



The upper Cretaceous palaeo-slope transition: an integrated calcareous nannofossil and microfacies approach (Ionian Islands, Preapulian Zone, Western Greece)

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The Ionian islands are situated on the west part of the Hellenic Arc, part of the most active plate margins in the Mediterranean. The westerly-verging Hellenides fold-and-thrust belt in this area comprises the deformed Mesozoic-Cenozoic basinal succession of the Ionian Zone, which thrusts over the time equivalent slope unit of the Preapulian Zone. The basal front of this tectonic contact outcrops along the eastern edges of Kefalonia and Zakynthos islands. Furthermore, the palaeoenvironmental transition between the Late Cretaceous persistent carbonate platform 'Apulian' facies and the time-equivalent 'Pre-Apulian' facies is exposed on the islands of Zakynthos and Kefalonia. Nannoflora analyses are conducted for the first time, providing detail dating of the outcropping Cretaceous strata in these two islands. Also, microfacies are investigated in order to appreciate the changes of palaeoenvironments during the Late Cretaceous. Thick-bedded calcareous strata outcrop on the westernmost edges of the island, and contain microfacies and microfossil assemblages characteristic of the edges of Cretaceous carbonate platforms, including rudists in life position. The remainders of the Cretaceous outcrops are composed by slope facies, comprising an intercalation between thin-bedded, fine-grained pelagic calcareous strata and thicker-bedded and coarser-grained depositional events. The latter can be sub-divided into massive megabreccias strata, dominated by near platform microfacies (wackestone-packestone) and thinner-bedded calciturbidites, which are composed by a mixture of pelagic microfacies and re-transported neritic assemblages. Most of the samples proved barren of calcareous nannofossils, perhaps due to an intense diagenetic and tectonic history. However, a section to the south of the island of Zakynthos (Lithakia-Agalas) was both continuous and relatively prolific. In the investigated section, strata form a north-east dipping monocline, spanning the transition from the edge of the Apulian platform (to the westernmost edges) and the Pre-Apulian slope facies. Calcareous nannofossil assemblages are dominated by *Watznaueria barnesae*, *Quadrum garneri* and *Retecapsa crenulata*. Campanian-Maastrichtian markers such as *Reinhardtites levis*, *Quadrum trifidum*, *Broinsonia parca* occur in the central and eastern part of the island, indicating a Campanian-Maastrichtian age. Older nannofossil assemblages were logged in the westernmost part of the study section. The sediments are either lower Late Cretaceous strata revealed to the west of the section because of the geometry and/or represent the contribution of older material eroded from the edge of the platform and re-deposited on a proximal slope area. The only other sampled sections containing nannofossils are in the northern part of the island, around the village of Orthonies. Here, a slope succession is characterized by poor nannofossil assemblages. This succession is not older than Turonian, as suggested by the occurrence of *Micula staurophora*, and the oldest part of the section is not younger than Early Campanian, as indicated by the presence of *Lithastrinus grilli* (range: Early Campanian to Late Coniacian). More generally, the whole Zakynthos was previously thought to belong to the transitional Pre-Apulian (=Paxos) unit. Our analyses, however, show that towards the westernmost part of the island, Cretaceous platform margin facies possibly attributable to the Apulian Platform are present, with a gradual transition to uppermost Cretaceous Pre-Apulian facies towards the east.