

Two end-members of carbonate slope evolution during the Late Cretaceous in the peri-Tethyan domain (Western Sicily and Southern Albania)

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Climatic and tectonic processes are major mechanisms influencing tropical carbonate platform development, sediment production and sediment export. Mass transport deposits (including slides, slumps and debrites) and calciturbidites are some of the sediment export products resulting from the interplay of aforementioned redeposition mechanisms. They reflect distinct variations in both production and export of sediments from the carbonate factories. The gravity export deposits provide information on their sediment source and result in sedimentary sequences with specific porosity / permeability properties prone to host hydrocarbon resources. Climate-controlled sea-level variations are well-constrained in present day and Quaternary tropical carbonate environments (e.g. Bahamas, Maldives). However, it is still challenging to decipher relative eustatic sea-level variations and to separate them from tectonically-induced control when dealing with flat-topped carbonate platform production and re-sedimentation products within the adjacent basins. During Cretaceous times, multiple wide carbonate platforms prevailed in the peri-Tethyan realm. These sedimentary series are exposed in various outcrops and host important hydrocarbons resources in the subsurface. During the Late Cretaceous, several sectors of the sedimentary platform systems drowned, thus causing the demise of large portions of the carbonate factories. Although reduced in size and extremely localized, some carbonate platforms and associated sediment production persisted, e.g. Panormide Platform (S Italy), Latium-Abruzzi Platform (SW Italy), Adriatic Platform (SE Italy-Albania), Arabian Platform (N Lebanon). The evolution of two Upper Cretaceous carbonate platforms and slopes were analyzed utilizing sedimentary sequences cropping out in Sicily (WSCE - Western Sicily Cretaceous Escarpment, southern Italy) as well as in Albania (SACS – Southern Albania Cretaceous Slope). WSCE is characterized by thick calcidebrites and displays strong tectonic control on the sedimentation patterns as shown by the occurrence of massive megabreccia bodies as well as volcanic intercalations related to deep rooted extensional faults. SACS is dominated by finer grained deposits

(calciturbidites) and slumps. Large-scale tectonics caused massive basin-ward sediment shedding in both the case studies. Nevertheless, an enhanced subsidence favoring platform production and aggradation is highlighted at SACS, while a clear backstepping of the system is observed at WSCE. The two outcrop studies allow for a detailed comparison of the growth and demise of two carbonate factories situated within the peri-Tethyan domain as detailed in the sedimentary records of the individual carbonate slope to basin systems. This comparison will enhance our understanding of the sedimentary response of peri-Tethyan tropical carbonate platforms to tectonic processes.