DR2009009

Lu et al. Supplemental Files

Table DR1. Carbon and Oxygen isotopes of bulk carbonate in shale.

Sample Depth TVD (m)	$\delta^{13}C$ ‰ $_{V\text{-}PDB}$	$\delta^{18}O$ ‰ $_{V\text{-}PDB}$	$\delta^{18}O$ ‰ $_{V\text{-}SMOW}$
Well 16/8b-A2			
3960.26	-3.98	-6.90	23.80
3960.43	-4.25	-7.31	23.37
3960.66	-3.83	-7.89	22.77
3960.86	-4.66	-6.97	23.73
3961.06	-6.11	-9.52	21.09
3961.22	-5.02	-6.47	24.24
3961.49	-5.39	-7.65	23.02
3961.90	-3.25	-8.48	22.16
3962.16	-5.90	-7.16	23.52
3962.63	-6.23	-8.25	22.40
3963.06	-8.90	-9.55	21.06
3963.45	-4.36	-9.23	21.39
3963.84	-4.12	-6.08	24.65
3964.25	-6.33	-9.35	21.27
3964.78	-4.33	-6.56	24.15
3965.13	-6.48	-10.53	20.06
3965.70	-4.62	-8.56	22.08
3966.06	-6.72	-7.47	23.21
3966.63	-6.25	-7.44	23.24
3967.05	-3.87	-6.15	24.57
3967.61	-6.43	-7.67	23.00
3968.04	-6.15	-8.39	22.26
3968.47	-5.80	-8.88	21.76
3968.69	-4.22	-7.94	22.73
3969.20	-5.73	-10.15	20.44
3969.69	-5.18	-8.09	22.57
3970.32	-4.05	-7.34	23.35
3970.94	-5.89	-10.74	19.84
3971.14	-6.29	-8.76	21.87
3971.58	-7.40	-8.73	21.91
3972.03	-7.12	-9.06	21.57
3972.60	-5.42	-7.90	22.76
3973.00	-6.95	-9.77	20.84
3973.62	-6.48	-8.74	21.90
3974.76	-6.02	-9.93	20.67
3975.14	-6.27	-8.65	22.00
3975.66	-6.58	-9.77	20.84
3976.04	-5.93	-9.24	21.39
3976.73	-5.82	-9.57	21.04
3977.04	-5.55	-8.81	21.83
3977.18	-5.52	-8.68	21.96
3977.42	-5.93	-12.23	18.30
3977.72	-4.96	-8.93	21.71
3978.22	-5.03	-10.39	20.20
3978.63	-4.36	-8.04	22.62
3978.79	-4.48	-10.45	20.14
3979.18	-3.97	-10.47	20.12
3979.37	-3.95	-8.47	22.18

3979.59	-4.39	-11.09	19.47
3979.98	-3.85	-9.03	21.60
3980.17	-3.35	-8.26	22.40
3980.34	-3.17	-9.00	21.63
3980.80	-3.36	-8.72	21.92
3981.06	-3.21	-8.30	22.35
3981.49	-2.87	-7.87	22.80
3981.78	-4.23	-10.92	19.65
3982.01	-3.05	-7.91	22.76
3982.20	-2.88	-11.88	18.67
3982.41	-2.31	-11.46	19.10
3982.75	-1.95	-11.97	18.57
3982.92	-1.83	-11.25	19.31
3983.01	-1.91	-9.50	21.11
3983.05	-1.91	-8.04	22.62
3983.15	-2.02	-11.57	18.98
3983.45	-0.77	-9.05	21.58
3983.49	-1.25	-12.33	18.20
3983.69	-1.94	-12.49	18.03
3983.80	-1.71	-11.36	19.20
3984.41	-3.12	-11.85	18.69
3984.80	-4.63	-10.85	19.73
3986.48	-3.47	-11.49	19.07
3986.65	-2.95	-13.70	16.79
3990.21	-4.61	-11.91	18.63
3991.33	-3.68	-12.03	18.51
3991.95	-0.65	-12.79	17.73
4002.25	-0.69	-11.87	18.67
4002.45	-0.66	-10.34	20.25
4004.25	-0.98	-10.66	19.92
4004.81	-1.62	-11.11	19.45
Well 9/28b-17			
4413.30	-2.84	-9.07	21.56
4413.97	-4.05	-5.86	24.87
4414.86	-1.78	-9.66	20.95
4416.11	-4.79	-6.72	23.99
4419.31	-2.84	-10.02	20.58
4419.33	-3.66	-4.99	25.76
4420.74	-4.19	-10.50	20.08
4423.27	-2.32	-7.69	22.98
4423.93	-3.91	-12.89	17.62
4425.57	-1.62	-9.86	20.74
4430.01	-5.57	-10.59	20.00
4431.86	-5.66	-9.22	21.41
4434.20	-2.01	-7.61	23.06
4436.08	-4.31	-9.81	20.80
4440.03	-3.42	-10.62	19.96
4440.55	1.12	-6.90	23.79
4441.13	-1.76	-10.73	19.85
4441.99	-1.16	-9.62	20.99
4443.32	-0.88	-4.98	25.78
4443.79	0.65	-6.87	23.83
4443.69	0.01	-8.16	22.50
4444.62	-2.21	-8.76	21.88

4445.10	-1.67	-5.47	25.27
4446.92	-1.58	-5.96	24.76
4446.96	-1.00	-7.64	23.03
4447.97	-2.80	-9.09	21.54
4448.85	1.77	-10.05	20.55
4449.52	-0.96	-8.70	21.94
4450.03	-2.61	-9.15	21.48
4452.49	-2.27	-11.14	19.42
4453.38	-2.21	-7.63	23.05

Table DR2. Inorganic carbon content of the shale samples from well 16/8b-A2.

Sample Depth TVD (m)	Inorganic C content wt%
3960.43	0.18
3960.66	0.12
3960.86	0.16
3961.22	0.27
3961.90	0.09
3962.16	0.27
3962.63	0.06
3963.84	0.20
3966.06	0.34
3966.63	0.26
3967.61	0.28
3968.69	0.15
3969.20	0.22
3969.69	0.19
3970.94	0.16
3971.14	0.25
3972.60	0.21
3973.62	0.30
3974.76	0.11
3975.14	0.37
3976.04	0.31
3977.18	0.25
3977.72	0.21
3978.79	0.25
3979.18	0.12
3979.98	0.30
3980.17	0.04
3980.34	0.19
3981.06	0.17
3981.49	0.15
3981.78	0.07
3982.20	0.03
3982.41	0.08
3983.49	0.08
3984.41	0.04
3986.48	0.06
3986.65	0.02
3991.33	0.01
4002.45	0.03
4004.25	0.06
4004.81	0.04

Table DR3. Conditions of the three component model at 1 m interval, showing the abundance of the carbon sources, $\delta^{13}C$ of the mixed source, precipitation temperature of present-day carbonate and its $\delta^{13}C$ values. The modeled $\delta^{13}C$ values of the new carbonate are projected in Figs. 2A and DR1.

Depth (m)	Source 1 (g/cm3) ($\delta^{13}C$ ~ -5.3 ‰ V-PDB)	Source 2 (g/cm3) ($\delta^{13}C$ ~ -7.9 ‰ V-PDB)	Source 3 (g/cm3) ($\delta^{13}C$ ~ -20 ‰ V-PDB)	$\delta^{13}C$ of Mixed C (‰V-PDB)	Precipitation T (°C)	$\delta^{13}C$ of New carbonate (‰ V-PDB)
3971	0.005	0.01125	0.00875	-11.62	120.0	-7.52
3972	0.005	0.01188	0.008125	-11.32	118.1	-7.15
3973	0.005	0.0125	0.0075	-11.01	116.2	-6.77
3974	0.005	0.01313	0.006875	-10.71	114.3	-6.39
3975	0.005	0.01375	0.00625	-10.41	112.4	-6.01
3976	0.005	0.01438	0.005625	-10.11	110.5	-5.62
3977	0.005	0.01500	0.005	-9.80	108.6	-5.24
3978	0.005	0.01563	0.004375	-9.50	106.7	-4.86
3979	0.005	0.01625	0.00375	-9.20	104.8	-4.47
3980	0.005	0.01688	0.003125	-8.90	99.0	-3.91
3981	0.005	0.0175	0.0025	-8.59	93.2	-3.33
3982	0.005	0.01813	0.001875	-8.29	87.4	-2.74
3983	0.005	0.01875	0.00125	-7.99	81.6	-2.13
3984	0.005	0.01938	0.000625	-7.69	75.8	-1.51
3985	0.005	0.0200	0.0000	-7.38	70.0	-0.87

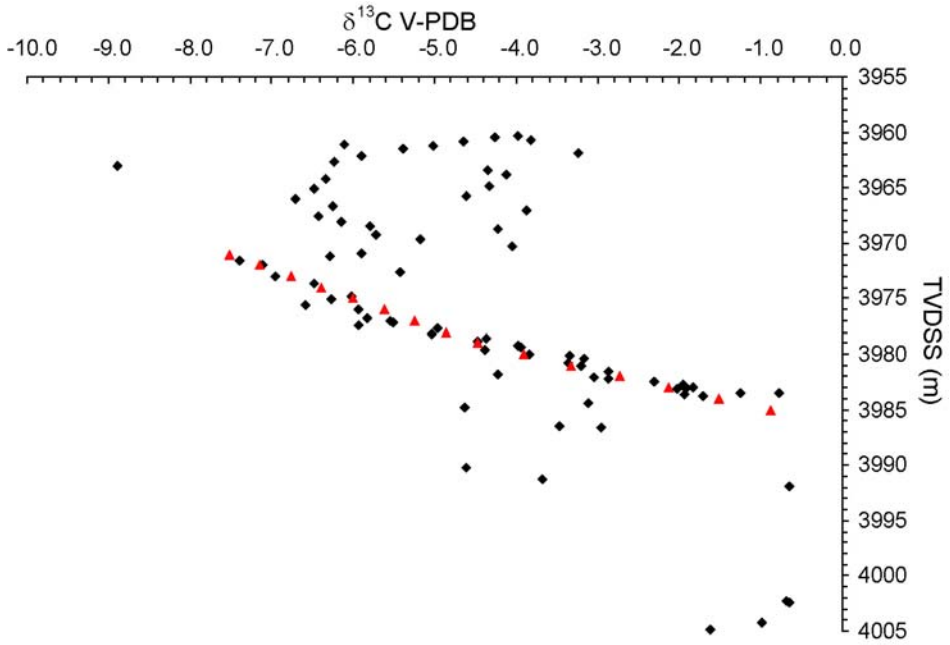

Figure DR1. Modeled $\delta^{13}C$ values (red triangles) of the reprecipitated carbonates in the anomalous zone according to the three carbon source model, showing a good match to the data.