

# **Plankton community dynamics through the Palaeogene–Neogene transition from the northwest Atlantic (IODP Expedition 342, Sites U1406 and U1411)**

**Claire M. Routledge**

University College London (UCL), Department of Earth Sciences, London WC1E 6BT, UK; claire.routledge.16@ucl.ac.uk

**Cherry Newsam**

Network Stratigraphic Consulting Ltd., Hertfordshire EN63JF, UK; cherry@network-stratigraphic.co.uk

**Paul R. Bown**

UCL, as above; p.bown@ucl.ac.uk

The later Palaeogene saw a significant climate change as the Earth system shifted from greenhouse to icehouse mode. This dramatic switch saw major extinctions and compositional changes in plankton across the Eocene–Oligocene boundary, but we lack the long-term quantitative records that document the structure and timing of coccolithophore diversity through this interval, and which would allow us to test whether climatic shifts played a significant role in plankton evolution, population variability and population composition.

Here, we present long-term community records of nanoplankton from deep-sea sites U1406 and U1411 (IODP 342) that provided stratigraphically-expanded Eocene through Early Miocene sections, including exceptionally well-preserved Eocene to Early Oligocene and Late Oligocene to Early Miocene calcareous nanoplankton (Site U1406), and moderately well-preserved Oligocene nanoplankton (Site U1411). This ~23-Myr record (45 to ~22 Ma) enables us to track nanoplankton diversity and community compositions through this interval, and to compare these data with proxies of climate and ocean changes.