine carbonate sedimentation in the Mediterranean Sea seems to be basically linked to the existence of either relatively small islands or karstic coastal regions. In these settings the scarcity (or absence) of a drainage network and/or the prevailing carbonate nature of the exposed rocks permit the development of carbonate depositional systems in the nearest shallow-sea.

The middle Pliocene-lower Pleistocene "Calcarenite di Gravina" Formation in the Apulian Foreland (south-eastern Italy) may represent the product of ancient counterparts of some of these systems. The Calcarenite di Gravina Formation extensively crops out in the Murge area; here, Plio-Pleistocene limestones unconformably overlie faulted Cretaceous rocks belonging to the Apulian carbonate platform. Plio-Pleistocene carbonates formed during the submersion of a subsiding karstic region. Subsidence and the resulting transgression onto the Apulian Foreland (a long-term relative sea-level rise) were induced by the eastward migration of the south-Appennines orogenic system. Before the transgression, the region was characterized by a horst and graben system, but the same system governed distribution of lands and seas during the Plio-Pleistocene relative sea-level rise; so the wide exposed Apulian foreland progressively became a large drowning archipelago. Either large shore platforms, or

ramps (from gentle to abrupt) or vertical sea-cliff flanked the islands, and seaways or semienclosed bays also formed. After submersion, island flat-tops became isolated small platforms. All these settings were sites of carbonate sedimentation due to either active temperate-water carbonate-factories or extraclastic (Cretaceous-limestone gravels) feeding (except for the small platforms), and either mixed- or reciprocal carbonate-systems locally formed. On platforms and gentle ramps subtidal cyclic successions developed while presence of rocky slopes and small steps favoured the growth and progradation of sigmoidal coastal bodies, either bioclastic or extraclastic in origin. Small gravelly (extraclastic) deltas locally formed. Apron-like successions, supplied from adjacent factories, could develop along submerging cliff, even if in-situ production (along slope) could exist. Deepening upward or backstepping, and then drowning, was the fate of all these accommodation-dominated systems.