Figure F1. Bathymetric and track chart, Site U1453. Projection is UTM Zone 45N. Multibeam bathymetry was acquired during R/V *Sonne* Cruises SO125 and SO188. Blue line = seismic Line SO125-GeoB97-027 with common depth point annotation. Contour interval is 20 m. A portion of the seismic profile is shown in Figure **F2** (red line, 22 km).

Figure F2. Seismic Line SO125-GeoB97-027 across Site U1453. Total depth is 215.7 m DSF, assuming an average velocity of 1640 m/s.

Figure F3. Lithostratigraphic summary, Hole U1453A. For legend, see Figure **F5** in the Expedition 354 methods chapter (France-Lanord et al., 2016a).

Figure F4. Representative examples of major lithologies recovered in Hole U1453A. A. Nannofossil-rich calcareous clay (1H-2, 103–135 cm). B. Volcanic ash (1H-2, 37–69 cm). C. Homogeneous fine sand (5H-3, 39–71 cm). D. Silt-dominated turbidites (5H-2, 85–117 cm). E. Succession of clay-dominated turbidites (2H-1, 82–114 cm). F. Gray calcareous clay, gray silt, and light gray silt (33F-2, 47–79 cm).

Figure F5. Representative examples of major lithologies in smear slides, Hole U1453A. A. Volcanic ash (30F-3, 29 cm; 152.69 m CSF-A). B. Nannofossil-rich calcareous clay (27F-1, 59 cm; 133.59 m CSF-A; crossed nicols). C. Silty clay (8F-2, 44 cm; 45.64 m CSF-A; crossed nicols). Notice the absence of nannofossils compared to B.

Figure F6. Maximum grain size, Hole U1453A.

Figure F7. Semiquantitative clay mineral proportions, Site U1453.

Figure F8. NRM decay (left) and AF demagnetization vector (right) diagrams of discrete samples, Site U1453. Points on demagnetization vector diagrams = projected endpoints of remanent magnetization vector measured for each sample in core coordinates (azimuth not oriented). A. Sample with positive component inclination. B. Sample with ChRM vector with anomalous low inclination. C, D. Calcareous sediment deposited in normal polarity. E, F. Deviation of remanence vector toward *y*-direction indicates acquisition of remanence (likely GRM) during AF treatment.

Figure F9. NRM of archive section halves and discrete samples before and after 20 mT AF demagnetization, Hole U1453A. Light gray dots = before demagnetization. Dark gray circles = intervals that do not meet quality criteria (see **Paleomagnetism** in the Expedition 354 methods chapter [France-Lanord et al., 2016a]). Blue dots = calcareous clay, red dots = volcanic ash, black dots = other lithology. Inclination and declination: dark green dots = principal component directions from discrete samples. Inclination: gray lines either side of 0° = expected inclinations from GAD. Declination: yellow = oriented cores. Declinations are in a geographic reference frame only where orientation data are available. Intensity: intensity of magnetization before and after demagnetization. Large light green dots = before demagnetization, dark green dots = after demagnetization. Magnetic susceptibility (MS) = point measurements on archive section halves.

Figure F10. Polarity interpretation, Core 354-U1453A-31F. Circles = measurements that do not pass quality control criteria (see **Paleomagnetism** in the Expedition 354 methods chapter [France-Lanord et al., 2016a]). Blue dots = calcareous clay, black dots = other lithology, green dots = measurements on discrete samples. Declination is rotated and illustrates magnetostratigraphic interpretation. A single vertical axis rotation was applied to the entire core so that points interpreted as normal polarity plot near the 0° line. Intensity = intensity of magnetization after 20 mT AF demagnetization. Magnetic susceptibility (MS) = point measurements on archive section halves. Polarity: black = normal, white = reversed, gray = uncertain. Geomagnetic polarity timescale (GPTS) of Gradstein et al. (2012).

Figure F11. Variations of salinity, bromide, sulfate, phosphate, alkalinity, magnesium, calcium, sodium, potassium, and silicon concentrations in interstitial waters, Hole U1453A.

Figure F12. TIC content expressed as $CaCO_3$, Hole U1453A.

Figure F13. TOC content, Hole U1453A.

Figure F14. Ca content expressed as carbonate content (wt%) vs. Sr/Ca scanned XRF data plot, Sections 354-U1453A-30F-3 (152.5–153.5 m CSF-A) and 31F-2 (155.6–156.9 m CSF-A).

Figure F15. Fe/Si and K/Si vs. Al/Si, Hole U1453A.

Figure F16. Physical property measurements, Hole U1453A. MS = magnetic susceptibility.

Figure F17. Moisture and density results, Site U1453.

Figure F18. Downhole logs from Hole U1453A compared to equivalent laboratory physical property measurements and lithostratigraphy from Hole U1450A. Downhole logs are on the logging depth scale (WSF), whereas MAD, PWC, lithology, and core recovery data are on the core depth scale (CSF-A). There are small depths shifts between the two depth scales, usually <2 m in amplitude.

Figure F19. Downhole NGR logs, Hole U1453A. NGR logs within the BHA were multiplied by a factor of 4 to compensate for attenuation.

Figure F20. Comparison of FMS image data to core description for 135–146 m WSF, Hole U1453A.

Figure F21. FMS images for 105–165 and 160–220 m WSF and their preliminary lithologic interpretation, Hole U1453A. Lithologic logs are taken from the principal lithology.

Figure F22. APCT-3 temperature-time series, Hole U1453A.

Figure F23. Seismic Line SO125-GeoB97-027, Site U1453. For lithologic legend, see Figure **F5** in the Expedition 354 methods chapter (France-Lanord et al., 2016a). Magnetic susceptibility (MS) is sensitive to grain size and mineral composition. Downhole MS (red) and *P*-wave velocity data (black) are shown for comparison. Vertical grid lines for *P*-wave velocity are plotted at 1550, 1700, and 1850 m/s. Blue arrows = hemipelagic units described in cores as calcareous clay. For a larger version of this figure, see STRATSYNTH in **Supplementary material**.

Figure F24. Compilation of biostratigraphic and chronostratigraphic markers, Site U1453. Calcareous nannofossil and foraminiferal biozones follow Gradstein et al. (2012; based on Martini [1971], Okada and Bukry [1980]) and Wade et al., (2011), respectively. Biomarkers are calculated as midpoints (Table **T6**). The dashed line associated with the LO of *Globorotalia tosaensis* signifies probable reworking. Paleomagnetic reversals follow the chronostratigraphic scheme of Gradstein et al. (2012); boundaries are the lower depth of the identified reversal (Table **T9**).

Figure F25. Age-depth plot, Site U1453. Interpreted lithology proposes the most probable lithologies in intervals of nonrecovery. Nannofossil and foraminiferal biomarkers are plotted as midpoints; error bars = uncertainty in depth. For biomarkers: right arrow = first occurrence, left arrow = last occurrence (Table **T6**). For magnetic reversals, see Table **T9**. Dashed lines = ash layers. Cross = young Toba ash. Black arrows = selected accumulation rates. HL = hemipelagic layer.