Supplementary Table S1: Measured calcitic element (E) to calcium ratio, calculated partition coefficients and experimental/field conditions. Reported E/Ca are reported either as a range of values (min-max), or as average values. 'Study type' refers to core-top/sediment trap calibrations (1) or culture experiment (2). 'n.m.' means not measured or not reported. For a number of (field) studies, seawater element concentrations are not measured, but are here calculated ('*') to obtain a partition coefficient. Assumed concentrations at salinity of 35 are 10.3 mmol/kg for Ca, 0.469 mol/kg for Na, 528 mmol/kg for Mg, 0.0909 mmol/kg or Sr and 0.101 µmol/kg for Ba.

Mg/Ca

#	species	calcite (mmol/mol)	seawater (mmol/mol)	Avg D_E (*10^-3)	T (^{0}C)	S	study type	ref
5	*Uvigerina spp.*	0.75 – 2.5	5126*	0.32	1.6 - 20	n.m.	1	[1]
6	*Globigerinoides ruber*	3.5 - 5.5	5126*	0.89	20-26	n.m.	1	[2]
7	*Globigerinoides sacculifer*	5.2	5126*	1	26	36	2	[3]
8	*Neogloboquadrina pachyderma*	0.75 – 1.05	5126*	0.175	-2	32.6 – 33.6	1	[4]
9a	*Ammonia tepida*	2-7	5158	0.895	25	32.2	2	[5]
9b	*Ammonia tepida*	1.3 – 2.2	5080	0.345	20.0	32.5	2	[6]
9c	*Ammonia tepida*	1-3	5100 – 5300	0.505	18.0	35.0	2	[7]
9d	*Ammonia tepida*	2.1	5565	0.40	25	35.2	2	[8]
10	*Cibicidoides wuellerstorfi*	0.98 – 1.40	5126*	0.23	2.9 – 3.4	n.m.	1	[9]
11	*Elphidium crispum*	4.3	5126	0.84	25	n.m.	2	[10]
12	*Oridorsalis umbonatus*	1 – 3	5300	0.38	1.1-3.6	n.m.	1	[11]
13a	*Amphistegina lessonii*	68 – 86	5126*	15	21 – 29	n.m.	1	[12]
13b	*Amphistegina lessonii*	40 – 60	5200	9.85	24	35	2	[13]
14	*Amphistegina lobifera*	50 – 70	5200	11.3	24	35	2	[13]
15	*Neorotalia calcar*	214 – 267	5126*	47	21 – 29	n.m.	1	[12]
16	*Heterostegina depressa*	110 – 140	5200-6200	21.7	18.0	35.0	2	[7]
17	*Operculina ammonoides*	141	5330	27	24	37	2	[14]
21b	*Marginopora vertebralis*	213 – 255	5126*	46	21 – 29	n.m.	1	[12]
22	*Amphisorus hemprichii*	224 – 256	5126*	47	21 – 29	n.m.	1	[12]
23	*Quinqueloculina* sp.	150.9	5126	29.4	25	n.m.	2	[10]

Sr/Ca

#	species	calcite (mmol/mol)	seawater (mmol/mol)	Avg D_E	T (^{0}C)	S	study type	ref
7	*Globigerinoides sacculifer*	1.35	8.83*	0.15	26	36	2	[3]
8	*Neogloboquadrina pachyderma*	1.36 – 1.40	8.83*	0.155	-2	32.6 – 33.6	1	[4]
9a	*Ammonia tepida*	1.2 – 1.9	9.47	0.165	25	32.2	2	[5]
9b	*Ammonia tepida*	1.4 – 2.0	9.27	0.185	20.0	32.5	2	[6]

9c	*Ammonia tepida*	1.35	4.6 – 15.6	0.165	18.0	35.0	2	[7]
9d	*Ammonia tepida*	1.36	5.91	0.23	25	35.2	2	[8]
10	*Cibicidoides wuellerstorfi*	1.29 – 1.36	8.83*	0.15	2.9 – 3.4	n.m.	1	[9]
11	*Elphidium crispum*	2.4	17.1	0.14	25	n.m.	2	[10]
12	*Oridorsalis umbonatus*	0.8 – 1.00	8.72	0.1	1.1-3.6	n.m.	1	[11]
13a	*Amphistegina lessonii*	1.6 – 1.9	8.83*	0.2	21 - 29	n.m.	1	[12]
15	*Neorotalia calcar*	1.9 – 2.2	8.83*	0.235	21 - 29	n.m.	1	[12]
16	*Heterostegina depressa*	2.56	4.8 – 17.8	0.3	18.0	35.0	2	[7]
17	*Operculina ammonoides*	2.56	8.42	0.3	24	37	2	[14]
21b	*Marginopora vertebralis*	0.6 – 1.8	8.83*	0.14	21 - 29	n.m.	1	[12]
22	*Amphisorus hemprichii*	1.8 – 1.9	8.83*	0.21	21 – 29	n.m.	1	[12]
23	*Quinqueloculina* sp.	3.4	17.1	0.19	25	n.m.	2	[10]
Na/Ca								
#	**species**	**calcite (mmol/mol)**	**seawater (mol/mol)**	**Avg D_E (*10^-3)**	**T (^{0}C)**	**S**	**study type**	**ref**
6	*Globigerinoides ruber*	5.9 – 7.6	45.5*	0.15	n.m.	n.m.	1	[15]
7	*Globigerinoides sacculifer*	5.5 – 6.0	45.5*	0.125	n.m.	n.m.	1	[16]
8	*Neogloboquadrina pachyderma*	4.5 – 5.2	45.5*	0.1	n.m.	n.m.	1	[16]
9b	*Ammonia tepida*	6.12	47.8	0.13	20.0	32.5	2	[6]
11	*Elphidium crispum*	7.3	52.7	0.13	25	n.m.	2	[10]
17	*Operculina ammonoides*	24	41.6	0.58	24	37	2	[14]
23	*Quinqueloculina* sp.	5.9	52.7	0.11	25	n.m.	2	[10]
Zn/Ca								
#	**species**	**calcite (nmol/mol)**	**seawater (µmol/mol)**	**Avg D_E**	**T (^{0}C)**	**S**	**study type**	**ref**
9d	*Ammonia tepida*	89.0	66	1.3	25	35.2	2	[8]
Ba/Ca								
#	**species**	**calcite (mmol/mol)**	**seawater (µmol/mol)**	**Avg D_E**	**T (^{0}C)**	**S**	**study type**	**ref**
5	*Uvigerina spp.*	1.9 – 4.7	4.6 - 13.1	0.33	n.m.	n.m.	1	[17]
6	*Globigerinoides ruber*	0.7 – 1.0	3.3 – 4.0	0.18	n.m.	n.m.	1	[18]
7	*Globigerinoides sacculifer*	0.65 – 2.17	4.4 - 15	0.145	22-39	36.7	2	[19]
8	*Neogloboquadrina pachyderma*	1.4 – 1.6	5.4 – 5.5	0.275	0	n.m.	1	[20]
10	*Cibicidoides wuellerstorfi*	1.8 – 4.4	4.5 – 13.5	0.36	n.m.	n.m.	1	[17]
13b	*Amphistegina lessonii*	10-40	50 - 90	0.32	25	32.5	2	[21]
16	*Heterostegina depressa*	30 - 90	50 - 90	0.81	25	32.5	2	[21]
17	*Operculina ammonoides*	0.3 – 13.5	15 - 19	0.62	24	37	2	[14]

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