

# Evidence of *Discoaster multiradiatus* size variation in the late Paleocene–early Eocene of the Zagros Basin (SW Iran)

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The Paleocene/Eocene boundary is associated with an abrupt global warming known as the Paleocene–Eocene Thermal Maximum (PETM) that occurred at about 55 Ma and coincided with a negative carbon isotope excursion in all ocean basins. At the PETM, there were also changes in calcareous nannofossils assemblages, such as an increase in abundance of the genera *Rhomboaster* and *Discoaster*. In the current study, calcareous nannofossils were investigated at the Gurpi anticline in the Zagros Basin in SW Iran (central Tethys). A morphometric analysis of *Discoaster multiradiatus* indicates a remarkable increase in the size of this species in the upper part of Biozone CNP11/NP9 within the PETM. The top of Zone CNP11 is marked by the disappearance of the *Fasciculithus richardii* group. The extinction of this group is regarded as a marker for the beginning of the PETM at the Paleocene/Eocene boundary in the Atlantic, Pacific, and Tethyan Oceans. In other parts of the world, the PETM has been recorded in the upper part of Biozone CNP11/NP9.

Within the studied interval from Zagros Basin, there was a reversed trend in the relative abundance of *Toweius* spp. and *Coccolithus pelagicus*, followed by a decreasing trend in the relative abundance of these two groups of taxa. An increase and subsequent decrease in the relative abundance of *Fasciculithus* spp. was also identified before their disappearance and extinction in the PETM and post-PETM interval. Warm and oligotrophic conditions were recorded during the PETM of the studied interval where an increase in the size of *D. multiradiatus* was recorded. According to Tremolada et al. (2008), an increase in the size of *D. multiradiatus* correlates with oligotrophic conditions under enhanced stratification rather than nitrification.

## References:

- Tremolada, F., Bernardi, B.D. & Erba, E. 2008. Size variations of the calcareous nannofossil taxon *Discoaster multiradiatus* (Incertae sedis) across the Paleocene–Eocene thermal maximum in ocean drilling program holes 690B and 1209B. *Marine Micropaleontology*, **67**: 239–254.  
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