Surface ocean warming and hydrographic change in the North Atlantic during the Middle Eocene Climatic Optimum

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How global was MECO warming?
- IODP Sites U1408 and U1410 (Newfoundland Drifts):
  - highest resolution MECO interval recovered so far
  - multiproxy temperature reconstructions possible due to well-preserved foraminifera and abundant organic matter

A new U1408/U1410 MECO composite record
- Revised stratigraphic correlations for MECO interval based on XRF data
- MECO peak warmth interval likely missing at U1408 but present at U1410

High-resolution clumped isotope paleothermometry and multiproxy temperature reconstructions
- Surface mixed-layer warming of 4 °C during MECO inferred from Δemperature measurements on two species of planktonic foraminifera
- Combined foraminiferal Δδ18O and δ18O data yield seawater δ18O increase of ~0.5 ‰, may indicate transient salinization of North Atlantic
- Multiproxy comparison between Δemperature, Mg/Ca and TEX86 results in roughly similar estimates of warming (2-4 °C), but absolute values differ greatly and depend on calibration used