

Figure F1. Location of Site U1543 with Sites U1542 and U1544, cored during Expedition 383. Bathymetric information is based on GEBCO (2021) (https://www.gebco.net/data_and_products/gridded_bathymetry_data).

Figure F2. Discrete CaCO_3 (orange dots) with (A) XRF scanned Ca peak areas (cyan line) and (B) NMS XRF CaCO_3 profile (blue line) in upper 30 mcd along the Site U1543 splice. Discrete CaCO_3 measurements show mean values of duplicate analyses. NMS CaCO_3 co-varied with the discrete CaCO_3 within an ~5% offset. cps = counts per second.

Figure F3. NMS XRF CaCO_3 plotted against 118 discrete analyses from the same depth intervals at Site U1543. The orange line shows that the linear least squares fit the data, and the black dashed line represents a perfect fit. The regression equation and R^2 are also shown.

Figure F4. XRF scanning CaCO_3 estimates (blue line) with discrete CaCO_3 measurements (orange dots) in (A) upper 30 mcd, (B) top 0.5 mcd, (C) 5.5–8.5 mcd, (D) 19–22 mcd, and (E) 25–27 mcd along the Site U1543 splice.

Figure F5. Histogram of differences between measured and XRF-estimated CaCO_3 at the same measurement depths, Site U1543. The number of samples is 122, the mean is -0.01 wt%, the median is -0.09 wt%, and the standard deviation is 4.50 wt%. More than 75% of samples are within ± 4.50 wt%. The bin width is set to 1.00.

Figure F6. Variation in bulk water content (black line) and XRF scanning CaCO_3 estimates (blue line) with discrete CaCO_3 measurements (orange dots) in the top 0.5 mcd of Site U1543. Bulk water contents were calculated from shipboard GRA density (Lamy et al., 2021). The black dashed line and gray rectangle are a mean value of water contents of 43.86 wt% and the range of 1σ of ± 4.75 wt% throughout 30 mcd along the Site U1543 splice, respectively. In the top 0.2 mcd, especially, containing significantly higher bulk water contents than mean $\pm 1\sigma$, the XRF scanning CaCO_3 estimates systematically overestimate compared to the discrete CaCO_3 measurements.