Figure F1. Location map of Site U1471, located near the outflow of the southern branch of the Kardiva Channel into the Inner Sea at the eastern end of the southern transect.

Figure F2. Seismic section along the southern transect with Expedition 359 sites. Site U1471 forms the eastern end of the southern transect and penetrates the drift deposits of the Inner Sea. Blue horizon = base of drift deposits. CDP = common depth point.

Figure F3. Lithostratigraphic overview, Site U1471.

Figure F4. Common components in Unit I. (A) Plane-polarized [PPL] and (B) cross-polarized [XPL] images (359-U1471A-1H-1, 20 cm). 1 = planktonic foraminifers, 2 = sponge spicules, 3 = pteropods. C. Vegetation remains (359-U1471C-3H-3). Arrow = wood? D. Mottling texture (6H-3).

Figure F5. Color change across Unit I. Increase in lighter colors downhole illustrated by Sections (A) 359-U1471-1H-1, 20–40 cm, (B) 6H-2, 20–40 cm, and (C) 8H-1, 20–40 cm.

Figure F6. Unit I/II transition (359-U1471A-9H and 10H). Core photos show changes in frequency and amplitude of color changes. Shaded bars = dark intervals. This pattern is recorded by changes in L*. A similar change in amplitude also occurs in NGR intensity. Cycle = size and relative position of dark–bright couplets.

Figure F7. Components present in Unit II. A. 1 = planktonic foraminifers, 2 = benthic foraminifers, 3 = organic matter (359-U1471A-10H-2, 78 cm; PPL). B. Benthic and planktonic foraminifers, porosity, and micritic cementation (arrow) (359-U1471A-11H-5, 115–117 cm; PPL).

Figure F8. Lithification. A. Transition from unlithified (top) to partially lithified (bottom) sediment (359-U4171C-10H-4). 1 = B, 2 = C. B. Unlithified intervals. White arrow = fully preserved *Umbilicosphaera* sp., black arrow = aragonite needles. C. Partially lithified interval. White arrow = poorly preserved *Umbilicosphaera* sp. where center of coccolith is missing, black arrow = partially dissolved calcareous nannofossil.

Figure F9. Distribution of lithified horizons, grain sizes, and textures, Hole U1471A. Note transition to wackestone that defines the Unit III boundary and increased abundance of lithified horizons in Unit III.

Figure F10. Lithification transition and effects on preservation. A. Transition from partially lithified to unlithified material. 1 = 359-U1471A-28H-2, 88 cm, 2 = 28H-3, 118 cm. B, C. Bioclastic components (28H-2, 88 cm; B = PPL, C = XPL). D. Expanded view of box in C; outline of benthic foraminifer can be seen encompassed by overgrowth. E, F. Bioclastic components (empty benthic foraminifer) (28H-3, 118 cm; E = PPL, F = XPL). G. Expanded view of box in F showing preservation of fine texture in wall of test.

Figure F11. Variation in appearance of lithified intervals of Unit V. A. Lithified with adjacent partially lithified intervals, Subunit VA (359-U1471A-29H-3). B, C. Lithified interval with no partially lithified surrounding: (B) Subunit VA (49X-1), (C) Subunit VB (55X-CC).

Figure F12. Components, porosity, and cementation of packstone in Unit V (359-U1471A-38X-1). Degraded foraminifers punctuated by (1) intraparticle, (2) moldic, and (3) interconnected vuggy porosity. Pore space is partially filled by (4) celestine (blue color; arrow). A. PPL. B. XPL.

Figure F13. Components and composition of Unit VI. Principal lithologies are (A) packstone and (B) wackestone (359-U1471A-75X-1). Note uncompacted intraparticle moldic porosity on wackestone compared to a more compacted form of packstone. Components present include (C) sponge spicules (arrow) and (D) dolomite (arrow) (81X-1, 46 cm; B = PPL, C = XPL). Fracturing (arrows) was observed at (E) 74X-1, 82–89 cm, and (F) 76X-1, 35–49 cm; these fractures are cemented, indicating that failure was not caused by drilling disturbance.

Figure F14. Packstone and grainstone alternations in Unit VIII. A. Series of alternating grainstone and packstone (359-U1471E-27R-2). B. Close-up and line drawing of flame structure at the base of a grainstone interval. C. Grainstone interval. Darker patches are ichnofossils filled with packstone.

Figure F15. Sedimentary features in Unit VIII. A. Alternations between white and dark gray layers (359-U1471E-35R-3). B. Glauconitic rims around burrows (arrow) (34R-6). C. Fine pseudo-lamination structure (36R-2). Insert shows discontinuous internal structure, possibly tapered and flattened burrows.

Figure F16. Biostratigraphic and paleoenvironmental summary, Site U1471. Calcareous nannofossil and planktonic foraminifer biozonation is shown with paleoenvironmental information provided by benthic foraminifers.

Figure F17. Age-depth plot, Site U1471. Details of each event plotted are given in Table **T2**.

Figure F18. Plate of benthic foraminifers. 1. Late to middle Miocene benthic foraminifer *Cibicidoides incrassatus* from Interval B (spiral, edge, and umbilical views) (359-U1471E-17R-3, 12–13 cm). 2. Late to middle Miocene upper bathyal benthic foraminifer *Siphonina pozonensis* (359-U1471A-55X-CC). Abundance of benthic foraminifer genus *Bolivina*: 3, 4. Crenulate species (30H-CC and 42X-CC). 5, 6. Smooth and flat species (42X -CC). 7. *Bolivina aliformis* (35F-CC). 8. *Bolivina reticulata* (43X-CC). 9. Pleistocene benthic foraminifer *Stilostomella lepidula* (9H-CC). 10. Early Pliocene benthic foraminifer *Uvigerina proboscidea* (20H-CC). Scale bars = 100 µm.

Figure F19. IW Cl^-, Na^+, and K^+ concentrations, Site U1471.

Figure F20. IW Ca^{2+}, Mg^{2+}, Sr^{2+}, and Li^+ concentrations, Site U1471.

Figure F21. Sr^{2+}/Ca^{2+}, Mg^{2+}/Ca^{2+}, Ca^{2+}/Cl^-, and Mg^{2+}/Cl^-, Site U1471.

Figure F23. IW alkalinity, hydrogen (pH), and SO_4^{2-} concentrations, Site U1471.

Figure F24. IW Fe, B, Ba^{2+}, and Si concentrations, Site U1471.

Figure F22. Excess Ca^{2+}, Mg^{2+}, SO_4^{2-}, and alkalinity, Site U1471

Figure F25. Carbonate content, Site U1471.

Figure F26. Organic carbon and nitrogen concentrations, Site U1471.

Figure F27. Relative concentrations of aragonite, HMC, LMC, dolomite, and quartz measured using XRD, Site U1471.

Figure F28. Mg/Ca, Sr/Ca, Mn/Ca, and Fe/Ca in sediments, Site U1471.

Figure F29. Headspace methane and ethane concentrations, Site U1471.

Figure F30. Ion activity product (IAP) of $SrSO_4$, Sites U1471 and U1466–U1468. Vertical dashed line = celestine saturation calculated by Baker and Bloomer (1988).

Figure F31. NRM declination and inclination from the upper 180 mbsf, Hole U1471A. Between 20 and 60 mbsf and below ~100 mbsf (black boxes) a noticeable bias toward east in the declination record is likely due to some unidentified measurement problem.

Figure F32. NRM intensity, declination, and inclination with magnetostratigraphy, Hole U1471C. Gray = original data, red = data after discarding intensities larger than 1×10^{-4} A/m and rotating the declination. Circles = Fisher

(1953) mean direction of each section. Dark red lines/solid circles = Core U1471D-6H data. Magnetostratigraphy is based on declination. Polarity: black = normal, white = reversed, gray = uncertain.

Figure F33. NRM intensity, declination, and inclination, Hole U1471D. Circles = Fisher (1953) mean direction of each section. Except for the upper part of each core, where intensity is higher, and except for Core 6H, declination is constantly biased toward east (green box).

Figure F34. NRM declination and inclination with magnetostratigraphy from 180 to 320 mbsf, Hole U1471A. Magnetostratigraphy is based only on inclination because declination is significantly biased toward east (black box). Polarity: black = possible normal chrons, light gray = possible reversal chrons.

Figure F35. NRM intensity, declination, and inclination from discrete samples without demagnetization, Holes U1471A and U1471E.

Figure F36. NRM declination and inclination with magnetostratigraphy below 320 mbsf, Hole U1471A. Magnetostratigraphy is based only on inclination because declination is significantly biased toward east. Polarity: black = possible normal chrons, light gray = possible reversal chrons.

Figure F37. NGR, Site U1471.

Figure F38. Bulk density, grain and dry density, and porosity, Site U1471.

Figure F39. *P*-wave velocity from the WRMSL and from split cores and discrete samples, Site U1471.

Figure F40. Color reflectance, Site U1471.

Figure F41. Magnetic susceptibility for WRMSL and SHMSL, Site U1471.

Figure F42. Thermal conductivity, Hole U1471A.

Figure F43. Logging operations, Hole U1471E.

Figure F44. Triple combo logs, Hole U1471E. Note that downhole logs are on the logging depth scale, whereas NGR, MAD, and magnetic susceptibility (WRMSL, gray dots; MSP, blue dots) core data from Hole U1468A and core recovery are on the core depth scale. HRLA: R3 = medium resistivity, R5 = deepest resistivity, RT = true resistivity, modeled from all depths of investigation.

Figure F45. NGR logs, Hole U1471E. HSGR = standard (total) gamma ray, HCGR = computed (U-free) gamma ray.

Figure F46. Downhole logs recorded in the main pass of the sonic tool string, Hole U1471E. GR EDTC = total gamma ray from EDTC. Higher waveform coherence, in orange-red colors in the velocity tracks, is a measure of the reliability of the slowness/time coherence algorithm used to derive compressional (V_P) and shear (V_S) velocities from monopole and lower dipole sonic waveforms, respectively. V_P shows similar trends to resistivity (from triple combo).

Figure F47. *P*-wave velocity from the sonic velocity log in Hole U1471E and cores (whole rounds, split cores, and discrete samples) from Holes U1471A and U1471E. PWC = *P*-wave caliper (split cores and discrete samples).

Figure F48. Time-depth curves and *P*-wave velocity, Site U1467. Left: VSP check shot stations and integrated sonic velocity log from Hole U1467E; seismic horizon depths are based on the expedition seismic velocity model. Integrated sonic log curve from Hole U1471E assumes *P*-wave velocity of 1633 m/s from 0 to 96 mbsf based on average velocity measurements on discrete core samples over that depth interval. Right: interval velocities derived from traveltimes between the three VSP stations, displayed with sonic log velocities from Hole U1471E.

Figure F49. APCT-3 temperature measurements, Hole U1471C.

Figure F50. Spliced L*, NGR, and GRA records, Site U1471. A 21-point Gaussian filter (solid line) was used to smooth the data.

Figure F51. Spliced L* record, Sites U1471 and U1467. MIS = inferred marine isotope stages (see Figure **F55** in the Site U1467 chapter [Betzler et al., 2017d]). Lines = correlative L* highs (MIS interglacials).

Figure F52. Spliced NGR record, Sites U1471 and U1467. Eccentricity is from Laskar et al. (2004). Sedimentation rates were calculated by correlating NGR minima to eccentricity minima.

Figure F53. West–east seismic section across Site U1471. Dark blue line at DS1 marks the horizon between platform and drift sequences.

Figure F54. Correlation of seismic and core data, Site U1471. Seismic Line 62 (M74) is shown with position of drift sequences. Interval velocity is used to calculate the time-depth conversion.

Figure F55. Time-depth conversion, Site U1471.