Figure F1. Location of Site U1385 relative to other Expedition 397 sites and selected piston cores from the continental slope of the southwestern Iberian Margin. Note the proximity of Piston Core MD01-2444 to Site U1385. The map is from Hodell et al. (2023) and was made with GeoMapApp (**https://www.geomapapp.org**) using the bathymetry of Zitellini et al. (2009).

Figure F2. Bathymetric map of Seismic Lines 9 and 13 showing the location of Sites 397-U1385 (red circle) and 339-U1385 (green circle). CMP = common midpoint, SSDB = Site Survey Databank.

Figure F3. Core recovery and age depth points of Hodell et al. (2015), Site 339-U1385. Slopes are indicative of sedimentation rate.

Figure F4. Benthic oxygen isotope record with identified interglacial MISs, Site 339-U1385 (Hodell et al., 2015). NGR (Expedition 339 Scientists, 2013) is also shown. The Site 397-U1385 NGR record was used to recognize MISs as a preliminary stratigraphy. cps = counts per second.

Figure F5. Salinity and silicate profiles on WOCE Line A03 (36°N) showing proposed site locations on the Iberian margin. Tongue of high salinity water between 600 and 1200 m is MOW. High Si (>35 µmol/kg) below 3000 m represents a contribution from LDW sourced from the Southern Ocean. Water masses do not have clearly defined boundaries but rather consist of a series of core layers bordered by transition (mixing) zones between adjacent layers. The positions of Expedition 397 sites are shown relative to each of the identified subsurface water masses.

Figure F6. Bathymetric transect of Expedition 397 sites designed to simulate a paleo-CTD with which to record past changes in deep water mass structure, ventilation, and carbon storage (figure made by Helder Pereira using Mirone and iView4D software).

Figure F7. Location of Site U1385 on the PPA at a water depth of 2591 mbsl. (Figure made by Helder Pereira using Mirone and iVew4D software.)

Figure F8. Original and interpreted Seismic Profile JC89-9 showing the location of Site 397-U1385. The ages of the reflectors have been revised to reflect the age of the recovered sediment. Penetration = 400 mbsf. TWT = two-way traveltime, CMP = common midpoint.

Figure F9. Original and interpreted Seismic Profile JC89-13 showing the location of Site 397-U1385. Penetration = 400 mbsf. TWT = two-way traveltime, CMP = common midpoint.

Figure F10. Core recovery, Sites 339-U1385 (November 2011) and 397-U1385 (November 2022). Holes U1385F and U1385H were washed down without recovery before XCB coring.

Figure F11. Lithofacies 1, Hole U1385G. All images: upper left = transmitted light brightfield, lower left = cross-polarized light (XPL), right = section half images, which include the interval where smear slides were taken.

Figure F12. Left: common trace fossils observed at Site U1385. Pl = *Planolites*, Th = *Thalassinoides*, Ch = *Chondrites*, Zo = *Zoophycos*. Right: *Chondrites* burrows filled with pyrite.

Figure F13. Diagenetic features, Site U1385. A. Orange-brownish oxidized sediment layer (0–10 cm CSF-A). B. Dark patches. C. A pyritized burrow that is nearly 60 cm long (only 37 cm is visible). D. A 10 cm long trace fossil burrow (likely *Thalassinoides*), which has a dark outline and some pyrite burrow fill and is altered by biscuiting. E. A nodule, likely pyritic. F. Pyritized burrows and dark patches.

Figure F14. Clay with nannofossil ooze from Lithofacies 2, Hole U1385F. Upper left: transmitted light brightfield. Lower left: XPL. Right: core photo.

Figure F15. Nannofossil ooze with diatoms and clay, Hole U1385G. Upper left: transmitted light brightfield. Lower left: XPL. Right: core photo.

Figure F16. Split cores, Hole U1385G. Left: soft-sediment section split with a wire. Right: more consolidated sediment section split with a saw.

Figure F17. Macrofossils, Site U1385. Top: shell that was cut in cross section during core splitting (397-U1385F-17X-4, 117–119 cm). Middle: whole gastropod shell (397-U1385G-18X-4, 121–122 cm). Bottom: pyrite-filled shell, which was cut in cross section during core splitting (397-U1385G-30X-3, 31–32 cm).

Figure F18. Inclined deformed bedding between a layer of nannofossil ooze with clay and nannofossil ooze (397-U1385G-3H-5, 87–98 cm; 18.16 m CSF-A).

Figure F19. Examples of drilling disturbance, Site U1385. A. Strong slurry. B. Slight gas expansion. C. Slight fracturing. D. Strong fragmentation. E. Severe fall-in. F. Moderate biscuiting.

Figure F20. $CaCO_3$ weight percent, L*, and MS, Hole U1385G.

Figure F21. Lithologic summary, Site U1385. ? = uncertain. For lithologic interpretation, colors are based on visual description and L*a*b* values (see Physical properties). Color is independent of lithology and is related to relative amounts of minor constituents such as pyrite and glauconite. Nannofossil biozones and paleomagnetic boundaries are summarized from shipboard data and may disagree. Inset: Seismic Line JC89 Line 9 showing location along transect and depth of Holes U1385F–U1385J (overlapping in image). TWT = two-way traveltime, CMP = common midpoint, SB = seabed, BPle = base of Pleistocene, BUPli = base of Upper Pliocene, BPli = base of Pliocene.

Figure F22. Preliminary age model from Site U1385 based on biostratigraphy. CN = calcareous nannofossils, PF = planktonic foraminifers.

Figure F23. Paleomagnetism data after 20 mT AF demagnetization, Hole U1385G. Chron: black = normal polarity zone/boundary, white = reversed polarity zone/boundary, gray = uncertain polarity zone/boundary. Squares = depths where discrete cube samples were collected. Inclination: dashed lines = expected GAD inclinations at the site latitude during reversed and normal polarities. Pink shading = strongly disturbed intervals. Declination: gray = measured declination values, green = declination values corrected using core orientation data collected with the Icefield MI-5. Susceptibility: magenta = SHMSL, black = WRMSL.

Figure F24. Paleomagnetism data after 20 mT AF demagnetization, Hole U1385I. Chron: black = normal polarity zone/boundary, white = reversed polarity zone/boundary, gray = uncertain polarity zone/boundary. Squares = depths where discrete cube samples were collected. Inclination: dashed lines = expected GAD inclinations at the site latitude during reversed and normal polarities. Pink shading = strongly disturbed intervals. Declination: gray = measured declination values, green = declination values corrected using core orientation data collected with the Icefield MI-5. Susceptibility: magenta = SHMSL, black = WRMSL.

Figure F25. Paleomagnetism data after 20 mT AF demagnetization, Hole U1385F. Chron: black = normal polarity zone/boundary, white = reversed polarity zone/boundary, gray = uncertain polarity zone/boundary. Inclination: dashed lines = expected GAD inclinations at the site latitude during reversed and normal polarities. Pink shading = strongly disturbed intervals. Susceptibility: magenta = SHMSL, black = WRMSL.

Figure F26. Paleomagnetism data after 20 mT AF demagnetization, Hole U1385H. Chron: black = normal polarity zone/boundary, white = reversed polarity zone/boundary, gray = uncertain polarity zone/boundary. Inclination: dashed lines = expected GAD inclinations at the site latitude during reversed and normal polarities. Pink shading = strongly disturbed intervals. Susceptibility: magenta = SHMSL, black = WRMSL.

Figure F27. Paleomagnetism data after 20 mT AF demagnetization, Hole U1385J. Chron: black = normal polarity zone/boundary, white = reversed polarity zone/boundary, gray = uncertain polarity zone/boundary. Inclination: dashed lines = expected GAD inclinations at the site latitude during reversed and normal polarities. Pink shading = strongly disturbed intervals. Declination: gray = measured declination values, green = declination values corrected using core orientation data collected with the Icefield MI-5. Susceptibility: magenta = SHMSL, black = WRMSL.

Figure F28. Discrete cube sample AF demagnetization, Hole U1385G. Cube sample results are organized by sample depth. All samples: left = intensity variation with progressive AF demagnetization, middle = NRM demagnetization data on orthogonal (Zijderveld) projections, right = equal area projections. Orthogonal projection plots: blue squares = horizontal projections, red circles = vertical projections. Equal area projection plots: solid circles = positive inclinations, open circles = negative inclinations. Measurements that were influenced by flux jumps and measurements from the first few demagnetization steps (typically <4–10 mT) that are heavily influenced by drilling-induced overprint are removed. (Continued on next two pages.)

Figure F29. Discrete cube sample AF demagnetization, Hole U1385I. Cube sample results are organized by sample depth. All samples: left = intensity variation with progressive AF demagnetization, middle = NRM demagnetization data on orthogonal (Zijderveld) projections, right = equal area projections. Orthogonal projection plots: blue squares = horizontal projections, red circles = vertical projections. Equal area projection plots: solid circles = positive inclinations, open circles = negative inclinations. Measurements that were influenced by flux jumps and measurements from the first few demagnetization steps (typically <4–10 mT) that are heavily influenced by drilling-induced overprint are removed.

Figure F30. Dissolved SO_4, alkalinity, headspace CH_4, Fe, Mn, and Ba and NH_4, PO_4, and pH, Hole U1385G.

Figure F31. Dissolved Na, K, and Cl, Hole U1385G.

Figure F32. Dissolved Ca, Mg, and Sr, Hole U1385G, with sulfate horizons.

Figure F33. Dissolved Si, Li, and B, Hole U1385G.

Figure F34. Discrete measurements of $CaCO_3$ by coulometry and ICP-AES with L* reflectance, Hole U1385G.

Figure F35. Cross-plot and linear regression of $CaCO_3$ and L* reflectance, Hole U1385G. Red line = 95% confidence interval (CI) for all carbonate data (direct measurements by coulometry and calculated from ICP-AES), black line = 95% CI for all coulometry data.

Figure F36. Cross-plot and linear regression of $CaCO_3$ and NGR, Hole U1385G. cps = counts per second, red line = 95% CI for all carbonate data (direct measurements by coulometry and calculated from ICP-AES), black line = 95% CI for all coulometry data, dashed line = 95% CI for all carbonate data from deeper than 25 m CSF-A.

Figure F37. Discrete measurements of $CaCO_3$ with NGR, Hole U1385G. cps = counts per second.

Figure F38. $CaCO_3$, TOC, and TN (black = Hole U1385G, blue = Hole U1385A and U1385B coulometer).

Figure F39. Sedimentary TOC, Tn, C/N, and TS, Hole U1385G.

Figure F40. Cross-plots of sedimentary major and minor element concentrations, Hole U1385G.

Figure F41. Downhole profiles of bulk sedimentary Ca/Ti, Si/Al, Ti/Al, Zr/Al, K/Al, biogenic Ba, and Sr/Ca, Hole U1385G.

Figure F42. GRA and MAD bulk density, porosity, thermal conductivity (TCON), and *P*-wave velocity (PWC), Holes U1385F (bottom) and U1385G (top). ma-20 = moving average of 20 points. Recovery of cores from Expedition 339 Hole U1385A is shown for comparison. Note that the thermal conductivity data for 0–150 m CSF-A in the top panel are from Hole U1385A.

Figure F43. MS (WRMSL), MSP (SHMSL), NGR, and L*a* b* values, Hole U1385G. Solid lines = moving average of 20 points, cps = counts per second.

Figure F44. NGR; K, Th, and U deconvolved and extracted from NGR spectra; and U/Th and K/Th ratios, Hole U1385G. All data from section edges (top and bottom) were cut. cps = counts per second.

Figure F45. Whole-round X-ray image of black grains presumed to be authigenic minerals (pyrite) filling burrow traces, Hole U1385G. Thin white lines = core gas expansion.

Figure F46. Physical properties comparison, Expeditions 339 and 397. cps = counts per second.

Figure F47. Composite section construction using MSP displayed in 50 m CCSF-A intervals, Site U1385. Horizontal dashed lines = wash-downed intervals, vertical dashed lines = core breaks. (Continued on next two pages.)

Figure F48. Spliced composite records of SHMSL MSP, L* color reflectance, RGB blue, and NGR, Site U1385. Data points at the beginning and end of core sections were removed (NGR = 10 cm; other measurements = 2 cm) to filter out spurious values. Spliced CCSF-A depths are transformed to CCSF-A* to better approximate the driller's depth. L* and RGB scales are reversed to match the sense of change in other parameters with increasing detrital composition to the right. cps = counts per second.

Figure F49. Depth scales, Site U1385. Left: comparison of CSF-A and CCSF-A depth scales. A 1:1 line is shown for comparison. Right: comparison of the growth of cumulative depth offset.

Figure F50. Polynomial mapping of CSF-A to composite depth (CCSF-A) used to derive the conversion to driller's depth, Site U1385. This conversion (CCSF-A*; see Table T32) brings data on the composite depth scale into close alignment with true stratigraphic depth.