Supplementary Material

Optical Observations and Geochemical Data in Deep-Sea Hexa- and Octo-Coralla Specimens

Claire Rollion-Bard [1,*], Jean-Pierre Cuif [2] and Dominique Blamart [3]

Table S1. Bulk $\delta^{18}O$ and $\delta^{13}C$ measurements in Valpareso and Jasus samples.

	$\delta^{18}O$ (V-PDB)	$\delta^{13}C$ (V-PDB)
Valpareso	1.32	−0.96
	1.74	−0.26
	1.49	−0.58
	1.96	0.38
	1.95	0.04
	1.74	0.62
	1.63	−0.35
	1.83	0.37
	1.98	0.50
	1.46	−0.83
	0.93	−2.13
	1.40	−0.76
	1.55	−0.27
	1.34	−0.61
	1.55	−0.10
	1.51	−0.29
	1.53	−0.17
	1.68	−0.01
	1.62	−0.02
	1.65	0.04
	1.87	0.03
Jasus	1.88	−1.27
	2.06	−0.99
	2.02	−0.78
	2.05	−0.78
	1.71	−1.29
	2.03	−0.60
	2.17	−0.74
	2.25	−0.57
	2.28	−0.48
	2.10	−0.79
	2.12	−0.68
	2.14	−0.76
	2.20	−0.86
	2.08	−0.87

Table S2. SIMS measurements of the oxygen isotopic compositions of Valpareso sample.

Distance (μm)	$\delta^{18}O$ (‰ V-PDB)	Error (1σ)
1214	1.12	0.40
1429	1.46	0.39
1643	0.41	0.39
1857	1.54	0.40
2071	1.10	0.38
2500	1.09	0.39
2714	1.51	0.39
2929	1.47	0.40
3143	2.18	0.40
3357	0.83	0.39
3571	1.74	0.39
3857	1.05	0.40
4000	1.94	0.39
4286	1.00	0.38
4500	1.56	0.38
4714	1.09	0.39
4929	0.43	0.39
5143	0.80	0.39
5393	0.40	0.39
5643	1.34	0.39
5821	0.94	0.39
6000	1.00	0.39
6214	0.87	0.39
6464	0.99	0.39
6786	1.36	0.40
7000	1.22	0.39
7214	1.36	0.39
7429	1.51	0.40
7643	1.82	0.39
7857	2.00	0.39
8071	1.60	0.39
8286	2.43	0.40
8500	1.45	0.39
8714	1.93	0.39
8929	1.66	0.38
9143	1.70	0.39
9429	1.76	0.39
9643	2.10	0.40
9857	2.21	0.39
10071	1.54	0.39
10357	1.88	0.38
10500	2.13	0.40
10786	2.08	0.39
11000	2.10	0.40
11214	2.05	0.40

11429	1.75	0.39
11714	2.23	0.39
11929	1.70	0.39
12143	1.81	0.39
12429	1.63	0.39
12607	1.46	0.39
12821	1.49	0.40
13071	1.56	0.38
13286	1.81	0.39
13500	1.56	0.38
13786	1.99	0.39
14000	2.00	0.39
14214	2.21	0.39
14429	1.78	0.39
14643	1.90	0.39
14857	0.97	0.39
15071	1.66	0.40
15357	1.75	0.38
15500	1.32	0.39
15786	1.27	0.39
16286	2.00	0.39
16429	1.78	0.39
16714	1.86	0.39
16929	1.45	0.39
17143	1.59	0.39
17357	1.67	0.39
17500	1.49	0.39
17786	1.64	0.39
18000	1.43	0.38
18214	0.83	0.39
18429	0.98	0.38
18714	0.86	0.40
18929	1.50	0.39
19071	1.05	0.39
19357	1.70	0.39
20093	0.96	0.16
20209	0.81	0.15
20395	0.85	0.15
20558	1.17	0.14
20767	0.50	0.14
20930	0.75	0.15
21093	0.78	0.15
21279	1.52	0.15
21465	1.88	0.16
21651	0.79	0.15
21837	1.38	0.14
22000	1.21	0.18

22186	1.19	0.14
22349	1.84	0.15
22535	2.11	0.14
22721	2.04	0.14
22907	1.99	0.16
23070	1.14	0.15
23233	2.28	0.13
23419	1.84	0.13
23605	1.61	0.17
23791	1.77	0.16
23953	1.51	0.13
24140	1.16	0.14
24302	1.70	0.16
24488	2.21	0.15
25160	1.68	0.14
25320	1.82	0.13
25480	2.26	0.17
25640	1.66	0.16
25800	2.10	0.16
25960	2.13	0.17
26120	1.74	0.15
26280	2.57	0.15
26440	2.08	0.19
26600	1.95	0.13
26760	2.15	0.15
26920	1.79	0.16
27080	1.58	0.17
27240	1.45	0.15
27400	0.95	0.14
27580	0.75	0.17
27740	1.04	0.14
27900	1.34	0.14
28080	1.68	0.14
28240	1.25	0.14
28400	1.34	0.16
28560	1.43	0.14
28720	1.55	0.14
28880	1.17	0.14
29040	1.55	0.18
29200	1.83	0.18
29360	1.83	0.14
29560	1.55	0.16
29680	2.08	0.13
29840	1.80	0.15
30000	1.83	0.18
30180	1.54	0.16
30320	1.90	0.16

30520	1.40	0.14
30680	1.62	0.16
30840	1.70	0.15
30960	1.58	0.14
31120	1.46	0.15
31280	1.09	0.15
31460	1.08	0.14
31640	0.92	0.18
31800	1.21	0.17
31960	1.52	0.16
32120	0.79	0.16
32280	1.76	0.15
32440	1.26	0.16
32600	0.61	0.16
32760	0.51	0.16
32920	0.64	0.16
33100	0.60	0.15
33240	1.04	0.16
33400	0.73	0.17
33560	0.81	0.18
33720	1.27	0.15
33880	1.51	0.16
34040	2.07	0.15
34180	2.26	0.13
34320	2.18	0.16
34480	1.85	0.16
34620	2.22	0.15
34760	2.44	0.15
34880	2.22	0.14
35080	2.21	0.15
35220	2.06	0.15
35360	1.70	0.17
35480	1.34	0.18
35600	0.27	0.14
35740	0.82	0.15
35880	1.27	0.16

Table S3. SIMS $\delta^{11}B$ measurements of Terrasses sample.

	$\delta^{11}B$ (‰)	Error (±1σ)		$\delta^{11}B$ (‰)	Error (±1σ)
Profile 1	21.9	1.3	**Profile 2**	28.0	1.4
	22.9	1.3		21.1	1.1
	21.6	1.0		19.2	1.1
	20.0	0.8		16.7	1.5
	18.2	1.2		17.0	1.0
	19.4	1.3		17.9	1.0
	16.0	1.0		16.0	1.3
	15.9	1.2		17.1	0.9
	14.3	1.2		18.8	1.4
	15.4	1.3		19.9	1.3
	16.7	1.5		18.7	1.5
	16.3	1.4		14.7	1.2
	19.8	1.5		16.1	1.3
	18.6	1.0		14.2	1.2
	16.5	1.3		16.0	1.2
	18.9	1.4		16.3	1.4
	18.5	1.5		14.3	1.4
	14.6	1.3			
	16.0	1.5			
	14.9	1.2			
	14.8	1.3			

Table S4. Bulk measurements of Mg/Ca, Sr/Ca and Na/Ca (mmol/mol) in Valpareso sample.

	Mg/Ca (mmol/mol)	Sr/Ca (mmol/mol)	Na/Ca (mmol/mol)
1	85.406	3.110	15.666
2	85.367	3.163	16.131
4	89.734	3.260	17.716
5	86.937	3.213	17.295
6	89.203	3.261	18.864
7	85.023	3.181	16.175
8	85.462	3.183	16.232
9	88.233	3.193	18.007
11	82.990	3.131	14.068
12	83.113	3.147	14.831
13	81.618	3.096	12.962
14	82.718	3.187	14.778
15	83.218	3.215	15.781
16	83.371	3.190	15.112
17	85.102	3.201	15.262
18	83.983	3.203	14.731
19	83.677	3.190	14.396
20	85.529	3.218	14.793
21	84.629	3.214	15.546
22	84.865	3.206	15.427

Table S5. SIMS measurements of Li/Ca (μmol/mol), Na/Ca, Mg/Ca, and Sr/Ca (mmol/mol) relative to the distance (μm) in Valpareso sample.

Distance (μm)	Li/Ca (μmol/mol)	Na/Ca (mmol/mol)	Mg/Ca (mmol/mol)	Sr/Ca (mmol/mol)
143	-	16.65	87.98	2.88
357	-	15.47	86.82	2.98
571	-	15.00	85.45	2.97
786	-	16.21	88.03	2.98
1036	-	16.09	86.38	2.97
1214	-	16.35	86.42	3.01
1464	-	16.58	91.27	3.12
1714	-	16.20	86.89	3.06
1929	-	16.26	87.27	3.12
2143	-	16.09	84.25	3.01
2571	-	17.88	89.24	3.09
2786	-	16.96	87.03	3.01
3000	-	18.42	89.96	3.14
3214	-	17.31	90.77	3.18
3429	-	17.09	88.76	3.15
3643	-	17.31	88.26	3.14
3893	-	14.95	82.27	3.11
4071	-	15.69	84.44	3.09
4357	-	15.65	84.94	3.04
4607	-	14.91	83.83	3.05
4786	-	15.11	80.25	2.98
5000	-	16.14	84.54	3.03
5286	-	15.56	83.15	3.08
5500	-	17.48	86.21	3.12
5714	-	19.68	93.56	3.11
6143	-	17.54	85.82	3.08
6357	-	16.77	84.48	3.10
6571	-	16.25	84.39	3.10
6857	-	17.62	84.73	3.18
7107	-	18.21	90.10	3.11
7321	-	17.46	85.09	3.14
7536	-	17.68	88.60	3.11
7679	-	16.44	82.74	3.11
7929	-	16.05	84.31	3.14
8143	-	18.05	88.32	3.16
8429	-	17.83	83.97	3.11
8643	-	16.64	86.34	3.16
8857	-	16.87	88.29	3.17
9000	-	16.12	83.68	3.09
9286	-	15.50	84.37	3.08
9500	-	14.72	79.48	3.04
9714	-	14.43	79.33	3.03
10000	-	14.42	80.17	3.07
10143	-	13.91	77.14	3.03
10429	-	14.87	80.33	3.08
10643	-	16.56	82.88	3.08
10857	-	16.48	83.00	3.08
11071	-	15.14	80.47	3.05

11357	-	17.32	82.68	3.09
11500	-	15.67	81.36	3.05
11786	-	17.23	83.49	3.08
12143	-	18.53	85.27	3.07
12214	-	17.63	81.91	3.07
12429	-	16.52	81.63	3.07
12643	-	14.35	79.72	3.03
12929	-	14.44	80.39	2.99
13214	-	15.16	79.67	-
13357	-	15.79	81.31	-
13571	-	15.97	80.68	3.03
13857	-	16.88	82.38	3.03
14071	-	18.07	87.47	3.07
14286	-	14.85	79.78	2.96
14500	-	14.35	79.58	3.00
14714	-	13.87	79.91	2.97
20093	-	-	81.73	3.06
20279	-	-	79.97	3.04
20465	-	-	81.27	3.10
20628	-	-	87.95	3.07
20814	-	-	86.73	3.10
21000	-	-	86.04	3.07
21163	-	-	88.03	3.11
21349	-	-	88.47	3.08
21535	-	-	86.80	3.09
21721	-	-	84.76	3.09
21860	-	-	86.10	3.04
22047	-	-	82.36	3.04
22233	-	-	81.54	3.03
22419	-	-	79.71	3.02
22605	-	-	82.82	3.02
22791	-	-	83.65	3.01
22977	-	-	84.89	3.02
23140	-	-	83.20	3.01
23302	-	-	87.32	2.99
23488	-	-	83.55	3.00
23674	-	-	83.46	3.01
23860	-	-	88.85	2.99
24023	-	-	84.66	3.00
24186	-	-	82.65	2.99
24349	-	-	86.67	2.98
24558	-	-	88.97	3.01
25160	23.32	13.85	80.62	-
25270	26.96	15.03	82.01	-
25380	35.25	15.41	86.30	-
25490	37.82	16.17	84.78	-
25600	29.89	14.84	83.91	-
25710	37.32	16.48	83.85	-
25820	32.62	15.63	81.44	-
25930	29.63	15.36	82.72	-
26040	30.73	15.38	82.96	-
26150	24.23	14.79	81.03	-

26260	47.90	17.57	86.39	-
26370	35.71	15.79	84.87	-
26480	27.89	14.95	81.67	-
26590	41.66	16.37	87.48	-
26700	29.87	14.54	82.46	-
26810	24.05	14.65	82.94	-
26920	35.98	16.31	83.39	-
27030	26.18	14.68	82.15	-
27140	27.10	14.59	80.89	-
27250	28.52	15.31	83.52	-
27360	27.93	14.90	82.56	-
27470	33.67	15.89	84.41	-
27580	30.59	15.30	83.55	-
27690	28.35	15.17	83.91	-
27800	38.62	16.02	89.00	-
27910	51.00	17.78	89.29	-
28020	27.03	14.93	82.11	-
28130	29.94	15.33	83.37	-
28240	30.37	15.13	83.79	-
28350	23.67	14.34	82.64	-
28460	26.55	14.76	84.24	-
28570	35.60	15.76	84.78	-
28680	29.48	14.91	85.79	-
28790	32.88	15.36	83.12	-
28900	35.87	15.68	86.41	-
29010	41.53	17.45	85.35	-
29120	41.26	17.00	86.38	-
29230	31.12	16.27	82.34	-
29340	34.32	16.12	84.71	-
29450	25.81	14.50	85.35	-
29560	30.90	15.94	83.70	-
29670	23.58	14.50	84.52	-
29780	28.25	15.54	83.99	-
29890	25.53	15.35	79.81	-
30000	43.40	16.70	88.84	-
30110	31.68	15.75	83.28	-
30220	35.29	16.15	84.86	-
30330	26.15	14.25	82.91	-
30440	30.99	14.78	81.29	-
30550	32.05	15.45	83.80	-
30660	37.28	16.53	84.28	-
30770	34.30	16.10	84.32	-
30880	35.87	16.50	87.75	-
30990	37.11	16.67	85.64	-
31100	37.16	16.63	83.90	-
31210	47.20	18.36	88.51	-
31320	36.34	16.38	84.61	-
31430	47.11	17.78	89.69	-
31540	31.10	15.41	83.65	-
31650	34.40	15.95	85.74	-
31760	38.50	16.36	88.78	-
31870	25.32	14.68	80.95	-

31980	37.67	16.47	85.30	-
32090	35.83	15.95	84.83	-
32200	43.61	16.86	88.99	-
32310	49.02	17.64	87.01	-
32420	37.81	17.09	87.58	-
32530	41.19	16.85	88.22	-
32640	41.93	17.47	87.13	-
32750	32.69	16.31	85.13	-
32860	37.44	17.11	88.86	-
32970	54.07	18.91	92.89	-
33080	30.40	15.66	82.23	-
33190	29.77	15.72	83.63	-
33300	49.91	17.83	88.67	-
33410	31.93	16.33	84.94	-
33520	26.28	14.92	84.60	-
33630	26.55	15.01	80.01	-
33740	25.43	14.00	83.52	-
33850	39.84	17.36	84.68	-
33960	35.66	16.71	87.08	-
34070	29.39	15.75	83.32	-
34180	38.61	17.05	86.21	-
34290	33.52	16.16	82.84	-
34400	39.28	17.24	86.69	-
34510	37.86	16.66	85.80	-
34620	43.52	17.79	86.36	-
34730	37.86	17.01	83.40	-
34840	36.85	16.19	83.55	-
34950	40.22	17.26	84.63	-
35060	29.46	15.67	82.22	-
35170	40.08	16.18	89.38	-