



First record of the end-Triassic mass-extinction in the Netherlands

Bas van de Schootbrugge, Mart Smeets, and Jelle Reumer

Utrecht University, Institute of Earth Sciences, Marine Palynology & Paleoceanography, Utrecht, Netherlands
(b.vanderschootbrugge@uu.nl)

The town of Winterswijk is well-known for its commercially exploited limestone quarry that represents the sole outcrop of Muschelkalk (Anisian, Triassic) in the Netherlands. Perhaps less well-known is that the Muschelkalk is overlain by a thin band of around 8 meters of black to brown laminated clays that have been dated to be of Rhaetian age based on a characteristic assemblage of Late Triassic pollen and spores. The Rhaetian is truncated towards the top and overlain by Oligocene marine clays rich in dinoflagellate cysts. Here, we use the WINT15-02 core drilled by Sibelco in 2015 to examine in detail the Rhaetian palynological assemblage. The Rhaetian clays of Winterswijk can be subdivided into two intervals; the lower part is dominated by high abundances of *Classopollis* and other typical Rhaetian pollen, including *Ovalipollis ovalis*. The upper part is a spore-dominated interval with high spore diversity and a dominance of the *Concavisorites-Deltoidospora* complex and *Polypodiisporites polymicroforatus*. We also observed aberrant forms of *Classopollis* in this interval. The WINT15-02 core thus preserves a transition from the latest Triassic Contorta to the Triletes Beds, representing the onset of the end-Triassic mass-extinction. Using the Spore Ecogroup Model, the Triletes Beds show a strong increase in lowland plants and pioneer species indicating warm and wet climate conditions. A strong decrease in palynomorph concentration and pollen diversity indicates an overall decrease in tree coverage as has also been observed in other nearby sites in the Germanic Basin.