Geophysical Research Abstracts,
Vol. 10, EGU2008-A-11500, 2008
SRef-ID: 1607-7962/gra/EGU2008-A-11500
EGU General Assembly 2008

Carbonate slope stratigraphic architectures induced by the grafting of superposed platform systems. The Middle Jurassic to Early Cretaceous of the Abruzzi area (Central Apennines, Italy)

G. Rusciadelli, S. Di Simone, C. Ricci

Dipartimento di Scienze della Terra, Università "G. d'Annunzio", Chieti, Italia. (grusciadelli@unich.it)

In central Apennines, Mesozoic carbonate systems are broadly considered as defined by stationary depositional environments and aggrading architectures. In order to deeply investigate these features we have studied a Middle Jurassic to Lower Cretaceous carbonate system of central Apennines (Italy), along a rather well preserved Jurassic-Cretaceous platform to basin transition.

In this work, we focus on slope and base-of-slope successions where stratigraphic architectures, outlined by platform-derived resediments and pelagic deposits alternations, reflect production and export changes of the carbonate factory through time.

Based on the analysis and relationships of systematic trends in thickness, grain size, lithofacies proportion, and sediment composition, slope successions have been subdivided into three large scale units. They roughly correspond to the Middle Jurassic, the Late Jurassic and the Early Cretaceous, respectively.

At the large-scale these units are characterized by similar internal architectures. They are defined by an overall symmetric organization, represented by a coarse grained and thickly bedded intervals in the lower and upper parts of the units, and a fine grained and thinly bedded interval in the central part.

Sediment composition indicates that the Middle Jurassic platform margin corresponds

to an open platform system with ooid sand shoals. A balanced geological cross section allows the depositional profile of the Middle Jurassic unit to be interpret as a very gentle “ramp-like” profile.

The composition of the platform margin abruptly changes from non-skeletal to skeletal throughout the Middle and the Upper Jurassic units, indicating the onset of a platform margin dominated by building biota. According to quantitative analyses of platform margin areas, the reefal macro-biota association is rather similar for both Upper Jurassic and Lower Cretaceous units. Despite the similar composition of the reef margins, slope successions record important difference in the amount of sediments exported. This change is related to the regional narrowing of platform margin areas between the Upper Jurassic and the Lower Cretaceous units, and it suggests a different reef margin structure throughout these two units. The different reef margin structure would have controlled the amount of sediments exported between the late Jurassic and the early Cretaceous.

In conclusion, the Middle Jurassic to Lower Cretaceous architecture of slope successions can be viewed as the large-scale response of the grafting process of three distinct and superposed carbonate platforms. They differ for the type of sediment produced and exported, the type of margin and the depositional profile. Our conclusions point toward a main biological control in the mechanism which produces the grafting of different carbonate platforms during the passive margin stage, controlling the production potential and export of resedimented deposits along the slope.