# Boreal-Tethyan calcareous nannofossil biostratigraphic correlation during the Cenomanian-Coniacian: New insights from Poigny core (Paris Basin) and Quero section (Belluno Basin)

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**Abstract**

The Cenomanian-Coniacian was characterized by pervasive changes in the ocean/atmosphere system where perturbations linked to the carbon cycle are highlighted by stable isotopic data. These data indicate temperature changes during the late Cenomanian-Coniacian interval. Specifically, the Cenomanian was characterized by a long-term warming trend culminating in the Ocean Anoxic Event 2 occurred close to the Cenomanian/Turonian boundary. Conversely, the Turonian was punctuated by several cooling phases culminating with the "Late Turonian Cool Phase" and continuing in the Coniacian. These paleoclimatic changes induced paleoenvironmental stressors due to a combination of several interconnected factors (e.g., volcanic activity, changes about trophic conditions in the upper water column). Widespread modifications influenced the marine biota even leading to evolutionary turnover, especially recorded by primary producers such as the calcareous nannoplankton. If the biotic turnover is an essential tool for biostratigraphic purposes, a sound biostratigraphy is crucial for constraining climatic changes. Although calcareous nannofossils are a powerful biostratigraphic tool, some widely adopted Cretaceous calcareous nannofossil biohorizons seem to suffer from diachronism and taxonomic ambiguity (e.g., *Eiffellithus eximius*) that can blur their biochronological reproducibility during the Cenomanian/Coniacian interval. To shed light on calcareous nannofossil biostratigraphic discrepancies, we studied the upper Cenomanian/lower Coniacian assemblages from the Poigny core (Paris Basin) and Quero section (Belluno Basin, northeastern Italy) with the aim to decipher the calcareous nannofossil turnover during this interval. We integrated calcareous nannofossil data with those of planktic foraminifera and the stable isotopic values (Le Callonnec et al., 2021). Our data highlight the evolutionary trend of three *E. eximius* morphotypes that might have biostratigraphic utility. The first occurrence of these *E. eximius* morphotypes have been correlated with isotopic stratigraphy data in both sites. In fact, the isotope stratigraphy suggests that the first occurrence of *E. eximius* morphotype 2 and *E. eximius* s.s. are synchronous taking places in both sites around the Round Down and Hitch Wood Events, respectively. Instead, the first occurrence of *E. eximius* morphotype 1 seems to be diachronous between Poigny and Quero. In addition, we record variations in presence and abundance of many taxa between the two investigated sites (e.g., *Kamptnerius magnificus*, *Gartnerago* spp., *Eprolithus* spp.).

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We interpret these variations as probably due to different paleoenvironmental conditions of the diverse depositional setting such as temperature and trophic resources of the upper water column.

References

Le Callonnec, L., Briard, J., Boulila, S., Galbrun, B. 2021. Late Cenomanian-Turonian isotopic stratigraphy in the chalk of the Paris Basin (France): a reference section between the Tethyan and Boreal realms. *BSGF-Earth Sciences Bulletin*, **192**(1): 1-14.

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