LATE CAMPANIAN–EARLY MAASTRICHTIAN CALCARCEOUS NANNOFOSSILS BIOSTRATIGRAPHY AND PALEOECOLOGY OF THE GURPI FORMATION (GURPI ANTICLINE – SW OF IRAN)

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Gurpi Formation consists of dark grey to grey marly shales, marls and marly limestones which has a good outcrop and extensive exposure in Zagros Basin in Iran. The present study focuses on the lower part of the Gurpi Formation in the central Zagros basin of Iran at the Dezful embayment. The aim of the present study is to exactly date the studied interval with regard to the calcareous nannofossils and to determine the calcareous nannofossil biozonation and paleoecology.

A total of 129 samples with a sampling resolution of about 2 m were collected and were processed using the gravity settling technique. The slides were studied with an Olympus BH2 microscope at 1250x magnification. Calcareous nannofossils have been investigated at the lower part of Gurpi Formation at Gurpi Anticline in the south west of Iran. The lower part of Gurpi Formation consists of grey to yellow marls, marly limestones, shales and limestones. According to the calcareous nannofossils data, the studied interval spans from Late Campanian to Early Maastrichtian and from the middle part of CC22/UC15eTP to CC24/UC18. Eight bio-horizons are recorded at the studied interval, which are as follows from the bottom to top of the section respectively: LO of Reinhardtites anthroporus, LO of Eiffellithus eximius, LO of Uniplanarius tridus (Long Ray), LO of Aspidolithus parcus parcus, LO of Aspidolithus parcus constrictus, LO of Uniplanarius tridus (Short Ray), LO of Uniplanarius gothicus, LO of Tranolithus orionatus. The studied interval encompasses the Cretaceous–Cenozoic boundary (CMB). At the Late Cretaceous (Campanian–Maastrichtian) a cooling event is recorded with some oscillations, which is associated with changes in the calcareous nannofossil assemblages and is recorded by the expansion of cold water taxa towards low latitude (such as Ahmuellerella octoradiata, Gartnerago segmentatum, Kamptnerius magnificus and Nephrolithus frequens). At the studied interval, the abundance of the above mentioned cold water taxa is below 0.5%, but other taxa that are considered as cool water (e.g., Discorhabdus ignotus, Biscutum constans, and Tranolithus orionatus) are present along with warm water taxa (e.g., Watznaueria barnesae and Ceratolithoides spp.), although the number of warm water taxa is higher than cool water taxa. It must be mentioned that the oligotroph taxa (such as Watznaueria barnesae, Eiffellithus spp., Lithraphidites spp., Staurolithites spp. and Prediscosphaera spp.) are observed along with the eutroph and mesotroph taxa (e.g., Discorhabdus ignotus, Biscutum constans and Zeugrhabdodotus spp.), but the number of oligotroph taxa is higher than eutroph and mesotroph taxa, which is similar to DSDP Hole 390A (Black Nose). The increase in the size of Arkhangelskiella cymbiformis is also observed above the CMB, which is similar to the other parts of the world.