Figure F1. Site map, Expedition 386. Bathymetric overview map of the Japan Trench (modified after Kioka et al., 2019) between the Daiichi Seamount in the south and the Erimo Seamount in the north.

Figure F2. Site M0088. Left: high-resolution bathymetric map with 5 m contours, site locations, and track lines and locations of previously acquired high-resolution subbottom profiles and short cores during the site survey cruise (Strasser et al., 2019). Right: site survey subbottom profiles showing depths (assuming 1500 m/s *P*-wave velocities) of the 20 and 40 m GPC barrels used to recover cores. Exact hole positions and depths are given in Table T1, Hydroacoustics, and Table T1 in the Expedition 386 methods chapter (Strasser et al., 2023a). SP = shotpoint, TWT = two-way traveltime.

Figure F3. Bathymetry and grid of subbottom profile lines acquired around Site M0088 in Basin N2. Contour interval = 5 m.

Figure F4. Trench-parallel Line 386_Underway_061, which shows the acoustic character along the length of Basin N2. SP = shotpoint, TWT = two-way traveltime.

Figure F5. Trench-perpendicular Line 386_Underway_057, showing the acoustic character across the northern part of Basin N2. SP = shotpoint, TWT = two-way traveltime.

Figure F6. Subbottom profile lines around Site M0088.

Figure F7. Trench-parallel Line 386_Underway_056, which intersects Holes M0088A–M0088D, showing the acoustic characteristics at Site M0088. SP = shotpoint, TWT = two-way traveltime.

Figure F8. Trench-parallel Line 386_Underway_059, showing the acoustic characteristics at Site M0088. SP = shotpoint, TWT = two-way traveltime.

Figure F9. Lithostratigraphic summaries, Holes M0088A and M0088B. XCT = X-ray CT, MS = magnetic susceptibility, cps = counts per second.

Figure F10. Thin silt beds and laminae, Holes M0088A and M0088C.

Figure F11. Ternary diagrams of grain size and major components, Site M0088.

Figure F12. Thin silt layers, Holes M0088B and M0088D.

Figure F13. Lithologic components, Site M0088. A. Lithogenic-rich siliceous ooze with pyrite. B. Lithogenic-bearing siliceous ooze. C. Siliceous- and lithogenic-rich silty clay with pyrite. D. Siliceous-rich lithogenic silty clay with pyrite. E. Lithogenic-rich siliceous ooze. F. Lithogenic-bearing siliceous ooze with pyrite.

Figure F14. Lithostratigraphic summaries, Holes M0088C and M0088D. XCT = X-ray CT, MS = magnetic susceptibility, cps = counts per second. (Continued on next page.)

Figure F15. Examples of bioturbation and fining-upward succession, Hole M0088D.

Figure F16. Yellowish clast, possible ikaite occurrence (386-M0088D-1H-28, 68–70 cm).

Figure F17. Fining-upward successions with sharp basal contacts, Hole M0088D.

Figure F18. XRD mineralogy, Site M0088.

Figure F19. Smear slide summaries, Holes M0088A and M0088B. The most abundant lithogenics (clay, quartz, feldspar, and pyrite) are in a brown color gradient, the volcaniclastics/vitrics are pink, and the biogenics are in a blue gradient for the siliceous biogenics (diatoms, sponge spicules, and radiolaria) and are green for the calcareous microfossils. See legend in Figure F14 in the Expedition 386 methods chapter (Strasser et al., 2023a). XCT = X-ray CT.

Figure F20. Smear slide summaries, Holes M0088C and M0088D. The most abundant lithogenics (clay, quartz, feldspar, and pyrite) are in a brown color gradient, the volcaniclastics/vitrics are pink, and the biogenics are in a blue gradient for the siliceous biogenics (diatoms, sponge spicules, and radiolaria) and are green for the calcareous microfossils. See legend in Figure F14 in the Expedition 386 methods chapter (Strasser et al., 2023a). XCT = X-ray CT. (Continued on next page.)

Figure F21. Abundance changes of radiolarian species *L. setosa*, *C. davisiana*, and the *Tetrapyle* group, Hole M0088D. See Micropaleontology in the Expedition 386 methods chapter (Strasser et al., 2023a) for explanations of radiolarian zonation and events.

Figure F22. IW salinity, alkalinity, and ammonium (NH_4^+) concentrations, Site M0088.

Figure F23. IW V, Mo, and U concentrations, Site M0088.

Figure F24. IW Li, B, Si, Mn, Fe, Sr, and Ba concentrations, Site M0088.

Figure F25. IW Cl^-, Br^-, and SO_4^{2-} concentrations, Site M0088.

Figure F26. Methane, ethane, and methane to ethane (C_1/C_2) ratio for trigger core samples from Hole M0088C (red diamonds) and GPC samples from Hole M0088D.

Figure F27. Solid-phase major elements (Al, Ca, Fe, Mn, and Si) in sediments, Site M0088. Open symbols = trigger core samples.

Figure F28. TC, TOC, TIC, and TS, Site M0088.

Figure F29. Physical properties summary, Holes M0088A (orange) and M0088B (black). MAD-derived density: blue dots = Hole M0088A, red dots = Hole M0088B. *P*-wave velocity: blue dots = Hole M0088A, orange diamonds = Hole M0088B. Error bars = ±50 m/s. Undrained shear strength measurements are from the handheld penetrometer. MS = magnetic susceptibility, cps = counts per second.

Figure F30. Physical properties summary, Holes M0088C (orange) and M0088D (black). MAD-derived density: blue dots = Hole M0088A, red dots = Hole M0088B. *P*-wave velocity: blue dots = Hole M0088A, orange diamonds = Hole M0088B. Error bars = ±50 m/s. Undrained shear strength measurements are from the handheld penetrometer. MS = magnetic susceptibility, cps = counts per second.

Figure F31. Undrained shear strength from fall cone and AVS, Site M0088.

Figure F32. MAD data, Holes M0088A (orange) and M0088B (black).

Figure F33. MAD data, Holes M0088C (orange) and M0088D (black).

Figure F34. Color data, Hole M0088B.

Figure F35. Color data, Hole M0088D.

Figure F36. Intensity, inclination, and declination, Holes M0088A and M0088C.

Figure F37. Intensity, Holes M0088B and M0088D.

Figure F38. Declination, Holes M0088B and M0088D.

Figure F39. Corrected declination, Holes M0088B and M0088D.

Figure F40. Inclination, Holes M0088B and M0088D.