



Carbonate clumped isotope seawater temperature reconstructions from macrofaunal assemblages of the Campanian, Maastrichtian and Danian from the area around Maastricht

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The climatic conditions towards the end of the Cretaceous are expected to show a cooling trend from the Campanian to the Maastrichtian stage accompanied with several carbon isotope excursions (CIE) detected in the Atlantic, Pacific and Tethyan Oceans. The observation that these CIEs do not correlate with warming as for instance the Paleocene Eocene Thermal Maximum points on different causes that might relate to tectonic activity and/or changes in seawater circulation (e.g. Linnert et al., 2017).

The shallow and still relatively warm water conditions offered a fruitful environment for a wide range of marine organisms of which the fossil remnants are very abundant in the area around Maastricht, defining the type locality of the final Cretaceous stage, the Maastrichtian (72.1-66.0 Ma). We performed a low resolution seawater temperature record on fossil shell assemblages from the Maastrichtian type locality in southern Netherlands, which is based on carbonate clumped isotope thermometry. Our new seawater temperature record includes shell material from the Campanian, Maastrichtian and the Danian, thus provides background seawater temperatures around the Cretaceous Paleogene Mass Extinction event. With the analysis of a fossil assemblage we further hope to draw more accurate constraints on the local seawater oxygen isotope composition and eventual circulation patterns during that time.

Literature:

Linnert C., Robinson S.A., Lees J.A., Pérez-Rodríguez I., Jenkyns H.C., Petrizzo M.R., Arz J.A., Bown P.R. and Falzoni F. (2017) Did Late Cretaceous cooling trigger the Campanian-Maastrichtian Boundary Event? *Newsletter on Stratigraphy* 51, 145-166.