Figure F1. Bathymetric map of CSKVF in southern Aegean Sea (Greece). Expedition 398 sites used in this study (white symbols) are in Anhydros Basin (Sites U1589, U1590, and U1593), Anafi Basin (Sites U1592 and U1599), Christiana Basin (Sites U1591 and U1598), and Anhydros Ridge (Site U1600). Sites inside Santorini caldera are not shown. Map created with GeoMapApp (**https://www.geomapapp.org**) using the Global Multi-Resolution Topography (GMRT) (Ryan et al., 2009).

Figure F2. Marine tephra layers, Expedition 398. A. Selected examples. B. Smear slides for microscopic description.

Figure F3. Individual glass shard analyses of marine tephra layers younger than 765 ka from eight basin sites (Figure F1). Left: total-alkali vs. silica classification diagram (after Le Bas, 1986). Right: K_2O vs. silica classification diagram (after Peccerillo and Taylor, 1976). Each symbol represents a single glass shard measurement. Colored fields represent known compositional groups for Ancient (AT and Akrotiri) and Modern (TPF and Peristeria) Santorini (after Druitt et al., 1999; Bailey et al., 2009; Kutterolf et al., 2021; Druitt et al., 2024g), complemented by compositional fields for Kolumbo (after Metcalfe et al., 2026) and Kos Plateau Tuff (KPT) eruption (Metcalfe et al., 2025b), also recovered during Expedition 398. For clarity, KPT, AT, and Kolumbo individual glass analyses are not plotted. A–C. Marine tephra inventory of Anhydros Basin (Sites U1589, U1590, and U1593). (Continued on next two pages.)

Figure F3 (continued). D–F. Marine tephra inventory of Anafi Basin and Anhydros Ridge (Sites U1592, U1599, and U1600). (Continued on next page.)

Figure F3 (continued). G, H. Marine tephra inventory of Christiana Basin (Sites U1591 and U1598). Compositions of all marine samples range from basaltic andesite to rhyolite, with compositional outlier group present at Sites U1591, U1598, U1599, and U1600 being phonolitic to trachytic (left panels). Analyzed glass shards are divided between high-K and calc-alkaline series, except for phonolitic/trachyitic group following shoshonitic series (right panels).

Figure F4. Two discrimination diagrams (left: SiO_2 vs. Y; right: Ba/Y vs. Zr/Nb) (after Metcalfe et al., 2026) showing compositional variability of tephra inventories younger than 765 ka. Symbols correspond to drill sites and each symbol represents an individual glass shard measurement. Colored fields represent known compositional groups for Ancient (AT and Akrotiri) and Modern (TPF and Peristeria) Santorini (after Druitt et al., 1999; Bailey et al., 2009; Kutterolf et al., 2021; Druitt et al., 2024g), Kolumbo (after Metcalfe et al., 2026), and Kos Plateau Tuff (KPT) eruption (Metcalfe et al., 2025b). For clarity, KPT, AT, and Kolumbo individual glass analyses are not plotted. A–C. Marine tephra inventory of Anhydros Basin (Sites U1589, U1590, and U1593). (Continued on next two pages.)

Figure F4 (continued). D–F. Anafi Basin and Anhydros Ridge (Sites U1592, U1599, and U1600). (Continued on next page.)

Figure F4 (continued). G, H. Christiana Basin (Sites U1591 and U1598).