

A Km-scale Cretaceous slope in western Sicily (Italy)

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Cretaceous slopes are well known from many regions of the world, since they are among the most prone depositional systems to host hydrocarbons. As far as Italy, in spite of fully described examples as the Majella and Gargano escarpments, detailed sedimentological and biostratigraphic studies from Sicily are not available, although the presence of slope carbonates of Cretaceous age in northwestern Sicily, is mentioned in several papers dealing with regional geology or geological mapping. The Cretaceous slope carbonates from this area, i.e. the San Vito Lo Capo Peninsula, belong to several thrust sheets of the Maghrebian chain. The stratigraphic setting in these tectonic units allows to reconstruct the aggradation of a thick carbonate platform during Late Triassic-earliest Jurassic, the drowning and conversion to a pelagic plateau during Pliensbachian-Toarcian and its evolution into a slope, since latest Jurassic times. The Cretaceous carbonates from this area are intensely exploited as ornamental stones since the past century and are known with the commercial name of “Perlato di Sicilia”. The wire-cutted walls of a number of quarries either active or abandoned offer the opportunity to study in detail the facies architecture along the slope and define its sedimentary evolution throughout the Cretaceous.

The preliminary results of the researches, that are carried out in the frame of a PhD study on the stratigraphy and sedimentology of this depositional system, allow to document the presence of slope to toe-of-slope sediments since at least the Aptian. The facies associations consist of gravitative skeletal sediments, mostly rudist rudstones to which are intercalated debrites and thick megabreccia beds formed by rudist-bearing extraclasts. Along the succession, the presence of repeated pillow lava intercalations highlights the role of the tectonics in the slope evolution and the crustal involvement in the extensional processes that have controlled the geometry of the slope. At present the slope sediments cover an area of about 100 square kilometers, however, owing to the Maghrebian contraction, the original extension of the slope is largely underestimated. Upsection, the occurrence of pelagic, scaglia-type, sediments points to a significant reduction of the clastic supply along the slope during lower Senonian times. However, debrites with Cretaceous carbonate extra-clasts occur into the pelagic calcilutites until the Eocene.