

Table captions

Table S1. EPMA measurement results for major elements in TARIM calcite pieces

Table S2. LA-ICPMS trace element data of TARIM calcite and quality control standard BCR-2G

Table S3 U-Pb ID-TIMS isotopic data for TARIM calcite

Table S4. Signal intensities, element compositions, and isotope ratios of the TARIM and quality control standard DuffBrown with LA-MC-ICPMS under different laser parameters and different grains

Table S5. Signal intensities, element compositions, and isotope ratios of the TARIM and quality control standard LD-5 with LA-Q-ICPMS under different laser parameters and different grains

Table S6. LA-MC-ICPMS U-Pb data of reference carbonates as unknowns with TARIM as standard