



Reconstructing the Aptian-Santonian evolution of the Friuli-Adriatic Platform through calcareous plankton and carbon isotope integrated stratigraphy: record of regional and global events (Casso section, Southern Alps, NE Italy)

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The detailed calcareous plankton - and chemostratigraphic study of the Aptian to Santonian interval of the Casso section, correlated with the classic Cellina section of the Friuli-Adriatic Carbonate Platform, (FACP, the largest remnant of isolated platform in the Tethys) allowed us to reconstruct the major changes in the sedimentary architecture throughout the mid- Cretaceous, a time of plate reorganization and global climatic and paleoceanographic changes. Considering the base of slope setting of the Casso succession, resedimented layers containing shallow-water fauna are interbedded with pelagic intervals, so that the presence of calcareous plankton is mostly restricted to the latter beds. The precise location of some zonal and stage boundaries is therefore prevented by the discontinuous occurrence of planktic assemblages and by hiatuses due to non-deposition and erosion at the base of coarser gravity-driven deposits. Nevertheless, we could reconstruct a complete chronological frame of the succession. Specifically, the Casso section spans the planktic foraminiferal *Pseudothalmaninella ticinensis* Zone to the *Dicarinella asymetrica* Zone and the calcareous nannofossil Zones NC6 to NC17. The correlation between planktic foraminiferal and calcareous nannofossil zones is generally consistent with the schemes previously proposed in the literature.

The integrated biostratigraphy allowed us to identify major stable isotope shifts, correlated with those recorded by the standard curves and to infer the evolution of the adjacent platform margin on the basis of the resedimented clasts. We identify the isotope shifts corresponding to the Oceanic Anoxic Event (OAE) 1a, 1d and 2, the late Turonian Caburn, Bridgewick and Hitch Wood Events, the Turonian-Coniacian Boundary Event (TCBE) or Navigation Event, the Coniacian-Santonian Boundary Event (CSBE) and the Santonian-Campanian event.

Interestingly, the FACP margin shows an abrupt change from reef rimmed to ramp, where abundant microbial mounds provided the habitat for the rudists to thrive. This change occurred around the late Albian and likely is correlated the OAE 1d. The previous OAE's did not change the structure of this platform, whose margins were mostly rigid and colonized by corals and calcareous sponges. Late Albian was a time of important changes in paleoceanography in Tethys and North Atlantic Oceans. We propose that the paleoceanographic changes related to the OAE 1d had more profound impacts on the FACP than the previous ones since they co-occurred with the tectonic transition from passive margin to foreland ramp. The increased subsidence rates, in conjunction with the important paleoceanographic events of late Albian to Turonian created favourable conditions for a dramatic change in the platform margin physiography and ecology.