Figure F1. Bathymetric map of South Atlantic Ocean with location of Expedition 390/393 drill sites. Deep Sea Drilling Program Leg 3 sites are also shown. Figure modified from Teagle et al. (2023). Red box = location of Site U1559. RGR = Rio Grande Rise, ERGR = eastern Rio Grande Rise, MAR = Mid-Atlantic Ridge, TdC = Tristan de Cunha.

Figure F2. Crossplots of XRF raw counts of common paleoceanographically relevant elements from scanned cores, Site U1559: A. Fe vs. Ca. B. Ti vs. Fe. C. Al vs. Ar. D. Si vs. Ca. E. K vs. Fe. F. Ti vs. Ca. G. Si vs. Ti. H. Ba vs. Br. I. Sr vs. Ca. See Figure F3 for Spearman's rank correlation. Elements used from 10 kV excitation energy: Ca, Fe, Ti, Ar, Al, Si, and K; elements used from 30 kV excitation energy: Br and Sr; elements used from 50 kV excitation energy: Ba.

Figure F3. Correlogram for elements above XRF detection limits (>1000 counts/s), Site U1559. Spearman's rank correlation was used to determine correlation between elements. Positive and negative correlations are represented by colors and ellipses (green to yellow = positive correlation [black ρ values]; teal to purple = negative correlation [white ρ values]). Spherical shapes indicate low to absent correlation, whereas more elliptical shapes represent stronger correlation between elements. ρ coefficient values or each correlation are plotted in the center of each correlated element pair. Elements used from 10 kV excitation energy: Al, Si, S, K, Ca, Ti, Mn, and Fe; elements used from 30 kV excitation energy: Ni, Br, Sr, Zr; elements used from 50 kV excitation energy: Ba.

Figure F4. Magnetic susceptibility (whole-round measurements in instrument units), three components of natural gamma ray, and XRF counts of selected elements (10 kV excitation energy: Ca, Fe, Ti, Al, Si, and K; 30 kV excitation energy: Zr), Site U1559. Lithologic units and major geologic epochs are also shown.