

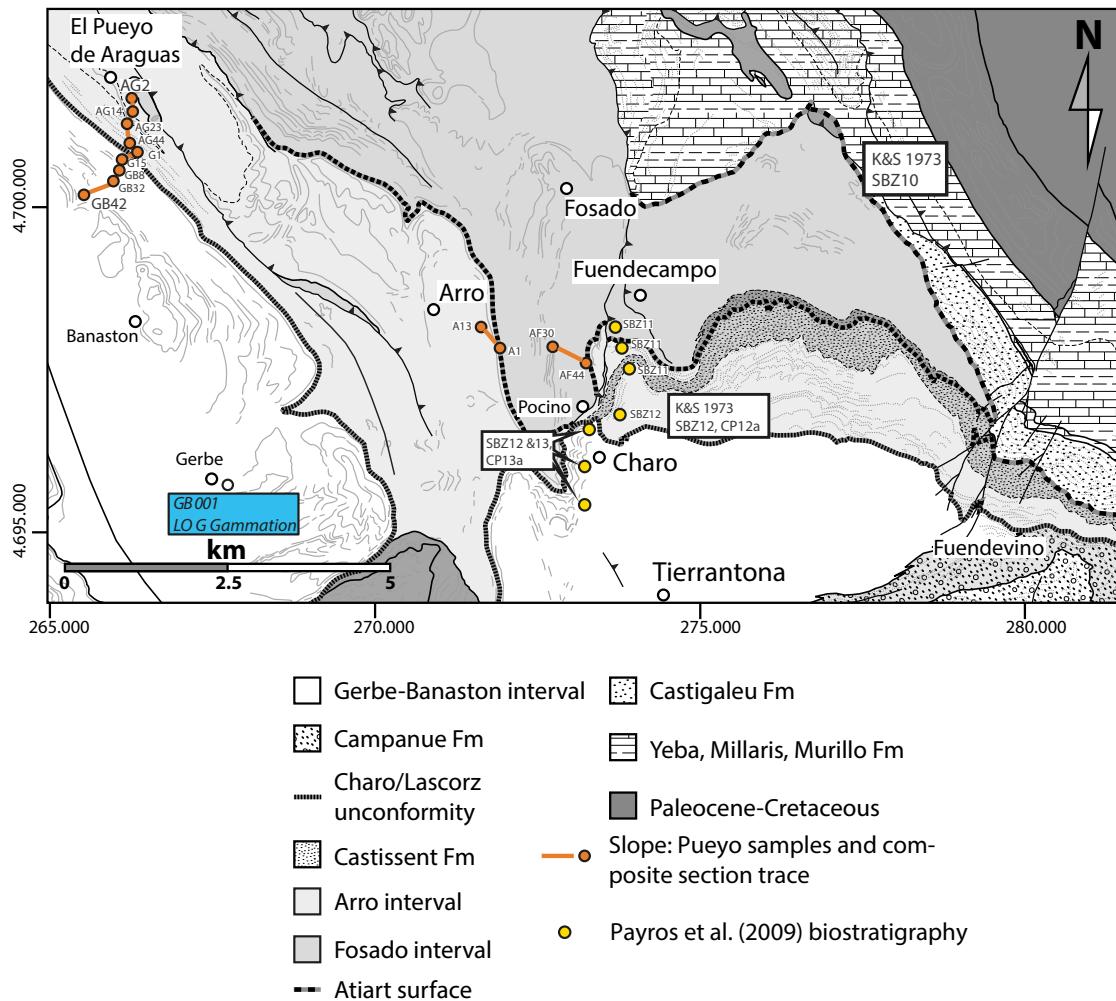
# Supplementary Material

## Detecting climatic and tectonic signals with carbon isotopes in deep-marine strata, Eocene Ainsa basin, Spanish Pyrenees

Sébastien Castelltort, Louis Honegger, Thierry Adatte, Julian D. Clark, Cai Puigdefábregas, Jorge E. Spangenberg, Mason L. Dykstra, Andrea Fildani.

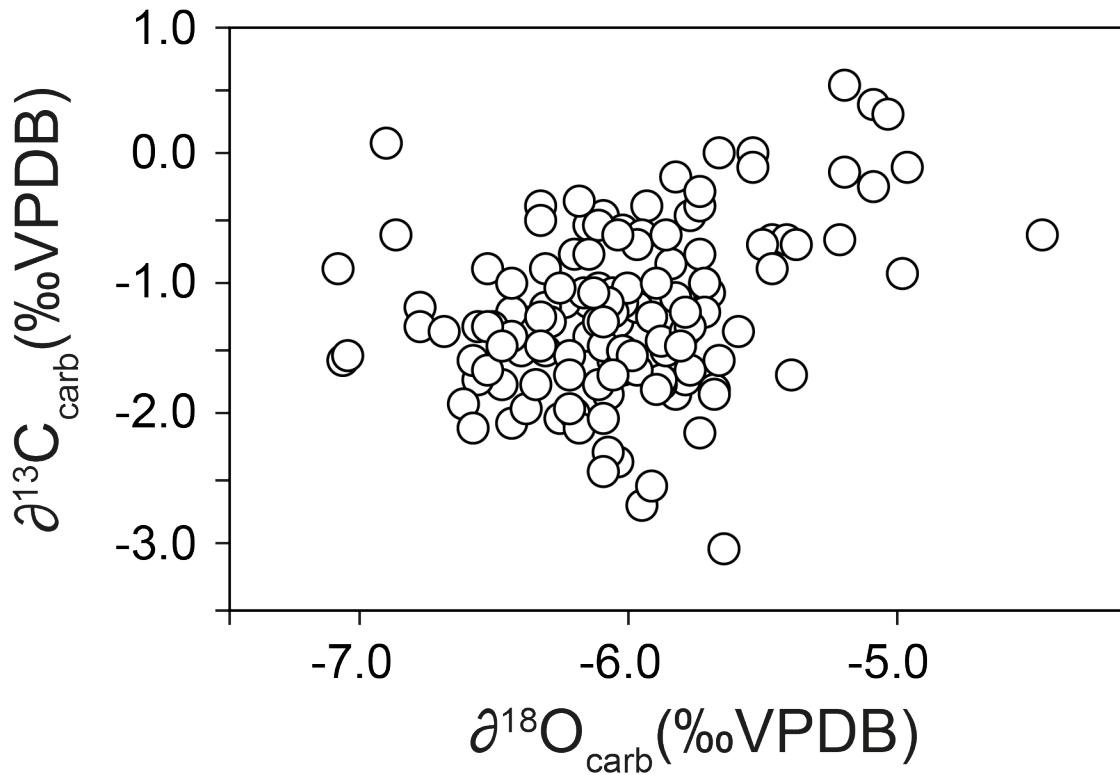
Correspondence to: [sebastien.castelltort@unige.ch](mailto:sebastien.castelltort@unige.ch)

**Figure DR1**



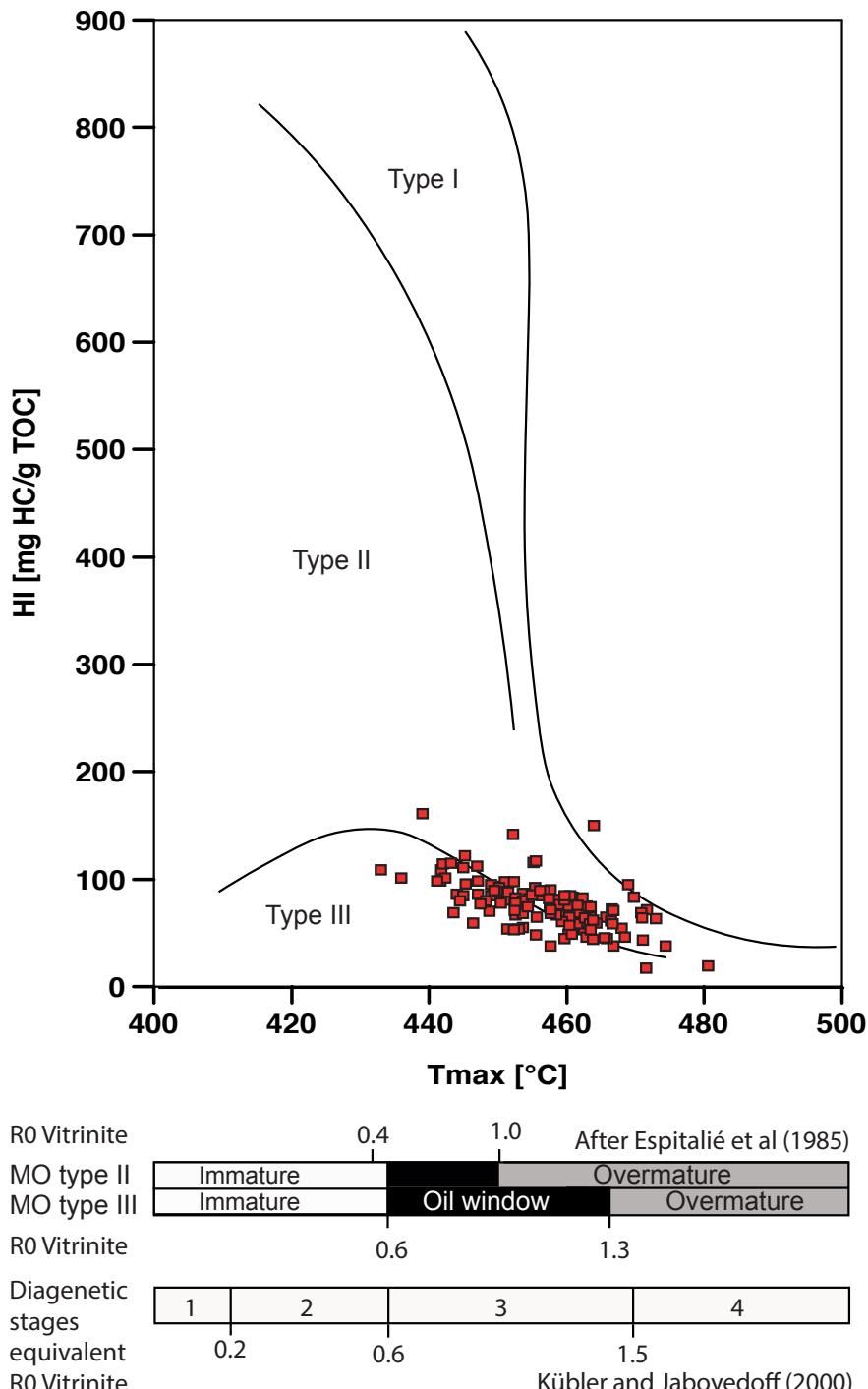
Geological map of the study area with location of samples (not all samples are shown due to their large number). Also shown in yellow dots are biostratigraphic data of Payros et al (2009) and samples of Kapellos and Schaub (1973) according to Payros et al (2009).

**Figure DR2**



The lack of statistically significant positive correlation between  $\delta^{13}\text{C}_{\text{carb}}$  and  $\delta^{18}\text{O}_{\text{carb}}$  values ( $r = 0.35$ ), and the narrower range of the  $\delta^{18}\text{O}_{\text{carb}}$  compared to that of the  $\delta^{13}\text{C}_{\text{carb}}$  values (2.6 and 3.5 ‰ respectively) indicate very low or no diagenetic resetting of the primary isotopic compositions.

**Figure DR3**



HI- $T_{\text{max}}$  plot indicates a mixed marine and terrestrial organic matter (data available in Table DR2). Only samples with TOC > 0.2 wt.% have been considered.  $T_{\text{max}}$  values range between 432 and 489  $^{\circ}\text{C}$  with a mean value of 456  $^{\circ}\text{C}$ . The HI- $T_{\text{max}}$  plot shows that the Ainsa marls underwent a medium diagenetic overprint, reaching the upper potential

oil window-overmature zone transition corresponding to a temperature of 100-120°C (Espitalié et al., 1985, Godet et al., 1988).

The < 2 µm clay fraction of 20 samples from Ainsa have been analysed. Mica, kaolinite, chlorite, irregular and ordered illite-smectite mixed-layers were identified. The amount of smectite and illite layers in the I-S mixed-layers were evaluated following the procedure of Moore and Reynolds (1997). Two kinds of I-S mixed layers were identified: The R0 ones contained more than 70% of smectite layers (“smectite-like”) and still had a peak at 5.2°. The presence of kaolinite and “smectite-like” constrain a diagenetic overprint typical of the upper stage 2 and 3 of Kübler and Jaboyedoff (2000) and confirms the data obtained from the Rockeval analysis.

### **Additional Data table DR1**

Collated stable isotopic data for the Pueyo section (in ‰ VPDB). Coordinates are given for key samples.

### **Additional Data table DR2**

Collated Rockeval analyses results for the Pueyo section.

### **Supplementary references**

Espitalié, J., Deroo, G., Marquis, F., 1985. La pyrolyse Rock-Eval et ses applications. Revue de l’Institut Français du Pétrole 40, 563–579

Godet, A., Bodin, S., Adatte, T., Vermeulen, J., Steinmann, P., Föllmi, K., 2008. Clay mineral assemblages along the Northern Tethyan margin during the late Hauterivian – early Aptian: Interaction between climate change and carbonate platform evolution Cretaceous research, 29, 5-6, 830-847

Kapellos, C. C., Schaub, H., 1973, Zur korrelation von biozonierungen mit grossforaminiferen und nannoplankton im Paläogen der Pyrenäen. Eclogae Geologicae Helveticae. 66, 687–737.

Kübler, B., Jaboyedoff, M. (Eds.), 2000. Illite Cristallinity. Sciences de la terre et des planètes/Earth & Planetary Sciences, 331. C.R. Ac. Sc., Paris, pp. 75–89.

Moore, D.M., Reynolds, R.C.J., 1997. X-Ray diffraction and the Identification and Analysis of Clay Minerals. Oxford University Press, New York, 378 pp.

**Table DR1: Pueyo Section stable isotope on bulk carbonate results, Rockeval results and GPS coordinates of samples.**

Sample height	Sample name	$\delta^{13}\text{C}_{\text{carb}}$	$\delta^{18}\text{O}_{\text{carb}}$	TOC	HI	OI	Latitude	Longitude
160500	GB42	-0.1	-5	0.29	84	141	42°25'32.11"N	0° 9'24.30"E
159500	GB41	-0.9	-5	0.27	86	117		
158500	GB40	-0.6	-4.5	0.19	98	145		
157500	GB39	-0.1	-5.5	0.22	94	172		
156500	GB38	-0.9	-5.5	0.21	70	316		
155500	GB37	0	-5.5	0.27	111	99		
153000	GB36	-0.7	-5.5	0.28	84	114		
152000	GB35	-0.2	-5.1	0.27	85	148		
151000	GB34	0.3	-5.1	0.29	84	116		
150000	GB33	0.5	-5.2	0.34	161	222		
149000	GB32	0.4	-5.1	0.25	95	138		
148000	GB31	-0.7	-5.4	0.34	87	98		
147000	GB30	-0.1	-5.2	0.34	109	233		
146000	GB29	-0.6	-5.2	0.34	77	108		
145000	GB28	-0.3	-5.7	0.34	80	118		
142000	GB27	0	-5.7	0.2	98	82		
141000	GB26	-0.7	-5.4	0.17	98	91		
140000	GB25	-0.4	-5.7	0.2	92	96		
139000	GB24	-0.6	-5.5	0.22	88	91		
138000	GB23	-1.7	-5.4	0.17	35	315		
137000	GB22	-1.2	-5.8	0.3	98	56		
136000	GB21	-1.5	-5.8	0.27	86	84		
135000	GB20	-1.7	-6.1	0.22	73	102		
134000	GB19	-1.5	-6	0.35	78	64		
133000	GB18	-1.5	-6	0.33	92	54		
132000	GB17	-1.6	-5.8	0.27	67	71		
130400	GB16	-1.8	-5.9	0.24	53	154		
129500	GB15	-1.3	-5.8	0.28	87	56	42°25'44.38"N	0° 9'48.99"E
128500	GB14	-1	-5.9	0.2	76	102		
127500	GB13	-3	-5.7	0.24	54	105		
126500	GB12	-2.4	-6.1	0.27	85	58		
125500	GB11	-2	-6.1	0.24	76	78		
124500	GB10	-1.4	-5.8	0.3	85	59		
123500	GB9	-1.3	-5.6	0.18	96	126		
122500	GB8	-0.6	-5.9	0.21	80	68		
121500	GB7	-1.1	-6.1	0.27	82	43		
120500	GB6	-1.3	-6.1	0.25	88	43		
119500	GB5	-1.5	-6.3	0.24	83	60		
118500	GB4	-1.3	-6.3	0.28	79	79		
117500	GB3	-1.5	-6.5	0.31	76	41		
117200	AG58	-1.1	-6	0.47	209	61		
116500	GB2	-1.1	-6.1	0.26	80	33		
115500	GB1	-1	-6	0.33	55	41		
114500	G14	-1.5	-6	0.27	77	57		
113500	G13	-1.4	-5.9	0.31	65	50		
112500	G12	-1.2	-6.1	0.26	91	64		
111500	G11	-1.1	-5.8	0.27	81	63		
110500	G10	-1.2	-5.7	0.25	90	66		
109500	G9	-1.2	-5.9	0.36	109	48		
108500	G8	-1.6	-6	0.31	65	56		
108200	AG55	-1.4	-6.7	0.39	59	53		
107500	G7	-1.8	-5.7	0.23	71	84		
106500	G6	-1.7	-6.2	0.32	76	60		
105500	G5	-1.6	-6	0.36	83	58		

104500	G4	-2.1	-5.8	0.4	89	48		
103500	G3	-1.8	-6.3	0.35	46	57		
102500	G2	-1.5	-6.1	0.37	44	81		
101900	AG54	-1.3	-6.5	0.42	69	51		
101500	G1	-1.6	-6.1	0.32	85	75	42° 25'52.10"N	0° 9'53.50"E
100900	AG53	-1.6	-6.2	0.38	75	59		
99900	AG52	-1.6	-6	0.35	70	64		
98900	AG51	-1	-5.7	0.27	76	114		
97900	AG50	-1.3	-6.1	0.22	60	124		
96900	AG49	-0.6	-6.1	0.4	55	98		
95900	AG48	-1.4	-6.4	0.24	44	147		
94900	AG47	-0.7	-6	0.32	90	67		
93900	AG46	-0.5	-5.8	0.32	116	79		
92900	AG45	-0.6	-6	0.35	142	80		
91900	AG44	-1	-5.7	0.33	75	67		
90900	AG43	-0.4	-5.9	0.33	83	59		
89900	AG42	-1.2	-6	0.28	49	117		
88900	AG41	-1	-6.3	0.3	60	102		
87900	AG40	-1	-6.1	0.25	46	109		
86900	AG39	-1.3	-6.3	0.38	65	70		
85900	AG38	-1.3	-6.1	0.19	43	197		
84900	AG37	-1.4	-6.1	0.23	41	177		
83900	AG36	-0.8	-5.7	0.31	64	67		
82900	AG35	-1.5	-6.3	0.25	45	155		
81900	AG34	-0.5	-6.3	0.36	80	73		
80900	AG33	-0.8	-6.1	0.35	65	77		
79900	AG31	-1	-6.4	0.38	61	85		
78900	AG30	-0.9	-6.3	0.35	59	82		
77900	AG29	-1.2	-6.3	0.27	38	153		
76900	AG28	-0.9	-7.1	0.44	61	45		
75900	AG27	-0.5	-6.1	0.36	74	55		
74900	AG26	-0.4	-6.2	0.33	67	91		
73900	AG25	-0.2	-5.8	0.31	85	65		
72900	AG24	-0.4	-6.3	0.39	53	84		
72300	AG23BIS	0.1	-6.9	1.3	19	22		
72300	AG23	-0.6	-6.9	1.87	18	8	42° 26'6.40"N	0° 9'50.20"E
71900	AG22	-0.9	-6.5	0.32	69	43		
70900	AG21	-1.5	-7	0.29	72	48		
69900	AG20	-1	-6.2	0.33	76	63		
68900	AG19	-1.3	-6.8	0.46	72	42		
67900	AG18	-0.6	-6	0.3	68	67		
66900	AG17	-1.9	-6.4	0.32	72	58		
65900	AG15	-1.2	-6.8	0.34	84	42		
65300	AG14	-1.6	-7.1	0.6	58	45		
63900	AG13	-2.1	-6.6	0.45	83	43		
62900	AG12	-0.5	-6.2	0.33	71	60		
61900	AG11	-1.3	-6.6	0.36	49	101		
60900	AG10	-0.8	-6.2	0.41	38	98		
59900	AG9	-0.5	-6.1	0.53	45	41		
58900	AG8	-2	-6.2	0.32	62	93		
57900	AG7	-2.1	-6.2	0.33	69	86		
56900	AG6	-1.9	-6.6	0.26	64	59		
55900	AG5	-1.3	-6.5	1.56	95	9		
54900	AG3	-1.2	-6.4	0.29	63	112	42° 26'18.98"N	0° 9'53.25"E
53900	AG2	-1.7	-6.5	0.72	150	42		
52700	A13	-1	-6	0.34	98	33	42° 24'24.10"N	0° 14'11.30"E
51700	A12	-0.8	-5.9	0.36	96	28		
50700	A11	-1	-5.7					

49700	A10	-1.5	-5.9	0.44	101	32		
48600	A9	-1.1	-6.2	0.3	58	105		
47600	A8	-1.1	-6.2	0.16	39	222		
45650	A7	-1.8	-6.1	0.4	80	54		
44650	A6	-1.7	-5.9	0.51	82	50		
43650	A5	-1.5	-6.4	1.27	117	13		
42650	A4	-1.3	-6.4	0.35	90	37		
41650	A3	-1.7	-5.9	0.36	48	127		
40650	A2	-1.4	-6.3	0.55	69	22		
39650	A1	-1.3	-6.4	0.57	78	22	42°24'16.20"N	0°14'10.53"E
36300	AF47	-2.6	-5.9	0.32	114	45	42°24'6.20"N	0°15'25.20"E
35000	AF46	-2	-6.2	0.42	112	41		
33000	AF45	-1.4	-6.1	0.33	101	78		
31000	AF44	-1.7	-5.8					
29000	AF43	-2.7	-6	0.3	54	124		
27000	AF42	-1.7	-5.8	0.3	86	55		
25000	AF41	-1.6	-5.7	0.32	99	76		
23000	AF40	-1.8	-5.7	0.34	115	33		
21100	AF39	-1.8	-5.8	0.45	122	36		
17200	AF38	-1	-6.1	0.39	80	59		
15200	AF37	-1.6	-6.6	0.33	74	56		
13200	AF36	-1.7	-6.6	0.29	53	102		
11200	AF35	-2	-6.4	0.28	60	48		
9200	AF34	-2.3	-6.1	0.29	71	60		
7200	AF33	-1.8	-6.1	0.25	77	48		
5200	AF32	-2.3	-6.1	0.23	46	127	42°24'19.90"N	0°14'51.70"E
1200	AF31	-1.7	-6.5	0.18	28	188		
0	AF30	-2	-6.3	0.27	38	114		

**Table DR2: Pueyo Section Rockeval results**

Echant.	Sample height (m)	PC [%]	RC [%]	TOC [%]	MINC [%]	HI [mg HC/g TOC]	OI [mg CO2/g TOC]	Tmax [°C]	S1 [mg HC/g]	S2a [mg HC/g]	S2b [mg HC/g]	S3	Quant	CyclN	CyclT
<b>GB42</b>	1605	0.04	0.25	0.29	5.85	84	141	451	0.06	0.24	0.00	0.40	71.3	BASIC 1	Bulk Rock
<b>GB41</b>	1595	0.03	0.24	0.27	5.63	86	117	444	0.07	0.23	0.00	0.32	73.8	BASIC 1	Bulk Rock
<b>GB40</b>	1585	0.03	0.16	0.19	5.86	98	145	440	0.07	0.19	0.00	0.28	73.5	BASIC 1	Bulk Rock
<b>GB39</b>	1575	0.03	0.19	0.22	5.43	94	172	450	0.05	0.21	0.00	0.39	67.9	BASIC 1	Bulk Rock
<b>GB38</b>	1565	0.03	0.18	0.21	4.54	70	316	451	0.03	0.15	0.00	0.67	67.7	BASIC 1	Bulk Rock
<b>GB37</b>	1555	0.04	0.23	0.27	5.02	111	99	445	0.09	0.30	0.00	0.26	72.4	BASIC 1	Bulk Rock
<b>GB36</b>	1530	0.03	0.24	0.28	4.28	84	114	451	0.08	0.23	0.00	0.32	74.7	BASIC 1	Bulk Rock
<b>GB35</b>	1520	0.04	0.24	0.27	5.37	85	148	445	0.08	0.23	0.00	0.40	69.9	BASIC 1	Bulk Rock
<b>GB34</b>	1510	0.04	0.25	0.29	5.10	84	116	449	0.09	0.24	0.00	0.33	72.7	BASIC 1	Bulk Rock
<b>GB33</b>	1500	0.08	0.26	0.34	6.64	161	222	439	0.19	0.55	0.00	0.75	69.6	BASIC 1	Bulk Rock
<b>GB32</b>	1490	0.04	0.22	0.25	5.66	95	138	449	0.07	0.24	0.00	0.35	70.6	BASIC 1	Bulk Rock
<b>GB31</b>	1480	0.04	0.30	0.34	4.55	87	98	454	0.07	0.30	0.00	0.33	67.8	BASIC 1	Bulk Rock
<b>GB30</b>	1470	0.06	0.28	0.34	5.28	109	233	433	0.12	0.37	0.00	0.79	69.7	BASIC 1	Bulk Rock
<b>GB29</b>	1460	0.04	0.30	0.34	4.42	77	108	448	0.07	0.26	0.00	0.37	70	BASIC 1	Bulk Rock
<b>GB28</b>	1450	0.04	0.30	0.34	5.24	80	118	451	0.08	0.27	0.00	0.40	71.5	BASIC 1	Bulk Rock
<b>GB27</b>	1420	0.03	0.18	0.20	4.47	98	82	451	0.05	0.20	0.00	0.17	79.9	BASIC 1	Bulk Rock
<b>GB26</b>	1410	0.02	0.15	0.17	5.58	98	91	447	0.06	0.17	0.00	0.16	67.9	BASIC 1	Bulk Rock
<b>GB25</b>	1400	0.02	0.17	0.20	5.31	92	96	450	0.05	0.18	0.00	0.19	80.9	BASIC 1	Bulk Rock
<b>GB24</b>	1390	0.03	0.19	0.22	5.08	88	91	451	0.05	0.19	0.00	0.20	73.3	BASIC 1	Bulk Rock
<b>GB23</b>	1380	0.02	0.15	0.17	3.10	35	315	467	0.01	0.06	0.00	0.55	78.3	BASIC 1	Bulk Rock
<b>GB22</b>	1370	0.04	0.26	0.30	4.01	98	56	452	0.09	0.29	0.00	0.17	65.4	BASIC 1	Bulk Rock
<b>GB21</b>	1360	0.03	0.24	0.27	3.52	86	84	455	0.07	0.23	0.00	0.22	66.2	BASIC 1	Bulk Rock
<b>GB20</b>	1350	0.02	0.20	0.22	4.22	73	102	459	0.05	0.16	0.00	0.22	68.3	BASIC 1	Bulk Rock
<b>GB19</b>	1340	0.04	0.31	0.35	4.53	78	64	450	0.09	0.27	0.00	0.22	68.8	BASIC 1	Bulk Rock
<b>GB18</b>	1330	0.04	0.29	0.33	4.68	92	54	455	0.08	0.30	0.00	0.17	76.7	BASIC 1	Bulk Rock
<b>GB17</b>	1320	0.02	0.25	0.27	4.41	67	71	453	0.05	0.18	0.00	0.19	76.8	BASIC 1	Bulk Rock
<b>GB16</b>	1304	0.02	0.22	0.24	4.33	53	154	463	0.02	0.13	0.00	0.38	74.6	BASIC 1	Bulk Rock
<b>GB15</b>	1295	0.03	0.25	0.28	5.10	87	56	454	0.07	0.24	0.00	0.15	79.3	BASIC 1	Bulk Rock
<b>GB14</b>	1285	0.02	0.18	0.20	6.14	76	102	458	0.03	0.15	0.00	0.20	72.8	BASIC 1	Bulk Rock
<b>GB13</b>	1275	0.02	0.22	0.24	4.26	54	105	451	0.06	0.13	0.00	0.25	70.8	BASIC 1	Bulk Rock
<b>GB12</b>	1265	0.03	0.24	0.27	4.10	85	58	455	0.07	0.23	0.00	0.16	68	BASIC 1	Bulk Rock
<b>GB11</b>	1255	0.02	0.21	0.24	3.44	76	78	453	0.05	0.18	0.00	0.19	68	BASIC 1	Bulk Rock
<b>GB10</b>	1245	0.03	0.26	0.30	4.87	85	59	456	0.07	0.25	0.00	0.18	68.3	BASIC 1	Bulk Rock
<b>GB9</b>	1235	0.02	0.15	0.18	4.71	96	126	453	0.05	0.17	0.00	0.22	66.2	BASIC 1	Bulk Rock
<b>GB8</b>	1225	0.02	0.19	0.21	5.05	80	68	452	0.04	0.17	0.00	0.15	66.7	BASIC 1	Bulk Rock
<b>GB7</b>	1215	0.03	0.24	0.27	4.94	82	43	454	0.06	0.22	0.00	0.12	67.6	BASIC 1	Bulk Rock
<b>GB6</b>	1205	0.03	0.22	0.25	4.34	88	43	451	0.06	0.22	0.00	0.11	68.9	BASIC 1	Bulk Rock
<b>GB5</b>	1195	0.02	0.22	0.24	5.07	83	60	453	0.05	0.20	0.00	0.15	72.9	BASIC 1	Bulk Rock
<b>GB4</b>	1185	0.03	0.25	0.28	4.64	79	79	460	0.05	0.22	0.00	0.22	67.4	BASIC 1	Bulk Rock

<b>GB3</b>	1175	0.03	0.28	0.31	4.37	76	41	458	0.06	0.23	0.00	0.13	73	BASIC 1	Bulk Rock
<b>AG58</b>	1172	0.15	0.32	0.47	4.22	209	61	367	0.72	0.98	0.00	0.29	68.1	BASIC 1	Bulk Rock
<b>GB2</b>	1165	0.02	0.24	0.26	4.78	80	33	454	0.05	0.21	0.00	0.09	72	BASIC 1	Bulk Rock
<b>GB1</b>	1155	0.02	0.30	0.33	4.99	55	41	454	0.05	0.18	0.00	0.14	79.2	BASIC 1	Bulk Rock
<b>G14</b>	1145	0.03	0.25	0.27	3.98	77	57	462	0.05	0.21	0.00	0.15	68.4	BASIC 1	Bulk Rock
<b>G13</b>	1135	0.03	0.28	0.31	3.89	65	50	456	0.06	0.20	0.00	0.15	70.5	BASIC 1	Bulk Rock
<b>G12</b>	1125	0.03	0.23	0.26	4.52	91	64	458	0.06	0.23	0.00	0.16	66	BASIC 1	Bulk Rock
<b>G11</b>	1115	0.03	0.25	0.27	4.20	81	63	459	0.06	0.22	0.00	0.17	65.3	BASIC 1	Bulk Rock
<b>G10</b>	1105	0.03	0.22	0.25	5.44	90	66	457	0.06	0.22	0.00	0.16	74.1	BASIC 1	Bulk Rock
<b>G9</b>	1095	0.04	0.32	0.36	3.61	109	48	442	0.07	0.39	0.00	0.17	77.8	BASIC 1	Bulk Rock
<b>G8</b>	1085	0.03	0.28	0.31	4.55	65	56	466	0.06	0.20	0.00	0.17	78.4	BASIC 1	Bulk Rock
<b>AG55</b>	1082	0.03	0.36	0.39	2.49	59	53	462	0.09	0.23	0.00	0.20	72	BASIC 1	Bulk Rock
<b>G7</b>	1075	0.02	0.21	0.23	5.26	71	84	449	0.05	0.16	0.00	0.19	68.1	BASIC 1	Bulk Rock
<b>G6</b>	1065	0.03	0.29	0.32	4.33	76	60	459	0.07	0.24	0.00	0.19	67.3	BASIC 1	Bulk Rock
<b>G5</b>	1055	0.04	0.32	0.36	4.17	83	58	461	0.08	0.30	0.00	0.21	72.4	BASIC 1	Bulk Rock
<b>G4</b>	1045	0.04	0.36	0.40	4.13	89	48	450	0.10	0.35	0.00	0.19	69.8	BASIC 1	Bulk Rock
<b>G3</b>	1035	0.02	0.33	0.35	3.67	46	57	463	0.04	0.16	0.00	0.20	72.5	BASIC 1	Bulk Rock
<b>G2</b>	1025	0.02	0.34	0.37	3.56	44	81	464	0.03	0.16	0.00	0.30	67.3	BASIC 1	Bulk Rock
<b>AG54</b>	1019	0.04	0.38	0.42	2.76	69	51	462	0.11	0.29	0.00	0.22	76.3	BASIC 1	Bulk Rock
<b>G1</b>	1015	0.03	0.28	0.32	4.80	85	75	455	0.06	0.27	0.00	0.24	69.8	BASIC 1	Bulk Rock
<b>AG53</b>	1009	0.04	0.35	0.38	4.11	75	59	463	0.09	0.29	0.00	0.23	69.2	BASIC 1	Bulk Rock
<b>AG52</b>	999	0.03	0.32	0.35	4.38	70	64	460	0.07	0.25	0.00	0.23	71.5	BASIC 1	Bulk Rock
<b>AG51</b>	989	0.03	0.24	0.27	4.75	76	114	459	0.07	0.21	0.00	0.31	80.1	BASIC 1	Bulk Rock
<b>AG50</b>	979	0.02	0.20	0.22	3.89	60	124	463	0.05	0.13	0.00	0.28	71	BASIC 1	Bulk Rock
<b>AG49</b>	969	0.03	0.36	0.40	3.82	55	98	468	0.06	0.22	0.00	0.39	78.7	BASIC 1	Bulk Rock
<b>AG48</b>	959	0.02	0.22	0.24	2.63	44	147	471	0.03	0.10	0.00	0.35	76	BASIC 1	Bulk Rock
<b>AG47</b>	949	0.04	0.29	0.32	4.71	90	67	456	0.09	0.29	0.00	0.22	74.8	BASIC 1	Bulk Rock
<b>AG46</b>	939	0.05	0.27	0.32	4.74	116	79	455	0.15	0.38	0.00	0.26	70	BASIC 1	Bulk Rock
<b>AG45</b>	929	0.07	0.27	0.35	4.42	142	80	452	0.27	0.49	0.00	0.28	70.9	BASIC 1	Bulk Rock
<b>AG44</b>	919	0.04	0.29	0.33	3.56	75	67	460	0.14	0.25	0.00	0.22	81.4	BASIC 1	Bulk Rock
<b>AG43</b>	909	0.04	0.29	0.33	4.11	83	59	462	0.11	0.27	0.00	0.19	73	BASIC 1	Bulk Rock
<b>AG42</b>	899	0.02	0.25	0.28	3.62	49	117	460	0.05	0.14	0.00	0.32	73.7	BASIC 1	Bulk Rock
<b>AG41</b>	889	0.03	0.27	0.30	3.29	60	102	464	0.05	0.18	0.00	0.30	74.1	BASIC 1	Bulk Rock
<b>AG40</b>	879	0.02	0.23	0.25	3.48	46	109	468	0.03	0.11	0.00	0.27	72	BASIC 1	Bulk Rock
<b>AG39</b>	869	0.03	0.35	0.38	4.10	65	70	463	0.06	0.25	0.00	0.27	70.5	BASIC 1	Bulk Rock
<b>AG38</b>	859	0.02	0.17	0.19	3.74	43	197	470	0.04	0.08	0.00	0.38	71.2	BASIC 1	Bulk Rock
<b>AG37</b>	849	0.02	0.21	0.23	3.66	41	177	467	0.03	0.09	0.00	0.40	70.6	BASIC 1	Bulk Rock
<b>AG36</b>	839	0.03	0.28	0.31	5.31	64	67	463	0.08	0.20	0.00	0.21	77.6	BASIC 1	Bulk Rock
<b>AG35</b>	829	0.02	0.23	0.25	2.74	45	155	460	0.03	0.11	0.00	0.39	70.8	BASIC 1	Bulk Rock
<b>AG34</b>	819	0.04	0.33	0.36	5.00	80	73	460	0.05	0.29	0.00	0.26	74.9	BASIC 1	Bulk Rock
<b>AG33</b>	809	0.03	0.32	0.35	3.68	65	77	460	0.06	0.23	0.00	0.27	78.9	BASIC 1	Bulk Rock
<b>AG31</b>	799	0.03	0.35	0.38	3.73	61	85	459	0.05	0.23	0.00	0.32	72.2	BASIC 1	Bulk Rock
<b>AG30</b>	789	0.03	0.32	0.35	4.29	59	82	463	0.04	0.21	0.00	0.29	70.5	BASIC 1	Bulk Rock
<b>AG29</b>	779	0.02	0.25	0.27	3.36	38	153	474	0.02	0.10	0.00	0.42	72	BASIC 1	Bulk Rock
<b>AG28</b>	769	0.03	0.41	0.44	1.55	61	45	466	0.06	0.27	0.00	0.20	72.2	BASIC 1	Bulk Rock
<b>AG27</b>	759	0.04	0.33	0.36	4.21	74	55	463	0.11	0.27	0.00	0.20	72.1	BASIC 1	Bulk Rock
<b>AG26</b>	749	0.03	0.30	0.33	4.47	67	91	458	0.06	0.22	0.00	0.30	66.8	BASIC 1	Bulk Rock

<b>AG25</b>	739	0.03	0.27	0.31	5.17	85	65	461	0.08	0.26	0.00	0.20	73.7	BASIC 1	Bulk Rock
<b>AG24</b>	729	0.03	0.36	0.39	4.40	53	84	464	0.06	0.21	0.00	0.33	72.2	BASIC 1	Bulk Rock
<b>AG23BIS</b>	723	0.03	1.27	1.30	6.60	19	22	481	0.06	0.25	0.00	0.29	60.9	BASIC 1	Bulk Rock
<b>AG23</b>	723	0.04	1.83	1.87	2.94	18	8	472	0.09	0.33	0.00	0.15	63.1	BASIC 1	Bulk Rock
<b>AG22</b>	719	0.03	0.29	0.32	4.48	69	43	454	0.10	0.22	0.00	0.14	71	BASIC 1	Bulk Rock
<b>AG21</b>	709	0.03	0.26	0.29	2.86	72	48	467	0.07	0.21	0.00	0.14	74.9	BASIC 1	Bulk Rock
<b>AG20</b>	699	0.03	0.29	0.33	4.63	76	63	462	0.10	0.25	0.00	0.21	70.6	BASIC 1	Bulk Rock
<b>AG19</b>	689	0.04	0.42	0.46	2.24	72	42	472	0.11	0.33	0.00	0.19	68.4	BASIC 1	Bulk Rock
<b>AG18</b>	679	0.03	0.27	0.30	4.95	68	67	458	0.10	0.21	0.00	0.20	66.4	BASIC 1	Bulk Rock
<b>AG17</b>	669	0.03	0.29	0.32	4.99	72	58	458	0.08	0.23	0.00	0.18	68.7	BASIC 1	Bulk Rock
<b>AG15</b>	659	0.04	0.31	0.34	5.04	84	42	460	0.10	0.29	0.00	0.15	78.2	BASIC 1	Bulk Rock
<b>AG14</b>	653	0.05	0.55	0.60	2.40	58	45	467	0.17	0.35	0.00	0.27	71.1	BASIC 1	Bulk Rock
<b>AG13</b>	639	0.04	0.40	0.45	2.40	83	43	470	0.10	0.37	0.00	0.19	75.2	BASIC 1	Bulk Rock
<b>AG12</b>	629	0.03	0.30	0.33	5.06	71	60	467	0.09	0.24	0.00	0.20	72.4	BASIC 1	Bulk Rock
<b>AG11</b>	619	0.03	0.33	0.36	2.95	49	101	461	0.03	0.18	0.00	0.36	71.9	BASIC 1	Bulk Rock
<b>AG10</b>	609	0.03	0.38	0.41	4.43	38	98	467	0.04	0.16	0.00	0.40	69.2	BASIC 1	Bulk Rock
<b>AG9</b>	599	0.03	0.50	0.53	5.95	45	41	466	0.09	0.24	0.00	0.22	70.1	BASIC 1	Bulk Rock
<b>AG8</b>	589	0.03	0.29	0.32	3.63	62	93	464	0.09	0.20	0.00	0.30	69.9	BASIC 1	Bulk Rock
<b>AG7</b>	579	0.03	0.30	0.33	3.25	69	86	471	0.09	0.23	0.00	0.29	69.8	BASIC 1	Bulk Rock
<b>AG6</b>	569	0.02	0.23	0.26	2.96	64	59	471	0.06	0.17	0.00	0.15	65.2	BASIC 1	Bulk Rock
<b>AG5</b>	559	0.16	1.40	1.56	4.94	95	9	469	0.41	1.48	0.00	0.13	76.6	BASIC 1	Bulk Rock
<b>AG3</b>	549	0.03	0.26	0.29	4.91	63	112	473	0.07	0.19	0.00	0.33	68.9	BASIC 1	Bulk Rock
<b>AG2</b>	539	0.14	0.58	0.72	2.26	150	42	464	0.49	1.08	0.00	0.30	67.2	BASIC 1	Bulk Rock
<b>A13</b>	527	0.04	0.30	0.34	4.50	98	33	442	0.11	0.34	0.00	0.11	70.2	BASIC 1	Bulk Rock
<b>A12</b>	517	0.04	0.32	0.36	5.04	96	28	445	0.10	0.35	0.00	0.10	67.2	BASIC 1	Bulk Rock
<b>A10</b>	497	0.05	0.39	0.44	4.45	101	32	442	0.14	0.45	0.00	0.14	72.4	BASIC 1	Bulk Rock
<b>A9</b>	486	0.02	0.28	0.30	5.49	58	105	460	0.02	0.17	0.00	0.32	69.1	BASIC 1	Bulk Rock
<b>A8</b>	476	0.02	0.14	0.16	4.60	39	222	471	0.01	0.06	0.00	0.35	68.7	BASIC 1	Bulk Rock
<b>A7</b>	456.5	0.04	0.36	0.40	4.77	80	54	444	0.06	0.32	0.00	0.21	75.9	BASIC 1	Bulk Rock
<b>A6</b>	446.5	0.05	0.46	0.51	4.47	82	50	457	0.07	0.42	0.00	0.25	68.8	BASIC 1	Bulk Rock
<b>A5</b>	436.5	0.15	1.12	1.27	4.81	117	13	456	0.29	1.49	0.00	0.16	68	BASIC 1	Bulk Rock
<b>A4</b>	426.5	0.04	0.32	0.35	5.63	90	37	450	0.08	0.32	0.00	0.13	69.4	BASIC 1	Bulk Rock
<b>A3</b>	416.5	0.03	0.33	0.36	3.77	48	127	456	0.02	0.17	0.00	0.46	70.3	BASIC 1	Bulk Rock
<b>A2</b>	406.5	0.04	0.51	0.55	2.15	69	22	444	0.08	0.38	0.00	0.12	68.5	BASIC 1	Bulk Rock
<b>A1</b>	396.5	0.05	0.52	0.57	2.81	78	22	453	0.08	0.44	0.00	0.12	71.2	BASIC 1	Bulk Rock
<b>FA47</b>	363	0.04	0.28	0.32	3.80	114	45	442	0.06	0.36	0.00	0.14	75.1	BASIC 1	Bulk Rock
<b>FA46</b>	350	0.05	0.37	0.42	4.74	112	41	447	0.11	0.47	0.00	0.17	76.6	BASIC 1	Bulk Rock
<b>FA45</b>	330	0.04	0.29	0.33	4.76	101	78	436	0.06	0.33	0.00	0.26	72.8	BASIC 1	Bulk Rock
<b>FA43</b>	290	0.03	0.28	0.30	3.91	54	124	453	0.03	0.16	0.00	0.37	72.4	BASIC 1	Bulk Rock
<b>FA42</b>	270	0.03	0.27	0.30	4.43	86	55	447	0.05	0.25	0.00	0.16	70.9	BASIC 1	Bulk Rock
<b>FA41</b>	250	0.04	0.28	0.32	4.11	99	76	441	0.05	0.32	0.00	0.24	73.5	BASIC 1	Bulk Rock
<b>FA40</b>	230	0.04	0.29	0.34	4.17	115	33	443	0.07	0.39	0.00	0.11	71	BASIC 1	Bulk Rock
<b>FA39</b>	211	0.06	0.40	0.45	4.24	122	36	445	0.08	0.55	0.00	0.16	79.9	BASIC 1	Bulk Rock
<b>FA38</b>	172	0.04	0.36	0.39	4.69	80	59	448	0.06	0.32	0.00	0.23	71.7	BASIC 1	Bulk Rock
<b>FA37</b>	152	0.03	0.30	0.33	3.56	74	56	454	0.05	0.25	0.00	0.18	70.8	BASIC 1	Bulk Rock
<b>FA36</b>	132	0.02	0.26	0.29	4.32	53	102	452	0.04	0.15	0.00	0.30	78.7	BASIC 1	Bulk Rock
<b>FA35</b>	112	0.02	0.25	0.28	4.07	60	48	446	0.04	0.16	0.00	0.13	71.8	BASIC 1	Bulk Rock

<b>FA34</b>	92	0.03	0.26	0.29	3.95	71	60	452	0.05	0.20	0.00	0.17	70.8	BASIC 1	Bulk Rock
<b>FA33</b>	72	0.02	0.23	0.25	4.11	77	48	448	0.05	0.19	0.00	0.12	72.3	BASIC 1	Bulk Rock
<b>FA32</b>	52	0.02	0.21	0.23	3.85	46	127	466	0.01	0.10	0.00	0.29	73.3	BASIC 1	Bulk Rock
<b>FA31</b>	12	0.01	0.17	0.18	2.82	28	188	464	0.01	0.05	0.00	0.35	73.8	BASIC 1	Bulk Rock
<b>FA30</b>	0	0.02	0.25	0.27	2.99	38	114	458	0.02	0.10	0.00	0.31	75	BASIC 1	Bulk Rock