Calcareous nannofossil biozonations for the Rhaetian (Upper Triassic)

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Abstract

The calcareous nannoplankton first occurred during the Upper Triassic (Norian) and seems to spread from the Western Neo-Tethys toward the other oceans. This project focuses on the early evolution of calcareous nannoplankton during the Rhaetian from sediments located in the Neo-Tethys Ocean (Western and Southern) as well as the Palaeo-Tethys Ocean. To tackle the problem of diagenesis and poor preservation often impacting the Upper Triassic sediments, different methodologies were applied according to the lithology. Both soft and hard calcareous lithologies were analyzed using a scanning electron microscope (SEM), while for the soft lithologies, the standard smear slides were observed under a light microscope (LM).

Those combined analysed allow the identification of a new nannolith species, *Eoconusphaera hallstattensis* and confirmation of the disregarded subspecies Prinsiosphaera triassica crenulata. E. hallstattensis presents a short range of occurrence during the early Rhaetian from *Paracochloceras suessi* to *Vandaites stuerzenbaumi* zones. The succeeding taxa, *E. zlambachensis* first occurs during the *V. stuerzenbaumi* Zone but dominates the assemblage until the end-Triassic. *P. triassica crenulata* was for a long time interpreted as a diagenetic alteration of *P. t. triassica,* however, our observation of its characteristic parallel-oriented calcite lamellae both under SEM and LM reconsidered this misinterpretation. This last species, also present a relatively short range of occurrence from the top of *V. stuerzenbaumi,* when *E. hallstattensis* last occurs, until the end-Triassic.

In the Western Tethys sections, the range of occurrence of those three species is well known and represents good biostratigraphic markers for the Rhaetian with the distinction of three biozones: *E. hallstattensis* Zone, *E. hallstattensis – E. zlambachensis* Zone and *E. zlambachensis – P. t. crenulata* Zone. The Eoconusphaeraceae species are abundant and observed in the different oceans of the Rhaetian. This new biozonation has proven to be useful as it allowed us to date as well sediments of the Palaeo-Tethys in Romania.

Keywords: Biozone, nannolith, Neo, Tethys, Palaeo, Tethys, Eoconusphaera spp., Prinsiosphaera triassica

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