



The evolution of Tethyan early Paleogene carbonate Platforms (late Paleocene-early Eocene)

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We present an overview on platform evolution data from several late Paleocene-early Eocene carbonate platforms from the Tethys. We focus on platform evolution in Egypt and Spain as these regions are biostratigraphically best defined and integrate also data from other areas in the Tethys. These data indicate that the Paleocene-Eocene interval was a time of profound changes in shallow-water carbonate settings. A comparison of time-equivalent carbonate platforms in the low and middle latitudes shows a threefold Tethyan-wide carbonate platform evolution in the late Paleocene to earliest Eocene: I. a late Paleocene (shallow benthic zone 3) coralgal-dominated platform; II. a latest Paleocene (shallow benthic zone 4) platform dominated by larger foraminifera (*Miscellanea*, *Ranikothalia*, *Assilina*) and III. an early Eocene (shallow benthic zone 5/6) platform also dominated by larger foraminifera (*Alveolina*, *Orbitolites*, *Nummulites*). The causes for the change from coral-dominated platforms to larger foraminifera-dominated platforms are multilayered. The early Paleogene was the time of the most pronounced long-term warming during the Cenozoic. During this time interval a calcite sea prevailed with very low Mg/Ca ratios, high CO₂ values and highly oligotrophic regimes. The short-term Paleocene-Eocene Thermal Maximum that is characterised by increased global warming and eutrophic conditions on shelf areas is superimposed on this long-term warming phase and coincides with the transition from platform stage II to III. The response of corals and larger foraminifera as the most important platform-building organisms to these trends caused the threefold Tethyan platform stage evolution around the Paleocene/Eocene boundary.