

Supplementary materials to:

Global marine plankton functional type biomass distributions: Coccolithophores

C. J. O'Brien*, J. A. Peloquin*, M. Vogt, M. Heinle, N. Gruber, P. Ajani, H. Andruleit, J. Arístegui, L. Beaufort, M. Estrada, D. Karentz, E. Kopczynska, R. Lee, T. Pritchard and C. Widdicombe.

* First and second authors contributed equally to this work. Correspondence: colleen.obrien@env.ethz.ch

Table S1 Biomass conversion methods for coccolithophore taxa reported in the database: Biovolume category, number of datapoints (n), and minimum, maximum and mean cell dimensions (μm), biovolume per cell (μm^3) and biomass per cell (pgCL^{-1}). Flags denote the method used to derive cell biovolumes: 1 = only one set of cell dimensions or one biovolume available in the literature; 2 = genus/group biovolumes estimated from mean of several species in the database; 3 = genus/group biovolume estimated from range of cell dimensions reported in the literature.

Biovolume Category	n	Shape	Diameter			Length			Width			Biovolume (μm^3)			Flag	Biomass (pg C cell^{-1})			References
			Min	Max	Mean	Min	Max	Mean	Min	Max	Mean	Min	Max	Mean		Min	Max	Mean	
Acanthoica sp.	199	prolate spheroid										79	1206	395	2	12	134	49	
Acanthoica acanthifera	130	prolate spheroid				6.0	7.0	6.5	5.0	5.0	5.0	79	92	85	0	12	13	12	5, 18
Acanthoica janchenii	5	prolate spheroid						7.0				77	325	155	1	11	41	21	18
Acanthoica ornata	4	prolate spheroid				14.0	16.0	15.0	11.0	12.0	11.5	887	1206	1039	0	102	134	117	29
Acanthoica quattrosolina	1446	prolate spheroid				7.0	15.0	11.0	5.0	9.5	7.3	92	709	303	0	13	83	39	5, 9, 10, 11, 12, 18
Algirosphaera cucullata	25	sphere	8.0	11.0	9.5							268	697	449	0	35	82	55	5, 18
Algirosphaera robusta	448	sphere	6.5	16.0	11.3							144	2145	746	0	20	225	87	5, 9, 10, 11, 12, 18, 27
Alisphaera sp.	60	sphere										144	1150	580	2	20	129	70	
Alisphaera extenta	45	sphere	6.5	10.0	8.3							144	524	294	0	20	63	38	19
Alisphaera gaudii	45	sphere	11.0	12.0	11.5							697	905	796	0	82	104	92	19
Alisphaera ordinata	67	sphere	10.0	12.0	11.0							524	905	697	0	63	104	82	19
Alisphaera pinnigera	70	sphere	7.0	13.0	10.0							180	1150	524	0	24	129	63	5,19
Alisphaera spatula	25	sphere			11.0							348	1464	697	1	44	160	82	4
Alisphaera unicornis	165	sphere	7.3	12.0	9.7							204	905	471	0	27	104	58	5,9,10,25
Alveosphaera bimurata	67	double cone						18.0			8.0	151	633	302	1	21	75	39	25
Anacanthoica acanthos	50	prolate spheroid				8.0	12.5	10.3	7.0	7.0	7.0	205	321	263	0	27	41	34	5,11,18,29
Anacanthoica cidaris	25	sphere			13.0							575	2416	1150	1	69	251	129	18
Anthosphaera sp.	305	sphere	4.5	16.0	10.3							48	2145	564	3	7	225	68	5,10,20
Anthosphaera fragaria	141	sphere	4.5	7.0	5.8							48	180	100	0	7	24	14	5,10,20
Braarudosphaera sp.	6	sphere	5.0	16.0	10.5							65	2145	606	2	10	225	72	
Braarudosphaera bigelowii	1034	sphere	5.0	16.0	10.5							65	2145	606	0	10	225	72	8,10
Calcidiscus sp.	2	sphere	5.0	28.0	16.5							65	11494	1687	2	10	1019	182	
Calcidiscus leptoporus	967	sphere	5.0	28.0	16.5							65	11494	2352	0	10	1019	245	5,9,10,11,17
Calcidiscus quadriperforatus	67	sphere	10.0	15.0	12.5							524	1767	1023	0	63	189	116	5,10,11
Calcioconus sp.	7	cone				15.0	18.0	16.5	10.0	12.0	11.0	393	679	523	2	49	80	63	
Calcioconus vitreus	17	cone				15.0	18.0	16.5	10.0	12.0	11.0	393	679	523	0	49	80	63	29
Calciopappus sp.	122	cone										83	254	134	2	12	33	19	
Calciopappus caudatus	49	cone				26.0	36.0	31.0	3.5	4.0	3.8	83	151	114	0	12	21	16	10
Calciopappus rigidus	181	cone				9.0	12.0	10.5	6.0	9.0	7.5	85	254	155	0	12	33	21	5,10,12
Calciosolenia sp.	61	various										138	5890	1110	2	19	559	125	
Calciosolenia brasiliensis	1394	double cone				33.0	100.0	66.5	4.0	8.0	6.0	138	1676	627	0	19	181	75	1,5,9,10,12,21
Calciosolenia murrayi	1311	cylinder	3.0	10.0	6.5	21.0	75.0	48.0				148	5890	1593	0	20	559	172	1,5,9,10,11,12
Calicasphaera blokii	45	sphere	6.5	7.7	7.1							144	239	187	0	20	31	25	17
Calicasphaera concava	45	sphere	7.0	11.0	9.0							180	697	382	0	24	82	48	17
Calicasphaera diconstricta	25	sphere	6.2	8.5	7.4							125	322	208	0	17	41	28	17
Calyptrolithina divergens	67	prolate spheroid				5.5	8.0	6.8	5.5	6.0	5.8	87	151	117	0	13	21	16	10

Biovolume Category	n	Shape	Diameter			Length			Width			Biovolume (μm^3)			Flag	Biomass (pg C cell ⁻¹)			References
			Min	Max	Mean	Min	Max	Mean	Min	Max	Mean	Min	Max	Mean		Min	Max	Mean	
<i>Calyptrolithina multipora</i>	92	sphere	13.9	22.5	18.2							1406	5964	3157	0	154	565	319	10,17
<i>Calyptrolithina wettsteinii</i>	45	prolate spheroid				12.5	15.8	14.2	10.7	13.0	11.9	749	1398	1040	0	88	153	118	11,17
<i>Calyptrolithophora gracillima</i>	1	prolate spheroid				9.5	18.0	13.8	9.0	16.0	12.5	403	2413	1125	0	50	251	126	5,10
<i>Calyptrolithophora papillifera</i>	141	sphere	9.0	20.0	14.5							382	4189	1596	0	48	411	173	5,10,11
<i>Calyptrosphaera</i> sp.	820	sphere	5.0	22.0	13.5							65	5575	1620	2	10	532	175	
<i>Calyptrosphaera globosa</i>	4	sphere	17.0	20.0	18.5							2572	4189	3315	0	265	411	333	29
<i>Calyptrosphaera incisa</i>	1	sphere			10.0							262	1100	524	1	34	124	63	29
<i>Calyptrosphaera insignis</i>	8	sphere	11.0	14.0	12.5							697	1437	1023	0	82	157	116	29
<i>Caneosphaera</i> sp.	15	sphere	4.5	18.0	11.3							48	3054	746	3	7	310	87	5,9,10,11,25
<i>Canistrolithus</i> sp.	74	sphere	14.3	23.8	19.0							1515	7014	3591	3	165	654	358	5
<i>Ceratolithus</i> sp.	6	sphere	7.0	18.9	13.0							180	3535	1137	2	24	353	127	
<i>Ceratolithus cristatus</i>	107	sphere	7.0	18.9	13.0							180	3535	1137	0	24	353	127	5,10,25
<i>Coccolithus</i> sp.	1191	sphere	8.0	22.0	15.0							268	5575	1767	2	35	532	189	
<i>Coccolithus pelagicus</i>	1108	sphere	8.0	22.0	15.0							268	5575	1767	0	35	532	189	9,10,11
<i>Coccolithus pelagicus holo</i>	625	sphere	8.0	18.0	13.0							268	3054	1150	0	35	310	129	10
<i>Corisphaera</i> sp.	40	sphere	4.5	9.2	6.9							48	408	128	2	7	51	18	
<i>Corisphaera gracilis</i>	93	sphere			6.5							72	302	144	1	11	39	20	10
<i>Corisphaera strigilis</i>	49	sphere	5.0	7.0	6.0							65	180	113	0	10	24	16	5
<i>Coronosphaera</i> sp.	626	sphere	12.0	53.0	32.5							905	77952	1596	2	104	5698	173	
<i>Coronosphaera binodata</i>	4	sphere	13.0	16.0	14.5							1150	2145	1596	0	129	225	173	5,29
<i>Coronosphaera mediterranea</i>	544	sphere	12.0	17.0	14.5							905	2572	1596	0	104	265	173	5,9,10
<i>Cribrosphaera</i> sp.	15	sphere			8.3							150	629	299	1	21	75	38	26
<i>Cribrosphaera ehrenbergii</i>	5	sphere			8.3							150	629	299	1	21	75	38	26
<i>Crystallolithus</i> sp.	11	sphere	8.0	20.0	14.0							268	4189	1437	3	35	411	157	10
<i>Cyclococcolithus</i> sp.	81	sphere	4.0	50.0	27.0							34	65450	10306	3	5	4870	924	5,9,10,11,12,25
<i>Cyrtosphaera aculeata</i>	93	sphere			7.0							90	377	180	1	13	47	24	5,10,18
<i>Cyrtosphaera lecaliae</i>	45	sphere			9.0							191	802	382	1	26	93	48	18
<i>Discosphaera</i> sp.	152	sphere	4.5	14.0	10.0							48	1437	524	2	7	157	63	
<i>Discosphaera tubifera</i>	1312	sphere	4.5	14.0	10.0							48	1437	524	0	7	157	63	1,5,9,10,11,12,16,25
<i>Emiliana huxleyi</i>	5651	sphere	3.5	15.0	9.3							22	1767	414	0	4	189	51	1,5,9,10,11,12,18
<i>Florisphaera profunda</i> var. <i>elongata</i>	49	sphere			12.0							452	1900	905	1	56	202	104	5,10,12,27,28
<i>Florisphaera profunda</i> var. <i>profunda</i>	536	sphere	4.0	12.0	8.0							34	905	268	0	5	104	35	28
<i>Gephyrocapsa</i> sp.	909	sphere	2.6	15.0	8.8							9	1767	202	2	2	189	27	
<i>Gephyrocapsa ericsonii</i>	254	sphere	3.0	5.0	4.0							14	65	34	0	2	10	5	5,9,10,28
<i>Gephyrocapsa muelleriae</i>	49	sphere	7.0	8.0	7.5							180	268	221	0	24	35	29	5
<i>Gephyrocapsa oceanica</i>	933	sphere	5.0	15.0	10.0							65	1767	524	0	10	189	63	5,6,9,10,11,12
<i>Gephyrocapsa ornata</i>	422	sphere	3.3	4.5	3.9							19	48	31	0	3	7	5	5,10
<i>Gephyrocapsids</i>	9	sphere	2.6	15.0	8.8							9	1767	238	2	2	189	31	
<i>Gladiolithus flabellatus</i>	245	sphere	8.0	12.0	10.0							268	905	524	0	35	104	63	5
<i>Halopappus</i> sp.	582	various										65	1078	611	2	10	121	73	
<i>Halopappus quadribrachiatius</i>	6	sphere	5.0	8.0	6.5							65	268	144	0	10	35	20	29
<i>Halopappus vahseli</i>	8	cone						21.0			14.0	539	2263	1078	1	65	237	121	29
<i>Heimiella excentrica</i>	18	sphere	18.0	24.0	21.0							3054	7238	4849	0	310	673	469	29
<i>Helicosphaera</i> sp.	398	various										524	5864	1576	2	63	557	171	
<i>Helicosphaera carteri</i>	553	prolate spheroid				10.0	28.0	19.0	13.0	20.0	16.5	885	5864	2708	0	102	557	278	1,5,9,10,11,12
<i>Helicosphaera carteri</i> (holo)	67	sphere	10.0	15.5	12.8							524	1950	1085	0	63	207	122	5,11
<i>Helicosphaera hyalina</i>	109	prolate spheroid				12.0	22.0	17.0	11.0	18.0	14.5	760	3732	1871	0	89	371	199	5,10,12
<i>Helicosphaera pavementum</i>	131	prolate spheroid				10.5	13.5	12.0	10.5	12.5	11.5	606	1104	831	0	72	124	96	5,25
<i>Helicosphaera wallichii</i>	49	sphere						14.7			13.4	691	2902	1382	1	81	296	152	5,25
<i>Helladosphaera</i> sp.	60	prolate spheroid				4.9	9.0	7.0	4.0	6.4	5.2	41	193	98	2	6	26	14	
<i>Helladosphaera cornifera</i>	158	prolate spheroid				4.9	9.0	7.0	4.0	6.4	5.2	41	193	98	0	6	26	14	5,10,11
<i>Holococcolithophora sphaeroidea</i>	100	sphere	6.0	12.0	9.0							113	905	382	0	16	104	48	5,10
<i>Homozygosphaera</i> sp.	45	sphere	6.0	15.0	10.5							113	1767	606	2	16	189	72	
<i>Homozygosphaera arethusae</i>	45	sphere	6.0	15.0	10.5							113	1767	606	0	16	189	72	5
<i>Homozygosphaera triarcha</i>	92	sphere	8.0	13.0	10.5							268	1150	606	0	35	129	72	5,10
<i>Lohmannosphaera</i> sp.	4	sphere	6.0	12.0	9.0							113	905	382	3	16	104	48	1,9,10,11,12,28,29

Biovolume Category	n	Shape	Diameter			Length			Width			Biovolume (μm^3)			Flag	Biomass (pg C cell ⁻¹)			References
			Min	Max	Mean	Min	Max	Mean	Min	Max	Mean	Min	Max	Mean		Min	Max	Mean	
Lohmannosphaera adriatica	32	sphere	10.0	12.0	11.0							524	905	697	0	63	104	82	1,9,10,11,12,28,29
Lohmannosphaera paucoscyphos	18	sphere			8.0							134	563	268	1	19	68	35	29
Michaelsarsia sp.	18	various										335	3534	1145	2	42	353	128	
Michaelsarsia adriaticus	270	prolate spheroid				10.0	30.0	20.0	8.0	15.0	11.5	335	3534	1385	0	42	353	152	1,9,10,11,12,28,29
Michaelsarsia elegans	200	sphere	9.0	15.0	12.0							382	1767	905	0	48	189	104	5,9,10
Michaelsarsia splendens	32	sphere			12.0							452	1900	905	1	56	202	104	28,29
Navilithus altivelum	45	sphere	5.0	8.0	6.5							65	268	144	0	10	35	20	32
Oolithotus sp.	39	sphere										34	14137	1684	2	5	1228	181	
Oolithotus antillarum	301	sphere	10.0	13.0	11.5							524	1150	796	0	63	129	92	5
Oolithotus fragilis	579	sphere	4.0	30.0	17.0							34	14137	2572	0	5	1228	265	5,9,10,25
Ophiaster sp.	101	sphere	3.5	10.5	7.0							22	606	180	3	4	72	24	1,5,10,11,12
Ophiaster hydroideus	1748	sphere	3.5	8.0	5.8							22	268	100	0	4	35	14	1,5,10,11,12
Palusphaera vandellii	145	sphere	4.0	8.7	6.4							34	345	134	0	5	44	19	5,10,25
Pappomonas sp.	294	various										21	1767	894	2	4	189	103	
Pappomonas flabellifera	25	prolate spheroid				4.5	7.5	6.0	3.0	5.0	4.0	21	98	50	0	4	14	8	22
Papposphaera sp.	192	sphere	4.0	16.0	10.0							34	2145	372	2	5	225	47	
Papposphaera borealis	67	sphere			7.0							90	377	180	1	13	47	24	23
Papposphaera lepida	165	sphere	4.5	16.0	10.3							48	2145	564	0	7	225	68	5,10
Picarola margalefii	94	sphere	6.0	12.0	9.0							113	905	382	0	16	104	48	5
Pleurochrysis carterae	32	sphere	12.0	17.0	14.5							905	2572	1596	0	104	265	173	3,10
Pleurochrysis roscoffensis	8	sphere	12.0	20.0	16.0							905	4189	2145	0	104	411	225	7
Polycrater galapagensis	141	sphere	9.8	15.8	12.8							493	2065	1098	0	60	218	123	5
Pontosphaera sp.	114	various										65	14137	2476	2	10	1228	256	
Pontosphaera discopora	2	sphere	17.0	28.0	22.5							2572	11494	5964	0	265	1019	565	9,10
Pontosphaera echinofera	5	prolate spheroid						16.0				603	2533	1206	1	72	262	134	29
Pontosphaera haeckelli	2	sphere	11.0	15.0	13.0							697	1767	1150	0	82	189	129	29
Pontosphaera inermis	1	sphere	7.0	9.0	8.0							180	382	268	0	24	48	35	29
Pontosphaera nigra	42	prolate spheroid				20.0	24.0	22.0	14.0	16.0	15.0	2053	3217	2592	0	217	324	267	29
Pontosphaera ovalis	1	sphere	5.0	6.0	5.5							65	113	87	0	10	16	13	29
Pontosphaera stagnicola	1	sphere	14.0	20.0	17.0							1437	4189	2572	0	157	411	265	29
Pontosphaera syracusana	555	sphere	15.0	30.0	22.5							1767	14137	5964	0	189	1228	565	1,10
Poricalypta sp.	45	various										180	951	476	2	24	109	58	
Poricalypta aurisinae	67	sphere	7.0	12.0	9.5							180	905	449	0	24	104	55	5
Poricalypta magnaghii	92	prolate spheroid				10.0	13.5	11.8	6.5	11.6	9.1	221	951	504	0	29	109	61	25
Poritectolithus sp.	70	sphere	6.8	14.0	10.4							161	1437	585	3	22	157	70	4,5
Poritectolithus poritectus	70	sphere			9.0							191	802	382	1	26	93	48	5
Reticulofenestra parvula	159	sphere	3.0	3.8	3.4							14	29	21	0	2	5	3	5,10
Reticulofenestra sessilis	284	sphere	6.0	10.5	8.3							113	606	294	0	16	72	38	9,25,28
Rhabdosphaera sp.	295	sphere	4.0	12.0	8.0							34	905	452	2	5	104	56	
Rhabdosphaera ampullacea	1	sphere	6.8	7.3	7.1							165	204	183	0	22	27	25	28
Rhabdosphaera clavigera	1641	sphere	7.9	12.0	10.0							258	905	516	0	34	104	63	1,5,9,10,11,12,18
Rhabdosphaera hispida	46	sphere	10.0	12.0	11.0							524	905	697	0	63	104	82	29
Rhabdosphaera tignifer	2	sphere										400	1680	800	1	50	181	93	31
Rhabdosphaera xiphos	212	sphere	4.0	6.0	5.0							34	113	65	0	5	16	10	5
Scyphosphaera apsteinii	414	sphere	18.0	25.0	21.5							3054	8181	5204	0	310	751	500	1,5,9,10,11,28
Solisphaera sp.	45	sphere	5.0	9.4	7.2							65	431	182	2	10	53	25	
Solisphaera blagnacensis	45	sphere	5.6	9.4	7.5							110	464	221	1	16	57	29	2
Solisphaera emidasius	45	sphere	5.0	8.0	6.5							65	268	144	0	10	35	20	2
Sphaerocalypta sp.	45	sphere	5.0	22.0	13.5							65	5575	1288	3	10	532	143	5,10,11
Sphaerocalypta adenensis	71	sphere	5.5	8.5	7.0							87	322	180	0	13	41	24	5
Sphaerocalypta quadridentata	68	sphere	5.0	9.0	7.0							65	382	180	0	10	48	24	5,10,11
Syracolithus sp.	47	sphere	10.0	19.0	14.5							524	3591	1596	2	63	358	173	
Syracolithus dalmaticus	29	sphere	10.0	19.0	14.5							524	3591	1596	0	63	358	173	5,10
Syracosphaera sp.	1249	sphere										14	19389	1042	2	2	1631	118	
Syracosphaera ampliorea	25	sphere	5.6	10.2	7.9							92	556	258	0	13	67	34	5,25
Syracosphaera anthos	183	sphere	7.0	13.0	10.0							180	1150	524	0	24	129	63	5,9,10

Biovolume Category	n	Shape	Diameter			Length			Width			Biovolume (μm^3)			Flag	Biomass (pg C cell ⁻¹)			References
			Min	Max	Mean	Min	Max	Mean	Min	Max	Mean	Min	Max	Mean		Min	Max	Mean	
Syracosphaera anthos holo	2	sphere			15.0							884	3711	1767	1	102	369	189	29
Syracosphaera bannockii	112	sphere	5.0	7.0	6.0							65	180	113	0	10	24	16	5
Syracosphaera borealis	49	sphere	6.5	8.2	7.4							144	289	208	0	20	37	28	25
Syracosphaera brandtii	43	sphere	12.0	15.0	13.5							905	1767	1288	0	104	189	143	29
Syracosphaera corolla	141	sphere	9.8	11.6	10.7							493	817	641	0	60	95	76	25
Syracosphaera cupulifera	3	sphere			10.0							262	1100	524	1	34	124	63	29
Syracosphaera delicata	45	sphere	6.5	7.5	7.0							144	221	180	0	20	29	24	5
Syracosphaera dentata	19	sphere	5.0	17.0	11.0							65	2572	697	0	10	265	82	29
Syracosphaera dilatata	117	sphere	9.0	14.0	11.5							382	1437	796	0	48	157	92	4
Syracosphaera epigrosa	117	sphere	8.0	13.0	10.5							268	1150	606	0	35	129	72	25
Syracosphaera exigua	94	sphere	7.5	11.7	9.6							221	839	463	0	29	97	57	25
Syracosphaera grundii	38	sphere	8.0	10.0	9.0							268	524	382	0	35	63	48	29
Syracosphaera halldalii	116	sphere	6.0	18.0	12.0							113	3054	905	0	16	310	104	5,9,10,25
Syracosphaera histrica	273	prolate spheroid				10.8	20.0	15.4	9.0	14.0	11.5	458	2053	1066	0	56	217	120	10,25
Syracosphaera lamina	165	prolate spheroid				12.0	47.0	29.5	12.5	23.5	18.0	982	13590	5005	0	112	1185	483	9,11,25
Syracosphaera marginaporata	165	sphere	3.0	6.0	4.5							14	113	48	0	2	16	7	4
Syracosphaera molischii	1083	sphere	4.5	11.3	7.9							48	755	258	0	7	88	34	5,9,10,11,25
Syracosphaera nana	106	sphere	5.5	8.2	6.9							87	289	168	0	13	37	23	5,25
Syracosphaera nodosa	248	sphere	6.5	20.0	13.3							144	4189	1218	0	20	411	136	5,10,25
Syracosphaera noroitica	70	sphere	9.0	11.0	10.0							382	697	524	0	48	82	63	25
Syracosphaera orbiculus	165	sphere	6.0	9.3	7.7							113	421	234	0	16	52	31	25
Syracosphaera ossa	141	sphere	6.0	8.3	7.2							113	299	191	0	16	38	26	5,25
Syracosphaera pirus	240	prolate spheroid				6.0	18.0	12.0	6.0	10.0	8.0	113	942	402	0	16	108	50	9,10,12,25
Syracosphaera prolongata	511	cone				10.0	70.0	40.0	7.0	8.0	7.5	64	586	295	0	10	70	38	5,10,11,25
Syracosphaera pulchra	1531	prolate spheroid				5.0	70.0	37.5	10.0	23.0	16.5	262	19389	5346	0	34	1631	512	1,5,9,10,11,12
Syracosphaera pulchra (holo)	257	sphere	8.0	28.0	18.0							268	11494	3054	0	35	1019	310	10,11
Syracosphaera rotula	116	sphere	5.0	7.2	6.1							65	195	119	0	10	26	17	5,10,25
Syracosphaera schilleri	1	sphere			15.0							884	3711	1767	1	102	369	189	29
Syracosphaera spinosa	2	sphere	8.0	9.5	8.8							268	449	351	0	35	55	44	29
Syracosphaera subsalsa	5	prolate spheroid				20.0	28.0	24.0	14.0	18.0	16.0	2053	4750	3217	0	217	461	324	29
Syracosphaera tumularis	94	sphere	10.0	20.0	15.0							524	4189	1767	0	63	411	189	5
Thoracosphaera heimii	33	sphere	12.0	12.6	12.3							905	1047	974	0	104	118	111	28
Turrilithus latericioides	206	sphere	8.0	11.0	9.5							268	697	449	0	35	82	55	5
Umbellosphaera sp.	690	sphere	9.2	16.0	12.6							408	2145	1035	2	51	225	117	
Umbellosphaera irregularis	1079	sphere	10.0	15.0	12.5							524	1767	1023	0	63	189	116	9
Umbellosphaera tenuis	420	sphere	9.2	16.0	12.6							408	2145	1047	0	51	225	118	5,10,11
Umbilicosphaera sp.	1968	sphere	8.5	43.0	25.8							322	41630	4300	2	41	3242	421	
Umbilicosphaera foliosa	46	sphere	10.0	18.0	14.0							524	3054	1437	0	63	310	157	5,10,14,25,28
Umbilicosphaera hulburtiana	289	prolate spheroid				8.5	28.0	18.3	8.5	24.0	16.3	322	8445	2523	0	41	773	261	5,10
Umbilicosphaera sibogae	1601	sphere	8.5	43.0	25.8							322	41630	8940	0	41	3242	813	1,5,9,10,11,12,25
Zygosphaera sp.	1	sphere	6.0	15.0	10.5							113	1767	370	2	16	189	46	
Zygosphaera amoena	45	sphere	5.0	7.0	6.0							65	180	113	0	10	24	16	5
Zygosphaera hellenica	120	sphere	8.0	15.0	11.5							268	1767	796	0	35	189	92	5,10,11,12,17,28
Zygosphaera marsilii	27	sphere	6.0	8.5	7.3							113	322	200	0	16	41	27	5,10
Unidentified coccolithophore Measurements Provided	3949											14	65450	524		2	4870	63	
Biomasses Only	3167																		
Mixed Categories	205																		
Total	438																		
	58384																		

References

[1] Avancini, M., Cicero, A. M., Girolamo, I. D., Innamorati, M., and Magaletti, E.: Guida al riconoscimento del plancton dei mari italiani, Volume I Fitoplancton, 2006.

- [2] Bollmann, J., Cortés, M. Y., Kleijne, A., Østergaard, J. B., and Young, J. R.: *Solisphaera* gen. nov. (Prymnesiophyceae), a new coccolithophore genus from the lower photic zone, *Phycologia*, 45, 465–477, doi:10.2216/05-14.1, 2006.
- [3] Bottino, N.: The effects of arsenate and arsenite on the growth and morphology of the marine unicellular algae *Tetraselmis chui* (Chlorophyta) and *Hymenomonas carterae* (Chrysophyta), *Journal of Experimental Marine Biology and Ecology*, 33, 153–168, doi:10.1016/0022-0981(78)90005-9, 1978.
- [4] Cros, L. and Fortuño, J.: *Atlas of northwestern Mediterranean coccolithophores*, Scientia Marina, 2002.
- [5] Cros i Miguel, L.: *Planktonic coccolithophores of the NW Mediterranean*, Ph.D. thesis, University of Barcelona, 2002.
- [6] Doan-Nhu, H. and Larsen, J.: Haptophyte algae of Vietnamese waters. The orders Phaeocystales, Prymnesiales and Isochrysidales (Prymnesiophyceae), *Nova Hedwigia*, 91, 193–222, doi:10.1127/0029-5035/2010/0091-0193, 2010.
- [7] Gayral, P. and Fresnel, J.: Nouvelles observations sur deux Coccolithophoracées marines: *Cricosphaera roscoffensis* (P. Dangeard) comb. nov. et *Hymenomonas globosa* (F. Magne) comb. nov., *Phycologia*, 15, 339–355, 1976.
- [8] Hagino, K., Okada, H., and Matsuoka, H.: Spatial dynamics of coccolithophore assemblages in the Equatorial Western-Central Pacific Ocean, *Marine Micropaleontology*, 39, 53–72, doi:10.1016/S0377-8398(00)00014-1, 2000.
- [9] Hallegraeff, G. M.: Coccolithophorids (Calcareous Nanoplankton) from Australian Waters, *Botanica Marina*, 27, 229–248, doi:10.1515/botm.1984.27.6.229, 1984.
- [10] Heimdal, B.: Coccolithophores, in: *Identifying marine phytoplankton*, edited by Tomas, C. R., 1997.
- [11] Heimdal, B. R. and Saugestad, A.: Light microscope studies on coccolithophorids from the western Mediterranean Sea, with notes on combination cells of *Daktylethra pirus* and *Syracosphaera pulchra*, *Plant Biosystems*, 136, 3–27, doi:10.1080/11263500212331358491, 2002.
- [12] Hernandez-Becerril, D. and Bravo-Sierra, E.: Coccolithophorids from the west coast of Baja California, Mexico, *Hydrobiologia*, pp. 31–45, 2001.
- [13] Hillebrand, H., Dürselen, C., Kirschtel, D., and U: Biovolume calculation for pelagic and benthic microalgae, *Journal of*, 424, 403–424, 1999.
- [14] Inouye, I. and Pienaar, R.: New observations on the Coccolithophorid *Umbilicosphaera sibogae* var. *foliosa* (Prymnesiophyceae) with reference to cell covering, cell structure and flagellar apparatus, *European Journal of Phycology*, 19, 357–369, doi:10.1080/00071618400650401, 1984.
- [15] Jordan, R., Cros, L., and Young, J.: A revised classification scheme for living haptophytes, *Micropaleontology*, 50, 55–79, 2004.
- [16] Klaveness, D.: *Coccolithus huxleyi* (Lohm.) Kamptn II. The flagellate cell, aberrant cell types, vegetative propagation and life cycles, *British Phycological Journal*, pp. 37–41, 1972.
- [17] Kleijne, A.: Holococcolithophorids from the Indian Ocean, Red Sea, Mediterranean Sea and North Atlantic Ocean, *Marine Micropaleontology*, 17, 1–76, doi:10.1016/0377-8398(91)90023-Y, 1991.
- [18] Kleijne, A.: Extant Rhabdosphaeraceae (coccolithophorids, class Prymnesiophyceae) from the Indian Ocean, Red Sea, Mediterranean Sea and North Atlantic Ocean, *Scripta geologica*, 100, 1–63, 1992.
- [19] Kleijne, A., Jordan, R. W., Heimdal, B. R., Samtleben, C., Chamberlain, A. H. L., and Cros, L.: Five new species of the coccolithophorid genus *Alisphaera* (Haptophyta), with notes on their distribution, coccolith structure and taxonomy, *Phycologia*, 40, 583–601, doi:10.2216/i0031-8884-40-6-583.1, 2002.
- [20] Lecal, J.: Le Nannoplancton des Côtes d’Israël, *Hydrobiologia*, 29, doi:10.1007/BF00189902, 1967.
- [21] Malinverno, E.: Morphological variability within the genus *Calciosolenia* (coccolithophorids) from the eastern Mediterranean Sea, *Micropaleontology*, 50, 81–91, 2004.
- [22] Manton, I. and Oates, K.: Fine-structural observations on *Papposphaera Tangen* from the Southern Hemisphere and on *Pappomonas* gen. nov. from South Africa and Greenland, *British Phycological Journal*, 10, 93–109, doi:10.1080/00071617500650091, 1975.
- [23] Manton, I., Sutherland, J., and McCully, M.: Fine structural observations on coccolithophorids from South Alaska in the genera *Papposphaera tangen* and *Pappomonas manton* and *oates*, *European Journal of Phycology*, 11, 225–238, doi:10.1080/00071617600650511, 1976.
- [24] Menden-Deuer, S. and Lessard, E. J.: Carbon to volume relationships for dinoflagellates, diatoms, and other protist plankton, *Limnology and Oceanography*, 45, 569–579, 2000.
- [25] Okada, H. and McIntyre, A.: Modern coccolithophores of the Pacific and North Atlantic oceans, *Micropaleontology*, 23, 1, 1977.
- [26] Prielwalder, H.: Die Coccolithophoridenflora des Locus typicus von *Pseudotextularia elegans* (Rzehak), Reingrubhöhe, Niederösterreich; (Maastricht), *Jahrbuch Geologischen Bundesanstalt*, 116, 3–34, 1973.
- [27] Quinn, P. S., Cortés, M. Y., and Bollmann, J.: Morphological variation in the deep ocean-dwelling coccolithophore *Florisphaera profunda* (Haptophyta), *European Journal of Phycology*, 40, 123–133, doi:10.1080/09670260400024667, 2005.
- [28] Reid, F. M. H.: Coccolithophorids of the North Pacific Central Gyre with Notes on Their Vertical and Seasonal Distribution, *Micropaleontology*, 26, 151, doi:10.2307/1485436, 1980.
- [29] Schiller, J.: Coccolithinae, in: *Kryptogamen - flora von Deutschland, Österreich und der Schweiz*, edited by Rabenhorst, L., Akademische Verlagsgesellschaft m. b. H., Leipzig, 1930.
- [30] Sun, J.: Geometric models for calculating cell biovolume and surface area for phytoplankton, *Journal of Plankton Research*, 25, 1331–1346, doi:10.1093/plankt/fbg096, 2003.
- [31] Vilicic, D.: An examination of cell volume in dominant phytoplankton species of the central and southern Adriatic Sea, *Int. Revue ges. Hydrobiol.*, 70, 829–843, 1985.
- [32] Young, J. R. and Andruleit, H.: *Navilithus altivelum*: a remarkable new genus and species of deep photic coccolithophores, *Journal of Micropaleontology*, 25, 141–151, doi:10.1144/jm.25.2.141, 2006.