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DIATOM TAPHOCOENOSSES IN THE COASTAL UPWELLING AREAS OFF WESTERN--ETC(U)

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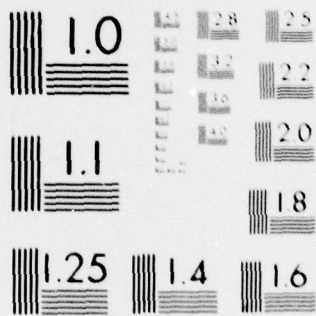
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The tables which constitute this report present the basic data and results of statistical analyses for the paper "Diatom Taphocoenoses in the Coastal Upwelling Area off Western South America" by Gretchen Schuette and Hans Schrader. Because of editorial constraints these tables were not included with the paper in Nova Hedwigia, Beiheft 64 (Proceedings of the Fifth International Symposium on Living and Fossil Diatoms, Antwerp) 1979.

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DIATOM TAPHOCOENOSSES IN THE COASTAL UPWELLING
AREA OFF WESTERN SOUTH AMERICA
JULY 1979

Funding from the Office of Naval Research and
the National Science Foundation

by

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Introduction

Diatom floral analysis of 116 sediment surface samples obtained off Peru reveals a boundary in the sediments between coastal upwelling influenced sediments and sediments outside the highly productive realm. Sinuous patterns of relative abundance for meroplanktic species (Actinocyclus octonarius, Actinoptychus senarius, and Cyclotella striata/stylorum) may preserve the meander-like patterns of surface water parameters off Peru. The occurrence of loci of high abundance of diatom valves per gram of dry sediment, and the limited occurrence of Skeletonema costatum and of a species of the genus Delphineis are additional pieces of evidence that upwelled tongues of cold water have a correspondingly patchy sediment signal.

The tables which constitute this report present the basic data and results of statistical analyses for the paper "Diatom Taphocoenoses in the Coastal Upwelling Area off Western South America" by Gretchen Schuette and Hans Schrader. Because of editorial constraints these tables were not included with the paper in *Nova Hedwigia*, Beiheft 64 (Proceedings of the Fifth International Symposium on Living and Fossil Diatoms, Antwerp), 1979.

Table I

A	B	C	D	E	F	G	H	I	J
1	W7706-78	RB	3°29.0'S	81°17.2'W	539	0			
2	W7706-79	K	3°29.0'S	81°17.2'W	538	0			
3	W7706-76	RB	3°34.7'S	81°00.1'W	365	2			+Late Miocene
4	W7706-77	K	3°35.0'S	81°02.5'W	366	0			
5	W7706-74	RB	3°45.4'S	81°24.3'W	713	3			
6	W7706-73	K	3°29.4'S	81°29.0'W	2116	16			
7	W7706-72	K	3°31.2'S	81°38.5'W	3601	10			
8	W7706-71	G	3°40.9'S	82°30.3'W	3600	4			Pleistocene/ Pliocene
9	W7706-69	RB	4°12.0'S	85°20.4'W	3537	5			
10	W7706-70	G	4°12.9'S	85°19.7'W	3453	14			
11	W7706-84	MG	5°00.0'S	85°57.2'W	4010	9			
12	W7706-68	G	4°49.1'S	85°30.7'W	3903	13			+Pliocene/ Miocene(?)
13	W7706-87	MG	5°03.25'S	93°04.8'W	3858	37			+?Oligocene
14	W7706-88	MG	5°00.3'S	93°26.5'W	3650	6			
15	W7706-89	MG	5°58.6'S	101°01.5'W	3990	10			
16	W7706-75	MG	9°57.09'S	97°56.3'W	4010	5			
17	W7706-33	MG	10°00.1'S	92°40.0'W	4093	4			
18	W7706-30	MG	10°03.1'S	88°40.6'W	4237	2			
19	W7706-66	RB	10°00.7'S	87°58.6'W	4305	0			
20	W7706-67	G	10°01.4'S	87°57.9'W	4351	0			
21	W7706-65	G	10°11.8'S	84°44.8'W	4500	0			
22	W7706-64	K	8°49.0'S	81°56.6'W	4404	12			
23	W7706-76	MG	8°07.0'S	81°36.0'W	5122	32			
24	W7706-83	MG	7°40.1'S	81°02.6'W	3103	71			
25	W7706-62	K	8°13.0'S	80°47.7'W	2670	0			
26	W7706-63	K	8°16.9'S	80°55.4'W	4513	30			
27	W7706-61	K	8°03.7'S	80°25.9'W	838	4			+Late Miocene
28	W7706-60	RB	8°03.7'S	80°25.9'W	830	0			
29	W7706-58	RB	8°03.4'S	80°24.3'W	486	0			
30	W7706-57	RB	7°55.7'S	80°10.9'W	192	1			
31	W7706-51	RB	9°44.6'S	79°24.3'W	259	0			
32	W7706-53	RB	9°47.0'S	79°26.5'W	414	0			
33	W7706-40	K	11°15.3'S	77°57.8'W	186	29			
34	W7706-39	RB	11°15.1'S	77°57.4'W	186	120			
35	W7706-41	K	11°20.6'S	78°07.0'W	411	11			
36	W7706-42	RB	11°20.6'S	78°07.0'W	411	15			
37	W7706-43	RB	11°24.6'S	78°13.8'W	584	2			
38	W7706-44	K	11°24.6'S	78°13.8'W	580	1			
39	W7706-45	K	11°26.6'S	78°17.2'W	810	2			
40	W7706-47	RB	11°40.2'S	78°25.8'W	1500	4			+unidentified older Miocene
41	W7706-49	K	11°16.6'S	79°05.9'W	3970	5			+Late Miocene
42	W7706-58	FF	11°37.6'S	79°14.2'W	6189	31			+Late Miocene
43	W7706-56	FF	11°38.4'S	79°14.2'W	6256	34			+Late Miocene
44	W7706-55	FF	11°38.5'S	79°14.8'W	6309	34			+Late Miocene
45	W7706-50	K	11°40.7'S	79°57.9'W	4902	7			
46	W7706-98	MG	12°22.0'S	77°28.0'W	300	0			
47	W7706-3	SS	12°28.2'S	77°02.7'W	130	0			
48	W7706-2	RB	12°53.2'S	76°52.0'W	161	43			
49	W7706-1	RB	12°54.0'S	76°51.0'W	148	2			
50	W7706-3	K	12°58.3'S	76°57.4'W	304	6			
51	W7706-4	K	12°58.9'S	76°58.0'W	325	8			
102	W7706-22	MG	16°48.6'S	74°03.4'W	5301	119			+Late Miocene
103	F075-3-14	P	16°57.0'S	74°33.0'W	6390	15			
104	F075-3-15	MG	17°11.0'S	74°52.0'W	4690	25			
105	W7706-19	MG	17°40.2'S	75°47.3'W	4625	1			+?Oligocene
106	W7706-19	K	22°14.3'S	79°30.7'W	4479	0			
107	W7706-20	K	23°01.9'S	73°44.7'W	3717	5			
108	W7706-21	K	23°14.7'S	71°48.7'W	4400	3			
109	F075-3-9	MG	23°15.0'S	71°24.0'W	7597	0			
110	W7706-22	K	23°18.7'S	71°20.0'W	8060	3			
111	W7706-24	K	23°19.2'S	71°08.7'W	5107	8			
112	W7706-28	RB	23°00.0'S	70°41.0'W	764	0			
113	W7706-86	MG	24°58.0'S	70°58.0'W	2925	8			
114	W7706-87	FF	25°01.0'S	71°26.0'W	3992	0			
115	W7706-82	MG	27°19.4'S	71°20.0'W	3063	0			
116	W7706-81	MG	27°34.4'S	71°51.2'W	6118	0			

A = Number this paper

B = OSU core number

C = Type of Sampler

D = Latitude

E = Longitude

F = Water Depth

G = Abundance x 10⁶ of diatoms per gram dry sediment

H = Age of reworked older diatoms

I = % displaced shallow water benthic diatoms

Table II. Relative abundance of 43 species at 49 stations.

Station #	Species # ^a																						
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	
111	0.00	1.02	0.00	0.00	.68	2.73	0.00	.68	0.00	0.00	77.47	0.00	1.02	0.00	0.00	1.71	0.00	0.00	0.00	2.39	0.00	0.00	
113	0.00	.74	0.00	0.00	0.00	.74	0.00	0.00	0.00	0.00	85.61	0.00	1.48	0.00	0.00	5.17	0.00	0.00	0.00	0.00	0.00	0.00	
4	0.00	2.34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	50.78	0.00	0.00	0.00	0.00	4.69	0.00	0.00	0.00	3.13	0.00	0.00	
5	0.00	0.00	0.00	0.00	1.65	22.31	0.00	0.00	0.00	0.00	48.35	0.00	0.00	0.00	0.00	41	41	0.00	41	0.00	0.00	.41	
8	0.00	0.00	0.00	.61	1.82	.30	0.00	0.00	0.00	0.00	34.55	0.00	.30	0.00	0.00	15.76	0.00	0.00	0.00	2.73	0.00	1.52	
20	0.00	.45	0.00	0.00	0.00	0.00	1.79	0.00	0.00	0.00	3.14	0.00	2.24	0.00	0.00	37.67	0.00	0.00	0.00	0.00	0.00	.45	
21	0.00	0.00	0.00	.52	.52	.52	1.55	0.00	0.00	0.00	4.66	0.00	.52	0.00	0.00	61.14	0.00	0.00	0.00	1.55	1.04	0.00	
22	0.00	0.00	0.00	0.00	0.00	4.08	0.00	0.00	0.00	0.00	14.97	0.00	0.00	0.00	0.00	24.44	0.00	0.00	0.00	35.03	2.38	0.00	
23	0.00	0.00	0.00	0.00	1.76	7.62	0.00	0.00	0.00	0.00	56.30	0.00	0.00	.59	0.00	2.93	0.00	0.00	0.00	8.80	3.81	0.00	
24	1.26	3.46	0.00	0.00	1.57	1.89	0.00	0.00	0.00	0.00	56.31	0.00	.31	0.00	0.00	1.57	.31	0.00	.31	11.64	.63	0.00	
25	0.00	2.54	.42	0.00	1.27	13.14	.42	0.00	0.00	0.00	29.24	0.00	1.27	0.00	0.00	15.68	1.27	0.00	1.69	17.37	.85	0.00	
26	0.00	1.28	0.00	0.00	.96	8.33	0.00	0.00	0.00	0.00	38.78	0.00	.64	0.00	0.00	9.28	.64	0.00	0.00	16.35	1.92	0.00	
28	0.00	12.92	0.00	0.00	1.25	16.25	0.00	0.00	0.00	0.00	10.00	0.00	1.25	0.00	0.00	10.00	2.92	0.00	0.00	22.08	1.25	0.00	
30	.27	23.84	0.00	0.00	2.19	5.75	0.00	0.00	0.00	0.00	.27	18.63	0.00	.27	0.00	0.00	4.64	.55	0.00	0.00	18.08	.82	0.00
41	0.00	9.87	0.00	0.00	1.56	7.53	0.00	0.00	0.00	0.00	34.03	0.00	.26	0.00	0.00	11.43	.26	0.00	0.00	10.39	1.04	.78	
45	0.00	0.00	0.00	0.00	.80	2.65	0.00	0.00	0.00	0.00	39.79	.27	1.33	0.00	0.00	18.57	0.00	0.00	.53	6.10	.80	1.06	
46	5.67	.26	0.00	0.00	1.03	15.21	0.00	.77	0.00	0.00	33.51	.52	2.84	0.00	0.00	10.57	0.00	0.00	.52	11.08	0.00	0.00	
55	0.00	.34	0.00	0.00	3.10	10.34	0.00	0.00	0.00	0.00	34.83	0.00	.34	0.00	0.00	18.97	.34	0.00	0.00	17.93	0.00	.34	
59	0.00	8.76	0.00	0.00	2.82	12.99	0.00	0.00	0.00	0.00	.28	34.46	0.00	.56	0.00	9.32	0.00	0.00	0.00	9.60	1.69	0.00	
60	0.00	1.01	0.00	0.00	1.68	25.50	0.00	0.00	0.00	0.00	24.50	0.00	0.00	0.00	0.00	.67	0.00	0.00	0.00	2.01	2.68	0.00	
62	0.00	.28	0.00	0.00	.28	5.11	0.00	0.00	0.00	0.00	77.84	0.00	0.00	0.00	0.00	.85	0.00	0.00	0.00	1.70	1.42	0.00	
63	2.60	0.00	0.00	0.00	.52	9.11	.52	0.00	0.00	0.00	36.20	0.00	.78	0.00	0.00	5.21	0.00	0.00	0.00	12.24	0.00	0.00	
74	.58	0.00	0.00	0.00	1.15	3.75	0.00	0.00	0.00	0.00	58.50	0.00	.58	0.00	0.00	15.56	0.00	0.00	.29	4.32	.58	0.00	
75	.99	0.00	0.00	0.00	0.00	.64	0.00	0.00	0.00	5.50	75.83	0.00	.99	0.00	0.00	6.62	0.00	0.00	0.00	1.66	.33	0.00	
76	0.00	.28	0.00	.28	3.06	7.50	.28	.28	0.00	0.00	35.83	0.00	.83	0.00	0.00	16.11	.28	0.00	.56	7.78	.28	0.00	
77	0.00	0.00	0.00	0.00	.79	3.17	.79	.40	0.00	0.00	30.95	0.00	0.00	0.00	0.00	16.65	0.00	0.00	1.19	9.92	.79	.79	
82	0.00	5.86	0.00	0.00	.93	4.01	.31	0.00	0.00	.31	25.00	.62	1.54	0.00	0.00	9.88	0.00	1.23	0.00	11.42	0.00	0.00	
83	0.00	0.00	0.00	0.00	5.74	4.31	0.00	.48	.48	0.00	35.89	.96	.96	0.00	0.00	14.83	.48	0.00	.48	1.91	.48	.48	
84	1.12	2.61	0.00	0.00	2.24	7.09	0.00	.37	0.00	0.00	46.64	1.49	.75	0.00	0.00	11.19	.37	0.00	0.00	7.84	0.00	0.00	
91	.30	4.78	0.00	0.00	0.00	3.58	0.00	.30	0.00	.30	70.15	0.00	.60	0.00	0.00	1.79	0.00	0.00	.30	3.58	.30	0.00	
92	0.00	30.73	0.00	0.00	0.00	4.47	0.00	0.00	0.00	0.00	26.82	0.00	0.00	0.00	0.00	1.12	0.00	0.00	0.00	5.59	0.00	0.00	
104	.26	3.37	0.00	0.00	1.81	4.40	0.00	.78	0.00	.26	52.33	.52	2.33	0.00	0.00	6.99	0.00	0.00	0.00	8.03	.26	0.00	
105	0.00	1.18	0.00	0.00	.59	1.18	0.00	0.00	0.00	0.00	55.62	0.00	1.18	0.00	0.00	8.28	0.00	0.00	.59	5.33	0.00	0.00	
33+34	0.00	6.02	1.70	0.00	.79	2.75	.79	0.00	0.00	.13	60.86	0.00	1.05	0.00	.50	1.31	0.00	0.00	0.00	4.06	0.00	0.00	
35+36	1.46	6.55	.12	0.00	2.79	10.19	0.00	.12	0.00	0.00	31.55	0.00	.73	0.00	0.00	22.21	.12	0.00	0.00	7.28	.12	.49	
37+38	.52	26.06	0.00	0.00	1.77	2.73	0.00	0.00	0.00	0.00	28.79	0.00	.27	0.00	0.00	3.96	0.00	0.00	0.00	11.60	0.00	0.00	
39+40	.13	15.00	0.00	0.00	2.68	7.52	0.00	.13	0.00	.64	25.99	0.00	.51	0.00	0.00	8.92	0.00	0.00	.13	14.01	.51	.25	
43+44	0.00	1.47	.15	0.00	1.18	9.00	0.00	0.00	0.00	0.00	38.64	0.00	1.33	0.00	0.00	10.32	0.00	.15	.74	5.46	1.62	.29	
48+49	0.00	9.64	0.00	0.00	.23	6.43	0.00	.11	0.00	.92	58.09	0.00	.23	0.00	0.00	.80	.23	0.00	0.00	5.28	.34	0.00	
50+51	1.02	0.00	.15	0.00	2.20	16.54	0.00	.73	.15	0.00	41.14	0.00	.44	0.00	0.00	12.74	0.00	0.00	.44	13.18	.15	0.00	
54+56+57	.91	7.11	0.00	0.00	.91	8.43	0.00	0.00	0.00	1.37	39.75	.21	.63	0.00	0.00	14.82	0.00	0.00	.41	9.04	.41	0.00	
64+65+66	.74	5.89	.11	0.00	2.52	8.10	0.00	.42	0.00	.70	57.00	.08	.62	.08	0.00	4.59	.31	0.00	.16	7.15	.62	0.00	
65-66	0.00	2.33	0.00	0.00	1.24	7.47	0.00	.16	0.00	.16	60.36	.04	.97	0.00	0.00	2.96	.21	0.00	.04	6.90	.59	.04	
95-101+103	.55	4.97	0.00	0.00	1.36	4.15	0.00	.08	.04	.04	38.15	0.00	.19	0.00	0.00	1.93	.39	0.00	0.00	3.08	.58	0.00	
89+90	0.00	30.83	0.00	0.00	1.70	2.98	0.00	.43	0.00	0.00	67.33	0.00	.99	0.00	0.00	1.56	0.00	0.00	.14	6.25	.57	0.00	
93+94	.14	.71	0.00	0.00	.32	.81	0.00	.49	0.00	0.00	3.40	0.00	1.29	0.00	0.00	48.71	0.00	0.00	0.00	.97	.16	1.13	
9+10	0.00	0.00	0.00	.32	.79	.16	0.00	.32	0.00	0.00	35.55	0.00	.32	0.00	0.00	7.42	.16	0.00	0.00	4.90	0.00	.32	
6+7	0.00	0.00	0.00	0.00	1.76	6.09	0.00	.16	0.00	0.00	42.15	.16	.96	0.00	0.00	5.93	.48	0.00	.32	12.50	.80	0.00	

^aSpecies names corresponding to these column headings are given in Table IV

20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	
2.39	0.00	0.00	0.00	0.00	0.00	0.00	1.37	0.00	0.00	3.41	0.00	0.00	0.00	0.34	0.00	1.37	0.00	0.00	0.00	0.00	1.37	0.00	4.10	
0.00	0.00	0.00	0.00	0.37	0.00	0.00	0.00	0.00	0.00	2.58	0.00	0.00	0.00	.57	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.74	
3.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.13	.78	.78	.78	2.34	0.00	0.00	19.53	10.16	0.00	0.00	0.00	0.00	1.56	
0.00	0.00	0.41	0.00	0.00	0.00	0.00	1.65	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.13	3.31	1.24	2.07	2.89	0.00	9.09	0.00	1.65	
2.73	0.00	1.52	0.00	0.00	0.00	0.00	0.00	0.00	2.42	.61	4.85	0.00	0.30	0.00	0.00	16.97	8.18	0.00	.30	.30	1.52	0.00	6.97	
0.00	.45	0.00	0.00	0.00	.90	0.00	0.00	0.00	14.35	0.00	4.93	0.00	1.35	0.00	0.00	11.21	17.94	.45	0.00	0.00	.45	0.00	2.69	
1.55	1.04	0.00	0.00	0.00	.52	0.00	0.00	0.00	5.70	0.00	2.59	0.00	.52	0.00	0.00	11.40	4.66	0.00	0.00	0.00	1.04	0.00	1.55	
35.33	2.38	0.00	0.00	0.00	0.00	0.00	1.02	0.00	1.70	0.00	0.00	0.00	.34	0.00	0.00	9.18	2.04	0.00	0.00	0.00	0.00	0.00	4.76	
8.80	3.81	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.17	0.00	0.00	0.00	1.17	0.00	0.00	9.97	2.05	0.00	1.47	0.00	1.17	0.00	1.17	
11.84	.63	0.00	0.00	0.00	0.00	0.00	0.00	.63	2.83	0.00	.94	0.00	1.26	0.00	0.00	16.04	2.83	0.00	.31	0.00	.31	0.00	1.57	
17.37	.85	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.54	0.00	.42	0.00	.42	0.00	0.00	4.87	.85	0.00	0.00	0.00	0.00	0.00	1.69	
16.35	1.92	0.00	0.00	0.00	0.00	0.00	.32	0.00	1.60	0.00	.64	0.00	1.28	0.00	.96	11.86	1.28	0.00	0.00	0.00	.96	0.00	2.88	
22.08	1.25	0.00	0.00	0.00	0.00	1.25	0.00	1.25	0.00	0.00	.27	1.10	.27	.55	0.00	1.92	0.00	0.00	18.63	.55	0.00	.27	0.00	1.25
18.08	.82	0.00	0.00	0.00	0.00	0.00	0.00	.27	1.10	.27	.55	0.00	1.92	0.00	0.00	18.63	.55	0.00	.82	0.00	.27	0.00	1.25	
10.39	1.04	.78	0.00	0.00	0.00	1.04	0.00	.26	0.00	.52	0.00	.26	.52	.26	14.81	2.60	0.00	.52	0.00	.52	0.00	.52	0.00	1.56
6.10	.80	1.06	0.00	0.00	0.00	0.00	0.00	0.00	3.45	0.00	1.86	.53	.80	0.00	0.00	13.53	5.04	0.00	.53	0.00	1.06	0.00	1.33	
11.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.26	4.38	0.00	.52	.26	.77	0.00	0.00	9.28	.26	0.00	.77	0.00	.26	0.00	1.29	
17.93	0.00	.34	0.00	0.00	0.00	0.00	0.00	0.00	.34	0.00	0.00	.34	1.38	.69	0.00	4.83	0.00	.34	2.76	0.00	1.38	0.00	1.38	
9.80	1.89	0.00	0.00	0.00	0.00	0.00	0.00	1.98	0.00	.56	0.00	1.13	0.00	1.69	8.47	0.00	0.00	4.52	0.00	0.00	0.00	0.00	1.13	
2.21	2.88	0.00	0.00	0.00	0.00	0.00	0.00	.34	0.00	0.00	0.00	0.00	0.00	6.38	3.02	0.00	0.00	26.51	0.00	3.69	0.00	2.01		
1.70	1.42	0.00	0.00	0.00	0.00	0.00	0.00	.28	.28	0.00	0.00	0.00	0.00	.57	0.00	5.97	0.00	0.00	3.98	0.00	0.00	.28	1.14	
12.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.31	10.80	.31	.31	.62	6.17	0.00	0.00	11.48	5.26	0.00	1.91	.96	.96	0.00	6.51	
4.32	.58	0.00	0.00	0.00	0.00	0.00	.58	1.44	0.00	0.00	.58	1.44	0.00	0.00	6.92	.29	0.00	2.31	0.00	0.00	0.00	0.00	1.15	
1.66	.33	0.00	0.00	0.00	0.00	.99	0.00	1.66	0.00	.66	0.00	0.00	.99	.33	4.64	.33	0.00	.99	0.00	.66	0.00	.66	0.00	1.66
7.78	.28	0.00	0.00	0.00	0.00	0.00	0.00	1.94	0.00	1.11	.83	1.11	0.00	.28	12.78	2.78	.83	.83	0.00	.28	0.00	.28	0.00	3.89
9.92	.79	.79	0.00	0.00	0.00	0.00	0.00	5.95	0.00	1.59	1.19	1.59	0.00	0.00	13.10	4.76	.40	.40	0.00	.79	0.00	.79	0.00	2.78
11.42	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.31	10.80	.31	.31	.62	6.17	0.00	0.00	11.48	5.26	0.00	1.91	.96	.96	0.00	4.32	
1.91	.48	.48	0.00	0.00	0.00	.96	0.00	2.39	1.44	1.44	1.91	1.44	0.00	0.00	11.48	5.26	0.00	1.91	.96	.96	0.00	2.39		
7.84	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.22	0.00	.37	0.00	2.24	1.87	0.00	4.48	1.12	0.00	.37	0.00	0.00	0.00	0.00	2.61	
3.58	.30	0.00	0.00	0.00	0.00	0.00	0.00	1.19	0.00	.90	0.00	1.19	0.00	0.00	7.16	0.00	0.00	1.19	0.00	.90	0.00	.90	0.00	1.49
5.59	0.00	0.00	0.00	0.00	0.00	7.82	0.00	3.35	0.00	0.00	0.00	0.00	0.00	1.12	10.06	0.00	0.00	8.94	0.00	0.00	0.00	0.00	0.00	
8.03	.26	0.00	0.00	0.00	0.00	0.00	0.00	3.37	.26	0.00	0.00	4.15	0.00	0.00	6.99	.52	0.00	.26	.26	.52	0.00	.26	0.00	2.07
5.33	0.00	0.00	0.00	0.00	0.00	2.96	0.00	2.37	0.00	2.96	.59	1.78	0.00	.59	8.88	1.78	0.00	0.00	1.78	0.00	0.00	0.00	4.14	
4.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.65	.79	.13	1.18	2.36	2.36	0.00	7.20	.79	0.00	1.83	0.00	2.49	.13	.65	0.00	
7.28	.12	.49	0.00	0.00	0.00	.85	.12	.73	.12	1.21	0.00	1.58	0.00	0.00	8.37	1.09	0.00	0.00	0.00	0.00	0.00	0.00	2.18	
11.80	0.00	0.00	0.00	0.00	0.00	.95	1.23	0.00	.68	0.00	2.18	0.00	1.23	14.05	0.00	0.00	1.91	0.00	0.00	0.00	.27	1.50		
14.01	.51	.25	0.00	0.00	.13	.38	.25	2.04	.13	.25	0.00	1.27	.13	3.31	10.83	.38	0.00	1.53	0.00	1.02	0.00	1.15		
5.46	1.82	.29	0.00	0.00	.15	.29	0.00	2.95	.29	1.33	.44	2.51	.29	1.33	12.83	1.62	0.00	1.77	0.00	1.18	0.00	2.36		
5.28	.34	0.00	0.00	0.00	0.00	.69	0.00	.11	0.00	0.00	0.00	0.00	0.00	.11	14.70	.46	0.00	.92	0.00	.46	0.00	.23		
13.18	.15	0.00	0.00	0.00	0.00	1.32	0.00	.73	0.00	.44	.44	1.61	.15	0.00	4.83	0.00	.59	.29	0.00	0.00	0.00	.73		
9.04	.41	0.00	0.00	0.00	0.00	.61	0.00	1.32	0.00	.71	0.00	.81	0.00	.61	13.10	.71	0.00	1.93	0.00	.51	0.00	1.12		
11.45	.84	0.00	0.00	0.00	0.00	.32	0.00	2.21	.11	0.00	.42	2.21	0.00	.84	6.20	6.20	0.00	.84	0.00	.32	.11	1.68		
7.15	.62	0.00	0.00	0.00	.08	.08	0.00	1.79	.23	.62	.16	.93	.23	.62	7.08	.93	0.00	2.49	0.00	.93	.08	1.09		
6.90	.59	.04	0.00	0.00	.17	.55	.13	2.03	.17	.34	.47	1.57	.25	.08	5.25	1.23	0.00	2.88	.08	.47	.04	1.06		
3.08	.58	0.00	0.00	0.00	0.00	.77	0.00	1.73	.19	.28	.14	1.99	1.28	0.00	6.11	.43	0.00	1.56	0.00	0.00	0.00	1.85		
6.25	.57	0.00	0.00	0.00	.43	0.00	0.00	2.98	.14	0.00	0.00	0.00	0.00	0.00	4.83	0.00	.16	.16	0.00	2.43	0.00	9.87		
.97	.16	1.13	0.00	.16	.32	0.00	0.00	6.80	0.00	1.94	1.13	1.29	0.00	0.00	13.27	5.18	0.00	.16	.16	0.00	0.00	0.00	1.85	
4.90	0.00	.32	1.11	.32	.47	.16	.63	0.00	4.11	0.00	2.84	1.11	.47	0.00	0.00	24.80	6.64	0.00	.47	.16	1.26	0.00	5.21	
12.50	.80	0.00	0.00	0.00	0.00	0.00	0.00	4.17	0.00	2.08	0.00	1.92	.16	.48	9.62	2.72	0.00	2.08	.16	.48	.16	.48	1.44	

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Table III. Varimax Factor Matrix (Q-mode)

Station #	Communality	Factors				
		1	2	3	4	5
111	.987	.961	.025	.203	.094	.119
113	.984	.965	.056	.187	.062	.110
4	.961	.889	.197	.336	.135	-.016
5	.955	.830	.012	.206	.165	.443
8	.955	.781	.484	.277	.184	-.004
20	.930	.067	.954	.077	.094	-.029
21	.963	.045	.966	.031	.157	.050
22	.949	.233	.452	.215	.802	-.020
23	.995	.914	.070	.263	.250	.149
24	.989	.878	.085	.365	.279	.016
25	.991	.619	.349	.316	.575	.237
26	.997	.780	.209	.323	.474	.127
28	.979	.119	.256	.605	.697	.219
30	.994	.299	.146	.841	.419	.007
41	.990	.709	.302	.512	.342	.129
45	.995	.810	.449	.261	.253	.071
46	.965	.731	.257	.276	.448	.295
55	.973	.682	.354	.234	.520	.241
59	.996	.717	.218	.460	.342	.325
60	.916	.446	.017	.230	.162	.799
62	.996	.956	.019	.219	.097	.155
63	.968	.805	.172	.303	.423	.142
74	.988	.910	.250	.215	.173	.147
75	.991	.961	.092	.201	.091	.103
76	.991	.779	.411	.280	.336	.156
77	.992	.715	.517	.274	.368	.051
82	.910	.642	.362	.451	.398	.077
83	.978	.824	.423	.256	.184	.141
84	.982	.873	.223	.268	.261	.175
91	.996	.942	.037	.284	.114	.117
92	.968	.433	.054	.051	.031	.187
104	.991	.905	.137	.295	.229	.116
105	.994	.929	.174	.259	.172	.069
33+34	.993	.929	.036	.318	.119	.115
35+36	.971	.655	.506	.353	.324	.236
37+38	.991	.512	.117	.815	.222	.039
39+40	.989	.548	.235	.665	.406	.161
43+44	.986	.830	.285	.318	.274	.199
48+49	.993	.883	.046	.416	.158	.117
50+51	.983	.772	.218	.232	.436	.309
54+56+57	.992	.728	.360	.433	.332	.187
64+65+66	.978	.820	.152	.376	.334	.170
85-88	.999	.916	.085	.278	.210	.177
95-101+103	.993	.923	.053	.300	.167	.140
89+90	.984	.607	.066	.773	.028	.118
93+94	.996	.950	.035	.237	.159	.108
9+10	.979	.049	.974	.057	.158	.018
6+7	.885	.777	.323	.353	.221	-.065
69+72	.993	.845	.156	.338	.351	.128
Variance		57.188	11.781	14.927	9.984	3.903
Cum. Var.		57.188	68.968	83.895	93.879	97.782

Table IV. Varimax Factor Score Matrix (Q-mode).

Species # and name	Factors				
	1	2	3	4	5
1 <i>Actinocyclus curvatus</i> / <i>Coscinodiscus rothii</i>	.004	-.005	-.008	.029	.016
2 <i>Actinocyclus octonarius</i>	-.190	-.024	.887	-.204	.017
3 <i>Actinocyclus divisus</i>	.002	-.001	-.001	.001	.001
4 <i>Actinocyclus ellipticus</i>	.001	.006	-.000	-.003	-.002
5 <i>Actinoptychus splendens</i>	.005	.020	.020	.026	.050
6 <i>Actinoptychus senarius</i>	-.076	-.040	.042	.295	.761
7 <i>Asteromphalus</i> spp.	-.001	.022	-.001	-.007	.001
8 <i>Asteromphalus arachne</i>	.004	.000	-.004	.004	.002
9 <i>Asteromphalus petterssonii</i>	.000	.001	-.000	-.001	.001
10 <i>Biddulphia aurita</i>	.000	-.002	.009	-.000	-.000
11 <i>Chaetoceros</i> resting spore group	.970	-.007	.178	.053	.100
12 <i>Coscinodiscus</i> #1	.003	.002	-.002	.001	.001
13 <i>Coscinodiscus africanus</i> / <i>C. tabularis</i>	.008	.023	-.002	.015	.008
14 <i>Coscinodiscus lineatus</i>	.001	-.000	-.001	.000	.000
15 <i>Coscinodiscus lineatus</i> <i>v. plicata</i>	.000	-.000	-.000	-.000	.000
16 <i>Coscinodiscus nodulifer</i> / <i>C. radiatus</i>	-.038	.916	-.059	.115	.097
17 <i>Coscinodiscus obscurus</i> / <i>C. perforatus</i>	-.009	-.007	.010	.033	.006
18 <i>Coscinodiscus oculus-iridis</i>	-.000	.001	.002	.002	-.003
19 <i>Coscinodiscus symbolophorus</i>	.003	.003	-.007	.012	.004
20 <i>Cyclotella striata/stylorum</i>	-.084	-.123	.148	.896	-.155
21 <i>Delphineis</i> spp.	-.004	.001	.001	.036	.039
22 <i>Hemidiscus cuneiformis</i>	.003	.015	.000	-.006	-.003
23 <i>Nitzschia bicapitata</i>	.001	.001	.001	-.000	-.005
24 <i>Nitzschia interrupta</i>	.001	.001	-.000	-.001	-.002
25 <i>Nitzschia marina</i>	-.001	.010	.001	-.006	-.001
26 <i>Nitzschia seriata</i>	.000	.000	-.000	-.000	-.001
27 <i>Paralia sulcata</i>	-.011	.005	.065	-.034	.028
28 <i>Pleurosigma</i> spp.	-.001	-.001	.008	.000	-.004
29 <i>Pseudoeunotia doliolus</i>	.019	.170	.039	-.023	-.045
30 <i>Rhizosolenia alata</i>	.005	.001	.000	.002	-.007
31 <i>Rhizosolenia bergonii</i>	.016	.074	.005	-.030	-.032
32 <i>Rhizosolenia styliiformis</i>	.008	.013	-.006	.002	-.010
33 <i>Roperia tessellata</i>	.018	.017	.021	.031	-.031
34 <i>Skeletonema costatum</i>	.006	-.003	-.001	.002	.001
35 <i>Stephanopyxis palmeriana</i> / <i>S. turris</i>	-.018	-.001	.026	-.018	.146
36 <i>Thalassionema nitzschioides</i>	.038	.236	.370	.134	-.238
37 <i>Thalassionema nitzschioides</i> <i>v. parva</i>	.038	.205	.004	-.070	-.100
38 <i>Thalassiosira</i> A & B	.001	.003	-.005	-.000	.015
39 <i>Thalassiosira eccentrica</i> group	-.053	.021	.094	-.137	.517
40 <i>Thalassiosira lineata</i>	.001	.004	.004	-.007	-.001
41 <i>Thalassiosira oestrupii</i>	.003	.022	-.004	-.019	.109
42 <i>Thalassiosira plicata</i>	.001	-.001	.001	-.000	-.001
43 <i>Thalassiothrix</i> spp.	.027	.094	-.015	.046	-.032

Table V. Rotated Factor Matrix (R-Mode)

Species	Factors									
	1	2	3	4	5	6	7	8	9	10
<i>Actinocyclus curvatus</i> /										
<i>Coccolodiscus rothii</i>	-.106	-.085	-.075	.070	.537	-.076	-.108	-.060	.013	.169
<i>Actinocyclus oregonarius</i>	-.127	-.117	.012	-.003	-.508	-.119	-.185	-.535	.232	.484
<i>Actinocyclus divinus</i>	.002	.003	.018	.040	-.088	-.028	.787	-.039	.051	.056
<i>Actinocyclus ellipticus</i>	.329	-.078	.012	-.125	-.161	.209	-.133	.523	-.106	.080
<i>Actinopteryx splendens</i>	-.184	.146	.604	.009	.181	-.069	-.078	.022	.168	-.049
<i>Actinopteryx senarius</i>	-.276	.751	-.027	-.104	.261	-.139	-.067	-.137	.392	-.114
<i>Asteromphalus</i> spp.	.860	-.017	-.114	.043	-.021	-.155	.285	.135	-.013	.006
<i>Asteromphalus arachne</i>	-.061	-.055	.323	-.036	.712	.184	-.045	-.146	-.061	.088
<i>Asteromphalus petersonii</i>	.012	.007	.905	-.090	.128	-.044	-.001	.016	.030	-.030
<i>Biddulphia aurita</i>	-.097	-.036	.033	.069	-.063	-.000	-.058	-.329	-.044	.030
<i>Chaetoceros</i> resting spore group	-.566	-.121	-.052	-.144	.153	.096	.321	-.207	-.620	-.142
<i>Coccolodiscus</i> #1	.020	-.051	.447	.286	.411	-.061	.024	-.127	-.039	.042
<i>Coccolodiscus africanus</i> /										
<i>C. tabularis</i>	.329	-.132	.018	.254	.568	-.030	.076	-.044	.026	.094
<i>Coccolodiscus lineatus</i>	.077	-.029	-.027	-.009	-.103	.022	-.038	-.048	-.050	-.554
<i>Coccolodiscus lineatus</i>										
<i>v. plicata</i>	-.037	.007	-.022	-.032	.015	.080	.003	-.140	-.106	-.100
<i>Coccolodiscus nodulifer</i> /										
<i>C. radiatus</i>	.678	-.122	-.023	-.071	.079	-.157	-.088	.422	.135	-.038
<i>Coccolodiscus obscurus</i> /										
<i>C. perforatus</i>	-.068	.029	.052	-.139	.001	-.018	.056	-.057	.578	.033
<i>Coccolodiscus oculus-iridis</i>	.055	.034	-.011	.742	-.024	-.009	-.041	-.027	.012	.008
<i>Coccolodiscus symbolophorus</i>	-.034	.053	.058	-.093	.302	-.078	.040	.180	.156	-.025
<i>Cyclotella striata</i> /										
<i>scylorum</i>	-.250	-.212	-.167	.116	.093	-.105	-.074	-.037	.715	-.126
<i>Delphinella</i> spp.	-.035	.120	-.073	-.126	-.250	-.080	-.146	-.140	.226	-.900
<i>Hemidiscus ouneiformis</i>	.064	.009	.188	-.084	-.131	.023	-.129	.658	-.096	.097
<i>Nitzschia bicapitata</i>	.083	-.027	.009	-.051	-.058	.921	-.056	.084	.051	.080
<i>Nitzschia interrupta</i>	.049	-.062	-.024	-.024	.048	.594	.062	.118	-.080	.026
<i>Nitzschia marina</i>	.922	.001	-.108	-.098	-.038	.298	-.061	.024	-.072	.030
<i>Nitzschia seriata</i>	-.011	-.013	.002	.022	-.025	.572	-.002	-.020	-.073	-.110
<i>Paralia sulcata</i>	-.074	.102	.009	-.184	-.204	-.022	-.093	-.153	.045	.270
<i>Pleurosigma</i> spp.	-.145	-.150	-.116	.255	-.030	-.078	-.197	-.172	.018	.192
<i>Pseudoecunotta dollotus</i>	.778	-.119	.035	.469	.174	.049	-.106	.073	-.090	.063
<i>Rhizosolenia alata</i>	-.047	-.096	.427	.227	-.056	-.037	.192	.169	-.110	.048
<i>Rhizosolenia bergonii</i>	.593	-.182	.047	-.062	-.039	.139	-.173	.489	-.222	.099
<i>Rhizosolenia styliformis</i>	.076	-.087	.538	.205	.051	.258	.271	.372	-.032	.032
<i>Roperia tessellata</i>	.018	-.176	.126	.858	.206	-.025	.138	-.092	-.086	.011
<i>Skeletonema coetatum</i>	-.099	-.050	-.013	-.011	.065	.031	.717	-.150	-.093	.028
<i>Stephanopyxis palmeriana</i> /										
<i>S. turris</i>	-.106	.844	-.061	-.001	-.194	-.041	-.170	-.136	-.000	-.045
<i>Thalassionema nitzschioides</i>	.142	-.407	.041	.057	-.347	.366	-.268	.292	.208	.167
<i>Thalassionema nitzschioides</i>										
<i>v. parva</i>	.672	-.141	.112	.015	-.068	.119	-.090	.319	-.149	-.012
<i>Thalassiosira</i> A&B	.021	.559	-.043	-.140	.130	-.069	.061	.233	-.024	.162
<i>Thalassiosira eccentrica</i>										
group	-.086	.602	.023	.005	-.234	-.018	-.115	-.264	-.090	-.145
<i>Thalassiosira lineata</i>	.042	-.095	.785	-.089	-.110	.046	-.102	.018	-.077	.107
<i>Thalassiosira oestrupii</i>	-.019	.776	.002	-.034	-.127	.038	.152	.283	-.079	.060
<i>Thalassiosira plicata</i>	-.124	-.118	-.011	.090	.022	-.043	.134	-.284	-.199	.038
<i>Thalassiothrix</i> spp.	.213	-.053	.059	.275	-.024	.200	-.116	.676	-.056	.009
Variance	25.0	14.4	11.6	10.1	8.9	6.8	6.5	6.2	5.5	5.0
(% of that explained by the 10 factors)										
Cumulative Variance	25.0	39.4	51.0	61.0	69.9	76.7	83.3	89.5	95.0	100.0

Table VI. Factor Score Matrix (R-Mode).

Station #	Factors									
	1	2	3	4	5	6	7	8	9	10
4	56.0	16.7	28.3	24.8	-12.5	-9.5	-32.3	53.0	99.0	17.7
5	9.4	7.6	4.5	3.4	-1.9	-2.1	-5.5	11.0	22.9	4.1
8	16.9	5.0	9.1	6.7	-4.1	-3.2	-10.8	19.2	38.3	5.8
20	7.6	0.7	0.5	0.4	0.0	-0.7	-1.5	1.5	5.0	0.8
21	8.3	1.5	2.0	1.4	-1.8	-1.8	-2.7	5.3	11.8	0.7
22	6.2	1.4	2.0	1.2	-1.1	-2.0	-4.9	8.5	18.4	1.4
23	-8.5	-2.7	-4.0	-3.5	0.8	1.2	4.5	-8.0	-18.6	-5.6
24	-38.0	-12.6	-19.6	-15.5	8.2	6.2	21.0	-34.6	-86.1	-12.0
25	62.9	18.6	31.3	26.6	-13.1	-10.5	-34.3	57.6	99.0	18.0
26	34.6	9.0	18.8	17.5	-9.8	-5.5	-18.3	30.0	77.2	5.6
28	-30.6	-8.2	-16.1	-14.4	7.3	4.8	16.8	-27.4	-64.6	-7.6
30	99.0	29.4	55.1	47.6	-26.3	-17.0	-62.0	97.6	99.0	29.6
41	-99.0	-30.7	-54.7	-47.7	22.4	17.6	61.3	-99.0	-99.0	-30.8
45	1.4	-1.9	1.4	1.4	-1.7	-0.3	-1.1	1.1	1.6	-1.3
46	57.0	17.6	27.7	23.6	-8.5	-9.5	-33.0	52.1	99.0	17.1
55	62.4	19.7	31.2	26.8	-12.3	-10.2	-34.4	59.0	99.0	18.9
59	42.9	16.4	21.2	18.0	-7.0	-7.5	-26.1	41.8	99.0	13.3
60	13.1	7.2	7.0	5.9	-4.3	-2.2	-8.0	11.2	29.0	2.0
62	25.4	6.7	11.7	9.4	-6.2	-3.8	-14.1	21.3	54.4	4.9
63	-41.8	-12.7	-20.9	-16.2	9.0	6.8	24.0	-37.6	-94.2	-11.9
74	-57.3	-16.7	-29.8	-25.0	13.5	9.8	31.7	-52.8	-99.0	-17.4
75	86.6	24.5	45.0	38.4	-19.6	-13.8	-49.3	81.6	99.0	24.9
77	13.9	4.2	6.9	6.1	-2.2	-2.9	-7.3	14.7	31.4	4.2
82	-3.4	-1.0	-1.9	3.3	0.6	0.5	2.0	-3.9	-8.7	-0.8
83	8.1	2.5	9.6	2.5	-1.2	-1.7	-4.7	8.1	18.3	2.4
84	-7.5	-2.5	-3.6	-2.7	3.1	1.0	5.1	-7.9	-17.5	-1.9
91	-99.0	-29.0	-52.7	-46.2	22.9	16.6	55.8	-93.3	-99.0	-25.8
92	-8.0	-2.2	-4.5	-3.9	0.3	1.2	3.7	-9.2	-18.4	-0.6
104	40.3	11.6	20.8	18.5	-6.4	-6.4	23.0	37.1	91.4	11.6
105	59.4	17.7	29.3	25.2	-12.9	-10.1	-33.0	55.5	99.0	16.7
33+34	-16.7	-4.8	-8.4	-6.9	2.7	2.6	14.7	-15.7	-38.0	-4.2
35+36	35.3	8.9	17.4	14.5	-7.8	-7.4	-21.1	34.8	80.5	11.3
37+38	22.0	6.9	12.0	10.6	-5.9	-4.8	-13.8	21.4	53.8	9.6
39+40	-34.4	-9.9	-18.3	-15.2	6.7	6.0	18.8	-34.9	-80.8	-9.1
43+44	31.4	10.0	15.2	13.7	-5.9	-4.4	-18.8	30.5	72.2	7.3
48+49	80.3	23.6	40.3	33.5	-16.4	-14.6	-45.5	76.4	99.0	24.5
50+51	-18.2	-5.5	-6.9	-6.9	5.2	3.4	10.4	-18.2	-40.6	-6.1
54+56+57	-99.0	-57.6	-98.1	-83.7	41.7	31.5	99.0	-99.0	-99.0	-54.1
64+65+66	-37.7	-11.4	-17.9	-15.0	7.6	6.5	21.3	-35.7	-84.4	-12.2
85-88	-0.2	0.0	-0.1	-0.2	0.1	0.5	0.0	-0.9	-0.7	-0.7
95-101+103	-28.2	-8.8	-13.4	-11.4	5.3	4.1	16.9	-27.2	-64.5	-7.8
89+90	-5.8	-2.7	-1.6	-2.8	-1.1	0.8	3.0	-7.7	-13.8	-1.3
93+94	-0.3	-0.3	-0.3	-0.3	0.8	0.3	0.8	0.1	-0.0	-0.3
9+10	0.8	-0.2	0.1	0.9	-0.4	0.4	0.1	1.2	-2.4	0.3
6+7	0.6	-0.2	0.1	-0.3	-0.4	6.2	-0.4	0.6	0.3	0.5
69+72	-99.0	-30.8	-52.1	-43.5	22.8	16.3	57.3	-95.1	-99.0	-28.7