

Figure F1. Regional bathymetry and boreholes near Site U1511. Stars = Expedition 371 sites, white dots = petroleum borehole sites, gray dots = DSDP and ODP sites.

Figure F2. Bathymetry and seismic reflection lines near Site U1511.

Figure F3. Seismic reflection dip Line TAN1409_TASS_01 through Site U1511. kmbf = kilometers below seafloor. CDP = common depth point.

Figure F4. Seismic reflection strike Line TAN1409_TASS_08 through Site U1511.

Figure F5. Lithostratigraphic summary of sedimentary section, Site U1511. cps = counts per second.

Figure F6. Major biogenic and lithologic constituent abundances in sediment based on smear slide analysis, Site U1511. + symbols and darker colored lines = Hole U1511A, x symbols and lighter colored lines = Hole U1511B. D = dominant (>50%), A = abundant (25%–50%), C = common (10%–25%), R = rare (1%–10%), T = trace (>0%–1%).

Figure F7. Common Unit I lithologies, Hole U1511B. A. Light yellowish brown clay. B. Greenish gray clay. C. Grayish brown clay with nannofossils.

Figure F8. Estimated abundance variation of major minerals identified by XRD analysis, Hole U1511B. Note that halite likely precipitated from pore fluids upon freeze-drying during XRD sample preparation, and this explains why it is particularly abundant in Unit II, where porosity is ~80%. Furthermore, noncrystalline components (such as amorphous biosilica) are not identified in XRD analysis and therefore are not represented in the total abundance. This overestimates the abundance of other crystalline minerals, especially in Unit II, where the majority of the solid sediment is composed of diatom opal.

Figure F9. Several authigenic features, Hole U1511B. A. Manganese oxide nodule. B. Chert nodules. C. Fluorapatite nodules. D. Rhodochrosite nodules. E. Rhodochrosite nodules. F. Red claystone with green halo containing native copper. G. Native copper.

Figure F10. Representative Unit I lithologies, Hole U1511B. A, B. Light yellowish brown clay. opq = opaque mineral. C, D. Greenish gray clay. qtz = quartz mineral. E, F. Grayish brown clay with nannofossils (nanno). PPL = plane-polarized light, XPL = cross-polarized light.

Figure F11. Common Unit II lithologies, Hole U1511B. A. Light yellowish brown biosiliceous diatomite with clay. B. Light yellow brown diatomite with clay. C. Light greenish gray clayey diatomite.

Figure F12. Representative Unit II lithologies, Hole U1511B. A, B. Light yellowish brown biosiliceous diatomite with clay. dtm = diatom. C, D. Light yellow brown diatomite with clay. rad = radiolarian. E, F. Light greenish gray clayey diatomite.

Figure F13. Common Unit III lithologies, Hole U1511B. A. Red claystone. B. Reddish brown claystone with radiolarians. C. Grayish green clay with nannofossils. D. Reddish brown claystone mixed with centimeter-scale greenish gray claystone. E. Mottled reddish brown and greenish gray claystone. F. Another mixture of red and green clays at multicentimeter scale.

Figure F14. Representative Unit III lithologies, Hole U1511B. A, B. Red claystone. C, D. Reddish brown claystone with radiolarians (rad). E, F. Grayish green clay with nannofossils (nanno).

Figure F15. Handheld XRF analysis from Units II and III, Site U1511. Major elements and selected ratios of weight percent (not molar ratios) normalized to Ti, which represents the detrital fraction.

Figure F16. Microfossil preservation and abundance, Site U1511. Abundance: D = dominant, A = abundant, C = common, F = few, R = rare, P = present, tr = trace, B = barren. Preservation: E = excellent, VG = very good, G = good, M = moderate, P = poor.

Figure F17. Radiolarian biozones, planktic foraminifer and calcareous nannofossil presence, benthic foraminiferal simple diversity (number of species), paleodepth interpretations, and plates of dominant microfossil groups found at Site U1511 (image letters are plotted alongside radiolarian zones to indicate samples images were taken from). Paleodepth reconstructions are largely based on presence/absence of calcareous microfossils. A. 371-U1511B-17R-CC (278.74–278.84 m). B. 12R-CC (230.81–230.91 m). C. 18R-CC (285.22–285.32 m). D. 17R-CC (278.74–278.84). E. 20R-CC (305.04–305.14 m). F. 19R-CC (295.37–295.47 m). G. 15R-CC (259.51–259.61 m). H. 23R-CC (335.44–335.54 m). I. 13R-CC (240.38–240.48). J. 16R-CC (268.64–268.74). K. 29R-CC (394.09–394.19 m).

Figure F18. Pass-through paleomagnetic data, Site U1511. Black dots = NRM intensity and inclination, gray dots = inclination after 20 mT AF cleaning interpolated by 10-point moving average (black line), red dots = inclination from discrete sample analysis. Magnetic polarity: black = normal, white = reversed, gray = unidentified. Correlation with GPTS2012 is shown.

Figure F19. A. Pass-through paleomagnetic inclination after 20 mT AF demagnetization, Hole U1511B. B. Stereographic projection of ChRM directions derived from discrete samples. Dashed line = average inclination (64.4°), associated with 95% confidence angle ($\pm 4.2^\circ$; gray band). N = number of ChRM directions.

Figure F20. Downhole variations in remanence intensity (NRM and remanence after 10, 15, and 20 mT AF demagnetization) and inclination (NRM and after 20 mT AF demagnetization) for (A) 371-U1511B-16R and (B) 19R. Core section images are shown. Light gray = NRM, medium gray = after 10 mT, dark gray = after 15 mT, red = after 20 mT. Dashed horizontal lines = positions of magnetization intensity minimum.

Figure F21. Vector endpoint demagnetization diagrams and AF demagnetization behavior for three representative discrete samples, Hole U1511B. Open squares = projections onto vertical plane, solid squares = projections onto horizontal plane, blue lines = components fitted using selected data points (red squares) by PCA (Kirschvink, 1980).

Figure F22. AMS data for 57 discrete samples from (A) Units I and II and (B) Unit III, Site U1511. Top: stereoscopic plots. Blue squares = κ_{\max} axes, green triangles = κ_{\int} axes, purple circles = κ_{\min} axes. Mean directions of κ_{\max} (open square), κ_{\int} (open triangle), and κ_{\min} (open circle) axes, shown along with their 95% confidence ellipses. N = number of samples. Bottom: corresponding lineation ($\kappa_{\max}/\kappa_{\int}$) vs. foliation ($\kappa_{\int}/\kappa_{\min}$) data.

Figure F23. Detail of pass-through paleomagnetic inclination data and correlation with GPTS2012 (371-U1511B-38R; 470–480 m). Magnetic polarity: black = normal, white = reversed.

Figure F24. Bulk density, grain density, porosity, and P-wave velocity, Site U1511. Large dots = MAD and PWC measurements, small dots = whole-round section GRA density and P-wave velocity (PWL). Horizontal lines = lithostratigraphic unit boundaries. Interval drilled without coring is also shown.

Figure F25. Magnetic susceptibility (MSL and MSP), NGR, and L*, a*, b*. Red = Hole U1511A, blue = Hole U1511B. Horizontal lines = lithostratigraphic unit boundaries.

Figure F26. Squeeze and Rhizon IW chemistry for uppermost 431 m, Site U1511. D = drilled interval.

Figure F27. Bulk sediment profiles of CaCO_3 , total carbon (TC), total inorganic carbon (TIC), TOC, and total nitrogen (TN), Site U1511. D = drilled interval.

Figure F28. Dissolved Ca vs. Mg in IW, Sites U1506–U1511.

Figure F29. Paleomagnetic, biostratigraphic, MSL, NGR, and L* data, Hole U1511B. Ages for polarity chron boundaries and radiolarian assemblages surrounding the MECO are noted. Magnetic polarity: black = normal, white = reversed.

Figure F30. A. SRM inclination data spanning polarity Chrons C20n to C18r, Site U1511. Magnetic polarity: black = normal, white = reversed, gray = unidentified. B. Paleomagnetic (SRM inclination and intensity) and L* data.

Figure F31. Sedimentation accumulation over time, Site U1511. A. Core recovery. B. Shipboard biostratigraphic and magnetostratigraphic datums and interpreted age-depth model. C. LSR and total MAR. Note that age model is based on magnetostratigraphic and calcareous nannofossil datums. Horizontal lines = lithostratigraphic unit boundaries.