

Sample	²³⁸ U	²³² Th	²³⁰ Th / ²³² Th	d ²³⁴ U*	²³⁰ Th / ²³⁸ U	²³⁰ Th Age (yr)	²³⁰ Th Age (yr)	d ²³⁴ U _{initial} **	²³⁰ Th Age (yr BP)***
Number	(ppb)	(ppt)	(atomic x10 ⁻⁶)	(measured)	(activity)	(uncorrected)	(corrected)	(corrected)	(corrected)
AGEG-2016-21	2415.6 ±3.9	1428 ±32	282 ±12	138.2 ±2.0	0.0101 ±0.0004	972 ±37	957 ±38	138.6 ±2.0	889 ±38
AGEG-2016-48	2598.7 ±4.2	2754 ±56	148 ±4	143.8 ±2.1	0.0095 ±0.0002	914 ±17	887 ±26	144.1 ±2.1	819 ±26
AGEG-2016-39	2529.9 ±3.1	5472 ±110	63 ±2	144.2 ±1.6	0.0082 ±0.0003	787 ±25	732 ±46	144.5 ±1.6	664 ±46
AGEG-2016-55	2249.1 ±3.1	1160 ±24	198 ±7	144.9 ±1.7	0.0062 ±0.0002	590 ±16	577 ±19	145.1 ±1.7	509 ±19
AGEG-2016-58	2541.6 ±3.4	1446 ±33	160 ±11	146.9 ±1.8	0.0055 ±0.0004	525 ±35	510 ±37	147.1 ±1.8	442 ±37
AGEG-2016-22	2545.4 ±3.5	271 ±14	825 ±67	142.4 ±1.7	0.0053 ±0.0003	510 ±31	507 ±31	142.6 ±1.7	439 ±31
AGEG-2016-38	2913.9 ±5.4	334 ±19	768 ±68	143.6 ±2.1	0.0053 ±0.0004	510 ±35	507 ±35	143.8 ±2.1	439 ±35
AGEG-2016-20	2409.6 ±3.5	717 ±19	290 ±19	144.7 ±2.0	0.0052 ±0.0003	500 ±30	492 ±30	144.9 ±2.0	424 ±30
CORAL-1	2134 ±3.0	64 ±5	2798 ±242	145 ±2.0	0.0051 ±0.0002	483 ±15	483 ±15	145 ±2.0	418 ±11
AGEG-2016-24	2353.2 ±3.6	423 ±13	465 ±28	142.7 ±1.8	0.0051 ±0.0003	485 ±25	481 ±25	142.9 ±1.8	413 ±25
CORAL-3	2174 ±3.0	50 ±4	3505 ±281	144.1 ±2.5	0.0049 ±0.0001	468 ±11	467 ±11	144 ±3.0	402 ±15
AGEG-2016-25	2395.1 ±4.1	241 ±18	777 ±95	141.8 ±2.0	0.0047 ±0.0005	454 ±43	452 ±44	142.0 ±2.0	384 ±44
AGEG-2016-13	2459.3 ±3.1	262 ±19	735 ±91	145.1 ±1.4	0.0047 ±0.0005	453 ±45	450 ±45	145.3 ±1.4	382 ±45
AGEG-2016-40	2827.8 ±4.3	219 ±14	987 ±90	144.1 ±1.8	0.0046 ±0.0003	444 ±28	442 ±28	144.2 ±1.8	374 ±28
AGEG-2016-45	2231.8 ±3.6	283 ±12	597 ±44	144.3 ±2.0	0.0046 ±0.0003	439 ±27	435 ±27	144.4 ±2.0	367 ±27
AGEG-2016-33	2431.2 ±3.8	89 ±12	2066 ±304	147.5 ±1.9	0.0046 ±0.0003	434 ±28	434 ±28	147.7 ±1.9	366 ±28
AGEG-2016-44	2268.5 ±3.5	433 ±16	392 ±34	144.6 ±2.0	0.0045 ±0.0004	433 ±34	428 ±34	144.8 ±2.0	360 ±34
AGEG-2016-27	2463.7 ±4.1	374 ±14	491 ±37	144.0 ±1.9	0.0045 ±0.0003	432 ±28	428 ±29	144.1 ±1.9	360 ±29
AGEG-2016-19	2397.9 ±4.1	215 ±13	818 ±79	144.2 ±2.0	0.0044 ±0.0003	424 ±31	422 ±31	144.4 ±2.0	354 ±31
AGEG-2016-7	2574.5 ±2.6	663 ±19	261 ±28	143.3 ±1.2	0.0041 ±0.0004	390 ±40	383 ±40	143.5 ±1.2	315 ±40

Supplemental Table 1. ²³⁰Th/U dating results. Error is 2σ.

Table Notes:

U decay constants: $\lambda_{238} = 1.55125 \times 10^{-10}$ (Jaffey et al. 1971) and $\lambda_{234} = 2.82206 \times 10^{-6}$ (Cheng et al. 2013).

Th decay constant: $\lambda_{230} = 9.1705 \times 10^{-6}$ (Cheng et al. 2013).

* $\delta^{234}\text{U} = ([^{234}\text{U}/^{238}\text{U}]_{\text{activity}} - 1) \times 1000$. ** $\delta^{234}\text{U}_{\text{initial}}$ was calculated based on ^{230}Th age (T), i.e., $\delta^{234}\text{U}_{\text{initial}} = \delta^{234}\text{U}_{\text{measured}} \times e^{\lambda_{234} \times T}$.

Corrected ^{230}Th ages assume the initial $^{230}\text{Th}/^{232}\text{Th}$ atomic ratio of $4.4 \pm 2.2 \times 10^{-6}$. Those are the values for a material at secular equilibrium, with the bulk earth $^{232}\text{Th}/^{238}\text{U}$ value of 3.8. The errors are arbitrarily

assumed to be 50%.

***B.P. stands for “Before Present” where “Present” is defined as the year AD 1950.