



## **Micropalaeontological evidence of the EECO and MECO events in southern England and adjacent areas**

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The Early Eocene Climatic Optimum (EECO) and Middle Eocene Climatic Optimum (MECO) are two, well-documented, warming events in the Paleogene prior to the general cooling trend of the late Eocene. Investigation of the classic succession of Whitecliff Bay (Isle of Wight, UK) and other locations on the English Channel coastline (e.g., Alum Bay, Bracklesham, Bognor Regis), around Jersey (Channel Islands) and the Cotentin Peninsula (France) have shown the limited, intermittent, presence of climatically-sensitive, larger foraminifera. The distribution of taxa, such as *Nummulites* spp., *Alveolina* spp. and other rotaliids, appear to be indicative of warmer waters, many of the species being at the northern limit of their distribution. Whitecliff Bay, and the other locations, also record fluctuations in sea level, which modify the facies and the microfossil distributions. In the early Eocene, the London Clay Formation contains no 'larger' foraminifera but there is a limited occurrence of planktic foraminifera associated with palaeobotanical evidence of warm conditions. The stable isotope data are equivocal, with work still in progress. Within the upper part of the Bracklesham Group and the lower part of the Barton Clay Formation, however, there is an interval characterised by the presence of distinctive, larger foraminifera. The main concentration of warm-water indicators is within the 'Brook Bed' and this assemblage is also recorded at Bracklesham, off-shore Jersey and near Vallognes (Cotentin Peninsula). Just above the disappearance of the *N. prestwichianus* and *N. rectus*, in the Barton Clay Formation, Dawber et al. (2011) have recorded an isotope excursion – which could be MECO – although their data do not extend into the interval with the larger foraminifera. Both EECO and MECO are potentially longer than the other Paleogene hyperthermal events and could, therefore, include time for migration of larger foraminifera at the northern limits of latitudinal ranges.

Dawber, C.F. et al., 2011, *Palaeogeography, Palaeoclimatology, Palaeoecology*, v. 300, pp. 84–100.