

Table S1. Organic geochemical parameters of the Lower Cambrian marine shale in the middle and lower Yangtze region (including organic matter types, TOC (%) and Ro (%)).

Region	Section /Well	Formation	Organic Geochemical Characteristics of Shales			Data Sources
			OM type	TOC (%)	Ro (%)	
Middle Yangtze	YY-1	Shuijingtuo	I and II ₁	0.52~5.96/2.26*	2.23~2.35/2.31	[65]
	YD-2	Shuijingtuo	I and II ₁	0.42~5.96/2.05	2.18~2.29/2.25	[64]
	WD-1	Shuijingtuo	no data.	3.37~8.60/4.96	no data.	[43]
	WD-2	Shuijingtuo	no data.	1.59~7.45/3.43	no data.	[43]
	HY-1	Shuijingtuo	I and II ₁	1.16~13.30/5.85	2.00~3.60/2.80	[58]
	(Ci)CY-1	Shuijingtuo	I and II ₁	1.79~6.44/4.83	3.02~3.53/3.28	[118]
	TD-1	Shuijingtuo	no data.	0.17~36.23/8.63	2.61~3.52/3.00	[59]
	JSL	Shuijingtuo	no data.	1.02~2.97/1.52	2.65~4.15	[62]
	(Chang)CY-1	Shuijingtuo	I and II ₁	0.03~17.6/3.90	2.02~3.13/2.60	[63]
Lower Yangtze	HTC	Hetang	I	0.11~17.72/7.67	3.84~5.08/4.62	This study
	WY-1	Hetang	I	2.07~11.90/5.90	2.70~4.8/3.96	[46]
	(Xuan)XY-1	Hetang	I	1.01~14.51/5.59	2.70~5.40/4.05	[46]
	LY	Hetang	I	0.16~14.30/4.01	2.57~4.41/3.73	This study
	DB	Hetang	I	0.19~15.10/4.29	2.76~3.76/3.13	This study
	ZJD-1	Hetang	I	1.93~16.93/5.67	2.68~3.22/2.91	[45]
	PM1	Wangyinpu	I	0.04~13.14/4.57	3.29~3.68/3.42	[86]
	ZLB	Wangyinpu	I	0.80~13.48/7.61	2.33~3.47/3.06	[119]
	(Xiu)XY-1	Wangyinpu	I	3.13~17.18/11.0	3.20~4.66/4.19	This study
	JJD	Wangyinpu	I	8.29~25.1/14.02	3.06~3.85/3.47	This study

Note: *OM=organic matter; number 1 ~ number 2 / number 3 represent min ~ max/ mean,respectively.

Table S2. Main mineral component content (%) of the Lower Cambrian marine shale in the middle and lower Yangtze region.

Region	Section /Well	Formation	Main Mineral Component Content (%)						Data Sources
			Quartz	Feldspar	Pyrite	Calcite	Dolomite	Clay	
Middle Yangtze	YY-1	Shuijingtuo	14.5~45.5/30.7*	1.9~14.3/5.5	1.7~13.2/5.9	13.8~61.3/26.2		15.8~45.1/31.7	[14]
	WD-1	Shuijingtuo	36.0~46.4/40.9	2.1~12.1/6.7	6.3~12.8/8.9	3.4~26.4/10.9	7.9~18.2/11.8	8.4~35.8/18.4	[43]
	WD-2	Shuijingtuo	16.7~50.6/31.7	3.4~12.8/5.9	0.0~10.9/4.2	4.3~31.0/20.8	5.6~18.4/11.2	19.9~37.2/24.8	[43]
	HY-1	Shuijingtuo	44.0	10.4	8.5	13.0	0.7	21.4	[58]
	CY-1	Shuijingtuo	41.4	9.6	6.4	8.6	7.5	26.4	[58]
	ZZK	Shuijingtuo	31.9~41.6/36.8	19.4~19.7/19.6	0.1~6.0/3.1	1.3~18.9/10.1	no data.	21.4~21.6/21.5	[66]
	JSL	Shuijingtuo	38.0~47.2/43.7	7.7~12.9/9.8	1.0~1.9/1.4	5.5~27.5/16.5	0.0~1.0/0.1	18.3~21.7/20.3	[66]
Lower Yangtze	HTC	Hetang	31.0~48.0/39.4	4.0~13.0/8.9	2.0~4.0/3.2	3.0~9.0/6.0	0.0~9.0/3.1	35.0~41.0/38.4	This study
	TLL	Hetang	31.0~37.0/34.8	9.0~15.0/11.3	1.0~4.0/2.3	2.0~5.0/3.9	0.0~5.5/3.1	41.0~51.0/44.8	This study
	WY-1	Hetang	47.2~96.9/70.1	0.0~14.8/9.8	0.8~5.3/3.3	0.5~7.2/3.9	no data.	1.9~29.9/15.3	[46]
	-	Hetang	5.5~92.8/64.6	0.0~8.9/1.6	0.0~8.2/1.3	0.0~51.8/4.0	0.0~38.6	1.0~49.0/23.6	[120]
	DT	Hetang	71.7~85.9/75.8	4.2~9.7/7.1	0.0~3.5/0.7	no data.	2.5~3.9/3.1	7.4~13.5/11.2	This study
	LY	Hetang	53.6~86.3/76.1	0.0~14.7/5.4	0.0~1.9/0.6	no data.	2.2~9.8/4.7	6.4~20.5/11.7	This study
	ZJD-1	Hetang	35.6~72.5/62.2	0~5.9/2.2	2.2~11.7/6.0	0.5~14.5/5.3	1.9~13.1/6.2	6.9~20.6/14.6	[45]
	-	Hetang	21.5~98.8/75.6	0.0~18.2/4.5	0.0~13.7/1.9	0.0~4.8/0.3	0.0~43.7/5.0	1.2~33.3/11.7	[121]
	PM1	Wangyinpu	31.4~40.8/36.3	22.5~36.9/28.7	0.0~4.1/1.6	5.8~15.9/10.2		21.2~26.7/23.2	[86]
	-	Wangyinpu	61.9	4.8	-	no data.	no data.	15.4~29.3/23.9	[68]
	-	Wangyinpu	62.6~97.2/77.8	0.0~17.1/5.1	0.0~3.8/1.1	no data.	0.0~1.3/0.2	8.6~31.3/15.2	[67]

Note: *number 1 ~ number 2 / number 3 represent min ~ max/ mean,respectively