

Early and Middle Jurassic Tethyan calcareous nannofossil zonation: Taxonomic updates and biostratigraphic improvements

Stefano Visentin

Eni SpA – Department SPES, Sedimentology, Petrography & Stratigraphy, 20097 San Donato Milanese, Italy; stefano.visentin@eni.com

Giulia Faucher

GEOMAR Helmholtz Centre for Ocean Research Kiel, 24148 Kiel, Germany; gfaucher@geomar.de

Elisabetta Erba

Università degli Studi di Milano, Dipartimento di Scienze della Terra “Ardito Desio,” 20133 Milano, Italy; elisabetta.erba@unimi.it

<https://doi.org/10.58998/jnr3298>

Biostratigraphic investigations of Tethyan sections, which span the Toarcian–lower Bajocian interval and have been published in the last two decades, were collected and compared with standard schemes. This assessment found that there were some discrepancies in the succession of events based on biozonations, which has resulted in our revision of the age of some biohorizons. Moreover, some new/additional nannofossil events are proposed as subzonal markers. A morphometric analysis of the genus *Watznaueria*, whose specific distribution is crucial for Jurassic biostratigraphy, was also conducted to identify diagnostic features that make possible unambiguous identification of the marker species *W. colacicchii*, *W. contracta*, and *W. britannica*. Moreover, a new species, *W. gaetanii*, was established based on a different bridge ultrastructure.

This work attests to the utility of establishing new biohorizons for Tethyan stratigraphic successions because they offer the ability for a more precise age dating of Lower to Middle Jurassic key sections. This more detailed chronostratigraphic framework is extremely useful, both for the oil and gas industry and for academic research. Moreover, this study provides new evidence of a comprehensive intrageneric evolutionary lineage that started in the Toarcian and accelerated during the Aalenian under stable paleoceanographic conditions in an oligotrophic regime.