

CALPIONELLID and CALCAREOUS NANNOFOSSIL EVOLUTION and CALCIFICATION  
ACROSS TITHONIAN-BERRIASIAN INTERVAL (TETHYS OCEAN)

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The Tithonian-Berriasian interval is characterized by the appearance of calpionellid and by a major calcareous nannofossil speciation episode: several genera and species first appear and evolve, showing an increase in diversity, abundance and calcification degree.

Monte Pernice and Torre de Busi sections (Southern Alps, Italy) have been analyzed for calcareous nannofossil and calpionellid biostratigraphy, relative and absolute abundances and to reconstruct biogenic calcite palaeofluxes. Calcareous nannofossils have been investigated on simple smear slides and ultra-thin sections (7-8  $\mu\text{m}$  thick) calpionellids on the same thin sections (20-30  $\mu\text{m}$  thick). All nannofossil specimens have been counted on 1  $\text{mm}^2$  of ultra-thin section; all calpionellid specimens on 1  $\text{cm}^2$  of thin sections to reconstruct paleofluxes.

In the Tithonian- Berriasian interval all known calcareous nannofossil Zones and corresponding Subzones (Bralower et al., 1989) have been recognized. *Chitinoidea*, *Crassicollaria* and *Calpionella* Zones have been identified (Remane, 1986; Pop, 1994b; Reháková & Michalík, 1997; Andreini et al., 2007).

Quantitative calpionellid and nannofossil analyses point out major changes during the Tithonian – Berriasian interval: nannolith taxa (*F.multicolumnatus*, *C.mexicana*, *P.beckmannii*) increase in abundance, size and calcification degree in discrete steps across the Lower Tithonian, coeval with the occurrence of first calcified calpionellids (*Tintinopsella*). Nannoconids and calcified calpionellids (*Crassicollaria*, *Calpionella*, *Remaniella*) increase across the Tithonian/Berriasian boundary reaching lithogenetic abundances: the rise in high-calcified nannoconids roughly corresponds with the Acme of *C. alpina* spherical forms. The diversification and biomineralization of highly-calcified microplankton produced a major increase in pelagic carbonate sedimentation due to the onset of paleoenvironmental conditions favorable to calcification.