



Supplement of

Permian-Triassic redox shift and its ferruginous aftermath in epicontinental seas

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Table S1 Iron proxies of the Ursula Creek section

Formation	Sample	Deposition (cm)	Fe _T (wt%)	Fe _{carb} (wt%)	Fe _{ox} (wt%)	Fe _{mag} (wt%)	Fe _{py} (wt%)	Fe _{HR} (wt%)	Fe _{carb} /Fe _{HR}	Fe _{ox} /Fe _{HR}	Fe _{mag} /Fe _{HR}	Fe _{py} /Fe _{HR}	Fe _{HR} /Fe _T	Fe/Al	(Fe _{py} +Fe _{ox})/Fe _{HR}
Grayling	UC75	3160	2.49	0.47	0.63	0.02	1.17	2.29	0.21	0.27	0.01	0.51	0.92	0.45	0.78
	UC73	2860	1.22	0.08	0.18	0.01	0.04	0.30	0.26	0.58	0.04	0.12	0.25	0.20	0.70
	UC70	2580	3.00	0.60	2.29	0.03	0.03	2.95	0.20	0.78	0.01	0.01	0.98	0.60	0.79
	UC68	2380	1.96	0.16	1.73	0.04	0.00	1.94	0.08	0.89	0.02	0.00	0.99	0.31	0.89
	UC64	2170	2.70	0.09	2.03	0.07	0.06	2.25	0.04	0.90	0.03	0.02	0.83	0.42	0.92
	UC56	1910	3.10	0.86	2.17	0.02	0.03	3.08	0.28	0.71	0.01	0.01	0.99	1.40	0.72
	UC54	1870	0.54	0.06	0.42	0.01	0.04	0.54	0.12	0.78	0.03	0.07	1.00	0.10	0.85
	UC53	1850	1.13	0.12	0.76	0.02	0.08	0.98	0.13	0.77	0.02	0.08	0.86	0.21	0.85
	UC52	1830	2.93	0.10	2.02	0.05	0.04	2.21	0.05	0.92	0.02	0.02	0.75	0.53	0.94
	UC51	1810	1.29	0.03	0.89	0.02	0.03	0.98	0.03	0.91	0.02	0.03	0.76	0.25	0.94
	UC50	1790	1.27	0.06	0.83	0.02	0.04	0.95	0.06	0.87	0.02	0.04	0.75	0.23	0.91
	UC49	1770	2.91	0.18	2.39	0.04	0.05	2.67	0.07	0.90	0.01	0.02	0.92	0.53	0.92
	UC48	1750	3.89	0.95	2.73	0.04	0.01	3.72	0.25	0.73	0.01	0.00	0.96	2.66	0.73
	UC46	1710	1.08	0.13	0.94	0.03	0.05	1.14	0.11	0.82	0.02	0.04	1.06	0.19	0.86
	UC45	1690	1.40	0.10	1.03	0.03	0.08	1.25	0.08	0.82	0.02	0.07	0.89	0.25	0.89
	UC44	1670	1.37	0.05	0.96	0.02	0.13	1.15	0.04	0.83	0.02	0.11	0.84	0.24	0.94
	UC43	1650	1.90	0.13	1.41	0.03	0.12	1.70	0.08	0.83	0.02	0.07	0.89	0.31	0.90
	UC42	1630	2.68	0.19	1.88	0.04	0.00	2.10	0.09	0.89	0.02	0.00	0.78	0.40	0.89
	UC40	1580	1.66	0.05	0.87	0.02	0.05	0.98	0.05	0.88	0.02	0.05	0.59	0.23	0.93
	UC39	1560	1.56	0.09	1.34	0.03	0.01	1.47	0.06	0.91	0.02	0.00	0.94	0.25	0.91
	UC37	1520	2.68	0.18	2.32	0.05	0.00	2.54	0.07	0.91	0.02	0.00	0.95	0.38	0.91
	UC35	1480	4.67	0.66	2.17	0.03	1.77	4.63	0.14	0.47	0.01	0.38	0.99	0.98	0.85
Fantasque	UC34	1477	0.89	0.06	0.47	0.04	0.13	0.71	0.08	0.67	0.06	0.19	0.80	0.37	0.86
	UC33	1460	0.78	0.12	0.32	0.06	0.15	0.65	0.18	0.49	0.09	0.23	0.84	0.49	0.72
	UC32	1440	0.64	0.16	0.30	0.03	0.16	0.66	0.25	0.46	0.05	0.24	1.03	0.32	0.70
	UC31	1420	0.60	0.16	0.15	0.05	0.13	0.49	0.33	0.30	0.11	0.26	0.82	0.33	0.56
	UC30	1400	0.91	0.11	0.43	0.04	0.11	0.69	0.15	0.63	0.06	0.15	0.75	0.35	0.78
	UC28	1360	0.84	0.10	0.51	0.03	0.09	0.73	0.14	0.69	0.04	0.13	0.87	0.36	0.82
	UC27	1300	0.56	0.15	0.18	0.08	0.13	0.54	0.28	0.34	0.14	0.24	0.97	0.37	0.58
	UC26	1250	0.54	0.05	0.27	0.06	0.00	0.39	0.14	0.70	0.16	0.00	0.72	0.39	0.70
	UC25	1200	0.77	0.08	0.53	0.04	0.04	0.69	0.12	0.77	0.06	0.05	0.89	0.53	0.82
	UC22	1050	0.52	0.06	0.30	0.08	0.09	0.53	0.12	0.56	0.15	0.17	1.01	0.41	0.73
	UC20	950	0.70	0.15	0.23	0.06	0.13	0.56	0.26	0.40	0.11	0.23	0.81	0.61	0.63
	UC18	850	0.62	0.05	0.37	0.05	0.00	0.48	0.11	0.78	0.11	0.00	0.77	0.36	0.78
	UC12	550	0.66	0.07	0.47	0.05	0.00	0.59	0.11	0.80	0.09	0.00	0.89	0.30	0.80

Table S2 Iron proxies of the Chibi section

Formation	Sample	Deposition (cm)	Fe _T (wt%)	Fe _{carb} (wt%)	Fe _{ox} (wt%)	Fe _{mag} (wt%)	Fe _{py} (wt%)	Fe _{HR} (wt%)	Fe _{carb} /Fe _{HR}	Fe _{ox} /Fe _{HR}	Fe _{mag} /Fe _{HR}	Fe _{py} /Fe _{HR}	Fe _{HR} /Fe _T	Fe/Al	(Fe _{py} +Fe _{ox})/Fe _{HR}
Daye	CBB30-8	510	0.53	0.26	0.03	0.01	0.12	0.42	0.62	0.06	0.02	0.3	0.8	0.62	0.36
	CBB35-1	278	0.57	0.15	0.04	0.01	0.22	0.42	0.36	0.09	0.03	0.53	0.73	0.46	0.62
	CBB36-4	121	0.6	0.3	0.02	0.01	0.04	0.37	0.8	0.06	0.03	0.11	0.63	0.57	0.17
	CBB38-20cm	84	0.62	0.27	0.03	0.01	0.08	0.39	0.69	0.08	0.02	0.21	0.63	0.53	0.29
	CBB38-7	54	1.46	0.27	0.04	0.03	0.25	0.59	0.47	0.07	0.04	0.42	0.4	0.38	0.49
	CBB38-8	34	1.2	0.35	0.04	0.02	0.37	0.78	0.45	0.05	0.03	0.48	0.65	0.49	0.53
	CBB40-9cm	13	1.21	0.2	0.04	0.02	0.49	0.75	0.27	0.06	0.02	0.65	0.62	0.47	0.71
	CBB41-1	6	1.37	0.51	0.04	0.03	0.21	0.79	0.65	0.05	0.03	0.27	0.58	0.53	0.32
	CBB43-10cm	-38	2.6	0.34	0.06	0.04	0.7	1.14	0.3	0.05	0.04	0.61	0.44	0.46	0.66
	CBB43-2	-43	1.62	0.54	0.05	0.03	0.33	0.95	0.57	0.05	0.03	0.35	0.58	0.37	0.4
	CBB45-1	-49	2.39	0.44	0.05	0.04	0.68	1.22	0.36	0.04	0.04	0.56	0.51	0.41	0.6
	CBB45-3	-66	1.81	0.62	0.05	0.04	0.32	1.03	0.6	0.05	0.04	0.31	0.57	0.40	0.36
	CBB47-24cm	-79	1.09	0.92	0.05	0.01	0.15	1.13	0.82	0.04	0.01	0.13	1.04	1.21	0.17
	CBB47-3cm	-100	1.39	0.85	0.05	0.01	0.29	1.2	0.71	0.04	0.01	0.24	0.87	1.12	0.28
Talung	CBB49-1cm	-116	5.68	0.33	0.17	0.01	3.49	4	0.08	0.04	0	0.87	0.7	0.67	0.91
	CBB49-2	-170	0.93	0.8	0.03	0	0.09	0.92	0.87	0.03	0	0.1	0.99	6.65	0.13
	CBB49-4	-218	0.82	0.52	0.03	0	0.18	0.72	0.71	0.04	0	0.25	0.88	1.67	0.29
	CBB50-10	-538	0.93	0.25	0.03	0	0.63	0.91	0.27	0.03	0	0.69	0.98	0.50	0.72
	CBB54-3	-1242	1.69	0.11	0.1	0.01	1.46	1.67	0.06	0.06	0	0.87	0.99	0.75	0.93

Table S3 Mo and U concentrations, enrichment factors and their ratios of the Ursula Creek section

Formation	Sample	Deposition(m)	Mo	U	Al	Mo _{EF}	U _{EF}	Mo _{EF} /U _{EF}	Mo/U
Grayling	UC75	31.6	3.3	5.6	18.0	5.5	3.3	3.3	0.6
	UC74	30.1	14.4	4.1	5.5	21.9	6.8	3.2	3.5
	UC73	28.6	8.2	3.0	6.1	11.4	4.6	2.5	2.7
	UC72	27.4	22.3	5.2	6.3	29.5	7.6	3.9	4.3
	UC71	26.8	12.8	4.7	5.3	20.1	8.1	2.5	2.7
	UC70	25.8	12.8	4.0	5.0	21.3	7.3	2.9	3.2
	UC69	24.8	20.3	4.0	6.2	27.4	5.9	4.6	5.1
	UC68	23.8	28.6	7.4	6.3	38.3	10.9	3.5	3.9
	UC67	22.8	7.9	2.5	4.0	16.7	5.8	2.9	3.2
	UC66	22.6	146.8	15.0	7.0	175.2	19.7	8.9	9.8
	UC65	22.5	27.7	13.4	9.2	25.4	13.5	1.9	2.1
	UC64	21.7	22.5	6.3	6.4	29.4	9.0	3.3	3.6
	UC63	20.7	41.5	6.8	6.6	52.7	9.5	5.6	6.1
	UC62	20.5	6.8	7.4	6.0	9.6	11.5	0.8	0.9
	UC61	20.3	14.4	7.4	6.0	20.2	11.4	1.8	2.0
	UC60	20.1	24.8	4.9	6.0	34.8	7.5	4.6	5.1
	UC59	19.9	11.6	5.5	5.7	17.1	8.9	1.9	2.1
	UC58	19.7	12.8	4.1	6.0	17.9	6.3	2.8	3.1
	UC57	19.4	19.0	4.9	6.0	26.7	7.6	3.5	3.9
	UC56	19.1	5.5	1.6	2.2	20.9	6.7	3.1	3.5
	UC55	18.9	13.6	7.4	6.0	19.1	11.4	1.7	1.8
	UC54	18.7	6.3	7.1	5.3	10.0	12.3	0.8	0.9
	UC53	18.5	17.3	6.4	5.5	26.4	10.8	2.5	2.7
	UC52	18.3	17.8	7.2	5.5	27.3	12.1	2.3	2.5
	UC51	18.1	13.5	7.3	5.2	22.0	13.1	1.7	1.9
	UC50	17.9	23.4	9.4	5.5	35.7	15.7	2.3	2.5
	UC49	17.7	24.8	6.7	5.5	38.2	11.3	3.4	3.7
	UC48	17.5	7.8	3.7	1.5	44.8	23.4	1.9	2.1
	UC47	17.3	12.5	6.6	5.7	18.5	10.7	1.7	1.9
	UC46	17.1	23.5	7.0	5.6	35.1	11.5	3.1	3.4
	UC45	16.9	38.1	6.5	5.6	56.8	10.7	5.3	5.9
	UC44	16.7	32.4	9.9	5.6	48.3	16.2	3.0	3.3
	UC43	16.5	22.0	11.0	6.2	29.8	16.3	1.8	2.0
	UC42	16.3	20.5	4.0	6.7	25.9	5.6	4.7	5.1
	UC41	16.0	3.0	1.3	1.3	19.2	9.1	2.1	2.3
	UC40	15.8	16.6	4.6	7.1	19.6	6.0	3.3	3.6
	UC39	15.6	12.5	5.0	6.2	17.0	7.4	2.3	2.5
	UC38	15.4	10.6	4.7	6.2	14.4	7.0	2.1	2.3
	UC37	15.2	37.1	7.1	7.0	44.3	9.3	4.8	5.2
	UC36	15.0	0.6	1.4	2.4	2.2	5.3	0.4	0.5
	UC35	14.8	3.2	3.3	4.8	5.6	6.4	0.9	1.0
	UC34	14.8	0.4	1.4	2.4	1.5	5.4	0.3	0.3
	UC33	14.6	0.3	1.0	1.6	1.7	5.8	0.3	0.3
	UC32	14.4	0.3	0.9	2.0	1.2	4.2	0.3	0.3
	UC31	14.2	0.2	0.8	1.8	1.0	4.0	0.3	0.3
	UC30	14.0	0.4	1.2	2.6	1.2	4.2	0.3	0.3
	UC29	13.8	0.2	0.7	1.7	1.2	3.9	0.3	0.3
	UC28	13.6	0.4	1.1	2.4	1.6	4.3	0.4	0.4
	UC27	13.0	0.4	2.1	1.5	2.3	12.7	0.2	0.2
	UC26	12.5	0.3	1.1	1.4	1.7	7.3	0.2	0.3

Fantasque	UC25	12.0	0.8	0.9	1.5	4.5	5.7	0.8	0.9
	UC24	11.5	0.3	0.7	1.3	2.1	5.0	0.4	0.5
	UC23	11.0	1.6	1.7	2.2	6.2	7.1	0.9	1.0
	UC22	10.5	1.3	1.2	1.3	8.9	8.8	1.0	1.1
	UC21	10.0	3.3	2.1	1.2	23.7	16.6	1.4	1.6
	UC20	9.5	2.4	2.2	1.2	17.4	17.7	1.0	1.1
	UC19	9.0	4.8	2.0	1.6	25.6	11.7	2.2	2.4
	UC18	8.5	1.8	1.3	1.7	9.0	7.1	1.3	1.4
	UC17	8.0	0.4	0.4	0.6	5.3	6.7	0.8	0.9
	UC16	7.5	0.2	0.5	0.8	2.4	5.7	0.4	0.5
	UC15	7.0	0.4	1.0	2.4	1.5	3.8	0.4	0.4
	UC14	6.5	0.2	0.5	2.5	0.6	1.8	0.3	0.4
	UC13	6.0	0.2	0.3	1.8	1.0	1.6	0.6	0.7
	UC12	5.5	0.4	0.6	2.2	1.6	2.5	0.6	0.7
	UC11	5.0	0.2	0.5	1.7	1.0	2.7	0.4	0.4
	UC10	4.5	0.1	0.3	1.4	0.7	1.9	0.4	0.4
	UC9	4.0	0.2	0.2	1.0	1.4	1.9	0.7	0.8
	UC8	3.5	0.2	0.3	1.3	1.1	2.2	0.5	0.6
	UC7	3.0	0.5	0.3	1.2	3.1	2.3	1.4	1.5
	UC6	2.5	0.3	0.5	0.7	3.8	6.7	0.6	0.6
	UC5	2.0	0.5	1.4	2.2	2.0	5.9	0.3	0.4
	UC4	1.5	0.2	0.9	0.6	3.0	13.4	0.2	0.2
	UC3	1.0	0.5	0.9	1.2	3.2	6.9	0.5	0.5
	UC2	0.5	0.3	1.2	2.4	1.1	4.7	0.2	0.3
	UC1	0.0	0.3	0.7	1.0	2.7	6.5	0.4	0.5

Table S4 Mo and U concentrations, enrichment factors and their ratios of the Chibi section

Formation	Sample	Deposition(cm)	Mo	U	Al	Mo _{EF}	U _{EF}	Mo _{EF} /U _{EF}	Mo/U
Daye	28	452	0.07	0.55	0.53	1.11	9.58	0.12	0.13
	27	407	0.06	0.59	0.79	0.64	6.89	0.09	0.10
	26	251	0.22	0.83	1.17	1.58	6.55	0.24	0.27
	25	177	0.06	0.64	0.45	1.12	13.13	0.09	0.09
	24	106	0.18	1.01	1.58	0.96	5.90	0.16	0.18
	23	75	0.24	1.63	3.86	0.52	3.90	0.13	0.15
	22	68	0.08	1.62	2.46	0.27	6.08	0.04	0.05
	21	60	0.27	3.07	3.30	0.69	8.59	0.08	0.09
	20	52	0.57	3.94	1.84	2.60	19.77	0.13	0.14
	19	49	0.08	1.24	3.16	0.21	3.62	0.06	0.06
	18	39	0.09	1.18	2.85	0.27	3.82	0.07	0.08
	17	24	0.32	5.69	2.90	0.93	18.11	0.05	0.06
	16	-20	0.66	43.00	1.46	3.80	271.87	0.01	0.02
	15	-55	9.55	9.73	0.75	106.96	119.75	0.89	0.98
Talung	14	-95	13.75	7.73	2.15	53.72	33.19	1.62	1.78
	13	-175	10.65	8.53	2.27	39.41	34.69	1.14	1.25
	12	-210	12.55	7.79	0.19	554.84	378.46	1.47	1.61
	11	-260	13.10	8.50	2.81	39.16	27.92	1.40	1.54
	10	-325	4.13	2.44	0.69	50.28	32.64	1.54	1.69
	9	-395	7.76	8.28	2.19	29.76	34.90	0.85	0.94
	8	-425	16.90	2.29	0.18	788.67	117.44	6.72	7.38
	7	-480	6.20	3.94	1.56	33.38	23.31	1.43	1.57
	6	-520	2.06	5.11	0.11	157.31	428.81	0.37	0.40
	5	-541	14.65	3.32	1.82	67.62	16.84	4.02	4.41
	4	-731	46.80	5.26	0.64	614.25	75.87	8.10	8.90
	3	-801	22.70	3.16	0.58	328.76	50.29	6.54	7.18
	2	-861	36.90	15.05	2.56	121.08	54.27	2.23	2.45
	1	-946	67.60	7.02	1.68	338.00	38.57	8.76	9.63