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Category:Geochemical Correlation of Marl Seams

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Detailed geochemical analysis of marl seams in the Turonian - Coniacian Chalk Group successions of Germany, eastern England (Yorkshire & Lincolnshire) and southern England has shown that some marls are bentonites, formed from volcanically derived material (Wray & Wood, 1995; Wray & Wood, 1998; Wray, 1999). These marl seams are distinguished by their Rare Earth Element (REE) geochemistry and clay mineralogy, anomalously low europium ('Eu anomaly') and high smectite content being characteristic (Wray, 1999). Other marl seams are considered to be detrital in origin, and are characterised by a minimal or absent Eu anomaly and a higher proportion of illite (Wray, 1999). The volcanically derived marl seams are probably ash-falls related to the early stages of rifting associated with the opening of the North Atlantic Ocean, whereas the detrital marls could have formed from increased clastic input during sea-level lowstands (see: Sequence Stratigraphy) (Wray, 1999).

Analysis of marls from broadly coeval Turonian-Coniacian successions in Germany, eastern England and southern England showed an identical number of bentonites occurred in each region (Wray, 1999). This apparent correlation has been verified by comparison of the Carbon-13 isotope signatures for southern England and northern Germany, and by biostratigraphic data from all three regions (Wray, 1999).

References

- WRAY, D S.** 1999. Identification and long-range correlation of bentonites in Turonian-Coniacian (Upper Cretaceous) chalks of northwest Europe. *Geological Magazine*, **136**, 361-371.
- WRAY, D S & WOOD, C J.** 1995. Geochemical identification and correlation of tuff layers in Lower Saxony, Germany. *Berliner geowiss. Abh.*, **E16**, 215-225.
- WRAY, D S & WOOD, C J.** 1998. Distinction between detrital and volcanogenic clay-rich beds in Turonian-Coniacian chalks of eastern England. *Proceedings of the Yorkshire Geological Society*, **52**, 95-105.

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