

Figure F1. Location of Expedition 397 sites on Promontório dos Príncipes de Avis (PPA) off Portugal. Also shown are Marion Dufrense (MD) piston cores and Integrated Ocean Drilling Program Expedition 339 Site U1391. Map is modified from Hodell et al. (2015) and was made with GeoMapApp (<http://www.geomapp.org>) using the bathymetry of Zitellini et al. (2009).

Figure F2. Core recovery from each Site U1385 hole, Expeditions 339 (Holes U1385A–U1385E), 397 (Holes U1385F–U1385J), and 401 (Holes U1385K and U1385L). Holes U1385F, U1385H, U1385K, and U1385L were drilled ahead before core recovery began at depth. Gray = drilled without coring (DWC), white = no recovery. APC = advanced piston corer, XCB = extended core barrel.

Figure F3. Comparison of CaCO_3 weight percentage (measured by coulometric titration on discrete samples) and $\log(\text{Ca}/\text{Ti})$ values at corresponding core depths, Site 397-U1385 (Hodell et al., 2024b) and Piston Cores MD01-2443 and MD01-2444 (Hodell et al., 2013a). Strong correlation supports use of $\log(\text{Ca}/\text{Ti})$ as a proxy for CaCO_3 content.

Figure F4. Ca/Ti signals for Cores 6H and 7H in Holes U1385G, U1385I, and U1385J showing tie lines connecting correlative features across cores. Only Core 397-U1385I-6H recovered a complete section across MIS 11/Termination V. The two highest peaks in Ca/Ti in Core 397-U1385I-6H are assumed to correlate with two precession minima during MIS 11e.

Figure F5. Core photographs taken during Expedition 397 shortly after core splitting (U1385I-6H and 7H). Images have been enhanced by adjusting brightness and contrast to emphasize core disturbance and color changes. Dark patches in Section 6H-3 indicate reducing core conditions that rapidly disappear upon exposure to atmospheric oxygen. Black boxes = disturbed intervals in tops of each core.

Figure F6. Oxygen isotopes of *G. bulloides* and *Cibicides* and Ca/Ti (397-U1385I-6H and 7H). Gray shading = MIS 11, blue = MIS 12, yellow = Termination V.

Figure F7. Tie points used to splice 4.46 m section from Site 397-U1385 to fill gap over MIS 11/Termination V at Site 339-U1385.

Figure F8. Comparison of correlated Ca/Ti signals using Match (Lisiecki and Lisiecki, 2002), Sites 397-U1385 and 339-U1385. Depth scale (crnmd) of Hodell et al. (2015) was revised to crnmd* by inserting missing MIS 11/Termination V interval recovered from Site 397-U1385.

Figure F9. $\log(\text{Ca}/\text{Ti})$ records with overlap for last 1450 ky, Sites 339-U1385 and 397-U1385.

Figure F10. Benthic oxygen isotope record of Site 397-U1385 compared to Sites 339-U1385 and U1308 and LR04 ProbStack. Gray = hiatus at Site 397-U1385 between 1720 and 1870 ka, corresponding to approximately MISs 62–70. Site U1385 record is on LR04 timescale to 2 Ma and precession-tuned timescale thereafter. Records are offset for clarity. LR04 record is adjusted to $\delta^{18}\text{O}$ values of *Uvigerina*, but Site U1385 and U1308 records are not.

Figure F11. Tuning of peaks in $\log(\text{Ca}/\text{Ti})$ at Site 397-U1385 (black) with precession minima (red). Gray = times of low eccentricity, which modulate the amplitude of precession and are evident in Site U1385 Ca/Ti record.

Figure F12. Age-depth relationship and interval sedimentation rates for proposed chronology, Sites 339-U1385 and 397-U1385. Note increase in sedimentation rates between ~3 and 2.5 Ma and hiatus between 1.72 and 1.87 Ma.

Figure F13. $\log(\text{Ca}/\text{Ti})$ for last 5300 ky, Site 339-U1385. Record is continuous except for hiatus between 1720 and 1870 ka.