Figure F1. Corinth rift with primary rift-related faults (both active and currently inactive), multibeam bathymetry of the gulf, and Expedition 381 drill sites. Offshore fault traces are derived from Nixon et al. (2016), building on Bell et al. (2009) and Taylor et al. (2011). Onshore fault traces are derived from Ford et al. (2007, 2013) and Skourtsos and Kranis (2009). Bathymetry data provided by the Hellenic Centre for Marine Research and collected during R/V *Aegaeo* cruises (Sakellariou et al., 2007). Inset: tectonic setting of Corinth rift in Aegean region, Eastern Mediterranean Sea.

Figure F2. Site M0078 shown with R/V *Maurice Ewing* Line 42 (Taylor et al., 2011) and interpretations from Nixon et al. (2016) (colored dotted lines and text). CDP = common depth point, TWT = two-way traveltime. Inset: seismic line and drill site locations.

Figure F3. Hole M0078A and M0078B locations.

Figure F4. Composite stratigraphic log. FA = facies association, Biot. int. = bioturbation intensity, MS = magnetic susceptibility. Lithostratigraphic subunits in Unit 1: blue = marine, green = isolated/semi-isolated. A. Legend. B. 0–300 mbsf, Hole M0078A. (Continued on next 2 pages.)

Figure F4 (continued). C. 300–610.43 mbsf (base of hole), Hole M0078A. Unit 2 color is purely for visual differentiation and does not have any paleoenvironmental meaning. (Continued on next page.)

Figure F4 (continued). D. Hole M0078B.

Figure F5. A. Downhole major mineral distribution from XRD data, Hole M0078A. B. Calcareous silt showing well-sorted elongated aragonite needles (36P-CC, 13–14 cm). C. Silt showing poorly sorted, subangular to subrounded biogenic grains (121R-CC, 12–13 cm). D. Calcareous clayey silt dominated by moderately to well-sorted, subrounded calcite mineral grains (153R-CC, 14–15 cm).

Figure F6. Transitional boundary over 15 cm from FA1 in Subunit 1-7 (marine; above) to FA3 in Subunit 1-8 (isolated/semi-isolated; below), Hole M0078A. Boundary is positioned at 86 cm (206.40 mbsf).

Figure F7. Transitional boundary from FA4 in Subunit 1-12 (isolated/semi-isolated; above) to FA1 in Subunit 1-13 (marine; below), Hole M0078A. Boundary is positioned below the last laminated sediment (322.35 mbsf). Bedding disappears gradually downward over 40 cm in FA1, which is strongly affected by biscuiting.

Figure F8. Unit 1/2 boundary at 385.43 mbsf, Hole M0078A.

Figure F9. Small tectonic faults observed in Hole M0078A cores (top: interpreted, bottom: uninterpreted). Blue and yellow = bedding, red = fault traces. A. Normal fault (113R-1). B. Possible strike-slip or oblique-slip fault showing variable slip sense along its length (118R-3).

Figure F10. Preliminary analyses of natural faults, Hole M0078A. A. Fracture intensity (number of fractures per meter; log scale). B. Lower hemisphere equal-area stereographic projection showing 18 small normal fault orientations in the core reference frame (see text for details). The faults describe a clear conjugate normal fault system. C. Fault dip frequency measured in the core reference frame in Hole M0078A cores showing distribution around a mean dip of 66°.

Figure F11. Several small conjugate normal faults from Core 381-M0078A-113R where the highest fracture intensity values were recorded (top: interpreted, bottom: uninterpreted). Blue and yellow = bedding, red = fault traces, orange = drilling-induced void opening and new fault.

Figure F12. DID intensity (0–4). Coring method is represented in shades of gray from piston (H) to push (P) to percussive (V) to rotary (R). White = no core recovery. A. Hole M0078A clearly showing an abrupt increase in DID intensity once the V and R methods were used. B. Hole M0078B. C, D. Examples of biscuiting, the dominant form of DID (C: 381-M0078A-144R-1; D: 84R-2).

Figure F13. Preliminary stratigraphic diagram of most common nonmarine diatom taxa observed in Hole M0078A. Taxa abundances are shown as counts and total counts per sample. Relative proportions of taxa are grouped according to salinity, habitat, and nutrient and alkalinity preferences. Blue = marine microfossil assemblages, green = mixed microfossil assemblages, gray = undetermined microfossil assemblages, purple = nonmarine microfossil assemblages.

Figure F14. Summary percentages and concentrations of selected terrestrial and aquatic pollen grains, fern spores, dinoflagellate cysts, green algae coenobia and spores, fungal remains, foraminifer test linings, and microscopic charred particles, Hole M0078A. Gray = marine subunits, dashed line = Unit 1 (above)/2 (below) boundary.

Figure F15. Summary of micropaleontology assemblages by subunit, Hole M0078A. Blue = marine microfossil assemblages, green = mixed microfossil assemblages, gray = undetermined microfossil assemblages.

Figure F16. Summary of micropaleontology assemblages by subunit, Hole M0078B. Blue = marine microfossil assemblages, green = mixed microfossil assemblages.

Figure F17. Pore water (A) salinity, (B) chloride, and (C) Cl^--based salinity. Black = Hole M0078A, red = Hole M0078B. Gray = marine subunits, black line = Unit 1 (above)/2 (below) boundary.

Figure F18. Pore water (A) manganese, (B) iron, and (C) sulfate. Black = Hole M0078A, red = Hole M0078B. Gray = marine subunits, black line = Unit 1 (above)/2 (below) boundary.

Figure F19. Pore water (A) ammonium, (B) phosphate, and (C) alkalinity and DIC (blue crosses). Black = Hole M0078A, red = Hole M0078B. Gray = marine subunits, black line = Unit 1 (above)/2 (below) boundary.

Figure F20. Pore water (A) pH, (B) B/Cl^- ratio, and (C) Br^-/Cl^- ratio. Black = Hole M0078A, red = Hole M0078B. Gray = marine subunits, solid line = Unit 1 (above)/2 (below) boundary. Dashed line = seawater values.

Figure F21. Pore water (A) sodium, (B) potassium, and (C) barium and (D) Na^+/Cl^-, (E) K^+/Cl^-, and (F) Ba^{2+}/Cl^- ratios. Black = Hole M0078A, red = Hole M0078B. Gray = marine subunits, solid line = Unit 1 (above)/2 (below) boundary. Dashed line = seawater values.

Figure F22. Pore water (A) calcium, (B) magnesium, and (C) strontium and (D) Ca^{2+}/Cl^-, (E) Mg^{2+}/Cl^-, and (F) Sr^{2+}/Cl^- ratios. Black = Hole M0078A, red = Hole M0078B. Gray = marine subunits, solid line = Unit 1 (above)/2 (below) boundary. Dashed line = seawater values.

Figure F23. Pore water (A) dissolved silica and (B) lithium. Black = Hole M0078A, red = Hole M0078B. Gray = marine subunits, black line = Unit 1 (above)/2 (below) boundary.

Figure F24. Solid-phase (A) TC, (B) TOC, and (C) TIC. Black = Hole M0078A, red = Hole M0078B. Gray = marine subunits, black line = Unit 1 (above)/2 (below) boundary.

Figure F25. Solid-phase (A) calcium, (B) strontium, and (C) magnesium. Black = Hole M0078A, red = Hole M0078B. Gray = marine subunits, black line = Unit 1 (above)/2 (below) boundary.

Figure F26. Solid-phase (A) silicon, (B) aluminum, and (C) potassium. Black = Hole M0078A, red = Hole M0078B. Gray = marine subunits, black line = Unit 1 (above)/2 (below) boundary.

Figure F27. Solid-phase (A) rubidium and (B) zirconium. Black = Hole M0078A, red = Hole M0078B. Gray = marine subunits, black line = Unit 1 (above)/2 (below) boundary.

Figure F28. Solid-phase (A) manganese, (B) iron, and (C) nickel. Black = Hole M0078A, red = Hole M0078B. Gray = marine subunits, black line = Unit 1 (above)/2 (below) boundary.

Figure F29. Physical properties with environmental interpretation (lithostratigraphic units), Hole M0078A. Red line = Unit 1/2 boundary. Elec. res. = electrical resistivity. cps = counts per second. Thermal conductivity values are not corrected to in situ conditions.

Figure F30. Physical properties with facies associations, Hole M0078A. Red line = Unit 1/2 boundary. Thermal conductivity values are not corrected to in situ conditions. Elec. res. = electrical resistivity.

Figure F31. Shear strength measurements, Holes M0078A and M0078B.

Figure F32. Fall cone and shear vane data correlations, Holes M0078A and M0078B.

Figure F33. MSCL NGR and magnetic susceptibility trends from 300 to 500 mbsf, Hole M0078A. Left two panels include environmental interpretation (Unit 1 subunits: blue = marine, green = isolated/semi-isolated; yellow= Unit 2, red line = Unit 1/2 boundary); right two panels include facies associations (white = no recovery).

Figure F34. MSCL NGR box and whisker plots grouped by subunits, Expedition 381. Top and bottom of boxes correspond to 1st and 3rd quartiles, solid line in middle of box shows the median, dashed line shows the mean. Ends of whiskers indicate minimum and maximum values. I/SI = isolated/semi-isolated.

Figure F35. MSCL magnetic susceptibility box and whisker plots grouped by subunits, Expedition 381. Top and bottom of boxes correspond to 1st and 3rd quartiles, solid line in middle of box shows the median, dashed line shows the mean. Ends of whiskers indicate minimum and maximum values. I/SI = isolated/semi-isolated.

Figure F36. *P*-wave velocity data, Holes M0078A and M0078B.

Figure F37. MSCL electrical resistivity box and whisker plots grouped by subunits, Expedition 381. Top and bottom of boxes correspond to 1st and 3rd quartiles, solid line in middle of box shows the median, dashed line shows the mean. Ends of whiskers indicate minimum and maximum values. I/SI = isolated/semi-isolated.

Figure F38. Resistivity and density trends observed in cores, Holes M0078A and M0078B.

Figure F39. Temperature and thermal conductivity data, Hole M0078A. A. Seafloor and CPT temperature data. B. Thermal resistance vs. temperature derived from Bullard method. C. Thermal conductivity (corrected to in situ conditions). Note that A and C are plotted against depth (different depth intervals), and B is plotted against thermal resistance.

Figure F40. L*a*b* color reflectance data box and whisker plots gathered by units, Expedition 381. Top and bottom of boxes correspond to 1st and 3rd quartiles, solid line in middle of box shows the median, dashed line shows the mean. Ends of whiskers indicate minimum and maximum values. I/SI = isolated/semi-isolated.

Figure F41. Comparison of magnetic susceptibility, L*, and a* from 60 to 150 mbsf interval, Hole M0078A. Left plots include environmental interpretation (lithostratigraphic units; blue = marine, green = isolated/semi-isolated); right plots include facies associations (white = no recovery).

Figure F42. Magnetic susceptibility frequency distribution from (A) shipboard whole core sections (MSCL) and OSP discrete samples for (B) Hole M0078A and (C) Hole M0078B.

Figure F43. (A) NRM intensity, (B) magnetic susceptibility, (C) NRM on log scale, (D) magnetic susceptibility on log scale, (E) magnetic susceptibility from MSCL (gray) and onshore discrete samples (red), and (F) lithostratigraphic unit/subunit boundaries (blue = marine, white = isolated/semi-isolated), Hole M0078A.

Figure F44. (A) NRM intensity, (B) magnetic susceptibility, (C) NRM on log scale, (D) magnetic susceptibility on log scale, (E) magnetic susceptibility from MSCL (gray) and onshore discrete samples (red), and (F) lithostratigraphic unit/subunit boundaries (blue = marine, white = isolated/semi-isolated), Hole M0078B.

Figure F45. NRM intensity vs. magnetic susceptibility, (A) Hole M0078A and (B) Hole M0078B.

Figure F46. Low-field susceptibility vs. temperature (*k*-*T*) experiment results for five samples obtained before the onshore phase, Hole M0078A. Red = heating path, blue = cooling path.

Figure F47. (Top) Orthogonal projections (Zijderveld diagrams; solid symbols = projection onto horizontal plane, open symbols = projection onto vertical plane) and (Bottom) relative decay paths of remanence during demagnetizations for six representative samples, Hole M0078A. Red = data used to compute the characteristic component (blue line).

Figure F48. Lower hemisphere equal-area stereographic projections of NRM directions from Hole M0078A and M0078B samples. Red dashed circle = geocentric axial dipole expected inclination (i.e., 57.5°) for the site latitude. Solid dots = directions with a positive (normal polarity) inclination, open dots = directions with a negative (reversed polarity) inclination.

Figure F49. Inclination of remanence after demagnetization at 40 mT with unit/subunit boundaries, (A) Hole M0078A and (B) Hole M0078B. Red dotted lines = expected inclination at the site latitude (i.e., 57.5°). Subunits: blue = marine, white = isolated/semi-isolated. C. Magnetostratigraphic logs based on inclination data in A and B showing intervals characterized by normal (black) and reversed (white) polarity. Loosely constrained *E. huxleyi* first appearance and *P. lacunosa* last occurrence from calcareous nannofossil analyses (see Micropaleontology). Dashed lines with question marks indicate correlation between site magnetostratigraphy (polarity reversals) and GITS, and they are speculative at this time. M/B = Matuyama/Brunhes.

Figure F50. Shore-based discrete sample V_P measurements compared with initial pre-expedition linear velocity model (see Core-log-seismic integration in the Expedition 381 methods chapter [McNeill et al., 2019b] for details) and interval V_P from offshore core-log-seismic integration (CLSI), Site M0078. Discrete V_P measurements significantly underestimate *P*-wave velocity (except for a small subset of measurements above ~150 mbsf) and cannot be used for building synthetic seismograms.

Figure F51. Final synthetic seismogram as seen in Petrel synthetic generation window showing true vertical depth (TVD) below sea level, TWT, input density and velocity curves, computed reflection coefficient series, ten traces of R/V *Maurice Ewing* Line 42 north–south profile crossing Site M0078 (Figure F2), synthetic seismogram, ten more traces of the same seismic line, and final velocity profile resulting from tying the synthetic to the seismic data. mbsl = meters below sea level.

Figure F52. Final onshore CLSI V_P profile compared with initial pre-expedition linear velocity model and offshore CLSI results, Site M0078. Core-based onshore lithostratigraphic unit and subunits are also shown. Unit 1 subunits: blue = marine, green = isolated/semi-isolated. Blue line = Unit 1/2 boundary. Yellow = Unit 2.

Figure F53. Time-depth conversion function generated by onshore CLSI and the range of depths and time picks for the main seismic horizons (H1–H6), Site M0078. t = top, b = bottom, U = seismic unit boundary (which corresponds to lithostratigraphic Unit 1/2 boundary). Maximum values correspond to the peak of a seismic reflector and minimum values correspond to the first break of the same reflector (wherever it was possible to identify one in the seismograms). Core-based lithostratigraphic unit and subunits are also shown. Unit 1 subunits: blue = marine, green = isolated/semi-isolated. Blue line = Unit 1/2 boundary. Yellow = Unit 2. The illustrated potential difference in depth of seismic boundaries is dependent on the method of picking the seismic reflector. Nevertheless, correspondence between subunit boundaries and seismic horizons is good.

Figure F54. MSCL data (density, magnetic susceptibility, and NGR) converted to time (TWT) alongside lithostratigraphic units and subunits and synthetic and seismic data (*Maurice Ewing* Line 42, CDP 655–665), Site M0078. Black dots = MSCL data, red lines = smoothed MSCL data (running average). Unit 1 subunits: blue = marine, green = isolated/semi-isolated. Horizontal blue line = Unit 1/2 boundary. Yellow = Unit 2. Seismic: solid color lines = seismic interpretation by Nixon et al. (2016), vertical red line = position of Hole M0078A.