

Data S1. Element content and their ratios of study samples. Red-colored data is sourced from Gong et al. (2017).

Sample NO.	Age (Ma)	Stage	Formation	Study sections	Heigh (m)	TOC (wt.%)	Hg (ppb)	Hg/TOC (ppb/wt.%)	Hg/Al (ppb/wt.%)	Hg/Fe (ppb/wt.%)	Hg/Mn (ppm/ppm)	Hg/TS (ppb/wt.%)	Mo _{EF}	U _{EF}	C _{org} /P (mol/mol)	Mn/Sr (ppm/ppm)
WS-13	442.80	Rhuddanian	Longmaxi	Wangjiawan	314.00	3.39	131.8	38.9	45.7	229.6	17.0		31.78	62.82	626.8	
WS-12	442.90	Rhuddanian	Longmaxi	Wangjiawan	313.90	3.04	302.5	99.5								
WS-11	442.99	Rhuddanian	Longmaxi	Wangjiawan	313.80	1.70	136.3	80.1								
WS-10	443.09	Rhuddanian	Longmaxi	Wangjiawan	313.70	2.38	192.1	80.7	68.2	435.6	12.4	2910.6	26.75	25.17	502.9	
WS-9	443.18	Rhuddanian	Longmaxi	Wangjiawan	313.60	1.83	155.2	85.0								
WS-8	443.28	Rhuddanian	Longmaxi	Wangjiawan	313.50	2.47	320.5	130.0								
WS-7	443.37	Rhuddanian	Longmaxi	Wangjiawan	313.40											
WS-6	443.47	Rhuddanian	Longmaxi	Wangjiawan	313.30											
WS-5	443.56	Rhuddanian	Longmaxi	Wangjiawan	313.20	3.55	143.3	40.4								
WS-4	443.66	Rhuddanian	Longmaxi	Wangjiawan	313.10	3.15	189.1	60.0	53.4	162.7	12.2		35.76	36.45	169.4	
WS-3	443.70	Rhuddanian	Longmaxi	Wangjiawan	313.05	2.56	233.2	91.2								
WS-2	443.75	Rhuddanian	Longmaxi	Wangjiawan	313.00	3.39	141.1	41.6								
WS-1	443.80	Rhuddanian	Longmaxi	Wangjiawan	312.95	2.39	216.0	90.4								
WOO3L-1	443.82	Hirnantian	Longmaxi	Wangjiawan	312.92	2.38	180.9	76.0								
WOO3L-2	443.87	Hirnantian	Longmaxi	Wangjiawan	312.90	0.80	81.0	101.8								
WOO3L-3	443.91	Hirnantian	Longmaxi	Wangjiawan	312.85	0.83	38.3	46.3	2.9	17.8	4.9		4.13	5.30	53.4	
WOO3L-4	443.96	Hirnantian	Longmaxi	Wangjiawan	312.80	1.45	96.5	66.5								
WOO3L-5	444.01	Hirnantian	Longmaxi	Wangjiawan	312.75	1.16	89.5	77.0								
WOO3L-6	444.06	Hirnantian	Longmaxi	Wangjiawan	312.70	2.48	223.9	90.1								
WOO3L-7	444.10	Hirnantian	Longmaxi	Wangjiawan	312.65	1.34	87.1	65.1	15.9	151.7	11.2		6.74	22.86	283.2	
WOO3L-8	444.15	Hirnantian	Longmaxi	Wangjiawan	312.60	2.82	229.2	81.2								
WOO3L-9	444.20	Hirnantian	Longmaxi	Wangjiawan	312.55	2.98	216.4	72.5								
WOO3L-10	444.25	Hirnantian	Longmaxi	Wangjiawan	312.50	3.91	231.7	59.3								
WOO3L-11	444.30	Hirnantian	Longmaxi	Wangjiawan	312.45	4.67	224.5	48.1								
WOO3L-12	444.34	Hirnantian	Longmaxi	Wangjiawan	312.40											
WOO3L-13	444.39	Hirnantian	Longmaxi	Wangjiawan	312.35	4.46	231.3	51.9	36.3	314.7	10.0		16.59	6.12	455.0	
WOO3L-14	444.44	Hirnantian	Longmaxi	Wangjiawan	312.30	4.72	198.3	42.0								
WOO3L-15	444.49	Hirnantian	Longmaxi	Wangjiawan	312.25	5.39	210.8	39.1								
WOO3L-16	444.63	Hirnantian	Longmaxi	Wangjiawan	312.20	3.38	133.8	39.6								
WOO3W-17	444.68	Hirnantian	Guanyinqiao	Wangjiawan	312.05	0.63	54.9	86.8								

	WOO3W-18	444.72	Hirnantian	Guanyinqiao	Wangjiawan	312.00	0.63	76.8	122.9	12.7	28.6	0.8	834.8	6.95	8.26	31.1	
	WOO3W-19	444.77	Hirnantian	Guanyinqiao	Wangjiawan	311.95	0.47	71.8	153.4	17.6	28.7	0.9	1669.8	16.30	11.22	25.3	
	WOO3W-20	444.82	Hirnantian	Guanyinqiao	Wangjiawan	311.90	1.09	195.3	178.6	47.0	120.3	49.0	6975.0	16.07	18.79	93.5	
	WOO3W-21	444.87	Hirnantian	Wufeng	Wangjiawan	311.85	1.51	253.5	168.2	161.2	258.7	10.9	6337.5	119.84	55.60	212.7	
	WOO3W-22	444.91	Hirnantian	Wufeng	Wangjiawan	311.80	1.70	96.2	56.8	20.4	42.8	2.8	3435.7	14.07	8.98	91.4	
	WOO3W-23	444.96	Hirnantian	Wufeng	Wangjiawan	311.75	1.32	85.0	64.6								
	WOO3W-24	445.01	Hirnantian	Wufeng	Wangjiawan	311.70	1.23	115.7	94.0	24.2	53.1	1.5		28.16	6.34	72.8	
	WOO3W-25	445.06	Hirnantian	Wufeng	Wangjiawan	311.65	0.95	194.2	205.4	25.9	39.7	0.2	4979.5	28.98	5.02	18.7	
	WOO3W-26	445.10	Hirnantian	Wufeng	Wangjiawan	311.60											
	WOO3W-27	445.15	Hirnantian	Wufeng	Wangjiawan	311.55											
	WOO3W-28	445.20	Hirnantian	Wufeng	Wangjiawan	311.50	1.15	210.4	183.5	28.5	38.9	0.1	2125.3	31.94	5.17	23.5	
	WOO3W-29	445.21	Katian	Wufeng	Wangjiawan	311.45	1.09	118.5	108.5								
	WOO3W-30	445.22	Katian	Wufeng	Wangjiawan	311.40	1.37	91.9	67.2	18.3	49.9	0.4	2702.9	50.56	6.40	81.1	
	WOO3W-31	445.24	Katian	Wufeng	Wangjiawan	311.35	2.09	44.5	21.3								
	WOO3W-32	445.25	Katian	Wufeng	Wangjiawan	311.30	1.94	34.7	17.9								
	WOO3W-33	445.26	Katian	Wufeng	Wangjiawan	311.25	1.21	86.6	71.7								
	WOO3W-34	445.27	Katian	Wufeng	Wangjiawan	311.20	2.50	68.2	27.3	16.6	44.5	1.8	811.9	23.67	10.83	268.9	
	WOO3W-35	445.28	Katian	Wufeng	Wangjiawan	311.15	2.74	69.9	25.5								
	WOO3W-36	445.29	Katian	Wufeng	Wangjiawan	311.10	0.93	91.6	98.3								
	WOO3W-37	445.31	Katian	Wufeng	Wangjiawan	311.05	1.80	34.4	19.1	6.2	13.4	0.9	242.3	26.87	4.59	88.8	
	WOO3W-38	445.32	Katian	Wufeng	Wangjiawan	311.00	2.89	57.0	19.7								
	WOO3W-39	445.33	Katian	Wufeng	Wangjiawan	310.95	0.86	106.2	123.2								
	WOO3W-40	445.34	Katian	Wufeng	Wangjiawan	310.90	2.77	61.5	22.2	24.2	56.7	1.6	585.7	30.76	19.22	237.5	
	WOO3W-41	445.35	Katian	Wufeng	Wangjiawan	310.85	1.55	42.1	27.2								
	WOO3W-42	445.36	Katian	Wufeng	Wangjiawan	310.80	1.98	71.2	36.0								
	WOO3W-43	445.38	Katian	Wufeng	Wangjiawan	310.75	1.70	80.1	47.1	30.4	39.2	0.3	1177.9	106.15	18.69	16.0	
	WOO3W-44	445.39	Katian	Wufeng	Wangjiawan	310.70	1.23	84.9	69.3								
	CO3L-12	448.96	Katian	Lingxiang	Chenjahe	294.25	0.04	1.4	36.6	0.6	1.1	0.0		1.00	1.00	8.1	33.4
	CO3L-11	449.31	Katian	Lingxiang	Chenjahe	292.75	0.03	1.0	29.7	0.3	0.7	0.0		1.00	1.00	6.2	3.8
	CO3L-10	449.55	Katian	Lingxiang	Chenjahe	291.75	0.05	2.3	45.0	0.7	1.2	0.0		1.00	1.01	8.6	4.1
	CO3L-9	449.78	Katian	Lingxiang	Chenjahe	290.75	0.06	1.3	21.8	0.4	0.6	0.0		1.00	1.00	8.4	43.3
	CO3L-8	449.90	Katian	Lingxiang	Chenjahe	290.25	0.03	1.8	54.9	0.6	0.8	0.0		1.00	1.00	6.1	4.5

CO3L-7	450.01	Katian	Lingxiang	Chenjahe	289.75	0.07	1.6	22.4	0.4	0.7	0.0	1.00	1.00	12.1	4.2
CO3L-6	450.13	Katian	Lingxiang	Chenjahe	289.25	0.37	1.2	3.2	0.3	0.5	0.0	1.00	1.00	52.3	
CO3L-5	450.25	Katian	Lingxiang	Chenjahe	288.75	0.05	1.8	32.9	0.3	0.5	0.0	1.00	1.00	7.0	31.4
CO3L-4	450.36	Katian	Lingxiang	Chenjahe	288.25	0.05	2.1	42.4	0.6	1.1	0.0	1.00	1.00	9.2	5.1
CO3L-3	450.48	Katian	Lingxiang	Chenjahe	287.75	0.05	2.0	41.3	0.5	1.0	0.0	1.00	1.00	8.9	
CO3L-2	450.60	Katian	Lingxiang	Chenjahe	287.25	0.05	1.0	18.5	0.3	0.4	0.0	1.00	1.00	9.1	4.8
CO3L-1	450.66	Katian	Lingxiang	Chenjahe	287.00	0.04	0.9	21.5	0.2	0.4	0.0	1.00	1.00	6.7	39.8
		Katian													
O3b-31	450.70	Katian	Baota	Huanghuachang	286.80	0.03	1.8	64.9							
O3b-30	450.75	Katian	Baota	Huanghuachang	286.60	0.05	1.0	20.0	0.5	0.7	0.0	1.00	1.00	8.5	3.1
O3b-29	450.82	Katian	Baota	Huanghuachang	286.30	0.03	1.7	61.2							
O3b-28	450.94	Katian	Baota	Huanghuachang	285.80	0.03	2.5	83.3	1.4	2.1	0.0	1.19	1.00	4.2	0.2
O3b-27	451.06	Katian	Baota	Huanghuachang	285.30	0.03	1.8	69.9							
O3b-26	451.17	Katian	Baota	Huanghuachang	284.80	0.04	1.2	30.0							1.7
O3b-25	451.29	Katian	Baota	Huanghuachang	284.30	0.08	1.8	22.2							
O3b-24	451.41	Katian	Baota	Huanghuachang	283.80	0.03	2.4	80.0	1.8	2.4	0.0	1.00	1.00	2.9	2.1
O3b-23	451.52	Katian	Baota	Huanghuachang	283.30	0.02	2.2	108.3							
O3b-22	451.64	Katian	Baota	Huanghuachang	282.80	0.04	1.8	45.0	1.3	2.0	0.0	4.35	4.34	5.4	3.4
O3b-21	451.76	Katian	Baota	Huanghuachang	282.30	0.05	2.1	41.1							
O3b-20	451.88	Katian	Baota	Huanghuachang	281.80	0.04	2.9	72.5	1.7	2.3	0.0	1.00	1.00	5.1	1.7
O3b-19	451.99	Katian	Baota	Huanghuachang	281.30	0.02	1.9	87.3							
O3b-18	452.11	Katian	Baota	Huanghuachang	280.80	0.03	1.5	50.0	1.2	1.8	0.0	1.00	1.00	3.5	1.7
O3b-17	452.23	Katian	Baota	Huanghuachang	280.30	0.05	2.2	43.5							
O3b-16	452.34	Katian	Baota	Huanghuachang	279.80	0.07	2.3	32.9			0.0				1.7
O3b-15	452.46	Katian	Baota	Huanghuachang	279.30	0.06	3.5	62.2							
O3b-14	452.55	Katian	Baota	Huanghuachang	278.90	0.08	2.9	36.3	2.1	3.2	0.0	1.00	1.00	10.3	1.9
O3b-13	452.58	Katian	Baota	Huanghuachang	278.80	0.06	2.8	46.5							
O3b-12	452.60	Katian	Baota	Huanghuachang	278.70	0.11	3.7	33.6							
O3b-11	452.63	Katian	Baota	Huanghuachang	278.60	0.05	2.7	58.0							
O3b-10	452.65	Katian	Baota	Huanghuachang	278.50	0.04	3.0	79.5							
O3b-9	452.67	Katian	Baota	Huanghuachang	278.40	0.04	2.7	67.5	1.9	2.6	0.0	1.00	1.00	5.6	1.8
O3b-8	452.70	Katian	Baota	Huanghuachang	278.30	0.03	3.5	101.5							
O3b-7	452.72	Katian	Baota	Huanghuachang	278.20	0.04	3.2	78.8							

[illegible]

O2m-2	458.67	Darriwilian	Miaopo	Huanghuachang	275.53	0.42	38.1	89.8										
O2m-1	458.68	Darriwilian	Miaopo	Huanghuachang	275.50	0.62	8.0	12.9										
O2g-1	458.71	Darriwilian	Guniutan	Huanghuachang	275.40	0.07	37.6	553.5			0.0			361.1				3.2
O2g-2	458.74	Darriwilian	Guniutan	Huanghuachang	275.30	0.17	16.2	92.8										
O2g-3	458.77	Darriwilian	Guniutan	Huanghuachang	275.20	0.04	30.7	749.9						479.7				
O2g-4	458.81	Darriwilian	Guniutan	Huanghuachang	275.10	0.04	2.8	70.0	1.7	2.7	0.0			1.00	3.03	6.1		1.6
O2g-5	458.84	Darriwilian	Guniutan	Huanghuachang	275.00	0.06	6.9	123.9						277.6				
O2g-6	458.87	Darriwilian	Guniutan	Huanghuachang	274.90	0.05	3.6	72.5										
O2g-7	458.91	Darriwilian	Guniutan	Huanghuachang	274.80	0.06	5.8	91.5										
O2g-8	458.94	Darriwilian	Guniutan	Huanghuachang	274.70	0.10	6.1	61.0	3.9	4.9	0.0			1.00	1.00	10.8		1.1
O2g-9	458.97	Darriwilian	Guniutan	Huanghuachang	274.60	0.08	3.0	39.7										
O2g-10	459.01	Darriwilian	Guniutan	Huanghuachang	274.50	0.08	2.7	31.6										
O2g-11	459.04	Darriwilian	Guniutan	Huanghuachang	274.40	0.06	5.2	86.7	6.0	5.8	0.0			1.00	1.18	9.1		1.9
O2g-12	459.07	Darriwilian	Guniutan	Huanghuachang	274.30	0.75	7.4	9.9										
O2g-13	459.11	Darriwilian	Guniutan	Huanghuachang	274.20	0.05	3.4	71.2										
O2g-14	459.14	Darriwilian	Guniutan	Huanghuachang	274.10	0.05	3.2	68.1										
O2g-15	459.17	Darriwilian	Guniutan	Huanghuachang	274.00	0.04	2.0	51.1										
O2g-15*	459.21	Darriwilian	Guniutan	Huanghuachang	273.90	0.05	2.0	40.9										
O2g-16	459.24	Darriwilian	Guniutan	Huanghuachang	273.80	0.04	2.7	67.5	2.4	4.1	0.0			1.00	1.00	7.4		0.2
O2g-17	459.27	Darriwilian	Guniutan	Huanghuachang	273.70	0.03	2.2	62.5										
O2g-18	459.31	Darriwilian	Guniutan	Huanghuachang	273.60	0.04	4.0	99.6			0.0							2.3
O2g-19	459.34	Darriwilian	Guniutan	Huanghuachang	273.50	0.03	2.3	81.9										
CO2g-32	461.33	Darriwilian	Guniutan	Chenjahe	267.50													
CO2g-31	461.49	Darriwilian	Guniutan	Chenjahe	267.00	0.07	3.3	50.8										
CO2g-30	461.66	Darriwilian	Guniutan	Chenjahe	266.50	0.06	45.2	759.7		39.0	0.1			1.00	1.74	5.4		1.4
CO2g-29	461.83	Darriwilian	Guniutan	Chenjahe	266.00													
CO2g-28	461.99	Darriwilian	Guniutan	Chenjahe	265.50	0.04								1.00	2.22	3.5		1.2
CO2g-27	462.16	Darriwilian	Guniutan	Chenjahe	265.00	0.05	339.1	6816.6		385.3	0.5		12109.3	1.00	1.18	4.2		1.9
CO2g-26	462.32	Darriwilian	Guniutan	Chenjahe	264.50													
CO2g-25	462.49	Darriwilian	Guniutan	Chenjahe	264.00	0.03	1.4	47.8										
CO2g-24	462.66	Darriwilian	Guniutan	Chenjahe	263.50	0.04	1.4	36.9										
CO2g-23	462.82	Darriwilian	Guniutan	Chenjahe	263.00													
CO2g-22	462.99	Darriwilian	Guniutan	Chenjahe	262.50	0.04	15.1	337.4		19.4	0.0			2.23	1.00	6.5		2.7

CO2g-21	463.15	Darriwilian	Guniutan	Chenjahe	262.00												
CO2g-20	463.32	Darriwilian	Guniutan	Chenjahe	261.50	0.02	0.4	17.5									
CO2g-19	463.49	Darriwilian	Guniutan	Chenjahe	261.00												
CO2g-18	463.65	Darriwilian	Guniutan	Chenjahe	260.50	0.05	5.6	104.9	2.7	0.0		1.00	1.00	7.2	2.5		
CO2g-17	463.82	Darriwilian	Guniutan	Chenjahe	260.00												
CO2g-16	463.98	Darriwilian	Guniutan	Chenjahe	259.50	0.05	2.0	40.7									
CO2g-15	464.15	Darriwilian	Guniutan	Chenjahe	259.00	0.05	0.9	19.9		0.0						0.2	
CO2g-14	464.31	Darriwilian	Guniutan	Chenjahe	258.50	0.02	2.0	86.4									
CO2g-13	464.48	Darriwilian	Guniutan	Chenjahe	258.00												
CO2g-12	464.65	Darriwilian	Guniutan	Chenjahe	257.50	0.03	0.3	9.5									
CO2g-11	464.81	Darriwilian	Guniutan	Chenjahe	257.00	0.03	4.9	183.3		0.0						2.2	
CO2g-10	464.98	Darriwilian	Guniutan	Chenjahe	256.50	0.05	19.7	381.0	7.6	0.0		1.00	1.00	8.6			
CO2g-9	465.14	Darriwilian	Guniutan	Chenjahe	256.00												
CO2g-8	465.31	Darriwilian	Guniutan	Chenjahe	255.50	0.07	3.5	48.1		0.0						1.0	
CO2g-7	465.48	Darriwilian	Guniutan	Chenjahe	255.00	0.13	1.6	12.1		0.0						21.8	
CO2g-6	465.64	Darriwilian	Guniutan	Chenjahe	254.50	0.03	0.6	19.2									
CO2g-5	465.81	Darriwilian	Guniutan	Chenjahe	254.00												
CO2g-4	465.97	Darriwilian	Guniutan	Chenjahe	253.50	0.04	1.0	28.0									
CO2g-3	466.14	Darriwilian	Guniutan	Chenjahe	253.00	0.03	1.9	56.1		0.0						3.1	
CO2g-2	466.30	Darriwilian	Guniutan	Chenjahe	252.50	0.02	1.5	62.4									
CO2g-1	466.47	Darriwilian	Guniutan	Chenjahe	252.00												
CO2d-33	466.64	Darriwilian	Dawan	Chenjahe	251.50	0.04	1.5	37.4									
CO2d-34	466.80	Darriwilian	Dawan	Chenjahe	251.00	0.06	58.2	959.2	28.5	0.0		1.00	1.00	3.2	7.1		
CO2d-35	466.97	Darriwilian	Dawan	Chenjahe	250.50	0.06	349.0	6979.7	215.4	0.1		1.00	1.50	2.7	9.9		
CO2d-36	467.13	Darriwilian	Dawan	Chenjahe	250.00	0.04	3.2	84.4									
CO2d-37	467.30	Darriwilian	Dawan	Chenjahe	249.50	0.04	9.0	229.4									
O2d-62	467.85	Dapingian	Dawan	Huanghuachang	243.20	0.06	3.4	56.7	1.0	1.8	0.0		1.00	1.94	3.7	7.3	
O2d-61	467.93	Dapingian	Dawan	Huanghuachang	242.20	0.04	2.8	70.0	1.2	1.6	0.0		1.00	2.76	2.0	12.3	
O2d-60	468.37	Dapingian	Dawan	Huanghuachang	237.20	0.03	3.2	106.7	1.3	2.0	0.0	145.5	1.00	1.23	2.4	1.5	
O2d-59	468.45	Dapingian	Dawan	Huanghuachang	236.20	0.13	8.2	62.6									
O2d-58	468.54	Dapingian	Dawan	Huanghuachang	235.20	0.04	3.0	71.4									
O2d-57	468.62	Dapingian	Dawan	Huanghuachang	234.20	0.03	16.6	652.4	9.3	12.4	0.0		1.00	1.54	2.0	0.8	
O2d-56	468.71	Dapingian	Dawan	Huanghuachang	233.20	0.03	6.2	189.7	3.5	5.2	0.0	260.0	1.00	1.32	3.2	23.3	

O2d-55	468.80	Dapingian	Dawan	Huanghuachang	232.20	0.04	2.2	57.1	2.3	2.9	0.0	1.16	2.98	3.2	17.4	
O2d-54	468.88	Dapingian	Dawan	Huanghuachang	231.20	0.02	3.0	145.2								
O2d-53	468.97	Dapingian	Dawan	Huanghuachang	230.20	0.02	3.1	154.9								
O2d-52	469.06	Dapingian	Dawan	Huanghuachang	229.20	0.03	0.4	13.3	0.2	0.3	0.0	1.00	1.00	2.7	11.5	
O2d-51	469.14	Dapingian	Dawan	Huanghuachang	228.20	0.02	0.6	30.0	0.6	0.4	0.0	1.00	1.64	1.2	6.9	
O2d-50	469.23	Dapingian	Dawan	Huanghuachang	227.20	0.02	0.7	35.0	0.4	0.3	0.0	22.6	1.00	1.20	1.5	11.4
O2d-49	469.31	Dapingian	Dawan	Huanghuachang	226.20	0.05	1.0	20.0	0.5	1.0	0.0	1.00	2.70	3.0	11.0	
O2d-48	469.40	Dapingian	Dawan	Huanghuachang	225.20	0.03	0.5	16.7	0.3	0.2	0.0	1.00	1.00	2.6	12.9	
O2d-47	469.49	Dapingian	Dawan	Huanghuachang	224.20											
O2d-46	469.57	Dapingian	Dawan	Huanghuachang	223.20	0.03	2.0	71.7								
O2d-45	469.66	Dapingian	Dawan	Huanghuachang	222.20	0.04	0.5	12.5	0.1	0.2	0.0	1.00	1.62	1.2	9.4	
O2d-44	469.70	Dapingian	Dawan	Huanghuachang	221.70	0.03	1.1	36.7	0.4	0.8	0.0	1.00	1.00	3.2	5.6	
O2d-43	469.75	Dapingian	Dawan	Huanghuachang	221.20	0.03	0.9	30.0	0.4	0.5	0.0	1.00	1.00	2.9	6.1	
O2d-42	469.79	Dapingian	Dawan	Huanghuachang	220.70	0.02	0.7	35.0	0.5	0.7	0.0	1.00	2.08	1.0	7.9	
O2d-41	469.82	Dapingian	Dawan	Huanghuachang	220.30	0.02	1.8	90.7								
O2d-40	469.83	Dapingian	Dawan	Huanghuachang	220.20	0.03	0.8	26.7	0.8	1.1	0.0	1.16	3.30	1.4	8.4	
O2d-39	469.84	Dapingian	Dawan	Huanghuachang	220.15	0.03	1.6	56.2								
O2d-38	469.84	Dapingian	Dawan	Huanghuachang	220.10	0.08	2.3	27.9								
O2d-37	469.84	Dapingian	Dawan	Huanghuachang	220.05	0.03	1.7	61.6								
O2d-36	469.85	Dapingian	Dawan	Huanghuachang	220.00	0.04	1.7	38.3								
O2d-35	469.85	Dapingian	Dawan	Huanghuachang	219.95	0.08	2.1	26.6								
O2d-34	469.86	Dapingian	Dawan	Huanghuachang	219.90	0.08	2.0	23.8								
O2d-33	469.86	Dapingian	Dawan	Huanghuachang	219.85	0.03	1.7	53.8								
O2d-32	469.87	Dapingian	Dawan	Huanghuachang	219.80	0.03	1.5	52.1								
O2d-31	469.87	Dapingian	Dawan	Huanghuachang	219.75	0.02	1.8	78.6								
O2d-30	469.87	Dapingian	Dawan	Huanghuachang	219.70	0.11	2.6	23.4	0.2	1.0	0.0	1.00	1.00	3.0	1.8	
O2d-29	469.88	Dapingian	Dawan	Huanghuachang	219.65	0.05	2.3	46.4								
O2d-28	469.88	Dapingian	Dawan	Huanghuachang	219.60	0.10	2.1	20.2								
O2d-27	469.89	Dapingian	Dawan	Huanghuachang	219.55	0.07	2.0	27.6								
O2d-26	469.89	Dapingian	Dawan	Huanghuachang	219.50		2.0									
O2d-25	469.90	Dapingian	Dawan	Huanghuachang	219.45	0.08	2.1	24.9								
O2d-24	469.90	Dapingian	Dawan	Huanghuachang	219.40		2.3									
O2d-23	469.91	Dapingian	Dawan	Huanghuachang	219.35	0.05	1.7	30.2								

O2d-22	469.91	Dapingian	Dawan	Huanghuachang	219.30	0.02	1.6	67.4								
O2d-21	469.91	Dapingian	Dawan	Huanghuachang	219.25	0.03	1.7	59.7								
O2d-20	469.92	Dapingian	Dawan	Huanghuachang	219.20	0.02	1.6	80.0	1.2	1.7	0.0		1.00	4.21	0.7	10.3
O2d-19	469.92	Dapingian	Dawan	Huanghuachang	219.15	0.03	2.0	63.6								
O2d-18	469.93	Dapingian	Dawan	Huanghuachang	219.10		1.7									
O2d-17	469.93	Dapingian	Dawan	Huanghuachang	219.05		1.8									
O2d-16	469.94	Dapingian	Dawan	Huanghuachang	219.00	0.02	1.8	103.1								
O2d-15	469.94	Dapingian	Dawan	Huanghuachang	218.95	0.11	2.3	20.3								
O2d-14	469.94	Dapingian	Dawan	Huanghuachang	218.90	0.10	2.2	21.3								
O2d-13	469.95	Dapingian	Dawan	Huanghuachang	218.85	0.08	1.8	23.4								
O2d-12	469.95	Dapingian	Dawan	Huanghuachang	218.80	0.08	1.9	24.0								
O2d-11	469.96	Dapingian	Dawan	Huanghuachang	218.75	0.08	1.9	24.8								
O2d-10	469.96	Dapingian	Dawan	Huanghuachang	218.70	0.10	2.2	22.0	0.2	0.5	0.0		1.00	1.18	1.9	2.0
O2d-9	469.97	Dapingian	Dawan	Huanghuachang	218.65	0.04	2.0	55.9								
O2d-8	469.97	Dapingian	Dawan	Huanghuachang	218.60	0.08	2.1	25.3								
O2d-7	469.97	Dapingian	Dawan	Huanghuachang	218.55	0.09	1.2	13.3	0.1	0.3	0.0		1.00	1.08	1.5	
O2d-6	469.98	Dapingian	Dawan	Huanghuachang	218.50	0.07	2.3	31.7								
O2d-5	469.98	Dapingian	Dawan	Huanghuachang	218.45	0.04	1.7	46.6								
O2d-4	469.99	Dapingian	Dawan	Huanghuachang	218.40	0.03	1.9	63.3	1.1	1.8	0.0		1.00	3.46	1.5	9.9
O2d-3	469.99	Dapingian	Dawan	Huanghuachang	218.35	0.02	1.8	99.8				61.4				
O2d-2	470.00	Dapingian	Dawan	Huanghuachang	218.30	0.03	2.0	76.7								
O2d-1	470.00	Dapingian	Dawan	Huanghuachang	218.25	0.03	2.3	76.7	2.5	3.3	0.0		1.00	4.40	2.5	10.7
O1d-82	470.30	Floian	Dawan	Huanghuachang	218.20	0.03	1.5	50.0	0.6	1.1	0.0		1.00	2.67	2.1	9.3
O1d-81	470.31	Floian	Dawan	Huanghuachang	218.15	0.09	1.9	21.2								
O1d-80	470.32	Floian	Dawan	Huanghuachang	218.10	0.05	2.4	46.4								
O1d-79	470.34	Floian	Dawan	Huanghuachang	218.05	0.02	1.9	116.7								
O1d-78	470.35	Floian	Dawan	Huanghuachang	218.00	0.03	2.4	80.0	2.7	3.8	0.0		2.30	5.69	1.5	8.5
O1d-77	470.36	Floian	Dawan	Huanghuachang	217.95	0.04	1.6	45.1								
O1d-76	470.37	Floian	Dawan	Huanghuachang	217.90	0.03	2.0	76.4								
O1d-75	470.39	Floian	Dawan	Huanghuachang	217.85	0.02	2.3	139.1				75.7				
O1d-74	470.40	Floian	Dawan	Huanghuachang	217.80	0.02	2.1	105.0	3.7	4.5	0.0		1.39	8.38	1.6	7.5
O1d-73	470.41	Floian	Dawan	Huanghuachang	217.75	0.03	1.6	49.8								
O1d-72	470.42	Floian	Dawan	Huanghuachang	217.70	0.03	1.9	57.3								

O1d-38	470.86	Floian	Dawan	Huanghuachang	216.00	0.03	1.3	43.3	1.1	1.3	0.0	1.00	4.37	1.5	11.8
O1d-37	470.87	Floian	Dawan	Huanghuachang	215.95	0.03	4.8	142.0							
O1d-36	470.88	Floian	Dawan	Huanghuachang	215.90	0.03	8.1	322.0				32.2			
O1d-35	470.90	Floian	Dawan	Huanghuachang	215.85	0.03	7.4	230.6							
O1d-34	470.91	Floian	Dawan	Huanghuachang	215.80	0.04	3.2	82.4							
O1d-33	470.92	Floian	Dawan	Huanghuachang	215.75	0.04	3.8	90.8							
O1d-32	470.93	Floian	Dawan	Huanghuachang	215.70	0.03	6.6	197.5							
O1d-31	470.95	Floian	Dawan	Huanghuachang	215.65	0.02	2.1	91.6							
O1d-30	470.96	Floian	Dawan	Huanghuachang	215.60	0.03	2.5	78.3							
O1d-29	470.97	Floian	Dawan	Huanghuachang	215.55	0.02	2.5	123.5							
O1d-28	470.98	Floian	Dawan	Huanghuachang	215.50	0.04	3.0	75.0	1.8	2.7	0.0	1.00	5.20	0.6	12.5
O1d-27	471.00	Floian	Dawan	Huanghuachang	215.45	0.04	3.1	84.6							
O1d-26	471.01	Floian	Dawan	Huanghuachang	215.40	0.04	4.3	100.6							
O1d-25	471.02	Floian	Dawan	Huanghuachang	215.35	0.03	4.3	162.8							
O1d-24	471.04	Floian	Dawan	Huanghuachang	215.30	0.04	4.4	100.3							
O1d-23	471.05	Floian	Dawan	Huanghuachang	215.25	0.03	3.1	97.3							
O1d-22	471.06	Floian	Dawan	Huanghuachang	215.20	0.02	2.9	127.8							
O1d-21	471.07	Floian	Dawan	Huanghuachang	215.15	0.03	2.4	68.7							
O1d-20	471.09	Floian	Dawan	Huanghuachang	215.10	0.03	2.5	77.7							
O1d-19	471.10	Floian	Dawan	Huanghuachang	215.05	0.02	2.2	140.9							
O1d-18	471.11	Floian	Dawan	Huanghuachang	215.00	0.03	2.8	93.3	4.8	4.3	0.0	1.00	13.17	0.6	9.7
O1d-17	471.12	Floian	Dawan	Huanghuachang	214.75	0.05	4.2	80.9							
O1d-16	471.19	Floian	Dawan	Huanghuachang	214.70	0.02	8.4	382.4				34.0			
O1d-15	471.20	Floian	Dawan	Huanghuachang	214.65	0.03	4.0	119.9							
O1d-14	471.21	Floian	Dawan	Huanghuachang	214.60	0.02	3.9	209.5							
O1d-13	471.23	Floian	Dawan	Huanghuachang	214.55	0.03	8.5	326.0							
O1d-12	471.24	Floian	Dawan	Huanghuachang	214.50	0.06	3.6	60.0	2.6	3.1	0.0	1.00	6.74	0.6	9.7
O1d-11	471.25	Floian	Dawan	Huanghuachang	214.00	0.02	3.7	149.3							
O1d-10	471.38	Floian	Dawan	Huanghuachang	213.50	0.02	2.5	112.5							
O1d-9	471.51	Floian	Dawan	Huanghuachang	213.00	0.02	1.6	80.0	4.5	3.3	0.0	1.06	15.83	1.0	10.6
O1d-8	471.63	Floian	Dawan	Huanghuachang	212.50	0.01	2.9	206.8				44.8			
O1d-7	471.76	Floian	Dawan	Huanghuachang	212.00	0.02	1.2	60.0	2.7	2.8	0.0	1.00	7.10	1.1	5.4
O1d-6	471.89	Floian	Dawan	Huanghuachang	211.50	0.02	2.7	163.2							

O1d-5	472.02	Floian	Dawan	Huanghuachang	211.00	0.01	3.8	256.4					96.0				
O1d-4	472.14	Floian	Dawan	Huanghuachang	210.50	0.03	8.9	271.6					99.9				
O1d-3	472.27	Floian	Dawan	Huanghuachang	210.00									1.96	10.62	0.0	5.1
O1d-2	472.40	Floian	Dawan	Huanghuachang	209.50	0.24	7.1	29.5									
O1d-1	472.52	Floian	Dawan	Huanghuachang	209.00	0.14	7.7	54.7									
O1h-15	472.65	Floian	Honghuayuan	Huanghuachang	207.83	0.11	3.1	28.2	15.0	5.6	0.0	79.5	6.23	13.10	2.0	0.7	
O1h-14	472.95	Floian	Honghuayuan	Huanghuachang	207.25	0.03	3.3	123.0									
O1h-13	473.10	Floian	Honghuayuan	Huanghuachang	206.67	0.03	1.9	63.3	5.0	7.5	0.0		5.81	9.63	1.0	31.3	
O1h-12	473.25	Floian	Honghuayuan	Huanghuachang	206.08	0.04	2.2	49.0									
O1h-11	473.39	Floian	Honghuayuan	Huanghuachang	205.50	0.14	2.5	17.9	2.7	4.8	0.0		3.75	5.97	28.6	2.0	
O1h-10	473.54	Floian	Honghuayuan	Huanghuachang	204.92	0.08	2.2	28.3									
O1h-9	473.69	Floian	Honghuayuan	Huanghuachang	204.33	0.11	2.3	20.9	6.3	8.4	0.0	22.5	24.44	14.76	17.1	3.1	
O1h-8	473.84	Floian	Honghuayuan	Huanghuachang	203.75	0.05	2.4	47.6									
O1h-7	473.99	Floian	Honghuayuan	Huanghuachang	203.17	0.02	2.1	105.0	7.2	13.0	0.1		5.40	9.56	0.8	0.1	
O1h-6	474.14	Floian	Honghuayuan	Huanghuachang	200.83	0.04	2.5	65.1									
O1h-5	474.73	Floian	Honghuayuan	Huanghuachang	198.50	0.11	4.2	38.2	9.4	15.4	0.0		30.64	12.19	59.2	0.4	
O1h-4	475.32	Floian	Honghuayuan	Huanghuachang	196.17	0.16	2.0	12.5	7.7	7.7	0.0		23.52	13.44	59.2	3.2	
O1h-3	475.92	Floian	Honghuayuan	Huanghuachang	190.33	0.16	3.3	20.6	7.8	12.7	0.0		13.74	9.53	52.6	10.4	
O1h-2	477.40	Floian	Honghuayuan	Huanghuachang	189.17	0.07	9.8	137.9			0.0		2.68	4.25	36.6	2.3	
O1h-1	477.70	Floian	Honghuayuan	Huanghuachang	188.00	0.04	4.1	102.0			0.0		18.92	16.22	17.1	1.5	
O1f-11	479.01	Tremadocian	Fenxiang	Huanghuachang	156.00	0.02	2.0	81.2		8.2	0.0		1.00	3.83	3.5	1.4	
O1f-10	479.42	Tremadocian	Fenxiang	Huanghuachang	146.00	0.02	2.0	90.4		9.4	0.0	56.3	1.00	3.53	1.8	2.0	
O1f-9	479.75	Tremadocian	Fenxiang	Huanghuachang	138.00	0.03	1.8	57.2									
O1f-8	479.99	Tremadocian	Fenxiang	Huanghuachang	132.00	0.01	1.5	140.1		7.9	0.0		1.00	2.63	1.5	0.8	
O1f-7	480.16	Tremadocian	Fenxiang	Huanghuachang	128.00	0.02	1.7	98.8		3.4	0.0		1.21	1.57	0.7	1.1	
O1f-6	480.24	Tremadocian	Fenxiang	Huanghuachang	126.00	0.04	1.8	41.7									
O1f-5	480.40	Tremadocian	Fenxiang	Huanghuachang	122.00	0.02	2.3	104.0									
O1f-4	480.49	Tremadocian	Fenxiang	Huanghuachang	120.00	0.04	3.7	96.3									
O1f-3	480.57	Tremadocian	Fenxiang	Huanghuachang	118.00	0.04	2.2	52.9									
O1f-2	480.61	Tremadocian	Fenxiang	Huanghuachang	117.00	0.06	2.9	47.4									
O1f-1	480.65	Tremadocian	Fenxiang	Huanghuachang	116.00	0.12	4.8	39.5									
O1n-32	480.67	Tremadocian	Nanjinguan	Huanghuachang	115.50	0.04	2.5	59.6									
O1n-31	480.73	Tremadocian	Nanjinguan	Huanghuachang	114.00	0.03	2.8	106.1		15.4	0.0	35.6	2.61	13.04	1.9	1.6	

O1n-30	480.79	Tremadocian	Nanjinguan	Huanghuachang	112.50												
O1n-29	481.12	Tremadocian	Nanjinguan	Huanghuachang	104.50	0.02	1.8	99.8									
O1n-28	481.20	Tremadocian	Nanjinguan	Huanghuachang	102.50	0.02	1.8	120.2									
O1n-27	481.28	Tremadocian	Nanjinguan	Huanghuachang	100.50	0.01	1.7	214.0	28.8	0.1	28.4	7.15	9.25	20.9	0.1		
O1n-26	481.30	Tremadocian	Nanjinguan	Huanghuachang	100.00	0.01	1.9	141.7									
O1n-25	481.35	Tremadocian	Nanjinguan	Huanghuachang	99.00	0.02	1.8	108.8	30.7	0.0	83.6	2.68	13.54	43.7	0.4		
O1n-24	482.59	Tremadocian	Nanjinguan	Huanghuachang	68.50	0.01	3.2	251.4	52.7	0.0	150.5	24.42	33.82	16.2	0.7		
O1n-23	482.68	Tremadocian	Nanjinguan	Huanghuachang	66.50	0.02	3.2	153.3	22.9	0.0		6.07	20.67	18.0	1.7		
O1n-22	482.80	Tremadocian	Nanjinguan	Huanghuachang	63.50	0.24	2.3	9.5									
O1n-21	482.88	Tremadocian	Nanjinguan	Huanghuachang	61.50	0.07	5.7	87.4									
O1n-20	482.96	Tremadocian	Nanjinguan	Huanghuachang	59.50	0.02	2.3	134.1	23.1	0.0		110.95	40.20	44.5	0.3		
O1n-19	483.04	Tremadocian	Nanjinguan	Huanghuachang	57.50	0.04	5.2	147.4									
O1n-18	483.13	Tremadocian	Nanjinguan	Huanghuachang	55.50	0.02	2.5	113.9									
O1n-17	483.21	Tremadocian	Nanjinguan	Huanghuachang	53.50	0.03	4.9	166.5	44.1	0.0		24.12	21.13	37.6	1.9		
O1n-16	483.29	Tremadocian	Nanjinguan	Huanghuachang	51.50	0.02	6.8	298.8	57.0	0.1		76.83	14.84	19.7	1.9		
O1n-15	483.37	Tremadocian	Nanjinguan	Huanghuachang	49.50	0.05	6.6	139.5									
O1n-14	483.45	Tremadocian	Nanjinguan	Huanghuachang	47.50	0.05	4.3	80.8									
O1n-13	483.50	Tremadocian	Nanjinguan	Huanghuachang	46.50	0.07	3.8	55.6									
O1n-12	483.58	Tremadocian	Nanjinguan	Huanghuachang	44.50	0.05	13.4	279.9	74.3	0.2		38.59	21.59	13.7	0.3		
O1n-11	483.66	Tremadocian	Nanjinguan	Huanghuachang	42.50	0.04	9.2	216.1	65.9	0.0		55.03	23.55	10.0	0.8		
O1n-10	483.74	Tremadocian	Nanjinguan	Huanghuachang	40.50	0.04	7.0	164.1									
O1n-9	483.82	Tremadocian	Nanjinguan	Huanghuachang	38.50	0.05	2.8	55.9	21.6	0.0	22.3	22.51	4.02	43.3	1.8		
O1n-8	483.91	Tremadocian	Nanjinguan	Huanghuachang	36.50	0.03	2.4	93.9									
O1n-7	483.99	Tremadocian	Nanjinguan	Huanghuachang	34.50	0.01	2.0	184.6									
O1n-6	484.07	Tremadocian	Nanjinguan	Huanghuachang	32.50	0.06	2.0	34.1									
O1n-5	484.15	Tremadocian	Nanjinguan	Huanghuachang	30.50	0.04	19.0	427.3	99.7	0.3	101.3	48.24	9.00	19.1	0.3		
O1n-4	484.23	Tremadocian	Nanjinguan	Huanghuachang	28.50	0.09	2.2	25.4									
O1n-3	484.31	Tremadocian	Nanjinguan	Huanghuachang	26.50	0.06	2.0	34.1									
O1n-2	484.40	Tremadocian	Nanjinguan	Huanghuachang	24.50	0.06	2.3	36.4	20.8	0.0	65.4	26.44	16.46	23.2	0.8		
O1n-1	484.46	Tremadocian	Nanjinguan	Huanghuachang	23.00	0.04	2.3	64.8	15.2	0.0	36.2	13.61	7.18	0.8	2.3		
O1x-7	484.91	Tremadocian	Nanjinguan	Huanghuachang	12.00	0.02	3.6	192.2	22.5	0.0			20.67	16.1	1.9		
O1x-6	484.99	Tremadocian	Nanjinguan	Huanghuachang	10.00	0.01	2.5	227.2									
O1x-5	485.07	Tremadocian	Nanjinguan	Huanghuachang	8.00	0.02	2.4	158.2	34.0	0.0		45.56	45.46	13.0	0.6		

[illegible]

Data S2. Hg isotopes of study samples. Red-colored data is sourced from Gong et al. (2017).

Sample NO.	Age (Ma)	Stage	Formation	Study sections	Heigh (m)	$\delta^{202}\text{Hg}$ (‰)	1SD	$\Delta^{199}\text{Hg}$ (‰)	1SD
WS-13	442.80	Rhuddanian	Longmaxi	Wangjiawan	314.00	-0.79	0.03	0.11	0.02
WS-10	443.09	Rhuddanian	Longmaxi	Wangjiawan	313.70	-0.95	0.07	0.08	0.01
WS-4	443.66	Rhuddanian	Longmaxi	Wangjiawan	313.10	-1.19	0.06	0.01	0.02
WOO3L-3	443.91	Hirnantian	Longmaxi	Wangjiawan	312.85	-1.62	0.04	0.02	0.01
WOO3L-7	444.10	Hirnantian	Longmaxi	Wangjiawan	312.65	-1.20	0.08	0.07	0.01
WOO3L-13	444.39	Hirnantian	Longmaxi	Wangjiawan	312.35	-0.79	0.04	0.06	0.01
WOO3W-18	444.72	Hirnantian	Guanyinqiao bed	Wangjiawan	312.00	-0.97	0.01	0.08	0.02
WOO3W-19	444.77	Hirnantian	Guanyinqiao bed	Wangjiawan	311.95	-0.89	0.01	0.11	0.01
WOO3W-20	444.82	Hirnantian	Guanyinqiao bed	Wangjiawan	311.90	-0.83	0.04	0.09	0.02
WOO3W-21	444.87	Hirnantian	Wufeng	Wangjiawan	311.85	-0.45	0.06	0.05	0.03
WOO3W-22	444.91	Hirnantian	Wufeng	Wangjiawan	311.80	-0.60	0.01	0.08	0.02
WOO3W-24	445.01	Hirnantian	Wufeng	Wangjiawan	311.70	-0.80	0.01	0.07	0.01
WOO3W-25	445.06	Hirnantian	Wufeng	Wangjiawan	311.65	-0.74	0.07	0.09	0.02
WOO3W-28	445.20	Hirnantian	Wufeng	Wangjiawan	311.50	-0.70	0.07	0.01	0.01
WOO3W-30	445.22	Katian	Wufeng	Wangjiawan	311.40	-0.82	0.01	0.10	0.01
WOO3W-34	445.27	Katian	Wufeng	Wangjiawan	311.20	-0.74	0.02	0.10	0.03
WOO3W-37	445.31	Katian	Wufeng	Wangjiawan	311.05	-1.26	0.12	0.05	0.03
WOO3W-40	445.34	Katian	Wufeng	Wangjiawan	310.90	-0.94	0.13	0.04	0.05
WOO3W-43	445.38	Katian	Wufeng	Wangjiawan	310.75	-0.75	0.11	0.06	0.03
CO3L-12	448.96	Katian	Lingxiang	Chenjiahe	294.25	-1.95	0.05	-0.03	0.05
O3b-28	450.94	Katian	Baota	Huanghuachang	285.80	-0.42	0.05	0.05	0.05
O3b-20	451.88	Katian	Baota	Huanghuachang	281.80	-2.01	0.05	0.20	0.05
O3b-12	452.60	Katian	Baota	Huanghuachang	278.70	-1.54	0.05	0.02	0.05
O3b-2	452.91	Katian	Baota	Huanghuachang	277.40	-0.85	0.05	0.00	0.05
SO3m-30	453.53	Sandbian	Miaopo	Chenjiahe	276.80	0.39	0.05	-0.20	0.05
SO3m-29	453.79	Sandbian	Miaopo	Chenjiahe	276.75	-0.28	0.05	-0.11	0.05
SO3m-23	455.38	Sandbian	Miaopo	Chenjiahe	276.45	0.66	0.05	-0.19	0.05
SO3m-19	456.44	Sandbian	Miaopo	Chenjiahe	276.25	0.38	0.05	-0.22	0.05
O3m-12	457.61	Sandbian	Miaopo	Huanghuachang	276.03	-0.25	0.05	-0.08	0.05
O3m-10	458.14	Sandbian	Miaopo	Huanghuachang	275.93	-0.15	0.05	-0.06	0.05
O2m-8	458.57	Darriwilian	Miaopo	Huanghuachang	275.83	-0.56	0.05	-0.09	0.05
O2m-7	458.58	Darriwilian	Miaopo	Huanghuachang	275.78	0.00	0.05	-0.22	0.05
O2m-4	458.63	Darriwilian	Miaopo	Huanghuachang	275.63	0.60	0.05	-0.19	0.05
O2m-3	458.65	Darriwilian	Miaopo	Huanghuachang	275.58	-0.31	0.05	-0.14	0.05
O2m-2	458.67	Darriwilian	Miaopo	Huanghuachang	275.53	-0.46	0.05	-0.18	0.05
O2m-1	458.68	Darriwilian	Miaopo	Huanghuachang	275.50	-0.43	0.05	-0.14	0.05
O2g-1	458.71	Darriwilian	Guniutan	Huanghuachang	275.40	-0.67	0.05	-0.07	0.05
O2g-3	458.77	Darriwilian	Guniutan	Huanghuachang	275.20	-1.19	0.05	-0.10	0.05
O2g-5	458.84	Darriwilian	Guniutan	Huanghuachang	275.00	-0.27	0.05	-0.18	0.05
O2g-8	458.94	Darriwilian	Guniutan	Huanghuachang	274.70	-1.25	0.05	0.04	0.05
O2g-16	459.24	Darriwilian	Guniutan	Huanghuachang	273.80	-1.22	0.05	-0.19	0.05
CO2g-30	461.66	Darriwilian	Guniutan	Chenjiahe	266.50	-1.63	0.05	-0.06	0.05
CO2g-28	461.99	Darriwilian	Guniutan	Chenjiahe	265.50	0.29	0.05	-0.04	0.05
CO2g-27	462.16	Darriwilian	Guniutan	Chenjiahe	265.00	0.25	0.05	-0.06	0.05
CO2g-22	462.99	Darriwilian	Guniutan	Chenjiahe	262.50	0.15	0.05	-0.04	0.05
CO2g-18	463.65	Darriwilian	Guniutan	Chenjiahe	260.50	2.42	0.05	-0.09	0.05

CO2g-10	464.98	Darriwilian	Guniutan	Chenjiahe	256.50	0.22	0.05	-0.05	0.05
CO2d-34	466.80	Darriwilian	Dawan	Chenjiahe	251.00	0.38	0.05	0.04	0.05
CO2d-35	466.97	Darriwilian	Dawan	Chenjiahe	250.50	0.22	0.05	0.05	0.05
O2d-60	468.37	Dapingian	Dawan	Huanghuachang	237.20	-1.74	0.05	0.26	0.05
O2d-57	468.62	Dapingian	Dawan	Huanghuachang	234.20	-0.88	0.05	0.01	0.05
O2d-56	468.71	Dapingian	Dawan	Huanghuachang	233.20	-1.08	0.05	0.06	0.05
O2d-53	468.97	Dapingian	Dawan	Huanghuachang	230.20	-2.96	0.05	0.01	0.05
O2d-50	469.23	Dapingian	Dawan	Huanghuachang	227.20	-1.71	0.05	-0.01	0.05
O2d-46	469.57	Dapingian	Dawan	Huanghuachang	223.20	-2.96	0.05	0.12	0.05
O2d-44	469.70	Dapingian	Dawan	Huanghuachang	221.70	-3.45	0.05	0.38	0.05
O2d-20	469.92	Dapingian	Dawan	Huanghuachang	219.20	-2.54	0.05	0.07	0.05
O2d-3	469.99	Dapingian	Dawan	Huanghuachang	218.35	-2.33	0.05	0.23	0.05
O1d-75	470.39	Floian	Dawan	Huanghuachang	217.85	-2.29	0.05	0.18	0.05
O1d-58	470.60	Floian	Dawan	Huanghuachang	217.00	-1.67	0.05	-0.08	0.05
O1d-36	470.88	Floian	Dawan	Huanghuachang	215.90	-0.43	0.05	0.03	0.05
O1d-35	470.90	Floian	Dawan	Huanghuachang	215.85	-0.58	0.05	0.01	0.05
O1d-16	471.19	Floian	Dawan	Huanghuachang	214.70	-0.62	0.05	-0.13	0.05
O1d-8	471.63	Floian	Dawan	Huanghuachang	212.50	-1.13	0.05	0.05	0.05
O1d-5	472.02	Floian	Dawan	Huanghuachang	211.00	-2.77	0.05	0.15	0.05
O1d-4	472.14	Floian	Dawan	Huanghuachang	210.50	-1.99	0.05	0.06	0.05
O1h-15	472.65	Floian	Honghuayuan	Huanghuachang	207.83	-1.79	0.05	0.01	0.05
O1h-9	473.69	Floian	Honghuayuan	Huanghuachang	204.33	-2.48	0.05	0.10	0.05
O1h-7	473.99	Floian	Honghuayuan	Huanghuachang	203.17	-2.00	0.05	0.03	0.05
O1h-5	474.73	Floian	Honghuayuan	Huanghuachang	198.50	-1.51	0.05	0.15	0.05
O1h-2	477.40	Floian	Honghuayuan	Huanghuachang	189.17	-2.11	0.05	-0.07	0.05
O1h-1	477.70	Floian	Honghuayuan	Huanghuachang	188.00	-2.04	0.05	0.12	0.05
O1f-11	479.01	Tremadocian	Fenxiang	Huanghuachang	156.00	-1.41	0.05	0.06	0.05
O1f-10	479.42	Tremadocian	Fenxiang	Huanghuachang	146.00	-3.53	0.05	0.22	0.05
O1f-8	479.99	Tremadocian	Fenxiang	Huanghuachang	132.00	-2.99	0.05	0.11	0.05
O1f-7	480.16	Tremadocian	Fenxiang	Huanghuachang	128.00	-1.82	0.05	0.20	0.05
O1n-31	480.73	Tremadocian	Nanjinguan	Huanghuachang	114.00	-1.66	0.05	0.20	0.05
O1n-27	481.28	Tremadocian	Nanjinguan	Huanghuachang	100.50	-2.92	0.05	0.11	0.05
O1n-25	481.35	Tremadocian	Nanjinguan	Huanghuachang	99.00	-2.20	0.05	0.19	0.05
O1n-24	482.59	Tremadocian	Nanjinguan	Huanghuachang	68.50	-0.74	0.05	0.18	0.05
O1n-23	482.68	Tremadocian	Nanjinguan	Huanghuachang	66.50	-1.03	0.05	0.18	0.05
O1n-20	482.96	Tremadocian	Nanjinguan	Huanghuachang	59.50	-1.90	0.05	0.24	0.05
O1n-17	483.21	Tremadocian	Nanjinguan	Huanghuachang	53.50	-1.78	0.05	0.21	0.05
O1n-16	483.29	Tremadocian	Nanjinguan	Huanghuachang	51.50	-1.57	0.05	0.24	0.05
O1n-12	483.58	Tremadocian	Nanjinguan	Huanghuachang	44.50	-0.39	0.05	0.03	0.05
O1n-11	483.66	Tremadocian	Nanjinguan	Huanghuachang	42.50	-2.03	0.05	0.27	0.05
O1n-9	483.82	Tremadocian	Nanjinguan	Huanghuachang	38.50	-1.40	0.05	0.16	0.05
O1n-5	484.15	Tremadocian	Nanjinguan	Huanghuachang	30.50	-3.35	0.05	0.26	0.05
O1n-2	484.40	Tremadocian	Nanjinguan	Huanghuachang	24.50	-1.92	0.05	0.36	0.05
O1n-1	484.46	Tremadocian	Nanjinguan	Huanghuachang	23.00	-2.15	0.05	0.31	0.05
O1x-7	484.91	Tremadocian	Nanjinguan	Huanghuachang	12.00	-1.81	0.05	0.35	0.05
O1x-5	485.07	Tremadocian	Nanjinguan	Huanghuachang	8.00	-1.36	0.05	0.34	0.05
O1x-3	485.24	Tremadocian	Nanjinguan	Huanghuachang	4.00	-1.25	0.05	0.06	0.05

Data S3. In-situ oxygen isotopes of conodont samples.

Series/Stage	Formation	Height (m)	Age (Ma)	Genus/Species	$\delta^{18}\text{O}_{\text{conodont}} (\text{‰})$	1SD
Silurian	Longmaxi	313.2	443.08	<i>Belodella</i> sp.	14.68	0.16
Silurian	Longmaxi	312.4	443.80	<i>Panderodus?</i> Sp.	15.51	0.23
Hirnantian	Longmaxi	312.14	444.97	<i>Belodella?</i> sp.	18.89	0.21
Hirnantian	Longmaxi	312.06	445.05	<i>Belodella?</i> sp.	19.60	0.15
Hirnantian	Longmaxi	311.98	445.12	<i>Belodella?</i> sp.	19.58	0.07
Hirnantian	Longmaxi	311.9	445.20	<i>Belodella?</i> sp.	19.56	0.12
Katian	Linxiang	306.2	446.40	<i>Belodella?</i> sp.	17.33	0.24
Katian	Linxiang	305.6	446.55	<i>Belodella</i> sp.	15.58	0.50
Katian	Linxiang	304.8	446.71	<i>Belodella</i> sp.	17.43	0.17
Katian	Linxiang	304.1	446.88	<i>Belodella</i> sp.	17.60	0.40
Katian	Linxiang	303.3	447.05	<i>Belodella</i> sp.	17.26	0.21
Katian	Linxiang	300.0	447.79	<i>Belodella</i> sp.	18.30	0.17
Katian	Linxiang	296.8	448.53	<i>Belodella</i> sp.	18.61	0.09
Katian	Linxiang	293.5	449.27	<i>Belodella</i> sp.	17.79	0.54
Katian	Linxiang	290.3	450.00	<i>Belodella</i> sp.	17.60	0.46
Katian	Linxiang	287	450.74	<i>Belodella?</i> sp.	19.10	0.28
Katian	Baota	286.3	450.91	<i>Belodella</i> sp.	18.40	0.34
Katian	Baota	285.4	451.11	<i>Baltoniodus</i> sp.	18.95	0.26
Katian	Baota	285.1	451.18	<i>Belodella</i> sp.	17.76	0.36
Katian	Baota	284.5	451.31	<i>Belodella</i> sp.	18.77	0.02
Katian	Baota	284.2	451.38	<i>Belodella</i> sp.	17.91	0.15
Katian	Baota	282.4	451.79	<i>Belodella</i> sp.	17.92	0.24
Katian	Baota	280.6	452.19	<i>Belodella</i> sp.	19.66	0.07
Sandbian	Baota	279.7	452.39	<i>Belodella</i> sp.	18.67	0.11
Sandbian	Baota	277	453.00	<i>Belodella</i> sp.	19.10	0.12
Sandbian	Miaopo	276.7	454.54	<i>Belodella</i> sp.	18.97	0.33
Sandbian	Miaopo	276.3	456.47	<i>Pesiodus</i> sp. & <i>Belodena</i> sp.	17.67	0.28
Sandbian	Miaopo	275.9	458.40	<i>Pesiodus</i> sp.	17.81	0.18
Sandbian	Miaopo	275.5	458.76	<i>Pesiodus</i> sp.	17.29	0.41
Darriwilian	Guniutan	275.4	458.78	<i>Pesiodus?</i> Sp.	17.30	0.14
Darriwilian	Guniutan	273.4	459.46	<i>Pasoistodus</i> sp.	17.19	0.36
Darriwilian	Guniutan	259.1	464.28	<i>Juanognathus</i> sp. & <i>Pasoistodus</i> sp.	17.11	0.31
Darriwilian	Guniutan	256.9	465.04	<i>Pasoistodus?</i> sp.	17.10	0.15
Darriwilian	Guniutan	256.6	465.14	<i>Oneotodus</i> sp.	18.18	0.30
Darriwilian	Guniutan	256.3	465.24	<i>Scolopodus?</i> sp.	16.03	0.05
Darriwilian	Guniutan	256.0	465.34	<i>Juanognathus?</i> sp.	18.11	0.07
Darriwilian	Guniutan	255.4	465.55	<i>Drepanodus?</i> Sp.	16.14	0.08
Darriwilian	Guniutan	254.8	465.76	<i>Pasoistodus</i> sp.	18.40	0.05
Darriwilian	Guniutan	254.4	465.86	<i>Scolopodus?</i> sp.	16.35	0.10
Darriwilian	Guniutan	252.6	466.48	<i>Scolopodus</i> sp.	18.61	0.17
Darriwilian	Guniutan	252.3	466.58	<i>Drepanodus</i> sp.	17.32	0.12
Darriwilian	Guniutan	252	466.69	<i>Scolopodus</i> sp.	18.45	0.06
Darriwilian	Guniutan	251.7	466.77	<i>Scolopodus</i> sp.	18.17	0.14
Dapingian	Dawan	250.2	467.30	<i>Scolopodus</i> sp. & <i>Baltoniodus</i> sp.	17.53	0.26
Dapingian	Dawan	246.3	467.62	<i>Oistodus</i> sp.	17.00	0.17
Dapingian	Dawan	243.3	467.88	<i>Drepanodus</i> sp.	15.88	0.53

Dapingian	Dawan	241.4	468.04	<i>Baltoniodus</i> sp.	17.79	0.12
Dapingian	Dawan	240.5	468.12	<i>Baltoniodus</i> sp.	17.91	0.26
Dapingian	Dawan	235.5	468.55	<i>Drepanoistodus</i> ? sp.	17.44	0.12
Dapingian	Dawan	235.1	468.59	<i>Pesiodus</i> sp.	17.04	0.20
Dapingian	Dawan	227.2	469.27	<i>Pesiodus</i> sp.	17.49	0.11
Dapingian	Dawan	218.7	470.00	<i>Baltoniodus</i> sp.	16.86	0.15
Dapingian	Dawan	215.8	470.62	<i>Scolopodus</i> sp.	18.17	0.04
Dapingian	Dawan	213.1	471.32	<i>Nususgnathus dolonus</i>	17.20	0.31
Floian	Dawan	213.1	471.32	<i>Pasoistodus</i> sp.	16.87	0.18
Floian	Dawan	213.0	471.33	<i>Tripodus</i> sp.	18.47	0.07
Floian	Dawan	213.0	471.34	<i>Juanogn</i> sp.	16.20	0.52
Floian	Dawan	213.0	471.35	<i>Drepanoistodus</i> sp.	16.45	0.16
Floian	Dawan	212.9	471.35	<i>Drepanoistodus</i> sp.	15.77	0.19
Floian	Dawan	212.8	471.39	<i>Tripodus</i> sp.	16.55	0.43
Floian	Dawan	212.8	471.39	<i>Tripodus</i> sp.	16.87	0.04
Floian	Dawan	212.7	471.40	<i>Tripodus</i> sp.	16.13	0.12
Floian	Dawan	212.7	471.41	<i>Drepanoistodus</i> sp.	16.39	0.12
Floian	Dawan	212.6	471.44	<i>Drepanoistodus</i> ? sp.	16.60	0.14
Floian	Dawan	212.1	471.58	<i>Triangulodus</i> sp.	15.02	0.12
Floian	Dawan	211.6	471.69	<i>Drepanoistodus</i> sp.	15.27	0.19
Floian	Dawan	211.3	471.77	<i>Pasoistodus</i> sp. & <i>Drepanoistodus</i> sp.	15.53	0.26
Floian	Dawan	211.0	471.86	<i>Tripodus</i> sp.	16.27	0.10
Floian	Dawan	210.6	471.94	<i>Conurodus longibasis</i> & <i>Drepanoistodus</i> sp.	16.11	0.25
Floian	Dawan	209	472.35	<i>Conurodus longibasis</i>	15.58	0.14
Floian	Honghuayuan	208.8	472.41	<i>Drepanoistodus</i> sp.	14.89	0.26
Floian	Honghuayuan	208.4	472.51	<i>Drepanoistodus</i> sp.	16.37	0.24
Floian	Honghuayuan	206.4	473.02	<i>Drepanoistodus</i> sp.	15.70	0.10
Floian	Honghuayuan	206.4	473.02	<i>Trianglodus</i> sp.	15.11	0.24
Floian	Honghuayuan	205.4	473.27	<i>Trianglodus</i> sp.	16.01	0.08
Floian	Honghuayuan	205.4	473.27	<i>Trianglodus</i> ? sp.	14.31	0.09
Floian	Honghuayuan	204.4	473.53	<i>Trianglodus</i> ? sp.	15.02	0.08
Floian	Honghuayuan	203.4	473.78	<i>Trianglodus</i> ? sp.	15.40	0.28
Floian	Honghuayuan	201.4	474.29	<i>Sessatognathodus diversus</i>	15.68	0.26
Floian	Honghuayuan	200.4	474.54	<i>Pasoistodus</i> sp.	16.46	0.09
Floian	Honghuayuan	199.4	474.80	<i>Trianglodus</i> sp.	15.17	0.21
Floian	Honghuayuan	198.4	475.05	<i>Trianglodus</i> sp.	15.68	0.29
Floian	Honghuayuan	197.4	475.31	<i>Protopandesodus</i> sp.	16.53	0.15
Floian	Honghuayuan	196.4	475.56	<i>Pasoistodus</i> sp.	15.88	0.10
Floian	Honghuayuan	195.4	475.82	<i>Pasoistodus</i> sp.	15.78	0.21
Floian	Honghuayuan	193.4	476.33	<i>Drepanodus</i> ? sp.	15.61	0.18
Floian	Honghuayuan	192.4	476.58	<i>Sessatognathodus diversus</i>	15.87	0.14
Floian	Honghuayuan	191.4	476.83	<i>Sessatognathodus diversus</i>	15.81	0.10
Floian	Honghuayuan	190.4	477.09	<i>Paltodus</i> sp. & <i>Oneotodus</i> sp.	15.51	0.16
Floian	Honghuayuan	189.9	477.22	<i>Oistodus</i> sp.	15.67	0.30
Floian	Honghuayuan	189.4	477.34	<i>Drepanodus</i> ? sp.	16.55	0.25
Floian	Honghuayuan	188	477.70	<i>Drepanodus</i> ? sp. & <i>Conurodus</i> sp.	15.27	0.24
Floian	Fengxiang	187.4	477.72	<i>Drepanodus</i> ? sp.	15.54	0.33
Floian	Fengxiang	185.0	477.82	<i>Drepanodus</i> sp.	15.73	0.25
Floian	Fengxiang	184.3	477.85	<i>Drepanodus</i> sp.	15.78	0.42

Floian	Fengxiang	183.8	477.87	<i>Drepanodus</i> sp. & <i>Paltodus</i> sp.	15.37	0.31
Floian	Fengxiang	183.2	477.90	<i>Drepanodus</i> ? sp.	15.55	0.31
Floian	Fengxiang	182.6	477.92	<i>Drepanodus</i> sp.	15.75	0.08
Floian	Fengxiang	182.0	477.95	<i>Drepanoistodus</i> sp.	16.66	0.15
Floian	Fengxiang	180.8	477.99	<i>Drepanoistodus</i> sp. & <i>Pasoistodus coneavus</i> Ni	15.96	0.21
Floian	Fengxiang	180.2	478.02	<i>Drepanodus</i> sp.	15.31	0.18
Floian	Fengxiang	179.6	478.04	<i>Drepanodus</i> sp.	15.48	0.25
Floian	Fengxiang	179.0	478.07	<i>Drepanodus</i> sp.	15.76	0.23
Floian	Fengxiang	177.0	478.15	<i>Drepanodus</i> sp.	15.97	0.40
Floian	Fengxiang	173.4	478.30	<i>Pasoistodus</i> sp.	15.71	0.43
Floian	Fengxiang	172.7	478.33	<i>Drepanodus</i> sp.	15.30	0.34
Floian	Fengxiang	172.0	478.36	<i>Drepanoistodus forceps</i>	16.82	0.23
Floian	Fengxiang	169.0	478.48	<i>Drepanodus</i> sp.	17.23	0.19
Floian	Fengxiang	168.0	478.52	<i>Drepanodus</i> sp.	15.86	0.30
Floian	Fengxiang	152.8	479.14	<i>Drepanodus foceps</i>	15.89	0.10
Floian	Fengxiang	148.5	479.32	<i>Drepanodus</i> sp. & <i>Oistodus</i> sp.	15.35	0.27
Floian	Fengxiang	146.0	479.42	<i>Drepanodus</i> sp.	15.31	0.42
Floian	Fengxiang	136.9	479.79	<i>Drepanodus</i> ? sp.	16.29	0.23
Floian	Fengxiang	127.5	480.18	<i>Drepanodus</i> ? sp.	16.85	0.02
Floian	Fengxiang	121.8	480.41	<i>Drepanodus</i> sp.	16.68	0.26
Floian	Fengxiang	118.0	480.57	<i>Drepanodus</i> sp.	15.32	0.26
Floian	Fengxiang	116	480.65	<i>Drepanodus</i> sp.	15.62	0.34
Tremadocian	Nanjinguan	115.5	480.67	<i>Tripodus</i> sp.	16.25	0.27
Tremadocian	Nanjinguan	115.0	480.69	<i>Oneotodus</i> sp. & <i>Tripodus</i> ? sp.	17.08	0.28
Tremadocian	Nanjinguan	114.0	480.73	<i>Drepanodus</i> sp.	16.57	0.19
Tremadocian	Nanjinguan	114.0	480.73	<i>Drepanodus</i> sp.	15.36	0.11
Tremadocian	Nanjinguan	112.0	480.81	<i>Drepanodus</i> ? sp.	16.85	0.29
Tremadocian	Nanjinguan	112.0	480.81	<i>Tripodus</i> sp. & <i>Drepanodus</i> sp.	15.68	0.28
Tremadocian	Nanjinguan	111.0	480.85	<i>Tripodus</i> sp.	16.35	0.19
Tremadocian	Nanjinguan	110.0	480.89	<i>Nususguathus</i> sp.	17.83	0.22
Tremadocian	Nanjinguan	109.0	480.94	<i>Drepanodus</i> sp.	16.88	0.23
Tremadocian	Nanjinguan	108.0	480.98	<i>Tripodus</i> ? sp. & <i>Drepanodus</i> sp.	16.33	0.16
Tremadocian	Nanjinguan	108.0	480.98	<i>Tripodus</i> ? sp. & <i>Drepanodus</i> sp.	15.00	0.19
Tremadocian	Nanjinguan	106.0	481.06	<i>Tripodus</i> ? sp. & <i>Drepanodus</i> sp.	15.48	0.13
Tremadocian	Nanjinguan	105.0	481.10	<i>Tripodus</i> sp. & <i>Tripodus</i> ? sp.	16.62	0.22
Tremadocian	Nanjinguan	104.0	481.14	<i>Oneotodus</i> sp. & <i>Drepanodus</i> ? sp.	15.14	0.07
Tremadocian	Nanjinguan	104.0	481.14	<i>Oneotodus</i> sp. & <i>Drepanodus</i> ? sp.	17.49	0.25
Tremadocian	Nanjinguan	103.0	481.18	<i>Oneotodus</i> ? sp.	16.37	0.32
Tremadocian	Nanjinguan	102.0	481.22	<i>Oneotodus</i> sp. & <i>Drepanodus</i> ? sp.	15.17	0.32
Tremadocian	Nanjinguan	100.0	481.30	<i>Drepanodus</i> sp. & <i>Tripodus</i> ? sp.	16.88	0.08
Tremadocian	Nanjinguan	100.0	481.30	<i>Drepanodus</i> sp. & <i>Tripodus</i> ? sp.	15.11	0.29
Tremadocian	Nanjinguan	98.0	481.39	<i>Drepanodus</i> ? sp.	16.60	0.03
Tremadocian	Nanjinguan	98.0	481.39	<i>Drepanodus</i> ? sp.	14.61	0.11
Tremadocian	Nanjinguan	97.0	481.43	<i>Tripodus</i> ? sp.	16.10	0.17
Tremadocian	Nanjinguan	96.0	481.47	<i>Drepanodus</i> ? sp.	14.79	0.03
Tremadocian	Nanjinguan	95.0	481.51	<i>Drepanodus</i> ? sp. & <i>Drepanodus</i> sp.	16.71	0.11
Tremadocian	Nanjinguan	95.0	481.51	<i>Drepanodus</i> ? sp. & <i>Drepanodus</i> sp.	15.00	0.17
Tremadocian	Nanjinguan	93.0	481.59	<i>Drepanodus</i> ? sp.	16.45	0.06
Tremadocian	Nanjinguan	89.0	481.75	<i>Oneotodus</i> ? sp. & <i>Oneotodus</i> sp.	15.75	0.14

Tremadocian	Nanjinguan	59.0	482.98	<i>Drepanodus</i> sp.	15.57	0.02
Tremadocian	Nanjinguan	59.0	482.98	<i>Drepanodus</i> sp.	16.31	0.08
Tremadocian	Nanjinguan	50.0	483.35	<i>Oneotodus</i> sp.	17.05	0.14
Tremadocian	Nanjinguan	44.0	483.60	<i>Drepanodus</i> sp.	16.34	0.12
Tremadocian	Nanjinguan	44.0	483.60	<i>Drepanodus</i> sp.	15.52	0.10
Tremadocian	Nanjinguan	40.8	483.73	<i>Drepanodus</i> sp.	16.22	0.17
Tremadocian	Nanjinguan	39.8	483.77	<i>Drepanodus?</i> sp. & <i>Drepanodus</i> sp.	16.74	0.11
Tremadocian	Nanjinguan	40.8	483.73	<i>Drepanodus</i> sp.	17.35	0.07
Tremadocian	Nanjinguan	36.8	483.89	<i>Drepanodus</i> sp.	17.67	0.09
Tremadocian	Nanjinguan	35.8	483.93	<i>Drepanodus</i> sp.	16.08	0.14
Tremadocian	Nanjinguan	30.2	484.16	<i>Drepanodus?</i> sp.	16.55	0.10
Tremadocian	Nanjinguan	29.2	484.20	<i>Drepanodus</i> sp.	15.79	0.14
Tremadocian	Nanjinguan	27.2	484.29	<i>Drepanodus?</i> sp.	15.49	0.13
Tremadocian	Nanjinguan	26.9	484.30	<i>Drepanodus?</i> sp. & <i>Drepanodus</i> sp.	15.20	0.13
Tremadocian	Nanjinguan	26.5	484.31	<i>Drepanodus?</i> sp. & <i>Drepanodus</i> sp.	14.80	0.20
Tremadocian	Nanjinguan	26.1	484.33	<i>Drepanodus?</i> sp.	15.05	0.12
Tremadocian	Nanjinguan	26.1	484.33	<i>Drepanodus?</i> sp.	16.53	0.20
Tremadocian	Nanjinguan	24.9	484.38	<i>Drepanodus?</i> sp. & <i>Drepanodus</i> sp.	16.11	0.19
Tremadocian	Nanjinguan	24.6	484.39	<i>Drepanodus?</i> sp.	15.74	0.15
Tremadocian	Nanjinguan	24.2	484.41	<i>Oneotodus</i> sp. & <i>Drepanodus</i> sp.	16.12	0.27
Tremadocian	Nanjinguan	23.9	484.42	<i>Drepanodus</i> sp.	16.66	0.23
Tremadocian	Nanjinguan	23.7	484.43	<i>Drepanodus</i> sp.	16.06	0.21
Tremadocian	Nanjinguan	23.6	484.43	<i>Drepanodus</i> sp.	16.31	0.08
Tremadocian	Nanjinguan	23.5	484.44	<i>Drepanodus</i> sp.	15.42	0.10
Tremadocian	Nanjinguan	23.1	484.45	<i>Oneotodus</i> sp.	16.45	0.22
Tremadocian	Nanjinguan	23	484.46	<i>Drepanodus</i> sp. & <i>Acodus?</i> sp.	16.05	0.40

Data S4. In-situ oxygen isotopes of international reference materials Durango during SIMS analysis.

Sample NO	$\delta^{18}\text{O}$ (‰)	2SE
Durango@1	9.43	0.34
Durango@2	9.39	0.34
Durango@3	9.25	0.28
Durango@4	9.44	0.26
Durango@5	9.17	0.25
Durango@6	9.33	0.19
Durango@7	9.46	0.26
Durango@8	9.31	0.30
Durango@9	9.66	0.38
Durango@10	9.43	0.20
Durango@11	9.47	0.21
Durango@12	9.61	0.27
Durango@13	9.64	0.32
Durango@14	9.40	0.22
Durango@15	9.42	0.29
Durango@16	9.26	0.22
Durango@18	9.35	0.27
Durango@19	9.42	0.34
Durango@20	9.47	0.31
Durango@21	9.38	0.21
Durango@22	9.45	0.29
Durango@23	9.56	0.33
Durango@24	9.43	0.26
Durango@25	9.21	0.25
Durango@27	9.27	0.39
Durango@28	9.23	0.27
Durango@29	9.34	0.33
Durango@30	9.41	0.28
Durango@31	9.42	0.26
Durango@32	9.48	0.17
Durango@33	9.20	0.22
Durango@34	9.43	0.23
Durango@35	9.45	0.29
Durango@36	9.57	0.34
Durango@37	9.39	0.31
Durango@38	9.30	0.23
Durango@39	9.19	0.26
Durango@40	9.64	0.35
Durango@41	9.35	0.31
Durango@42	9.53	0.17
Durango@43	9.24	0.27
Durango@44	9.42	0.31
Durango@45	9.39	0.30
Durango@46	9.38	0.32
Durango@47	9.42	0.26

Durango@48	9.38	0.25
Durango@49	9.52	0.31
Durango@50	9.32	0.31
Durango@51	9.33	0.23
Durango@52	9.46	0.31
Durango@53	9.56	0.20
Durango@54	9.30	0.25
Durango@55	9.51	0.18
Durango@56	9.56	0.28
Durango@57	9.30	0.22
Durango@58	9.20	0.26
Durango@59	9.45	0.26
Durango@60	9.40	0.38
Durango@61	9.27	0.21
Durango@62	9.31	0.37
Durango@63	9.48	0.34
Durango@64	9.21	0.33
Durango@65	9.40	0.28
Durango@66	9.48	0.36
Durango@67	9.67	0.26
Durango@68	9.13	0.29
Durango@69	9.19	0.21
Durango@70	9.30	0.22
Durango@71	9.91	0.26
Durango@72	9.70	0.29
Durango@73	9.27	0.35
Durango@74	9.11	0.34
Durango@75	9.26	0.22
Durango@76	9.73	0.32
Durango@77	9.64	0.33
Durango@78	9.59	0.31
Durango@79	8.99	0.24
Durango@80	9.29	0.44

Data S5. In-situ strontium isotopes of conodont samples.

Age (Ma)	Height (m)	⁸⁷ Sr/ ⁸⁶ Sr	1SD
447.05	311.3	0.70827	0.00069
447.05	311.3	0.70796	0.00059
450.91	293.4	0.70833	0.00068
450.91	293.4	0.70853	0.00079
451.11	292.5	0.70822	0.00099
451.18	292.2	0.70811	0.00042
451.18	292.2	0.70801	0.00035
451.31	291.6	0.70827	0.00042
451.79	289.5	0.70813	0.00082
451.79	289.5	0.70813	0.00060
456.47	282.9	0.70841	0.00053
456.47	282.9	0.70873	0.00061
458.40	282.4	0.70846	0.00026
458.40	282.4	0.70853	0.00054
458.58	282.2	0.70850	0.00018
458.76	281.9	0.70853	0.00069
458.76	281.9	0.70860	0.00045
458.78	281.4	0.70855	0.00023
459.46	280.3	0.70867	0.00025
464.28	272.7	0.70882	0.00028
464.28	272.7	0.70887	0.00026
465.04	271.5	0.70887	0.00067
465.14	271.3	0.70889	0.00031
465.34	271.0	0.70871	0.00028
465.44	270.8	0.70889	0.00045
465.55	270.6	0.70890	0.00036
465.76	270.3	0.70892	0.00022
465.76	270.3	0.70881	0.00025
465.76	270.3	0.70876	0.00037
466.48	269.2	0.70897	0.00031
466.58	269.0	0.70909	0.00056
466.69	268.8	0.70896	0.00030
466.77	259.5	0.70890	0.00018
467.30	257.9	0.70888	0.00023
467.30	257.9	0.70866	0.00030
467.62	253.9	0.70890	0.00045
467.88	250.9	0.70874	0.00034
468.04	248.9	0.70874	0.00035
468.04	248.9	0.70879	0.00016
468.12	247.9	0.70886	0.00026
468.12	247.9	0.70895	0.00019
468.59	242.4	0.70880	0.00020
470.00	225.9	0.70932	0.00044
470.62	222.9	0.70887	0.00014

471.32	220.1	0.70882	0.00031
471.32	220.0	0.70900	0.00046
471.33	219.9	0.70885	0.00019
471.34	219.8	0.70886	0.00016
471.34	219.8	0.70882	0.00032
471.35	219.7	0.70887	0.00032
471.35	219.6	0.70891	0.00031
471.35	219.6	0.70886	0.00030
471.39	219.4	0.70883	0.00028
471.39	219.4	0.70887	0.00042
471.40	219.2	0.70893	0.00037
471.41	219.1	0.70890	0.00018
471.44	218.9	0.70889	0.00017
471.44	218.9	0.70891	0.00033
471.58	218.3	0.70900	0.00035
471.69	217.8	0.70904	0.00022
471.69	217.8	0.70902	0.00030
471.77	217.4	0.70888	0.00017
471.77	217.4	0.70895	0.00038
471.86	217.0	0.70896	0.00025
471.86	217.0	0.70884	0.00031
471.94	216.6	0.70890	0.00028
471.94	216.6	0.70876	0.00050
472.35	214.9	0.70897	0.00039
472.41	211.9	0.70894	0.00019
472.51	210.9	0.70900	0.00039
473.02	208.9	0.70895	0.00018
473.02	208.9	0.70894	0.00041
473.02	208.9	0.70886	0.00057
473.27	207.9	0.70906	0.00041
473.27	207.9	0.70900	0.00041
473.27	207.9	0.70896	0.00045
473.27	207.9	0.70906	0.00035
473.27	207.9	0.70893	0.00040
473.27	207.9	0.70927	0.00038
473.27	207.9	0.70915	0.00056
473.27	207.9	0.70906	0.00028
473.27	207.9	0.70893	0.00031
473.53	206.9	0.70905	0.00070
473.78	205.9	0.70895	0.00046
473.78	205.9	0.70891	0.00019
474.29	203.9	0.70922	0.00032
474.29	203.9	0.70898	0.00053
474.54	202.9	0.70907	0.00041
474.54	202.9	0.70899	0.00029
474.80	201.9	0.70895	0.00027
474.80	201.9	0.70892	0.00032

475.05	200.9	0.70900	0.00030
475.05	200.9	0.70897	0.00017
475.31	199.9	0.70893	0.00026
475.31	199.9	0.70898	0.00026
475.56	198.9	0.70894	0.00022
475.82	197.9	0.70896	0.00042
476.83	193.9	0.70888	0.00046
476.83	193.9	0.70895	0.00035
477.09	192.9	0.70896	0.00018
477.09	192.9	0.70898	0.00022
477.22	192.4	0.70903	0.00039
477.34	191.9	0.70894	0.00023
477.70	190.5	0.70892	0.00015
477.70	190.5	0.70890	0.00015
477.70	190.5	0.70895	0.00024
477.70	190.5	0.70895	0.00019
477.72	189.9	0.70888	0.00033
477.72	189.9	0.70900	0.00032
477.72	189.9	0.70892	0.00035
477.77	187.5	0.70902	0.00073
477.82	186.9	0.70896	0.00032
477.82	186.9	0.70896	0.00022
477.82	186.9	0.70914	0.00037
477.87	185.7	0.70898	0.00013
477.87	185.7	0.70898	0.00016
477.87	185.7	0.70899	0.00033
477.90	185.1	0.70894	0.00015
477.90	185.1	0.70901	0.00033
477.90	185.1	0.70900	0.00033
477.92	184.5	0.70890	0.00023
477.95	183.9	0.70892	0.00028
477.99	182.7	0.70892	0.00024
477.99	182.7	0.70896	0.00031
478.02	182.1	0.70896	0.00021
478.04	181.5	0.70892	0.00024
478.04	181.5	0.70893	0.00017
478.07	180.9	0.70906	0.00020
478.15	178.9	0.70889	0.00044
478.15	178.9	0.70899	0.00050
478.15	178.9	0.70898	0.00037
478.15	178.9	0.70905	0.00027
478.15	178.9	0.70902	0.00028
478.15	178.9	0.70919	0.00030
478.15	178.9	0.70902	0.00025
478.15	178.9	0.70905	0.00035
478.15	178.9	0.70887	0.00031
478.30	175.3	0.70901	0.00027

478.33	174.6	0.70895	0.00023
478.36	173.9	0.70919	0.00029
478.36	173.9	0.70903	0.00037
478.36	173.9	0.70899	0.00027
478.48	170.9	0.70912	0.00026
478.52	169.9	0.70895	0.00029
478.52	169.9	0.70889	0.00031
478.52	169.9	0.70897	0.00017
479.14	154.7	0.70897	0.00040
479.32	150.4	0.70894	0.00021
479.32	150.4	0.70888	0.00074
479.42	147.9	0.70889	0.00033
479.42	147.9	0.70893	0.00041
480.09	135.4	0.70888	0.00035
480.09	135.4	0.70901	0.00031
480.18	129.4	0.70908	0.00030
480.30	126.9	0.70894	0.00023
480.30	126.9	0.70894	0.00029
480.33	126.5	0.70897	0.00027
480.33	126.5	0.70913	0.00035
480.41	123.7	0.70896	0.00033
480.57	119.9	0.70888	0.00034
480.57	119.9	0.70893	0.00042
480.65	117.9	0.70900	0.00024
480.67	116.9	0.70904	0.00020
480.67	116.9	0.70904	0.00019
480.69	115.9	0.70897	0.00013
480.69	115.9	0.70906	0.00014
480.69	115.9	0.70902	0.00018
480.73	114.9	0.70903	0.00032
480.73	114.9	0.70896	0.00029
480.73	114.9	0.70902	0.00017
480.81	112.9	0.70892	0.00027
480.81	112.9	0.70908	0.00019
480.81	112.9	0.70903	0.00037
480.81	112.9	0.70912	0.00073
480.85	111.9	0.70897	0.00054
480.85	111.9	0.70902	0.00017
480.85	111.9	0.70901	0.00017
480.89	110.9	0.70903	0.00017
480.89	110.9	0.70901	0.00011
480.94	109.9	0.70901	0.00022
480.94	109.9	0.70894	0.00034
480.98	108.9	0.70906	0.00031
480.98	108.9	0.70882	0.00058
481.06	106.9	0.70906	0.00027
481.06	106.9	0.70905	0.00050

481.10	105.9	0.70894	0.00050
481.10	105.9	0.70905	0.00048
481.14	104.9	0.70898	0.00014
481.14	104.9	0.70903	0.00028
481.18	103.9	0.70903	0.00013
481.18	103.9	0.70907	0.00018
481.22	102.9	0.70908	0.00024
481.22	102.9	0.70899	0.00018
481.30	100.9	0.70904	0.00017
481.30	100.9	0.70904	0.00024
481.39	98.9	0.70904	0.00027
481.43	97.9	0.70902	0.00017
481.43	97.9	0.70905	0.00021
481.51	95.9	0.70906	0.00021
481.51	95.9	0.70907	0.00027
481.59	93.9	0.70900	0.00028
481.75	89.9	0.70908	0.00032
482.30	71.9	0.70909	0.00025
483.35	50.9	0.70927	0.00058
483.60	44.9	0.70907	0.00018
483.60	44.9	0.70904	0.00063
483.60	44.9	0.70907	0.00026
483.60	44.9	0.70907	0.00074
483.73	41.7	0.70903	0.00030
483.77	40.7	0.70897	0.00030
483.77	40.7	0.70904	0.00027
483.77	40.7	0.70900	0.00018
483.73	41.7	0.70905	0.00030
483.89	37.7	0.70918	0.00061
483.93	36.7	0.70896	0.00022
483.93	36.7	0.70917	0.00030
483.93	36.7	0.70906	0.00026
484.16	31.1	0.70904	0.00028
484.20	30.1	0.70892	0.00027
484.30	27.8	0.70926	0.00067
484.30	27.8	0.70911	0.00034
484.31	27.4	0.70912	0.00058
484.31	27.4	0.70904	0.00025
484.33	27.0	0.70910	0.00034
484.38	25.8	0.70906	0.00023
484.38	25.8	0.70894	0.00022
484.39	25.5	0.70894	0.00022
484.39	25.5	0.70901	0.00012
484.39	25.5	0.70908	0.00017
484.41	25.1	0.70902	0.00013
484.41	25.1	0.70902	0.00023
484.41	25.1	0.70903	0.00019

484.41	25.1	0.70901	0.00021
484.42	24.8	0.70903	0.00019
484.42	24.8	0.70907	0.00032
484.43	24.6	0.70905	0.00015
484.43	24.6	0.70904	0.00020
484.43	24.6	0.70906	0.00020
484.43	24.6	0.70903	0.00015
484.43	24.5	0.70905	0.00020
484.43	24.5	0.70904	0.00018
484.45	24.0	0.70909	0.00014
484.46	23.9	0.70906	0.00021
484.46	23.9	0.70904	0.00036
484.46	23.9	0.70901	0.00027

Data S6. Linear sedimentation rate of the study sections. Age of the base of each stage according to the Geologic Time Scale 2020.

	Stage	Age for base (Ma)	Linear sedimentation rate (m/Myr)
Silurian	Rhuddanian	443.8±1.5	1.1
Upper Ordovician	Hirnantian	445.2±1.4	1.1
	Katian	453.0±0.7	4.3
	Sandbian	458.4±0.9	0.2
Middle Ordovician	Darriwilian	467.3±1.1	3.0
	Dapingian	470.0±1.4	11.6
Lower Ordovician	Floian	477.7±1.4	3.9
	Tremadocian	485.4±1.9	24.4