

Supporting Online Material for Yuan et al.

Supporting Tables

Table S1. Meteorological data at Dongge cave, Guiyuan and Nanjing.

Location*	Latitude	Longitude	Elevation (m)	Month	Weighted Monthly $\delta^{18}\text{O}$ (‰)**	Weighted Annual $\delta^{18}\text{O}$ (‰)**	Monthly Precipitation (mm)***	Mean Annual Precipitation (mm)***	Monthly Temperature (°C)***	Mean Annual temperature (°C)***
Dongge Cave	25.28 N	108.08 E	680	1			29.8		5.2	
				2			36.7		9.9	
				3			55.7		11.3	
				4			135.7		16.3	
				5			237.8		19.7	
				6			305.4	1753	22.1	15.6
				7			324.2		23.5	
				8			292.3		22.8	
				9			124.8		20.8	
				10			116.4		16.4	
				11			61.8		11.4	
				12			32.5		7.2	
Guiyang	26.35 N	106.43 E	1071	1	-4.72					
				2	-3.45					
				3	-4.47					
				4	-2.82					
				5	-5.16					
				6	-7.99	-8.33				
				7	-12.42					
				8	-9.67					
				9	-12.48					
				10	-10.06					
				11	-6.99					
				12	-5.43					
Nanjing	32.18 N	118.18 E	26	1	-7.86		29		2.7	
				2	-6.14		48		4.2	
				3	-7.08		69		9.0	
				4	-3.11		87		15.2	
				5	-4.74		96		20.5	
				6	-10.05	-8.41	159	1036	24.7	15.7
				7	-10.03		188		28.3	
				8	-9.02		124		28.2	
				9	-7.89		95		23.2	
				10	-6.77		60		17.4	
				11	-7.56		56		11.0	
				12	-8.68		25		4.8	

* Distance between Dongge Cave and Guiyang is about 160 km.

** Data from the Isotope Hydrology Section of the IAEA (see: <http://isohis.iaea.org/>).

*** Average data from 1965 to 1983 for Dongge Cave area (recorded by the Meteorological Observatory of Maolan, Libo county, Guizhou Province, China) and from 1961 to 1990 for Nanjing (recorded by the Meteorological Observatory of Nanjing, Jiangsu China).

Table S2. ^{230}Th dating of stalagmites from Dongge Cave by thermal ionization mass spectrometry (TIMS) and magnetic sector inductively coupled plasma mass spectrometry (ICP-MS) (⁸). Errors are 2σ . Decay constant values are: $\lambda_{230} = 9.1577 \times 10^{-6} \text{ y}^{-1}$ (S1), $\lambda_{234} = 2.8263 \times 10^{-6} \text{ y}^{-1}$ (S1), and $\lambda_{238} = 1.55125 \times 10^{-10} \text{ y}^{-1}$ (S2). The corrected ^{230}Th ages assume a broad initial $^{230}\text{Th}/^{232}\text{Th}$ atomic ratio of $(7 \pm 5) \times 10^{-6}$, which places the few high ^{232}Th samples (including D3-15 and D4-1) all in stratigraphic order. I and II indicate duplicate analyses. Depths are relative to the top (youngest surface) of each stalagmite and are measured along the growth axis. Ages in ka BP are relative to 1950 A.D. The dates between 168.8 and 193.5 cm (together with oxygen data in the time period, see Table S4) were obtained from a different piece of D4 than the other dates so that the depth scale and dates for the two portions are independent, but similar. Based on matching of distinctive stratigraphic features, this portion corresponds to the portion between 166.6 and 193.2 cm on the other portion. The growth rates are calculated using dates of the same row and the adjacent row above.

Stalagmite D3

Sample Number	Distance To top(cm)	^{238}U (ppb)	^{232}Th (ppt)	$\delta^{234}\text{U}^*$ (measured)	$^{230}\text{Th}/^{238}\text{U}$ (activity)	^{230}Th Age (ka, BP) (uncorrected)	^{230}Th Age (ka, BP) (corrected)	$\delta^{234}\text{U}_{\text{initial}}$ (corrected)	Growth Rate(mm/ka)
D3-25	0.5	856 $\pm$ 1	392 $\pm$ 5	-244.8 $\pm$ 0.9	0.00088 $\pm$ 0.00004	0.077 $\pm$ 0.005	0.049 $\pm$ 0.021	-244.8 $\pm$ 0.9	
D3-24	4.0	1080 $\pm$ 1	4817 $\pm$ 19	-217.5 $\pm$ 0.8	0.4292 $\pm$ 0.0010	91.5 $\pm$ 0.4	91.2 $\pm$ 0.5	-281.4 $\pm$ 1.1	
D3-9	17.9	1067 $\pm$ 1	698 $\pm$ 4	-213.5 $\pm$ 1.0	0.4504 $\pm$ 0.0011	98.3 $\pm$ 0.5	98.2 $\pm$ 0.5	-281.8 $\pm$ 1.4	20
D3-23	51.0	989 $\pm$ 1	977 $\pm$ 6	-228.1 $\pm$ 0.9	0.4478 $\pm$ 0.0010	101.0 $\pm$ 0.5	101.0 $\pm$ 0.5	-303.4 $\pm$ 1.2	120
D3-22	63.9	920 $\pm$ 1	1073 $\pm$ 6	-193.5 $\pm$ 1.0	0.4821 $\pm$ 0.0011	105.1 $\pm$ 0.5	105.0 $\pm$ 0.5	-260.3 $\pm$ 1.4	32
D3-21	73.4	1082 $\pm$ 1	613 $\pm$ 5	-186.7 $\pm$ 1.0	0.5016 $\pm$ 0.0012	110.9 $\pm$ 0.6	110.8 $\pm$ 0.6	-255.4 $\pm$ 1.4	16
D3-20	102.5	1188 $\pm$ 1	383 $\pm$ 5	-193.4 $\pm$ 0.8	0.5041 $\pm$ 0.0012	113.9 $\pm$ 0.6	113.9 $\pm$ 0.6	-266.8 $\pm$ 1.2	94
D3-8 (I)	116.9	1138 $\pm$ 1	587 $\pm$ 3	-205.5 $\pm$ 0.8	0.5048 $\pm$ 0.0012	118.2 $\pm$ 0.6	118.2 $\pm$ 0.6	-287.0 $\pm$ 1.3	34
D3-8 (II)	116.9	1334 $\pm$ 2	514 $\pm$ 3	-203.5 $\pm$ 0.9	0.5066 $\pm$ 0.0013	118.4 $\pm$ 0.7	118.3 $\pm$ 0.7	-284.4 $\pm$ 1.4	-
D3-19	141.5	1251 $\pm$ 1	306 $\pm$ 5	-203.5 $\pm$ 0.9	0.5092 $\pm$ 0.0012	119.6 $\pm$ 0.6	119.6 $\pm$ 0.6	-285.3 $\pm$ 1.4	190
D3-18	161.5	1367 $\pm$ 1	1137 $\pm$ 5	-195.3 $\pm$ 0.8	0.5209 $\pm$ 0.0012	122.0 $\pm$ 0.6	121.9 $\pm$ 0.6	-275.6 $\pm$ 1.2	87
D3-7	180.8	970 $\pm$ 1	531 $\pm$ 6	-184.8 $\pm$ 1.3	0.5328 $\pm$ 0.0013	123.7 $\pm$ 0.8	123.7 $\pm$ 0.8	-262.1 $\pm$ 2.0	110
D3-17	181.5	1115 $\pm$ 1	16671 $\pm$ 151	-187.9 $\pm$ 0.8	0.5314 $\pm$ 0.0012	124.2 $\pm$ 0.6	124.1 $\pm$ 0.6	-266.9 $\pm$ 1.2	18
D3-16	185.1	714 $\pm$ 1	21024 $\pm$ 156	-191.8 $\pm$ 0.9	0.5425 $\pm$ 0.0013	131.0 $\pm$ 0.8	129.1 $\pm$ 1.6	-276.4 $\pm$ 1.7	7.2
D3-15	185.9	1021 $\pm$ 2	66580 $\pm$ 480	-189.5 $\pm$ 1.8	0.5556 $\pm$ 0.0015	136.8 $\pm$ 1.2	132.5 $\pm$ 3.2	-275.6 $\pm$ 3.7	2.4
D3-14	187.3	833 $\pm$ 1	9523 $\pm$ 39	-179.5 $\pm$ 1.5	0.5583 $\pm$ 0.0014	134.0 $\pm$ 1.0	133.2 $\pm$ 1.1	-261.6 $\pm$ 2.3	20
D3-13	191.4	953 $\pm$ 2	7055 $\pm$ 51	-183.1 $\pm$ 1.6	0.5620 $\pm$ 0.0015	137.3 $\pm$ 1.1	136.9 $\pm$ 1.1	-269.6 $\pm$ 2.5	11
D3-6 (I)	195.9	915 $\pm$ 1	3986 $\pm$ 28	-177.5 $\pm$ 0.9	0.5819 $\pm$ 0.0015	145.6 $\pm$ 1.0	145.3 $\pm$ 1.0	-267.6 $\pm$ 1.6	5.4
D3-6 (II)	195.9	873 $\pm$ 1	2970 $\pm$ 15	-178.6 $\pm$ 1.3	0.5799 $\pm$ 0.0015	145.0 $\pm$ 1.1	144.8 $\pm$ 1.1	-268.2 $\pm$ 2.2	-
D3-12	204.3	1231 $\pm$ 1	2310 $\pm$ 11	-177.8 $\pm$ 0.7	0.5891 $\pm$ 0.0014	150.0 $\pm$ 0.9	149.8 $\pm$ 0.9	-271.6 $\pm$ 1.3	17
D3-11	205.8	1383 $\pm$ 6	27464 $\pm$ 211	-177.6 $\pm$ 6.6	0.6070 $\pm$ 0.0049	161.1 $\pm$ 5.3	159.8 $\pm$ 5.3	-279.1 $\pm$ 11.2	1.5
D3-10	209.3	936 $\pm$ 4	12827 $\pm$ 106	-162.7 $\pm$ 6.4	0.6249 $\pm$ 0.0034	163.7 $\pm$ 4.5	162.9 $\pm$ 4.6	-257.9 $\pm$ 10.7	11

Table S2 (Cont.)
Stalagmite D4

Sample Number	Distance To top(cm)	^{238}U (ppb)	^{232}Th (ppt)	$\delta^{234}\text{U}^*$ (measured)	$^{230}\text{Th}/^{238}\text{U}$ (activity)	^{230}Th Age (ka, BP) (uncorrected)	^{230}Th Age (ka, BP) (corrected)	$\delta^{234}\text{U}_{\text{initial}}$ (corrected)	Growth Rate(mm/ka)
D4-26	0.5	600.0 ±0.5	249 ±13	-2.0 ±1.1	0.00147 ±0.00040	0.111 ±0.043	0.092 ±0.046	-2.0 ±1.1	
D4-25	11	488.0 ±0.5	129 ±9	-6.9 ±1.4	0.00380 ±0.00010	0.368 ±0.011	0.356 ±0.014	-6.9 ±1.4	400
D4-24	13	387.2 ±0.4	316 ±10	-5.6 ±1.7	0.00441 ±0.00023	0.435 ±0.026	0.397 ±0.037	-5.6 ±1.7	490
D4-23	25	438.5 ±0.3	263 ±10	-8.6 ±1.1	0.01430 ±0.00023	1.537 ±0.0.26	1.509 ±0.033	-8.7 ±1.1	110
D4-21	30	341.9 ±1.8	433 ±11	2 ±9	0.02165 ±0.00020	2.335 ±0.031	2.276 ±0.052	2 ±9	65
D4-20	45.5	475.7 ±0.8	208 ±9	8.8 ±2.5	0.03651 ±0.00025	3.975 ±0.030	3.955 ±0.033	8.9 ±2.6	92
D4-19	47	335.5 ±0.2	120 ±8	0.9 ±0.9	0.03745 ±0.00027	4.148 ±0.031	4.098 ±0.033	0.9 ±0.9	110
D4-28 ^s	62	507.1 ±1.2	56 ±7	-10.2 ±1.3	0.04798 ±0.00031	5.320 ±0.037	5.315 ±0.046	-10.2 ±1.3	120
D4-18	86	420.2 ±5.3	70 ±8	-62 ±16	0.05236 ±0.00079	6.227 ±0.147	6.219 ±0.147	-63 ±16	270
D4-17	102	443.3 ±0.3	57 ±8	-20.6 ±0.9	0.05839 ±0.00035	6.663 ±0.042	6.657 ±0.042	-20.9 ±1.0	370
D4-16	122	344.7 ±0.5	13 ±9	-9.4 ±2.5	0.06520 ±0.00033	7.385 ±0.043	7.383 ±0.043	-9.6 ±2.5	280
D4-15	144	468.0 ±0.6	213 ±8	-23.8 ±1.8	0.07182 ±0.00034	8.297 ±0.045	8.275 ±0.047	-24.3 ±1.8	250
D4-29 ^s	162	486.5 ±1.0	320 ±9	1.6 ±1.4	0.08038 ±0.00052	9.085 ±0.063	9.054 ±0.080	1.6 ±1.4	230
D4-13	164	482.2 ±0.4	116 ±7	-12.5 ±1.0	0.08130 ±0.00032	9.333 ±0.040	9.321 ±0.041	-12.8 ±1.0	75
B6-5 ^s	166.8	294 ±0.54	219 ±24	-15.8 ±1.8	0.08664 ±0.00088	10.01 ±0.11	9.98 ±0.11	-16.2 ±1.9	43
B6-7 ^s	169.1	314 ±0.39	458 ±15	-7.3 ±1.5	0.09116 ±0.00048	10.47 ±0.06	10.40 ±0.08	-7.3 ±1.5	55
B7-8 ^s	171.7	372 ±0.71	217 ±23	-7.1 ±1.9	0.09489 ±0.00094	10.93 ±0.12	10.89 ±0.12	-7.3 ±1.9	53
B7-1 ^s	174.2	366 ±0.45	354 ±23	-8.8 ±1.3	0.09879 ±0.00065	11.41 ±0.08	11.37 ±0.08	-9.1 ±1.3	52
B7-7 ^s	178.3	428 ±0.82	117 ±23	-15.6 ±1.8	0.10415 ±0.00061	12.16 ±0.08	12.15 ±0.08	-16.2 ±1.9	53
B7-2 ^s	179.5	386 ±0.66	465 ±22	-27.7 ±1.6	0.10610 ±0.00062	12.57 ±0.08	12.51 ±0.08	-28.7 ±3.3	33
B7-3 ^s	181.2	348 ±0.59	73.1 ±23	-17.6 ±1.6	0.11069 ±0.00069	13.01 ±0.09	13.00 ±0.09	-18.2 ±1.7	35
B7-6 ^s	183.3	372 ±0.62	23.9 ±24	-4.9 ±1.6	0.11350 ±0.00074	13.17 ±0.10	13.17 ±0.10	-5.0 ±1.6	120
B7-4 ^s	184.4	287 ±0.49	72.3 ±22	1.4 ±1.7	0.11427 ±0.00077	13.17 ±0.10	13.17 ±0.10	1.5 ±1.7	-
B7-5 ^s	186.9	302 ±0.88	98.4 ±23	-9.4 ±3.0	0.11682 ±0.00074	13.65 ±0.10	13.64 ±0.10	-9.8 ±3.2	53
B8-2 ^s	188.6	284 ±0.52	78.1 ±22	-8.3 ±1.7	0.12077 ±0.00079	14.13 ±0.10	14.12 ±0.10	-8.6 ±1.8	35
B8-3 ^s	190.5	259 ±0.46	397 ±23	-5.4 ±1.8	0.12732 ±0.00078	14.91 ±0.10	14.84 ±0.10	-5.6 ±1.9	26
B8-4 ^s	192.1	327 ±0.52	81.4 ±23	0.0 ±1.5	0.13317 ±0.00072	15.55 ±0.09	15.54 ±0.10	0.0 ±1.5	23
B8-1 ^s	193.5	406 ±0.55	562 ±22	-11 ±1.4	0.13511 ±0.00074	15.98 ±0.10	15.92 ±0.11	-11.0 ±1.4	37
D4-34 ^s	195	356.4 ±0.7	662 ±10	-48.1 ±1.4	0.3116 ±0.0017	43.4 ±0.3	43.3 ±0.3	-54.3 ±1.6	-
D4-10	200	430.6 ±0.3	429 ±9	-43.8 ±0.9	0.3387 ±0.0010	47.9 ±0.2	47.8 ±0.2	-50.1 ±1.0	11
D4-9	222	343.3 ±0.3	90 ±9	5.9 ±1.3	0.4207 ±0.0016	59.1 ±0.3	59.1 ±0.3	7.0 ±1.5	19
D4-35 ^s	232.5	393.2 ±0.8	760 ±9	-44.9 ±1.7	0.4262 ±0.0021	64.9 ±0.5	64.8 ±0.5	-54.0 ±2.0	18
D4-36 ^s	236	685.1 ±1.7	61 ±9	-94.9 ±2.1	0.5769 ±0.0025	113.2 ±1.1	113.2 ±1.1	-131.0 ±2.6	-
D4-8	240	503.9 ±0.5	387 ±11	-116.0 ±1.2	0.5627 ±0.0016	114.4 ±0.7	114.3 ±0.7	-160.3 ±1.6	36
D4-7	244	522.3 ±0.4	1639 ±27	-63.7 ±0.8	0.6313 ±0.0016	125.0 ±0.6	124.8 ±0.7	-90.7 ±1.1	3.8
D4-6	254	565.3 ±0.9	67 ±10	-52.1 ±2.1	0.6457 ±0.0017	126.9 ±0.9	126.9 ±0.9	-74.5 ±3.1	48
D4-5	259	514.5 ±0.6	379 ±9	-41.0 ±1.7	0.6588 ±0.0016	128.5 ±0.8	128.4 ±0.8	-58.9 ±2.4	33
D4-27	261	558.0 ±0.8	186 ±9	-37.5 ±1.8	0.6637 ±0.0017	129.3 ±0.9	129.3 ±0.9	-54.1 ±2.6	22
D4-4	268	312.9 ±0.3	375 ±10	-18.7 ±1.7	0.6860 ±0.0019	131.9 ±0.9	131.8 ±0.9	-27.2 ±2.5	28
D4-3	276	450.0 ±0.6	176 ±9	-36.5 ±2.0	0.6831 ±0.0019	136.5 ±1.0	136.5 ±1.0	-53.7 ±3.0	17
D4-37 ^s	290	433.2 ±0.9	2561 ±10	-49.2 ±1.5	0.6775 ±0.0025	138.6 ±1.2	138.3 ±1.2	-72.8 ±2.2	78
D4-2	293	395.2 ±0.6	3966 ±39	-41.9 ±2.3	0.7041 ±0.0020	147.4 ±1.3	146.9 ±1.3	-63.5 ±3.4	3.5
D4-38 ^s	299	534.4 ±1.0	1517 ±11	-45.5 ±1.4	0.7018 ±0.0026	147.8 ±1.3	147.7 ±1.3	-69.1 ±2.1	75
D4-1 [#]	302	374.7 ±0.3	79860 ±750	-35.2 ±1.3	0.7488 ±0.0038	166.2 ±2.1	155.3 ±7.7	-54.6 ±2.3	3.9

Table S3. ^{230}Th dating results of stalagmite H82 from the Hulu Cave, Nanjing, China. The error is 2σ . Dating results of sample H82-a and b have been reported in Wang et al. (S3). We have used all of the age data below to assign ages to the oxygen isotope values in Table S5. These results are in a slightly refined timescale compared to that presented in Wang et al. (S3). 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 crustal $^{232}\text{Th}/^{238}\text{U}$ value of 3.8. The errors are arbitrarily assumed to be 50%. The half lives and growth rate calculations are as same as Table S2.

Sample Number	Depth (mm)	^{238}U (ppb)	^{232}Th (ppt)	$\delta^{234}\text{U}^*$ (measured)	$^{230}\text{Th}/^{238}\text{U}$ (activity)	^{230}Th Age (ka, BP) (uncorrected)	^{230}Th Age (ka, BP) (corrected)	$\delta^{234}\text{U}_{\text{initial}}^{**}$ (corrected)	Growth Rate(mm/ka)
H82-a	7.25	118.3 $\pm$ 0.1	42 $\pm$ 4	222.4 $\pm$ 1.5	0.1181 $\pm$ 0.0010	11.01 $\pm$ 0.10	11.00 $\pm$ 0.10	229.5 $\pm$ 1.5	
H82-1	11	111.4 $\pm$ 0.3	9 $\pm$ 6	231.5 $\pm$ 3.2	0.1227 $\pm$ 0.0010	11.37 $\pm$ 0.11	11.37 $\pm$ 0.11	239.1 $\pm$ 3.3	11
H82-3	20	138.2 $\pm$ 0.4	42 $\pm$ 5	213.4 $\pm$ 2.4	0.1243 $\pm$ 0.0009	11.72 $\pm$ 0.09	11.71 $\pm$ 0.09	220.6 $\pm$ 2.4	27
H82-5	30	140.1 $\pm$ 0.4	11 $\pm$ 5	205.3 $\pm$ 2.6	0.1270 $\pm$ 0.0008	12.07 $\pm$ 0.09	12.07 $\pm$ 0.09	212.4 $\pm$ 2.7	28
H82-7	50	141.7 $\pm$ 0.3	21 $\pm$ 5	204.4 $\pm$ 1.7	0.1353 $\pm$ 0.0009	12.92 $\pm$ 0.10	12.91 $\pm$ 0.10	212.0 $\pm$ 1.7	24
H82-9	70	164.2 $\pm$ 0.4	39 $\pm$ 5	203.5 $\pm$ 2.1	0.1398 $\pm$ 0.0008	13.39 $\pm$ 0.09	13.38 $\pm$ 0.09	211.4 $\pm$ 2.2	43
H82-11	90	133.7 $\pm$ 0.3	70 $\pm$ 8	200.3 $\pm$ 2.2	0.1434 $\pm$ 0.0010	13.79 $\pm$ 0.11	13.78 $\pm$ 0.11	208.3 $\pm$ 2.3	50
H82-13	110	105.2 $\pm$ 0.2	38 $\pm$ 7	203.5 $\pm$ 2.4	0.1496 $\pm$ 0.0011	14.39 $\pm$ 0.12	14.39 $\pm$ 0.12	212.0 $\pm$ 2.5	33
H82-15	130	142.0 $\pm$ 0.3	18 $\pm$ 10	203.7 $\pm$ 2.1	0.1546 $\pm$ 0.0011	14.90 $\pm$ 0.12	14.90 $\pm$ 0.12	212.5 $\pm$ 2.2	39
H82-b	158.5	209.4 $\pm$ 0.2	6 $\pm$ 4	209.9 $\pm$ 1.1	0.1667 $\pm$ 0.0010	16.12 $\pm$ 0.11	16.07 $\pm$ 0.11	219.7 $\pm$ 1.2	24

Table S4. Oxygen isotopic data for stalagmites from Dongge Cave. Depths are relative to the top (youngest surface) of each stalagmite and are measured along the growth axis. Ages are established with ^{230}Th ages (see Table S1). “ka, BP” refers to years relative to 1950 AD. See Table S2 for subsample positions of stalagmite D4 between 166.8 and 193.5 cm.

Distance (cm)	Age (ka, BP)	$\delta^{18}\text{O}$ (VPDB)	Distance (cm)	Age (ka, BP)	$\delta^{18}\text{O}$ (VPDB)	Distance (cm)	Age (ka, BP)	$\delta^{18}\text{O}$ (VPDB)
Stalagmite D3								
4.0	91.2	-6.11	116.5	118.1	-5.76	192.0	138.0	-5.01
7.0	92.7	-6.31	118.0	118.3	-3.20	192.5	138.9	-4.60
10.0	94.2	-6.45	119.5	118.4	-5.75	193.0	139.8	-4.98
13.0	95.7	-6.43	121.0	118.5	-5.06	193.5	140.7	-5.38
16.0	97.2	-6.78	124.0	118.6	-5.40	194.0	141.6	-5.29
19.0	98.3	-7.08	127.0	118.8	-5.94	194.5	142.5	-5.83
22.0	98.5	-7.05	130.0	119.0	-5.75	195.0	143.4	-5.42
25.0	98.8	-7.57	133.0	119.1	-6.32	195.5	144.3	-5.79
28.0	99.1	-7.47	136.0	119.3	-5.94	196.0	145.1	-5.92
31.0	99.3	-7.81	139.0	119.5	-6.27	196.5	145.4	-6.93
34.0	99.6	-8.02	142.0	119.7	-6.84	197.0	145.7	-6.56
37.0	99.8	-7.99	145.0	120.0	-8.20	197.5	146.0	-5.88
40.0	100.1	-8.20	148.0	120.3	-8.72	198.0	146.2	-6.62
43.0	100.3	-8.42	151.0	120.7	-8.88	198.5	146.5	-6.31
46.0	100.6	-8.50	154.0	121.0	-8.73	199.0	146.8	-6.15
49.0	100.8	-8.63	157.0	121.4	-8.57	199.5	147.1	-6.67
52.0	101.3	-8.89	160.0	121.7	-8.67	200.0	147.4	-6.03
55.0	102.2	-8.55	163.0	122.0	-8.40	200.5	147.7	-6.88
58.0	103.2	-8.25	166.0	122.3	-8.63	201.0	147.9	-7.11
61.0	104.1	-8.37	169.0	122.6	-8.90	201.5	148.2	-7.63
64.0	105.1	-7.69	172.0	122.9	-8.69	202.0	148.5	-7.03
67.0	106.9	-8.63	175.0	123.2	-8.51	202.5	148.8	-7.38
70.0	108.7	-8.31	178.0	123.4	-8.02	203.0	149.1	-6.34
73.0	110.6	-6.21	181.0	123.8	-8.93	203.5	149.3	-6.82
76.0	111.1	-6.11	183.5	127.2	-8.50	204.0	149.6	-7.42
79.0	111.4	-5.90	185.0	129.6	-7.89	204.5	151.1	-7.90
82.0	111.7	-5.84	185.5	130.4	-8.43	205.0	154.5	-6.59
85.0	112.0	-5.68	186.0	131.2	-5.66	205.5	157.8	-4.88
88.0	112.4	-5.96	186.5	131.9	-5.69	206.0	160.0	-4.75
91.0	112.7	-5.89	187.0	132.7	-3.73	206.5	160.4	-5.12
94.0	113.0	-5.57	187.5	133.4	-3.63	207.0	160.9	-5.28
97.0	113.3	-5.58	188.0	133.8	-4.47	207.5	161.3	-6.22
100.0	113.6	-4.98	188.5	134.3	-4.06	208.0	161.7	-5.50
103.0	114.1	-5.50	189.0	134.7	-3.69	208.5	162.2	-6.76
106.0	115.0	-4.88	189.5	135.2	-4.42	209.0	162.6	-6.24
107.0	115.3	-4.92	190.0	135.6	-4.10	209.5	163.1	-5.48
109.0	115.9	-5.60	190.5	136.1	-5.12	210.0	163.5	-4.61
112.0	116.8	-5.48	191.0	136.5	-5.40			
115.0	117.7	-5.63	191.5	137.1	-5.14			

Continue to next page

Table S4 (Cont.)

Distance (cm)	Age (ka, BP)	$\delta^{18}\text{O}$ (VPDB)	Distance (cm)	Age (ka, BP)	$\delta^{18}\text{O}$ (VPDB)	Distance (cm)	Age (ka, BP)	$\delta^{18}\text{O}$ (VPDB)
Stalagmite D4								
1.0	0.116	-7.89	45.0	3.90	-8.83	116.0	7.17	-8.79
2.0	0.140	-7.91	46.0	4.00	-8.78	118.0	7.24	-8.77
3.0	0.164	-7.88	47.0	4.10	-8.37	120.0	7.31	-9.10
4.0	0.188	-8.15	48.0	4.18	-8.27	122.0	7.38	-8.84
5.0	0.212	-8.24	49.0	4.26	-8.36	124.0	7.46	-9.20
6.0	0.236	-8.02	50.0	4.34	-8.28	126.0	7.55	-8.96
7.0	0.260	-7.86	51.0	4.42	-8.76	128.0	7.63	-8.89
8.0	0.284	-7.67	52.0	4.50	-8.41	130.0	7.71	-8.87
9.0	0.308	-7.79	53.0	4.58	-8.32	132.0	7.79	-8.84
10.0	0.332	-8.10	54.0	4.67	-8.53	134.0	7.87	-8.91
11.0	0.356	-7.85	55.0	4.75	-8.01	136.0	7.95	-8.82
12.0	0.377	-7.42	56.0	4.83	-8.74	138.0	8.03	-8.88
13.0	0.397	-7.54	57.0	4.91	-8.61	140.0	8.11	-9.09
14.0	0.490	-7.50	58.0	4.99	-8.3	142.0	8.19	-8.50
15.0	0.582	-7.30	59.0	5.07	-8.44	144.0	8.28	-8.46
16.0	0.675	-7.76	60.0	5.15	-8.27	146.0	8.36	-9.12
17.0	0.768	-8.15	61.0	5.23	-8.45	148.0	8.45	-8.76
18.0	0.860	-7.68	62.0	5.32	-8.48	150.0	8.53	-8.71
19.0	0.953	-7.67	64.0	5.39	-8.55	152.0	8.62	-9.10
20.0	1.05	-7.30	66.0	5.47	-8.66	154.0	8.71	-8.88
21.0	1.14	-7.13	68.0	5.54	-8.48	156.0	8.79	-9.17
22.0	1.23	-7.42	70.0	5.62	-8.58	158.0	8.88	-9.27
23.0	1.32	-7.69	72.0	5.69	-8.57	160.0	8.97	-9.08
24.0	1.42	-7.51	74.0	5.77	-8.27	161.0	9.01	-9.33
25.0	1.51	-7.56	76.0	5.84	-8.41	162.0	9.05	-9.29
26.0	1.66	-7.53	78.0	5.92	-9.08	163.0	9.19	-8.59
27.0	1.82	-7.35	80.0	5.99	-8.57	163.5	9.25	-8.52
28.0	1.97	-7.49	82.0	6.07	-8.52	164.0	9.32	-8.77
29.0	2.12	-7.38	84.0	6.14	-8.74	164.5	9.47	-9.03
30.0	2.28	-6.80	86.0	6.22	-8.68	165.0	9.59	-8.56
31.0	2.38	-6.97	88.0	6.27	-8.92	165.5	9.70	-8.94
32.0	2.49	-7.28	90.0	6.33	-8.94	166.0	9.81	-8.83
33.0	2.60	-7.13	92.0	6.38	-8.83	166.5	9.92	-9.06
34.0	2.71	-7.08	94.0	6.44	-9.26			
35.0	2.82	-7.49	96.0	6.49	-9.02	166.8	9.98	-8.31
36.0	2.93	-7.45	98.0	6.55	-8.84	166.9	10.00	-8.69
37.0	3.03	-7.49	100.0	6.60	-8.8	167.0	10.02	-8.44
38.0	3.14	-7.69	102.0	6.66	-9.26	167.1	10.03	-8.58
39.0	3.25	-7.54	104.0	6.73	-8.89	167.2	10.05	-8.93
40.0	3.36	-8.10	106.0	6.80	-9.05	167.3	10.07	-8.99
41.0	3.47	-8.05	108.0	6.87	-8.82	167.4	10.09	-9.02
42.0	3.58	-8.08	110.0	6.95	-8.86	167.5	10.11	-9.06
43.0	3.68	-8.24	112.0	7.02	-9.21	167.6	10.13	-8.80
44.0	3.79	-8.59	114.0	7.09	-9.04	167.7	10.14	-8.26

Continue to next page.

Table S4 (Cont.)

Distance (cm)	Age (ka, BP)	$\delta^{18}\text{O}$ (VPDB)	Distance (cm)	Age (ka, BP)	$\delta^{18}\text{O}$ (VPDB)	Distance (cm)	Age (ka, BP)	$\delta^{18}\text{O}$ (VPDB)
Stalagmite D4								
167.8	10.16	-8.49	172.2	10.99	-8.71	176.6	11.83	-6.12
167.9	10.18	-8.59	172.3	11.01	-8.60	176.7	11.85	-6.77
168.0	10.20	-9.16	172.4	11.03	-8.42	176.8	11.87	-6.73
168.1	10.22	-9.15	172.5	11.05	-8.32	176.9	11.89	-6.89
168.2	10.24	-8.86	172.6	11.07	-8.40	177.0	11.90	-6.74
168.3	10.25	-8.64	172.7	11.08	-8.63	177.1	11.92	-6.66
168.4	10.27	-8.90	172.8	11.10	-8.38	177.2	11.94	-6.80
168.5	10.29	-8.79	172.9	11.12	-8.21	177.3	11.96	-6.87
168.6	10.31	-8.94	173.0	11.14	-8.24	177.4	11.98	-6.63
168.7	10.33	-8.99	173.1	11.16	-8.41	177.5	12.00	-6.87
168.8	10.35	-8.65	173.2	11.18	-8.61	177.6	12.02	-6.45
168.9	10.36	-9.00	173.3	11.20	-7.52	177.7	12.04	-6.70
169.0	10.38	-8.90	173.4	11.22	-7.37	177.8	12.06	-6.50
169.1	10.40	-8.83	173.5	11.24	-7.62	177.9	12.08	-6.84
169.2	10.42	-8.31	173.6	11.26	-7.95	178.0	12.09	-6.49
169.3	10.44	-8.30	173.7	11.28	-8.22	178.1	12.11	-6.51
169.4	10.46	-8.61	173.8	11.29	-8.00	178.2	12.13	-6.65
169.5	10.48	-8.03	173.9	11.31	-7.45	178.3	12.15	-6.49
169.6	10.49	-8.70	174.0	11.33	-7.57	178.4	12.18	-6.60
169.7	10.51	-8.86	174.1	11.35	-7.45	178.5	12.21	-6.70
169.8	10.53	-8.92	174.2	11.37	-7.76	178.6	12.24	-6.86
169.9	10.55	-8.83	174.3	11.39	-7.73	178.7	12.27	-6.96
170.0	10.57	-9.02	174.4	11.41	-7.37	178.8	12.30	-6.31
170.1	0.00	0.00	174.5	11.43	-7.44	178.9	12.33	-6.56
170.2	10.61	-8.95	174.6	11.45	-7.36	179.0	12.36	-6.71
170.3	10.63	-8.69	174.7	11.47	-7.36	179.1	12.40	-6.82
170.4	10.65	-8.77	174.8	11.49	-7.54	179.2	12.43	-6.80
170.5	10.67	-9.05	174.9	11.50	-7.42	179.3	12.46	-6.94
170.6	10.68	-8.87	175.0	11.52	-7.42	179.4	12.49	-6.95
170.7	10.70	-8.20	175.1	11.54	-7.27	179.5	12.52	-6.62
170.8	10.72	-8.43	175.2	11.56	-6.93	179.6	12.55	-6.48
170.9	10.74	-8.32	175.3	11.58	-6.89	179.7	12.57	-6.52
171.0	10.76	-8.63	175.4	11.60	-6.85	179.8	12.60	-7.18
171.1	10.78	-8.96	175.5	11.62	-6.76	179.9	12.63	-7.28
171.2	10.80	-8.90	175.6	11.64	-6.76	180.0	12.66	-7.15
171.3	10.82	-8.82	175.7	11.66	-6.86	180.1	12.69	-7.29
171.4	10.84	-7.96	175.8	11.68	-6.80	180.2	12.72	-7.11
171.5	10.86	-7.75	175.9	11.69	-6.62	180.3	12.74	-7.41
171.6	10.87	-7.70	176.0	11.71	-6.63	180.4	12.77	-7.49
171.7	10.89	-7.84	176.1	11.73	-6.34	180.5	12.80	-7.17
171.8	10.91	-7.97	176.2	11.75	-6.29	180.6	12.83	-7.44
171.9	10.93	-8.11	176.3	11.77	-6.57	180.7	12.86	-7.34
172.0	10.95	-8.23	176.4	11.79	-6.59	180.8	12.88	-7.47
172.1	10.97	-8.18	176.5	11.81	-6.38	180.9	12.91	-7.52

Continue to next page.

Table S4 (Cont.)

Distance (cm)	Age (ka, BP)	$\delta^{18}\text{O}$ (VPDB)	Distance (cm)	Age (ka, BP)	$\delta^{18}\text{O}$ (VPDB)	Distance (cm)	Age (ka, BP)	$\delta^{18}\text{O}$ (VPDB)
Stalagmite D4								
181.0	12.94	-6.92	185.4	13.41	-7.90	189.8	14.57	-6.93
181.1	12.97	-7.23	185.5	13.42	-7.87	189.9	14.61	-6.33
181.2	13.00	-7.27	185.6	13.44	-8.09	190.0	14.65	-6.69
181.3	13.00	-7.05	185.7	13.45	-8.03	190.1	14.69	-5.71
181.4	13.01	-7.31	185.8	13.47	-8.01	190.2	14.72	-5.45
181.5	13.02	-7.85	185.9	13.48	-8.20	190.3	14.76	-5.15
181.6	13.02	-7.85	186.0	13.50	-8.29	190.4	14.80	-5.45
181.7	13.03	-7.74	186.1	13.52	-8.09	190.5	14.84	-5.32
181.8	13.04	-7.59	186.2	0.00	0.00	190.6	14.88	-5.27
181.9	13.04	-7.57	186.3	0.00	0.00	190.7	14.93	-5.18
182.0	13.05	-7.53	186.4	13.56	-7.98	190.8	14.97	-4.96
182.1	13.06	-7.81	186.5	13.58	-8.15	190.9	15.01	-5.29
182.2	13.06	-7.92	186.6	13.59	-7.94	191.0	15.06	-5.07
182.3	13.07	-7.88	186.7	13.61	-7.89	191.1	15.10	-5.29
182.4	13.07	-7.85	186.8	13.63	-8.03	191.2	15.15	-5.33
182.5	13.08	-8.13	186.9	13.64	-7.97	191.3	15.19	-5.64
182.6	13.09	-8.24	187.0	13.67	-7.90	191.4	15.24	-5.52
182.7	13.09	-8.10	187.1	13.70	-7.94	191.5	15.28	-5.34
182.8	13.10	-8.07	187.2	13.73	-7.86	191.6	15.32	-5.72
182.9	13.11	-8.15	187.3	13.75	-7.91	191.7	15.37	-5.12
183.0	13.11	-8.40	187.4	13.78	-8.11	191.8	15.41	-5.24
183.1	13.12	-8.17	187.5	13.81	-8.27	191.9	15.46	-5.28
183.2	13.13	-8.38	187.6	13.84	-8.22	192.0	15.50	-5.16
183.3	13.13	-8.49	187.7	13.87	-7.45	192.1	15.54	-5.10
183.4	13.14	-7.83	187.8	13.89	-7.90	192.2	15.57	-5.15
183.5	13.14	-7.73	187.9	13.92	-8.16	192.3	15.60	-5.08
183.6	13.15	-7.77	188.0	13.95	-7.95	192.4	15.62	-5.08
183.7	13.16	-7.85	188.1	13.98	-7.53	192.5	15.65	-5.08
183.8	13.16	-7.81	188.2	14.01	-7.33	192.6	15.68	-4.94
183.9	13.17	-7.93	188.3	0.00	0.00	192.7	15.71	-4.96
184.0	13.19	-7.88	188.4	0.00	0.00	192.8	15.73	-4.92
184.1	13.20	-7.87	188.5	0.00	0.00	192.9	15.76	-4.84
184.2	13.22	-7.81	188.6	14.12	-7.68	193.0	15.79	-4.89
184.3	13.23	-8.05	188.7	14.16	-7.40	193.1	15.81	-5.14
184.4	13.25	-7.47	188.8	14.20	-7.53			
184.5	13.26	-7.86	188.9	14.23	-7.35	194.0	42.40	-8.18
184.6	13.28	-7.78	189.0	14.27	-7.68	194.5	42.85	-6.83
184.7	13.30	-8.07	189.1	14.31	-7.27	195.0	43.30	-7.28
184.8	13.31	-8.03	189.2	14.35	-6.64	195.5	43.75	-6.99
184.9	13.33	-8.05	189.3	14.38	-6.78	196.0	44.20	-7.32
185.0	13.34	-7.75	189.4	14.42	-6.92	196.5	44.65	-7.51
185.1	13.36	-7.91	189.5	14.46	-6.72	197.0	45.10	-7.89
185.2	13.37	-7.87	189.6	14.50	-6.35	197.5	45.55	-8.21
185.3	13.39	-8.01	189.7	14.54	-5.92	198.0	46.00	-7.76

Continue to next page.

Table S4 (Cont.)

Distance (cm)	Age (ka, BP)	$\delta^{18}\text{O}$ (VPDB)	Distance (cm)	Age (ka, BP)	$\delta^{18}\text{O}$ (VPDB)	Distance (cm)	Age (ka, BP)	$\delta^{18}\text{O}$ (VPDB)
Stalagmite D4								
198.5	46.45	-7.98	232.5	64.80	-6.93	255.5	127.4	-8.83
199.0	46.90	-7.38	233.0	65.07	-7.22	256.0	127.5	-8.83
199.5	47.35	-7.11	233.5	65.34	-6.72	256.5	127.7	-8.80
200.0	47.80	-6.67	234.0	65.61	-6.35	257.0	127.8	-8.72
201.0	48.31	-7.68	234.5	65.89	-5.86	257.5	128.0	-8.29
202.0	48.83	-8.04	235.0	112.9	-5.60	258.0	128.1	-8.22
203.0	49.34	-8.31	235.5	113.1	-5.65	258.5	128.3	-8.41
204.0	49.85	-8.72	236.0	113.2	-5.21	259.0	128.4	-8.06
205.0	50.37	-8.59	236.5	113.3	-5.63	259.5	128.6	-8.10
206.0	50.88	-8.39	237.0	113.5	-5.67	260.0	128.9	-7.66
207.0	51.40	-8.30	237.5	113.6	-5.48	260.5	129.1	-7.44
208.0	51.91	-7.34	238.0	113.8	-5.36	261.0	129.3	-6.20
209.0	52.42	-8.51	238.5	113.9	-5.44	261.5	129.5	-5.88
210.0	52.94	-8.11	239.0	114.0	-5.85	262.0	129.7	-5.21
211.0	53.45	-8.72	239.5	114.2	-4.83	262.5	129.8	-5.55
212.0	53.96	-8.94	240.0	114.3	-4.53	263.0	130.0	-5.65
213.0	54.48	-8.81	240.5	115.6	-5.41	263.5	130.2	-5.45
214.0	54.99	-8.86	241.0	116.9	-4.87	264.0	130.4	-5.67
215.0	55.50	-8.85	241.5	118.2	-5.22	266.0	131.1	-5.12
216.0	56.02	-8.40	242.0	119.6	-6.46	268.0	131.8	-4.67
217.0	56.53	-8.42	242.5	120.9	-8.09	270.0	133.0	-5.11
218.0	57.05	-8.55	243.0	122.2	-8.12	272.0	134.2	-4.70
219.0	57.56	-8.05	243.5	123.5	-8.22	274.0	135.3	-5.26
220.0	58.07	-8.69	244.0	124.8	-8.05	276.0	136.5	-6.31
221.0	58.59	-8.82	244.5	124.9	-8.08	278.0	136.8	-6.19
222.0	59.10	-8.90	245.0	125.0	-8.15	280.0	137.0	-6.04
222.5	59.37	-8.80	245.5	125.1	-7.94	282.0	137.3	-5.66
223.0	59.64	-8.09	246.0	125.2	-8.11	284.0	137.5	-6.68
223.5	59.91	-7.54	246.5	125.3	-8.32	286.0	137.8	-6.17
224.0	60.19	-7.68	247.0	125.4	-8.22	288.0	138.0	-6.08
224.5	60.46	-7.62	247.5	125.5	-8.53	290.0	138.3	-5.94
225.0	60.73	-7.80	248.0	125.6	-8.31	291.0	141.2	-5.58
225.5	61.00	-7.59	248.5	125.7	-8.59	292.0	144.0	-6.09
226.0	61.27	-7.04	249.0	125.9	-8.64	293.0	146.9	-7.18
226.5	61.54	-7.27	249.5	126.0	-8.76	294.0	147.0	-7.00
227.0	61.81	-7.13	250.0	126.1	-8.53	295.0	147.2	-6.17
227.5	62.09	-7.02	250.5	126.2	-8.50	296.0	147.3	-6.62
228.0	62.36	-6.94	251.0	126.3	-8.05	297.0	147.4	-6.82
228.5	62.63	-7.30	251.5	126.4	-8.01	298.0	147.6	-6.63
229.0	62.90	-7.19	252.0	126.5	-8.50	299.0	147.7	-6.93
229.5	63.17	-6.92	252.5	126.6	-8.43	300.0	147.8	-6.18
230.0	63.44	-6.35	253.0	126.7	-8.07	301.0	148.0	-5.37
230.5	63.71	-6.60	253.5	126.8	-8.08	302.0	148.1	-5.60
231.0	63.99	-6.48	254.0	126.9	-8.92	303.0	148.2	-6.03
231.5	64.26	-6.76	254.5	127.1	-8.67	304.0	148.4	-6.77
232.0	64.53	-6.81	255.0	127.2	-8.78			

Table S5. Oxygen isotopic data of stalagmite H82 from Hulu Cave. Depths are relative to the top (youngest surface) of each stalagmite and are measured along the growth axis. Ages are established with ^{230}Th ages (see Table 2). “ka, BP” refers to years relative to 1950 A.D. Oxygen data between 140.0 and 165.6 mm are from this study and the rest from Wang et al, (S3). The distances have been re-measured and the total distance difference accumulated over 165.6 mm is within 2mm of the original measurement. This contributes to a slight refinement in the timescale.

Distance (mm)	Age (ka, BP)	$\delta^{18}\text{O}$ (VPDB)	Distance (cm)	Age (ka, BP)	$\delta^{18}\text{O}$ (VPDB)	Distance (cm)	Age (ka, BP)	$\delta^{18}\text{O}$ (VPDB)
0.00	10.29	-7.68	9.75	11.26	-7.49	17.00	11.59	-7.42
0.25	10.32	-8.00	10.00	11.28	-7.62	17.17	11.60	-7.12
0.50	10.34	-7.76	10.25	11.30	-8.05	17.33	11.61	-6.88
0.75	10.36	-7.76	10.50	11.32	-7.91	17.50	11.61	-6.38
1.00	10.39	-7.58	10.75	11.35	-7.66	17.67	11.62	-7.50
1.25	10.41	-7.51	11.00	11.37	-7.68	17.83	11.63	-7.14
1.50	10.44	-8.11	11.25	11.38	-7.63	18.00	11.63	-7.06
1.75	10.46	-8.53	11.50	11.38	-7.83	18.17	11.64	-7.21
2.00	10.49	-8.24	11.75	11.39	-7.96	18.33	11.64	-7.22
2.25	10.51	-7.89	12.00	11.40	-7.86	18.50	11.65	-6.88
2.50	10.54	-8.54	12.17	11.40	-7.89	18.67	11.66	-6.84
2.75	10.56	-8.61	12.33	11.41	-7.82	18.83	11.66	-6.67
3.00	10.58	-8.57	12.50	11.42	-7.93	19.00	11.67	-6.70
3.25	10.61	-8.50	12.67	11.42	-7.72	19.17	11.68	-6.51
3.50	10.63	-8.44	12.83	11.43	-7.73	19.33	11.68	-6.98
3.75	10.66	-8.25	13.00	11.44	-7.62	19.50	11.69	-6.95
4.00	10.68	-7.75	13.17	11.44	-7.79	19.67	11.70	-6.89
4.25	10.71	-7.75	13.33	11.45	-7.56	19.83	11.70	-7.09
4.50	10.73	-7.59	13.50	11.46	-7.53	20.00	11.71	-7.22
4.75	10.76	-7.75	13.67	11.46	-7.57	20.17	11.72	-7.33
5.00	10.78	-7.80	13.83	11.47	-7.82	20.33	11.72	-6.90
5.25	10.81	-7.77	14.00	11.47	-7.84	20.50	11.73	-6.93
5.50	10.83	-7.74	14.17	11.48	-7.95	20.67	11.73	-6.82
5.75	10.85	-7.76	14.33	11.49	-7.98	20.83	11.74	-6.88
6.00	10.88	-7.69	14.50	11.49	-8.42	21.00	11.75	-6.98
6.25	10.90	-7.80	14.67	11.50	-8.28	21.17	11.75	-7.03
6.50	10.93	-7.67	14.83	11.51	-8.15	21.33	11.76	-6.77
6.75	10.95	-7.53	15.00	11.51	-7.79	21.50	11.76	-6.73
7.00	11.00	-7.44	15.17	11.52	-7.94	21.67	11.77	-6.76
7.25	11.03	-7.16	15.33	11.53	-7.63	21.83	11.78	-6.73
7.50	11.05	-7.72	15.50	11.53	-7.95	22.00	11.78	-6.67
7.75	11.07	-7.68	15.67	11.54	-8.04	22.17	11.79	-6.65
8.00	11.09	-8.27	15.83	11.55	-7.69	22.33	11.79	-6.64
8.25	11.12	-8.07	16.00	11.55	-7.07	22.50	11.80	-6.57
8.50	11.14	-8.01	16.17	11.56	-7.19	22.67	11.81	-6.78
8.75	11.16	-7.96	16.33	11.57	-6.99	22.83	11.81	-6.87
9.00	11.19	-7.83	16.50	11.57	-7.04	23.00	11.82	-6.97
9.25	11.21	-7.77	16.67	11.58	-7.34	23.17	11.82	-6.91
9.50	11.23	-7.85	16.83	11.59	-7.31	23.33	11.83	-7.23

Continue to next page

Table S5 (Cont.)

Distance (mm)	Age (ka, BP)	$\delta^{18}\text{O}$ (VPDB)	Distance (cm)	Age (ka, BP)	$\delta^{18}\text{O}$ (VPDB)	Distance (cm)	Age (ka, BP)	$\delta^{18}\text{O}$ (VPDB)
23.50	11.84	-7.29	30.83	12.11	-6.73	38.17	12.41	-6.24
23.67	11.84	-6.98	31.00	12.11	-6.52	38.33	12.42	-6.43
23.83	11.85	-6.70	31.17	12.12	-6.29	38.50	12.43	-6.37
24.00	11.85	-6.71	31.33	12.13	-6.55	38.67	12.43	-6.42
24.17	11.86	-6.56	31.50	12.13	-7.11	38.83	12.44	-6.15
24.33	11.87	-6.55	31.67	12.14	-7.33	39.00	12.45	-5.88
24.50	11.87	-6.64	31.83	12.15	-7.17	39.17	12.46	-6.25
24.67	11.88	-6.60	32.00	12.15	-6.74	39.33	12.46	-6.39
24.83	11.88	-6.43	32.17	12.16	-6.87	39.50	12.47	-6.48
25.00	11.89	-6.30	32.33	12.17	-6.21	39.67	12.48	-6.53
25.17	11.90	-6.29	32.50	12.18	-6.78	39.83	12.48	-6.80
25.33	11.90	-6.43	32.67	12.18	-7.34	40.00	12.49	-6.76
25.50	11.91	-6.58	32.83	12.19	-7.27	40.17	12.50	-6.83
25.67	11.91	-7.06	33.00	12.20	-7.01	40.33	12.50	-6.92
25.83	11.92	-6.80	33.17	12.20	-7.13	40.50	12.51	-6.85
26.00	11.93	-6.77	33.33	12.21	-6.84	40.67	12.52	-6.92
26.17	11.93	-6.81	33.50	12.22	-6.50	40.83	12.53	-6.89
26.33	11.94	-6.80	33.67	12.22	-6.24	41.00	12.53	-6.77
26.50	11.94	-6.79	33.83	12.23	-6.44	41.17	12.54	-6.87
26.67	11.95	-6.90	34.00	12.24	-6.39	41.33	12.55	-6.95
26.83	11.96	-7.02	34.17	12.25	-6.51	41.50	12.55	-6.91
27.00	11.96	-7.10	34.33	12.25	-6.36	41.67	12.56	-6.71
27.17	11.97	-7.08	34.50	12.26	-6.38	41.83	12.57	-6.96
27.33	11.97	-7.71	34.67	12.27	-6.48	42.00	12.57	-6.98
27.50	11.98	-7.57	34.83	12.27	-5.95	42.17	12.58	-7.03
27.67	11.99	-7.64	35.00	12.28	-6.25	42.33	12.59	-6.94
27.83	11.99	-7.77	35.17	12.29	-6.67	42.50	12.60	-6.78
28.00	12.00	-7.15	35.33	12.29	-6.21	42.67	12.60	-6.92
28.17	12.00	-7.28	35.50	12.30	-6.51	42.83	12.61	-6.94
28.33	12.01	-7.30	35.67	12.31	-6.82	43.00	12.62	-6.88
28.50	12.02	-7.05	35.83	12.32	-6.75	43.17	12.62	-6.91
28.67	12.02	-6.89	36.00	12.32	-6.80	43.33	12.63	-7.02
28.83	12.03	-6.76	36.17	12.33	-6.88	43.50	12.64	-7.14
29.00	12.03	-6.87	36.33	12.34	-6.74	43.67	12.64	-7.19
29.17	12.04	-6.86	36.50	12.34	-6.75	43.83	12.65	-7.23
29.33	12.05	-6.97	36.67	12.35	-6.63	44.00	12.66	-7.16
29.50	12.05	-6.57	36.83	12.36	-6.70	44.17	12.67	-7.22
29.67	12.06	-6.88	37.00	12.36	-7.25	44.33	12.67	-7.25
29.83	12.06	-7.54	37.17	12.37	-6.71	44.50	12.68	-7.12
30.00	12.07	-6.82	37.33	12.38	-6.32	44.67	12.69	-7.41
30.17	12.08	-7.07	37.50	12.39	-6.55	44.83	12.69	-7.47
30.33	12.08	-6.84	37.67	12.39	-6.31	45.00	12.70	-7.31
30.50	12.09	-6.98	37.83	12.40	-6.40	45.17	12.71	-7.25
30.67	12.10	-6.89	38.00	12.41	-6.49	45.33	12.71	-7.37

Continue to next page.

Table S5 (Cont.)

Distance (mm)	Age (ka, BP)	$\delta^{18}\text{O}$ (VPDB)	Distance (cm)	Age (ka, BP)	$\delta^{18}\text{O}$ (VPDB)	Distance (cm)	Age (ka, BP)	$\delta^{18}\text{O}$ (VPDB)
45.50	12.72	-7.46	52.83	12.99	-8.45	60.95	13.19	-8.03
45.67	12.73	-7.46	53.00	12.99	-8.36	61.15	13.19	-8.09
45.83	12.74	-7.49	53.17	13.00	-8.33	61.35	13.20	-8.09
46.00	12.74	-7.75	53.33	13.00	-8.59	61.55	13.20	-8.06
46.17	12.75	-7.53	53.50	13.01	-8.62	61.75	13.20	-8.17
46.33	12.76	-7.53	53.67	13.01	-8.56	61.95	13.21	-8.08
46.50	12.76	-7.60	53.83	13.01	-8.62	62.15	13.21	-8.07
46.67	12.77	-7.50	54.00	13.02	-8.67	62.35	13.22	-8.10
46.83	12.78	-7.48	54.17	13.02	-8.56	62.55	13.22	-7.96
47.00	12.78	-7.37	54.33	13.03	-8.29	62.75	13.23	-7.71
47.17	12.79	-7.35	54.50	13.03	-8.56	62.95	13.23	-7.85
47.33	12.80	-7.46	54.67	13.04	-8.41	63.15	13.24	-7.99
47.50	12.81	-7.36	54.83	13.04	-8.30	63.35	13.24	-7.94
47.67	12.81	-7.50	55.00	13.05	-8.27	63.55	13.25	-7.87
47.83	12.82	-7.43	55.17	13.05	-8.15	63.75	13.25	-7.94
48.00	12.83	-7.46	55.33	13.05	-8.30	63.95	13.25	-7.87
48.17	12.83	-7.39	55.50	13.06	-8.38	64.15	13.26	-7.72
48.33	12.84	-7.50	55.67	13.06	-8.38	64.35	13.26	-7.86
48.50	12.85	-7.56	55.83	13.07	-8.43	64.55	13.27	-7.94
48.67	12.85	-7.61	56.00	13.07	-8.40	64.75	13.27	-7.96
48.83	12.86	-7.68	56.20	13.08	-8.38	64.95	13.28	-7.99
49.00	12.87	-7.54	56.40	13.08	-8.41	65.16	13.28	-7.98
49.17	12.88	-7.58	56.60	13.09	-8.48	65.37	13.29	-7.88
49.33	12.88	-7.44	56.80	13.09	-8.37	65.58	13.29	-7.87
49.50	12.89	-7.84	57.00	13.10	-8.38	65.79	13.29	-7.96
49.67	12.90	-7.78	57.20	13.10	-8.45	66.00	13.30	-8.14
49.83	12.90	-7.95	57.40	13.10	-8.30	66.20	13.30	-8.36
50.00	12.91	-7.72	57.60	13.11	-8.30	66.40	13.31	-8.45
50.17	12.91	-7.77	57.80	13.11	-8.28	66.60	13.31	-8.37
50.33	12.92	-7.87	58.00	13.12	-8.29	66.80	13.32	-8.35
50.50	12.92	-8.03	58.20	13.12	-8.02	67.00	13.32	-8.38
50.67	12.93	-7.87	58.40	13.13	-8.16	67.20	13.33	-8.35
50.83	12.93	-7.78	58.60	13.13	-8.14	67.40	13.33	-8.36
51.00	12.94	-8.02	58.80	13.14	-8.13	67.60	13.34	-8.26
51.17	12.94	-8.03	59.00	13.14	-8.10	67.80	13.34	-8.36
51.33	12.95	-7.86	59.15	13.15	-8.04	68.00	13.34	-8.33
51.50	12.95	-8.06	59.35	13.15	-8.22	68.20	13.35	-8.56
51.67	12.96	-8.06	59.55	13.15	-8.14	68.40	13.35	-8.48
51.83	12.96	-8.00	59.75	13.16	-8.17	68.60	13.36	-8.58
52.00	12.96	-8.10	59.95	13.16	-8.05	68.80	13.36	-8.38
52.17	12.97	-8.25	60.15	13.17	-7.93	69.00	13.37	-8.40
52.33	12.97	-8.16	60.35	13.17	-7.85	69.20	13.37	-8.26
52.50	12.98	-8.33	60.55	13.18	-8.02	69.40	13.38	-8.34
52.67	12.98	-8.15	60.75	13.18	-8.00	69.60	13.38	-8.28

Continue to next page.

Table S5 (Cont.)

Distance (mm)	Age (ka, BP)	$\delta^{18}\text{O}$ (VPDB)	Distance (cm)	Age (ka, BP)	$\delta^{18}\text{O}$ (VPDB)	Distance (cm)	Age (ka, BP)	$\delta^{18}\text{O}$ (VPDB)
69.80	13.39	-8.29	78.60	13.56	-8.22	87.40	13.74	-8.22
70.00	13.39	-8.09	78.80	13.57	-8.00	87.60	13.74	-8.32
70.20	13.39	-8.09	79.00	13.57	-7.87	87.80	13.75	-8.20
70.40	13.40	-8.01	79.20	13.57	-8.09	88.00	13.75	-8.21
70.60	13.40	-8.33	79.40	13.58	-8.31	88.21	13.75	-8.18
70.80	13.41	-8.21	79.60	13.58	-8.18	88.42	13.76	-8.18
71.00	13.41	-8.34	79.80	13.59	-8.14	88.62	13.76	-8.08
71.20	13.41	-8.46	80.00	13.59	-8.11	88.83	13.77	-8.26
71.40	13.42	-8.48	80.20	13.59	-8.12	89.04	13.77	-8.17
71.60	13.42	-8.32	80.40	13.60	-8.20	89.25	13.77	-8.02
71.80	13.43	-8.20	80.60	13.60	-8.15	89.46	13.78	-8.13
72.00	13.43	-8.16	80.80	13.61	-8.12	89.66	13.78	-8.14
72.20	13.43	-7.97	81.00	13.61	-8.06	89.87	13.79	-7.95
72.40	13.44	-8.03	81.20	13.61	-7.87	90.08	13.79	-8.12
72.60	13.44	-8.19	81.40	13.62	-8.02	90.29	13.80	-8.21
72.80	13.45	-8.14	81.60	13.62	-8.05	90.50	13.80	-8.16
73.00	13.45	-8.37	81.80	13.63	-8.07	90.70	13.81	-8.17
73.20	13.45	-8.25	82.00	13.63	-8.32	90.91	13.82	-8.04
73.40	13.46	-8.20	82.20	13.63	-8.14	91.12	13.82	-8.08
73.60	13.46	-8.15	82.40	13.64	-8.26	91.33	13.83	-8.13
73.80	13.47	-8.14	82.60	13.64	-8.24	91.54	13.83	-8.07
74.00	13.47	-8.26	82.80	13.65	-8.22	91.74	13.84	-8.06
74.20	13.47	-8.23	83.00	13.65	-8.22	91.95	13.85	-8.06
74.40	13.48	-8.21	83.20	13.65	-8.27	92.16	13.85	-8.02
74.60	13.48	-8.10	83.40	13.66	-8.17	92.37	13.86	-8.04
74.80	13.49	-8.14	83.60	13.66	-8.22	92.58	13.87	-8.02
75.00	13.49	-8.14	83.80	13.67	-8.20	92.78	13.87	-7.85
75.20	13.49	-8.17	84.00	13.67	-8.29	92.99	13.88	-8.04
75.40	13.50	-8.02	84.20	13.67	-8.18	93.20	13.88	-8.11
75.60	13.50	-7.94	84.40	13.68	-8.19	93.41	13.89	-8.07
75.80	13.51	-8.10	84.60	13.68	-8.39	93.62	13.90	-8.02
76.00	13.51	-8.16	84.80	13.69	-8.36	93.82	13.90	-8.00
76.20	13.51	-8.13	85.00	13.69	-8.38	94.03	13.91	-7.91
76.40	13.52	-8.08	85.20	13.69	-8.05	94.24	13.92	-7.95
76.60	13.52	-8.03	85.40	13.70	-8.16	94.45	13.92	-7.87
76.80	13.53	-8.23	85.60	13.70	-8.28	94.66	13.93	-7.79
77.00	13.53	-8.05	85.80	13.71	-8.25	94.86	13.93	-7.88
77.20	13.53	-8.03	86.00	13.71	-8.20	95.07	13.94	-7.93
77.40	13.54	-8.37	86.20	13.71	-8.26	95.28	13.95	-7.89
77.60	13.54	-8.22	86.40	13.72	-8.30	95.49	13.95	-7.81
77.80	13.55	-8.10	86.60	13.72	-8.17	95.70	13.96	-7.83
78.00	13.55	-8.19	86.80	13.73	-8.21	95.90	13.97	-7.86
78.20	13.55	-8.28	87.00	13.73	-8.20	96.11	13.97	-7.76
78.40	13.56	-8.24	87.20	13.73	-8.36	96.32	13.98	-7.55

Continue to next page.

Table S5 (Cont.)

Distance (mm)	Age (ka, BP)	$\delta^{18}\text{O}$ (VPDB)	Distance (cm)	Age (ka, BP)	$\delta^{18}\text{O}$ (VPDB)	Distance (cm)	Age (ka, BP)	$\delta^{18}\text{O}$ (VPDB)
96.53	13.98	-7.77	105.68	14.26	-7.88	114.83	14.51	-7.24
96.74	13.99	-7.75	105.89	14.27	-7.95	115.04	14.52	-7.23
96.94	14.00	-7.65	106.10	14.27	-8.00	115.25	14.52	-7.29
97.15	14.00	-7.62	106.30	14.28	-7.99	115.46	14.53	-7.29
97.36	14.01	-7.46	106.51	14.28	-8.00	115.66	14.53	-7.17
97.57	14.02	-7.52	106.72	14.29	-7.87	115.87	14.54	-7.16
97.78	14.02	-7.45	106.93	14.30	-7.92	116.08	14.54	-7.14
97.98	14.03	-7.56	107.14	14.30	-7.95	116.29	14.55	-7.06
98.19	14.03	-7.37	107.34	14.31	-8.03	116.50	14.55	-7.08
98.40	14.04	-7.45	107.55	14.32	-8.08	116.70	14.56	-7.02
98.61	14.05	-7.40	107.76	14.32	-8.21	116.91	14.57	-7.03
98.82	14.05	-7.39	107.97	14.33	-8.27	117.12	14.57	-7.02
99.02	14.06	-7.37	108.18	14.33	-7.98	117.33	14.58	-7.02
99.23	14.07	-7.17	108.38	14.34	-8.09	117.54	14.58	-7.10
99.44	14.07	-7.33	108.59	14.35	-7.95	117.74	14.59	-6.93
99.65	14.08	-7.27	108.80	14.35	-8.06	117.95	14.59	-6.88
99.86	14.08	-7.30	109.01	14.36	-8.00	118.16	14.60	-6.95
100.06	14.09	-7.38	109.22	14.37	-7.97	118.37	14.60	-6.91
100.27	14.10	-7.46	109.42	14.37	-7.84	118.58	14.61	-6.67
100.48	14.10	-7.40	109.63	14.38	-8.02	118.78	14.61	-6.75
100.69	14.11	-7.51	109.84	14.38	-8.03	118.99	14.62	-6.77
100.90	14.12	-7.52	110.05	14.39	-7.89	119.20	14.62	-6.74
101.10	14.12	-7.62	110.26	14.40	-7.92	119.41	14.63	-6.84
101.31	14.13	-7.57	110.46	14.40	-7.95	119.62	14.63	-6.69
101.52	14.13	-7.44	110.67	14.41	-7.98	119.82	14.64	-6.71
101.73	14.14	-7.59	110.88	14.41	-7.80	120.03	14.65	-6.49
101.94	14.15	-7.50	111.09	14.42	-7.80	120.24	14.65	-6.51
102.14	14.15	-7.77	111.30	14.42	-7.78	120.45	14.66	-6.49
102.35	14.16	-7.75	111.50	14.43	-7.94	120.66	14.66	-6.57
102.56	14.17	-7.76	111.71	14.43	-7.75	120.86	14.67	-6.67
102.77	14.17	-7.61	111.92	14.44	-7.67	121.07	14.67	-6.50
102.98	14.18	-7.87	112.13	14.44	-7.75	121.28	14.68	
103.18	14.18	-7.77	112.34	14.45	-7.77	121.49	14.68	-6.36
103.39	14.19	-7.73	112.54	14.45	-7.72	121.70	14.69	-6.38
103.60	14.20	-7.92	112.75	14.46	-7.68	121.90	14.69	-6.42
103.81	14.20	-7.77	112.96	14.46	-7.60	122.11	14.70	-6.56
104.02	14.21	-8.04	113.17	14.47	-7.45	122.32	14.70	-6.35
104.22	14.22	-7.96	113.38	14.48	-7.38	122.53	14.71	-6.32
104.43	14.22	-7.96	113.58	14.48	-7.44	122.74	14.71	-6.33
104.64	14.23	-7.92	113.79	14.49	-7.44	122.94	14.72	-6.39
104.85	14.23	-7.98	114.00	14.49	-7.27	123.15	14.72	-6.21
105.06	14.24	-7.91	114.21	14.50	-7.29	123.36	14.73	-6.22
105.26	14.25	-8.02	114.42	14.50	-7.18	123.57	14.74	-6.12
105.47	14.25	-7.90	114.62	14.51	-7.08	123.78	14.74	-6.18

Continue to next page.

Table S5 (Cont.)

Distance (mm)	Age (ka, BP)	$\delta^{18}\text{O}$ (VPDB)	Distance (cm)	Age (ka, BP)	$\delta^{18}\text{O}$ (VPDB)	Distance (cm)	Age (ka, BP)	$\delta^{18}\text{O}$ (VPDB)
123.98	14.75	-6.15	133.14	15.04	-5.97	142.30	15.44	-6.28
124.19	14.75	-6.23	133.34	15.05	-5.74	142.60	15.44	-6.12
124.40	14.76	-6.15	133.55	15.05	-5.84	142.90	15.45	-6.48
124.61	14.76	-6.17	133.76	15.06	-5.67	143.20	15.46	-6.19
124.82	14.77	-6.14	133.97	15.07	-5.89	143.50	15.47	-6.15
125.02	14.77	-6.24	134.18	15.08	-5.80	143.80	15.48	-5.84
125.23	14.78	-5.89	134.38	15.09	-5.75	144.10	15.49	-5.62
125.44	14.78	-6.09	134.59	15.10	-5.78	144.40	15.50	-5.81
125.65	14.79	-5.87	134.80	15.11	-5.87	144.70	15.51	-5.64
125.86	14.79	-5.95	135.01	15.12	-5.97	145.00	15.52	-5.53
126.06	14.80	-5.93	135.22	15.13	-5.81	145.30	15.53	-5.71
126.27	14.80	-5.95	135.42	15.14	-5.91	145.60	15.53	-5.66
126.48	14.81	-5.98	135.63	15.14	-5.81	145.90	15.54	-5.88
126.69	14.82	-5.91	135.84	15.15		146.20	15.55	-5.43
126.90	14.82	-6.00	136.05	15.16	-5.99	146.50	15.56	-5.53
127.10	14.83	-6.12	136.26	15.17	-6.03	146.70	15.57	-5.55
127.31	14.83	-6.00	136.46	15.18	-6.02	146.90	15.58	-5.56
127.52	14.84	-5.92	136.67	15.19	-6.18	147.10	15.59	-5.50
127.73	14.84	-5.95	136.88	15.20	-6.10	147.30	15.60	-5.17
127.94	14.85	-5.92	137.09	15.21	-5.99	147.50	15.61	-5.13
128.14	14.85	-5.96	137.30	15.22	-5.97	147.70	15.62	-5.15
128.35	14.86	-6.01	137.50	15.23	-5.85	147.90	15.63	-5.39
128.56	14.86	-5.94	137.71	15.24	-5.80	148.10	15.63	-5.36
128.77	14.87	-6.01	137.92	15.24	-5.77	148.30	15.64	-5.37
128.98	14.87	-5.90	138.13	15.25	-5.48	148.50	15.65	-5.47
129.18	14.88	-6.07	138.34	15.26	-5.48	148.70	15.66	-5.85
129.39	14.88	-6.09	138.54	15.27	-5.62	148.90	15.67	-5.92
129.60	14.89	-5.91	138.75	15.28	-5.69	149.10	15.68	-5.94
129.81	14.89	-5.81	138.96	15.29	-5.77	149.30	15.69	-5.67
130.02	14.90	-5.66	139.17	15.30	-5.76	149.50	15.70	-5.54
130.22	14.91	-5.78	139.38	15.31	-5.73	149.70	15.71	-5.46
130.43	14.92	-5.67	139.58	15.32	-5.81	149.90	15.72	-5.73
130.64	14.93	-5.55	139.79	15.33	-5.84	150.10	15.73	-5.83
130.85	14.94	-5.56	140.00	15.34	-5.89	150.30	15.73	-5.98
131.06	14.95	-5.52	140.20	15.34	-5.87	150.50	15.74	-5.98
131.26	14.95	-5.56	140.40	15.35	-6.07	150.70	15.75	-5.91
131.47	14.96	-5.83	140.60	15.36	-6.01	150.90	15.76	-5.26
131.68	14.97	-5.69	140.80	15.37	-6.14	151.10	15.77	-5.61
131.89	14.98	-5.72	141.00	15.38	-5.87	151.30	15.78	-5.14
132.10	14.99	-5.87	141.20	15.39	-5.91	151.50	15.79	-5.54
132.30	15.00	-5.87	141.40	15.40	-6.04	152.13	15.80	-5.85
132.51	15.01	-5.73	141.60	15.41	-6.33	152.38	15.81	-5.69
132.72	15.02	-5.98	141.80	15.42	-6.28	152.63	15.82	-5.83
132.93	15.03	-5.98	142.00	15.43	-6.35	152.88	15.83	-5.59

Continue to next page.

Table S5 (Cont.)

Distance (mm)	Age (ka, BP)	$\delta^{18}\text{O}$ (VPDB)	Distance (cm)	Age (ka, BP)	$\delta^{18}\text{O}$ (VPDB)	Distance (cm)	Age (ka, BP)	$\delta^{18}\text{O}$ (VPDB)
153.13	15.83	-5.40	157.10	16.01	-4.85	161.00	16.16	-5.92
153.38	15.84	-5.43	157.30	16.02	-4.96	161.40	16.17	-5.97
153.63	15.85	-5.21	157.50	16.02	-4.94	161.80	16.18	-6.09
153.88	15.86	-5.18	157.70	16.03	-5.00	162.14	16.19	-5.99
154.08	15.87	-5.12	157.90	16.04	-4.90	162.43	16.19	-6.08
154.25	15.88	-5.16	158.10	16.05	-4.91	162.72	16.20	-6.04
154.42	15.89	-5.10	158.30	16.06	-4.85	163.00	16.21	-6.57
154.58	15.90	-5.11	158.50	16.07	-4.82	163.10	16.22	-6.41
154.75	15.91	-5.03	158.70	16.08	-4.76	163.30	16.23	-6.15
154.92	15.92	-4.96	158.90	16.09	-5.01	163.50	16.23	-6.30
155.13	15.92	-4.76	159.07	16.09	-5.38	163.70	16.24	-6.26
155.38	15.93	-4.74	159.27	16.10	-5.37	163.90	16.25	-6.36
155.63	15.94	-4.74	159.47	16.11	-6.00	164.14	16.26	-6.23
155.88	15.95	-4.77	159.67	16.12	-5.84	164.43	16.26	-6.26
156.10	15.96	-4.78	159.87	16.12	-5.65	164.72	16.27	-6.25
156.30	15.97	-4.70	160.20	16.13	-5.59	165.00	16.28	-6.30
156.50	15.98	-4.84	160.40	16.14	-5.77	165.40	16.29	-6.22
156.70	15.99	-4.73	160.60	16.15	-5.71	165.60	16.30	-5.89
156.90	16.00	-4.86	160.80	16.16	-5.94			

Table S6. Correlation coefficients and the best fit lines between $\delta^{18}\text{O}$ and $\delta^{13}\text{C}$ for stalagmites and portions of stalagmites with different growth rates.

Location	Sample number	r^2 (all data)	Different portion	Growth rate (mm/ka)	r^2 (Different portion)	Best fit line
Dongge Cave	D3	0.27				$\delta^{18}\text{O} = 0.45 \delta^{13}\text{C} - 4.6$
			<124 ka	~54	0.14	$\delta^{18}\text{O} = 0.18 \delta^{13}\text{C} - 6.0$
			>124 ka	~7.2	0.14	$\delta^{18}\text{O} = 0.68 \delta^{13}\text{C} - 3.9$
	D4	0.10				$\delta^{18}\text{O} = 0.31 \delta^{13}\text{C} - 6.1$
			< 9.3 ka	~180	0.15	$\delta^{18}\text{O} = 0.27 \delta^{13}\text{C} - 6.7$
			9.3~ 16 ka	~45	0.004	$\delta^{18}\text{O} = 0.09 \delta^{13}\text{C} - 7.1$
			42 ~ 66 ka	~17	0.45	$\delta^{18}\text{O} = 0.54 \delta^{13}\text{C} - 5.6$
			>113 ka	~16	0.09	$\delta^{18}\text{O} = 0.34 \delta^{13}\text{C} - 5.2$
Hulu Cave	H82	0.12		~30		$\delta^{18}\text{O} = 0.31 \delta^{13}\text{C} - 4.7$

Reference for supplementary tables

- S1. H. Cheng *et al.*, *Chem. Geol.* **169**, 17 (2000).
- S2. A. H. Jaffey, K. F. Flynn, L. E. Glendenin, W. C. Bentley, A. M. Essling, *Phys. Rev.* **C4**, 1889 (1971).
- S3. Y. J. Wang *et al.*, *Science* **294**, 2345 (2001).