

Tables with details on U-series dates from
stalagmites TSAL-1 and YOK-G for manuscript

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“COⁿstructing Proxy-Record from Age models
(COPRA)”

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[Here we supply two tables with dates from TSAL-1 and YOK-G stalagmites.](#)

Table 1: Radiometric dates for stalagmite TSAL-1, dated in the Minnesota isotope laboratory, University of Minnesota. $\dagger \delta^{234}\text{U} = ([^{234}\text{U}/^{238}\text{U}]_{\text{activity}} - 1) \times 1000$. $\ddagger \delta^{234}\text{U}_{\text{initial}}$ was calculated based on ^{230}Th age (T), i.e., $\delta^{234}\text{U}_{\text{initial}} = \delta^{234}\text{U}_{\text{measured}} \times e^{1234 \times T}$. 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 the "Present" is defined as the year 1950 A.D. The dating uncertainty is 2 sigma.

Sample	Distance from top (mm)	^{238}U (ppb)	^{232}Th (ppt)	$^{230}\text{Th}/^{232}\text{Th}$ (atomic $\times 10^{-6}$)	$\delta^{234}\text{U}^\dagger$	$^{230}\text{Th}/^{238}\text{U}$ (activity)	^{230}Th Age (yrs, uncorr.)	^{230}Th Age (yrs, corr.)	$\delta^{234}\text{U}_{\text{initial}}^\ddagger$ (corr.)	^{230}Th Age* (yrs BP)
U5	4.53±0.3	42.4±0.1	468±9	524±11	220.1±2.0	0.3504±0.0021	36528±273	36270±328	244±2	36208±328
U1	13.0±1.0	47.0±0.1	16±1	17961±1232	212.5±1.8	0.3726±0.0019	39586±257	39578±257	238±2	39518±257
U6	31.3±0.8	53.2±0.1	4±1	75286±18915	219.4±2.9	0.3631±0.0015	38118±221	38116±221	244±3	38054±221
U7	47.7±0.8	60.6±0.1	46±1	8118±256	208.5±1.7	0.3700±0.0015	39414±204	39396±204	233±2	39334±204
U4	68.0±1.5	28.8±0.1	19±1	9410±559	209.0±2.8	0.3792±0.0028	40570±377	40554±377	234±3	40494±377
hiatus	72.25±0.3									
U8	75.5±1.0	68.9±0.1	684±14	668±14	200.9±1.6	0.4023±0.0011	43944±171	43708±238	227±2	43646±238
U2	92.3±1.0	35.8±0.1	36±1	6823±245	205.2±2.1	0.4149±0.0024	45410±337	45386±337	233±2	45326±337
U9	141.9±0.8	31.0±0.03	15±1	13538±984	206.6±1.8	0.4067±0.0023	44250±317	44239±317	234±2	44177±317
U10	194.7±0.8	31.2±0.03	4±1	56042±15710	205.9±2.1	0.4107±0.0023	44823±322	44820±322	234±2	447582±322
U11	244.2±0.8	42.8±0.05	11±1	27108±2933	199.4±1.7	0.4086±0.0020	44850±276	44844±276	226±2	44782±276
U12	296.9±0.8	46.2±0.04	6±1	54781±10468	202.3±1.6	0.4104±0.0017	44953±235	44950±235	230±2	44888±235
U3	351.7±1.0	32.7±0.1	20±5	11232±2645	207.9±6.2	0.4143±0.0093	45207±1279	45193±1279	236±7	45133±1279

Table 2: Radiometric dates for stalagmite YOK-G. YOK-G was dated in the Radiogenic Isotope Laboratory at the University of New Mexico. The dating uncertainty is 2 sigma.

Sample	Distance from top (mm)	^{238}U (ppb)	^{232}U (ppt)	$^{230}\text{Th}/^{232}\text{Th}$ (activity)	$^{230}\text{Th}/^{238}\text{U}$ (act., error $\times 10^{-5}$)	$\delta^{234}\text{U}$ (measured)	$\delta^{234}\text{U}$ (initial)	Age (yrs, uncorr.)	Age (yrs, corr.)	Calendar Age (yrs AD)
modern	0.0									2006
1	6.0	5200.1 \pm 4.7	270.0 \pm 57.4	31.7 \pm 7	0.001 \pm 3.054	467.4 \pm 1.47	467.5 \pm 1.47	40 \pm 2	39 \pm 2	1967
2	27.0	4496.9 \pm 9.4	86.5 \pm 73.2	136.4 \pm 116	0.001 \pm 4.251	467.4 \pm 1.47	467.5 \pm 1.47	64 \pm 3	64 \pm 3	1942
3	47.0	5153.9 \pm 4.8	57.7 \pm 60.0	331.38 \pm 345	0.001 \pm 3.118	482.7 \pm 1.48	482.8 \pm 1.48	89 \pm 2	89 \pm 2	1917
4	68.0	6644.5 \pm 6.8	27.1 \pm 50.3	1109.6 \pm 2057	0.001 \pm 2.010	487.9 \pm 1.49	488.0 \pm 1.49	109 \pm 1	109 \pm 1	1897
5	87.0	8352.4 \pm 6.6	6.8 \pm 41.9	6470.6 \pm 39632	0.002 \pm 1.435	464.3 \pm 1.46	464.5 \pm 1.46	129 \pm 1	129 \pm 1	1877
6	107.5	5783.8 \pm 5.4	58.9 \pm 39.4	630.9 \pm 422	0.002 \pm 2.041	485.1 \pm 1.48	485.3 \pm 1.49	154 \pm 2	154 \pm 2	1852
7	124.5	7772.9 \pm 3.8	30.5 \pm 50.1	1886.7 \pm 3099	0.002 \pm 2.541	489.2 \pm 1.49	489.4 \pm 1.49	178 \pm 2	178 \pm 2	1828
8	141.5	17083.1 \pm 20.3	116.9 \pm 60.0	1206.0 \pm 619	0.003 \pm 2.211	507.8 \pm 1.51	508.1 \pm 1.51	195 \pm 2	195 \pm 2	1811
9	165.0	6416.0 \pm 5.2	3.7 \pm 66.0	15952.1 \pm 281458	0.003 \pm 3.143	491.3 \pm 1.49	491.6 \pm 1.49	223 \pm 2	223 \pm 2	1783
10	185.0	6753.5 \pm 5.0	6753.5 \pm 57.0	2016.7 \pm 3322	0.003 \pm 2.732	485.6 \pm 1.48	486.0 \pm 1.48	248 \pm 2	248 \pm 2	1758
11	203.0	7932.2 \pm 7.1	7932.2 \pm 61.0	5051.1 \pm 17887	0.004 \pm 2.655	476.7 \pm 1.48	477.1 \pm 1.48	265 \pm 2	265 \pm 2	1741
12	221.0	8387.4 \pm 9.9	8387.4 \pm 55.2	21475.2 \pm 258268	0.004 \pm 2.486	474.4 \pm 1.47	474.8 \pm 1.47	285 \pm 2	285 \pm 2	1721
13	241.5	10094.6 \pm 24.7	10094.6 \pm 47.3	15310.1 \pm 86993	0.004 \pm 2.452	480.1 \pm 1.48	480.5 \pm 1.48	304 \pm 2	304 \pm 2	1702
14	265.0	8099.4 \pm 14.2	8099.4 \pm 47.0	2287.1 \pm 2173	0.005 \pm 3.331	481.0 \pm 1.48	481.5 \pm 1.48	337 \pm 2	337 \pm 2	1669
15	285.0	8629.1 \pm 15.1	8629.1 \pm 39.9	1982.3 \pm 1241	0.005 \pm 2.898	471.2 \pm 1.47	471.7 \pm 1.47	355 \pm 2	355 \pm 2	1651
16	310.0	5674.0 \pm 18.1	5674.0 \pm 66.3	1130.4 \pm 937	0.005 \pm 5.743	450.5 \pm 1.86	451.0 \pm 1.86	392 \pm 4	392 \pm 4	1614
17	325.0	6237.6 \pm 10.0	6237.6 \pm 53.2	7679.5 \pm 30144	0.005 \pm 4.965	470.6 \pm 1.47	471.1 \pm 1.47	405 \pm 4	405 \pm 4	1601
18	343.5	7440.0 \pm 11.0	7439.6 \pm 56.1	1253.1 \pm 664	0.006 \pm 3.355	469.0 \pm 1.47	469.6 \pm 1.47	434 \pm 3	434 \pm 3	1572