

Tithonian–early Berriasian calcareous nannofossil events in Barlya, Bulgaria, and Lókút, Hungary: calibration with magnetostratigraphy and calpionellid biostratigraphy

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We present a high-resolution nannofossil bioevent record through the Tithonian-Berriasian boundary interval at two distant Tethyan sections: Barlya, western Bulgaria and Lókút, northern Hungary. Both sections display a similar sedimentary succession of pelagic limestones. The Barlya section (western Balkan Mountains) exposes a thick and continuous Tithonian to Valanginian carbonate sequence (>100m) (Lakova & Petrova, 2013). However, the upper Tithonian to lower Berriasian part of this section is partially remagnetized and correlation of nannofossil events with magnetic stratigraphy can only be provisional. The Lókút section (Bakony Mountains) represents a ca. 13m-thick succession of early Tithonian to early Berriasian age and is precisely dated with calpionellids and magnetostratigraphy (Grabowski *et al.*, 2010).

A comprehensive review of previous and present data on nannofossil and magnetostratigraphy correlation clearly showed two distinct groups of nannofossil taxa: one with rather scattered and diachronous first occurrences (FOs), and the second with a more or less consistent FO record between the different sections. The first group includes *Conusphaera mexicana mexicana*, *Polycostella beckmannii*, *Cyclagelosphaera argoensis*, *Hexalithus noeliae*, and *Nannoconus infans*. These taxa's FOs demonstrate diachroneity in the Tethyan domain and thus cannot be used for precise correlation.

The second group includes *Nannoconus globulus minor*, *Hexalithus geometricus*, *N. globulus globulus*, *N. wintereri*, *Cruciellipsis cuvillieri*, *N. steinmanni minor*, and *N. kamptneri minor*. Overall, their FOs fall within the long M19 chron. The FO of *Hexalithus geometricus* seems to be a fairly consistent bioevent at the middle of the M19n2n subchron and thus of potential use for detailed correlation. The FOs of *N. steinmanni minor* and *N. kamptneri minor*, commonly used for biostratigraphic zonation, were concentrated within the upper part of M19n. It is worth noting that the next two species to evolve in the early Berriasian, *N. steinmanni steinmanni* and *N. kamptneri kamptneri*, showed relatively dispersed FOs within the M19n1r–M17r chrons, which may be due to preservation problems, problematic bio-magnetostratigraphy calibrations, or simple diachroneity.

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References

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