



Biostratigraphy of Cretaceous-Paleogene marine succession, foraminiferal changes across the K/T boundary, sequence stratigraphy and response to sedimentary cyclicity in the Haymana Basin (Central Anatolia, Turkey)

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The aim of this study is to establish the planktonic foraminiferal biozonation, to construct the sequence stratigraphical framework and to determine the foraminiferal response to sedimentary cyclicity in the sedimentary sequence spanning Upper Cretaceous-Paleocene in the Haymana basin (Central Anatolia, Turkey).

In order to achieve this study, the stratigraphic section was measured from sedimentary sequence of the Haymana, Beyobası and Yeşilyurt formations. The sedimentary sequence is mainly characterized by flyschoidal sequence that is composed of alternating of siliciclastic and carbonate units.

On the account of the detailed taxonomic study of planktonic foraminifers, the biostratigraphic framework was established for the Maastrichtian-Paleocene interval. The biozonation includes 7 zones; Pseudoguembelina hariensis, P α , P1, P2, P3, P4 and P5 zones. The Cretaceous-Paleogene (K/P) boundary was delineated between the samples HEA-105 and 106.

In order to construct the sequence-stratigraphical framework, the A, B, C and D-type meter-scale cycles were identified. Based on the stacking patterns of them, six depositional sequences, six third and two second order cycles were determined. Third order cycles coincide with the Global Sea Level Change Curve.

On the account of the conducted petrographic analysis sandstone, mudstone, marl, limestone and muddy-limestone lithofacies were recorded in the studied samples. In order to demonstrate the response of foraminifers to cyclicity, quantitative analysis has been carried out by counting the individuals of planktonic, benthonic foraminifers and ostracods. The best response to sedimentary cyclicity was revealed from planktonic foraminifers. The average abundance of planktonic foraminifers increases in the transgressive systems tract and decreases in the highstand systems tract.

Foraminifera are the most abundant marine protozoa in the benthic, epipelagic and pelagic realm. Because of the complexity and diversity of habitats, especially in the pelagic realm, planktonic foraminifera show high biodiversity and abundance as an effect of their different ecological requirements.

Microfaunal analysis displays significant presence of foraminifers and an insignificant presence of ostracoda shells which represented by genera Leptocythere, Caspiella, Xestoleberis and etc. The foraminiferal assemblages of this sequence were determined in detail and quantitative analysis of them was carried out. By detail investigation of microfauna and determination of foraminifer species under the microscope, it was possible to pinpoint the C/P boundary in the studied section, which is indicating the mass extinctions of Cretaceous foraminifers represented by genera Archaeoglobigerina, Contusotruncana, Gansserina, Globigerinelloides, Globotruncana, Globorotalia, Hedbergella, Heterohelix, Planoglobulina and appearance of new small and non-keeled Danian species, represented by genera such as Chiloguembelina, Eoglobigerina, Globoconusa, Globanomalina, Igorina, Parvularugoglobigerina, Parasubbotina, Subbotina, Woodringina and etc.

As a result of precise conducted research the significant bioevent has been revealed, namely that Hedbergella holmdelensis became extinct in P α Zone.