

The Upper Campanian Paleoceanographic and paleoclimatic records on the northern Arabian Platform, SE Turkey

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The studied pelagic succession lies on the northern Arabian Platform in the Mazıdağ-Derik area, SE Turkey. Upper Campanian paleoceanographic events and paleoecology in the studied area have been determined for the first time in Turkey by sedimentological, geochemical and micropaleontological analysis. A composite stratigraphic section has been measured and sampled in detail. The section is characterized by alternation of marls, clayey limestones, shales and black shales. There are no coarse siliciclastic sediments or turbiditic structures recorded in the section. Stable isotope analysis have been carried out on 45 samples along the Mazıdağ measured stratigraphic section with a thickness of 119.25 m. $\delta^{13}\text{C}$ values range between min. 0.57 ‰ and max. 1.92 ‰ and $\delta^{18}\text{O}$ values range between min. -4.23 ‰ and max. -3.45 ‰. The isotope curves obtained are divided into 4 zones to analyze the minor details in between. The isotope zones display similar patterns with curves determined in European and Chinese basins in the same time interval. Especially, the negative carbon isotope excursion determined in the second zone is parallel with the Upper Campanian Event.

Proxy elemental geochemistry displays generally two relative phases of rise in productivity; One in the lower part of the section and the other one in the mid part. Redox proxy elements indicate that the lower part of the section is relatively more dysoxic compared to the upper part. This coincides with the presence of frequent black shale beds in the lower part. The result of nannofossils analysis indicated that warm-water marine and low-latitude Tethyan oceanic environment was present in the studied interval. Independently, the plant fossils records in the same measured section displayed that there was a tropical humid climate condition similar to those of north east Australia. Consequently, warm water, tropical humid atmospheric conditions developed on the studied area on the northern Arabian platform causing the rise in productivity, precipitation and transportation of plant debris into offshore following an oceanic event developed on the Arabian platform margin.