

Figure F1. Site map. Red = Site U1597, yellow = other sites. Inset: location map. See Figure F1 in the Site U1589 chapter (Druitt et al., 2024) for citations for the swath data on which this map is based. KVC = Kolumbo volcanic chain.

Figure F2. Top: seismic profile across the Santorini caldera with Seismic Units S1–S4, Sites U1594–U1597. Depths in meters. TWT = two-way traveltime. Bottom left: profile of Sites U1596 and U1597. Right: locations of the four intracaldera sites. Red = Site U1597, yellow = other sites.

Figure F3. Lithostratigraphy, Site U1597. The nonvolcanic mud lies at the top of interval 1H-1, 0–6 cm. Unit color = dominant lithology.

Figure F4. Relative percentages of volcanic, tuffaceous, and nonvolcanic lithologies, Site U1597. Unit I is volcanic dominated.

Figure F5. Grain size distributions of volcanic, tuffaceous, and nonvolcanic sediments, Site U1597. Length of colored bars = relative grain size (ash = <2 mm, lapilli = 2–64 mm, mud = <63 μm , sand = 0.063–2 mm), with separate scales shown for volcanic grain size (top) and nonvolcanic grain size (bottom, used for tuffaceous and nonvolcanic sediments). Mixed lithologies such as lapilli-ash (dark pink) that have relative grain sizes between two categories are plotted between ticks.

Figure F6. Core disturbances, Site U1597. A. Soupy ash. B. Artificial size and density grading or pseudohorizontal density grading caused by segregation of fine lapilli pumice clasts in liquefied sediments while the core is lying flat on the deck, resulting in vertical structures when the core is turned upright.

Figure F7. Dominant lithologies in Subunit Ia, Site U1597. A. Moderately to poorly sorted gray lapilli-ash observed in the uppermost core section. (B) Greenish dark and (C) very dark grayish brown ash intervals.

Figure F8. Dominant lithologies in Subunit Ib, Site U1597. A. Dark gray ash with lapilli. B, C. Lapilli-ash with subangular white, gray, and banded pumice. D. Ash intervals.

Figure F9. Selected XRD spectra of Subunit Ia volcanic lithologies (ash), Site U1597. Samples show a characteristic hump at low 2θ , indicating the presence of volcanic glass. Identified crystalline phases are Ca-rich plagioclase, clay minerals typical of the illite group, and zeolite. Il = illite, Ze = zeolite, Pl = Ca-rich plagioclase.

Figure F10. Planktonic foraminifer. *Globoturbotalita rubescens* (398-U1597A-1H-CC, 6–13 cm).

Figure F11. Physical properties, Site U1597. Dots = whole-round measurements, open symbols = discrete measurements. cps = counts per second.

Figure F12. Discrete physical properties measurements, Site U1597. Dashed line = AVS upper measurement limit, solid line = AVS lower measurement limit.

Figure F13. ICP-AES analyses of selected volcanoclastic units used to discriminate between potential volcanic sources, Site U1597. A. Total alkali vs. SiO_2 plot with the rock nomenclature of Le Maitre et al. (2002) overlain used for sample naming. Ol = olivine. B. Ba/Y vs. Ba/Zr plot used to correlate samples. Note that all three samples overlap completely in the provided plot.

Figure F14. IW salinity, alkalinity, and pH, Site U1597. Lithostratigraphic Unit I is described in Lithostratigraphy.

Figure F15. IC and ICP-AES concentrations of Br, Cl, B, Na, K, Mg, Ca, and SO_4^{2-} in IW samples, Site U1597. Lithostratigraphic Unit I is described in Lithostratigraphy.

Figure F16. ICP-AES concentrations of Li, Fe, Mn, Ba, Si, and Sr in IW samples, Site U1597. Lithostratigraphic Unit I is described in Lithostratigraphy.