

EVALUATION OF PALEOCEANOGRAPHIC AND PLANKTONIC FORAMINIFERAL DIVERSIFICATION FROM THE MUGHAL KOT FORMATION, LOWER INDUS BASIN, PAKISTAN

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Abstract

The present study is focused on the Late Cretaceous Mughal Kot Formation exposed in Mughal Kot Section, FR D.I Khan to establish the biostratigraphy and paleoceanography and its impact on depositional setting and planktonic foraminiferal evolution. The biostratigraphic investigations revealed the presence of abundant planktonic foraminiferal species such as *Globotruncana*, *Globotruncanita* and *Hetrohelix*. Based on these species, a single planktonic foraminiferal biozone has been reported named as *Globotruncana-Globotruncanita-Hetrohelix* Assemblage Zone of the Maastrichtian age. The Mughal Kot Formation is interpreted to be composite of carbonates and clastics (sandstone). Seven carbonate microfacies are identified including pelagic mudstone, siliciclastic pelagic mudstone, siliciclastic sponge laminated mudstone, organic rich siliciclastic pelagic mudstone, siliciclastic pelagic mudstone with thin laminae of sand showing tempestite, dolomitized mudstone with alternate laminae of sand and dolomite, and siliciclastic bioclastic orbitoidal wackestone. Similarly, three sandstone microfacies are recognized including quartz arenite, quartz wacke and calcareous quartz. All of the microfacies indicates outer shelf depositional setting except the siliciclastic bioclastic orbitoidal wackestone microfacies reflecting open inner shelf depositional setting. The evolutionary study of the planktonic foraminifera such as species richness of the Mughal Kot Formation indicates a decreasing trend from base to top of the rock unit. The species richness/diversification correspond to the stratified global oceans during the Maastrichtian while the overall stepwise decrease within species richness indicate the effect of local tectonics on the Mughal Kot Formation.