Calcareous nannofossil and calpionellid calcification events across the Tithonian-Berriasian time-interval and low-latitude paleoceanographic implications

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Calcareous nannofossil and magnetic stratigraphies of several sections spanning the Middle-Upper Jurassic to lowermost Cretaceous have been studied in the Lombardian Basin (Torre di Busi, Colle di Sogno) and Trento Plateau (Colma di Vignole, Foza, Frisoni, Sciapala, Bombatierle, Passo Branchetto) in order to integrate calcareous nannofossil events with the polarity chron sequence and, where available, with calpionellid biostratigraphy. Calcareous nannofossil biostratigraphy has been carried out on smear slides prepared from un-heated end-pieces of the same samples used for magnetostratigraphy. Similar variations in nannofloral abundance and composition have been documented in all sections. In the Jurassic/Cretaceous boundary time-interval, all previously-known calcareous nannofossil zones and corresponding subzones (Bralower *et al*., 1989) have been clearly recognized. In the Callovian-Kimmeridgian interval, a tentative integration of biostratigraphy (De Kaenel *et al*., 1996; Bown, 1998; Cobianchi, 2002) with polarity chrons is proposed. The magnetic stratigraphies span the CM16R (late Berriasian) to the CM25 (Oxfordian) interval. The identification of polarity zones is based on polarity-zone pattern fit, and, where available, on the previously-established correlations of polarity chrons to nannofossil events/zones (Channell & Grandesso, 1987; Channell *et al*., 1987; Weissert & Channell, 1989; Bralower *et al*., 1989).

References

Bown, P.R. & Cooper, M.K.E. 1998. Jurassic. *In*: P.R. Bown (Ed.). *Calcareous Nannofossil Biostratigraphy*. British Micropalaeontological Society Publications Series. Kluwer Academic Publishers, London: 34-85.

Bralower, T.J., Monechi, S. & Thierstein, H.R. 1989. Calcareous Nannofossil Zonation of the Jurassic-Cretaceous Boundary Interval and Correlation with the Geomagnetic Polarity Timescale. *Marine Micropaleontology*, **14**: 153-235.

Channell, J.E.T., Bralower, T.J. & Grandesso, P. 1987. Biostratigraphic correlation of M-sequence chrons at Capriolo and Xausa (S. Alps, Italy). *Earth Planetary Science Letters*, **85**: 203-221.

Channell, J.E.T., Erba, E., Nakanishi, M. & Tamaki, K. 1995. Late Jurassic-Early Cretaceous time scales and oceanic magnetic anomaly block models. *Geochronology Time Scale and Global Stratigraphic Correlation*, **54**: 51-63.

Channell, J.E.T. & Grandesso, P. 1987. A revised correlation of Mesozoic polarity chrons and calpionellid zones. *Earth Planetary Science Letters*, **85**: 222-240.

Cobianchi, M. 2002. Calcareous nannofossils from the Middle and Upper Jurassic of the Belluno Basin (Southern Calcareous Alps). *Atti Ticinensi di Scienze della Terra*, **43**: 3-24.

De Kaenel, E., Bergen, J.A. & Perch-Nielsen, K. 1996. Jurassic calcareous nannofossil biostratigraphy of Western Europe. Compilation of recent studies and calibration of bioevents. *Bulletin Société geologique de France*, **167**(1): 15-28.

Weissert, H. & Channell, J.E.T. 1989. Tethyan carbonate carbon isotope stratigraphy across the Jurassic/Cretaceous boundary: an indicator of decelerated global carbon cycling? *Paleoceanography*, **4**(4): 483-494.