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. Sites M0081 and M0082. 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).

Figure F3. Bathymetry and grid of subbottom profiler lines acquired around Sites M0081 and M0082 in Basin S1. Contour interval = 5 m.

Figure F4. Trench-perpendicular Line 386_Underway_012, the northernmost line of the survey, showing the acoustic character at the northern end of Basin S1. SP = shotpoint.

Figure F5. Trench-perpendicular Line 386_Underway_015, which bounds Site M0081 to the north, showing the acoustic character at the center of Basin S1. SP = shotpoint.

Figure F6. Trench-perpendicular Line 386_Underway_018, the southernmost line of the survey, showing the acoustic character in the southern part of Basin S1. SP = shotpoint.

Figure F7. Subbottom profiles around Site M0081.

Figure F8. Trench-parallel Line 386_Underway_002, which intersects Holes M0081A–M0081D, showing the acoustic character at Site M0081. SP = shotpoint.

Figure F9. Trench-parallel Line 386_Underway_010, which passes 730 m west of Site M0081 and intersects Site M0082, showing the acoustic character at both sites in Basin S1. SP = shotpoint.

Figure F10. Subbottom profiles around Site M0082.

Figure F11. Trench-parallel Line 386-Underway_003, which intersects Site M0082, showing the acoustic character at that site. SP = shotpoint.

Figure F12. Sedimentary structures, Site M0081.

Figure F13. Monosulfide occurrences, Holes M0081B and M0081D.

Figure F14. Monosulfide occurrences, Holes M0081B and M0082D.

Figure F15. Lithostratigraphic summaries, Holes M0081A and M0081B. XCT = X-ray CT, MS = magnetic susceptibility, cps = counts per second.

Figure F16. Lithologic components, Site M0081.

Figure F17. Ternary diagrams of major components, Site M0081.

Figure F18. Smear slide summaries, Holes M0081A and M0081B. 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 F19. Lithologic components, Site M0082.

Figure F20. Lithostratigraphic summaries, Holes M0081C and M0081D. XCT = X-ray CT, MS = magnetic susceptibility, cps = counts per second. (Continued on next page.)

Figure F21. Smear slide summaries, Holes M0081C and M0081D. 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 F22. Lithostratigraphic summaries, Holes M0081E and M0081F. XCT = X-ray CT, MS = magnetic susceptibility, cps = counts per second. (Continued on next page.)

Figure F23. Smear slide summaries, Holes M0081E and M0081F. 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 F24. Lithostratigraphic summaries, Holes M0082A and M0082B. XCT = X-ray CT, MS = magnetic susceptibility, cps = counts per second.

Figure F25. Smear slide summaries, Holes M0082A and M0082B. 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 F26. Ternary diagrams of major components, Site M0082.

Figure F27. Lithostratigraphic summaries, Holes M0082C and M0082D. XCT = X-ray CT, MS = magnetic susceptibility, cps = counts per second. (Continued on next page.)

Figure F28. Smear slide summaries, Holes M0082C and M0082D. 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). (Continued on next page.)

Figure F29. Oxidation of cores, Hole M0081B.

Figure F30. XRD mineralogy, Holes M0081F and M0082D.

Figure F31. Tephras (brackets) in Basin S1. A. Tephras M0081B-1H-8, 36 cm (386-M0081B-1H-8, 34.5–36 cm) and M0081B-1H-8, 46 cm (386-M0081B-1H-8, 36–46 cm). B. Tephras M0081D-1H-6, 87.5 cm (386-M0081D-1H-6, 86.3–87.5 cm) and M0081D-1H-6, 93.5 cm (386-M0081D-1H-6, 86.3–87.5 cm). C. Tephras M0082B-1H-3, 60 cm (386-M0082B-1H-3, 58.5–60 cm) and M0082B-1H-3, 69 cm (386-M0082B-1H-3, 60–69 cm). D. Tephra M0082D-1H-22, 28.3 cm (386-M0082D-1H-22, 28–28.3 cm).

Figure F32. Smear slides of tephras in Basin S1. A. Tephra M0082B-1H-3, 60 cm (386-M0082B-1H-3, 60 cm). B. Tephra M0082B-1H-3, 66 cm (386-M0082B-1H-3, 61 cm).

Figure F33. Abundance of radiolarian species *L. setosa*, *C. davisiana*, and the *Tetrapyle* group and their probable correlation between Holes M0081D and M0082D. See Micropaleontology in the Expedition 386 methods chapter (Strasser et al., 2023a) for explanations of radiolarian zonation and events.

Figure F34. IW salinity, total alkalinity, and ammonium concentrations, Site M0081.

Figure F35. IW salinity, total alkalinity, and ammonium concentrations, Site M0082.

Figure F36. IW V, Mo, and U concentrations, Site M0081.

Figure F37. IW V, Mo, and U concentrations, Site M0082.

Figure F38. IW Li, B, Si, Mn, Fe, Sr, and Ba concentrations, Site M0081.

Figure F39. IW Li, B, Si, Mn, Fe, Sr, and Ba concentrations, Site M0082.

Figure F40. IW Cl^-, Br^-, and SO_4^{2-} concentrations, Site M0081.

Figure F41. IW Cl^-, Br^-, and SO_4^{2-} concentrations, Site M0082.

Figure F42. Methane, ethane, and methane to ethane (C_1/C_2) ratio (red diamonds), Holes M0081F and M0081E.

Figure F43. Methane, ethane, and methane to ethane (C_1/C_2) ratio (red diamonds), Holes M0082D and M0082C.

Figure F44. Solid-phase X-ray fluorescence contents of Al, Ca, Fe, Mn, and Si, Site M0081. Open symbols = trigger core samples.

Figure F45. Solid-phase X-ray fluorescence contents of Al, Ca, Fe, Mn, and Si, Site M0082. Open symbols = trigger core samples.

Figure F46. Solid-phase contents of TC, TOC, TIC, TN, and TS, Site M0081.

Figure F47. Solid-phase contents of TC, TOC, TIC, TN, and TS, Site M0082.

Figure F48. Physical properties summary, Holes M0081A (orange) and M0081B (black). Bulk density: curves = MSCL, red dots = MAD. *P*-wave velocity: curves = MSCL, blue dots = laboratory-derived data with error bars of ± 50 m/s.

Figure F49. Physical properties summary, Holes M0081C (orange) and M0081D (black). Bulk density: curves = MSCL, red dots = MAD. *P*-wave velocity: curves = MSCL, blue dots = laboratory-derived data with error bars of ± 50 m/s.

Figure F50. Physical properties summary, Holes M0081E (orange) and M0081F (black). Bulk density: curves = MSCL, red dots = MAD. *P*-wave velocity: curves = MSCL, blue dots = laboratory-derived data with error bars of ± 50 m/s.

Figure F51. Physical properties summary, Holes M0082A (orange) and M0082B (black). Bulk density: curves = MSCL, red dots = MAD. *P*-wave velocity: curves = MSCL, blue dots = laboratory-derived data with error bars of ± 50 m/s.

Figure F52. Physical properties summary, Holes M0082C (orange) and M0082D (black). Bulk density: curves = MSCL, red dots = MAD. *P*-wave velocity: curves = MSCL, blue dots = laboratory-derived data with error bars of ± 50 m/s.

Figure F53. Undrained shear strength from fall cone and AVS, Site M0081.

Figure F54. Undrained shear strength from fall cone and AVS, Site M0082.

Figure F55. MAD data, Holes M0081A (orange) and M0081B (gray).

Figure F56. MAD data, Hole M0081D.

Figure F57. MAD data, Holes M0081E (orange) and M0081F (gray).

Figure F58. MAD data, Holes M0082A (orange) and M0082B (gray).

Figure F59. MAD data, Holes M0082C (orange) and M0082D (gray).

Figure F60. Color data, Holes M0081A and M0081B. Trigger core data is orange, except in the R panel, where it is black.

Figure F61. Color data, Holes M0081C and M0081D. Trigger core data is orange, except in the R panel, where it is black.

Figure F62. Color data, Holes M0081E and M0081F. Trigger core data is orange, except in the R panel, where it is black.

Figure F63. Color data, Holes M0082A and M0082B. Trigger core data is orange, except in the R panel, where it is black.

Figure F64. Color data, Holes M0082C and M0082D. Trigger core data is orange, except in the R panel, where it is black.

Figure F65. Intensity, inclination, and declination, Holes M0081A, M0081C, M0081E, M0082A, and M0082B.

Figure F66. Intensity, Holes M0081B, M0081D, M0081F, M0082B, and M0082D.

Figure F67. Declination, Holes M0081B, M0081D, M0081F, M0082B, and M0082D.

Figure F68. Corrected declination, Holes M0081B, M0081D, M0081F, M0082B, and M0082D.

Figure F69. Inclination, Holes M0081B, M0081D, M0081F, M0082B, and M0082D. Arrows = sudden drops.