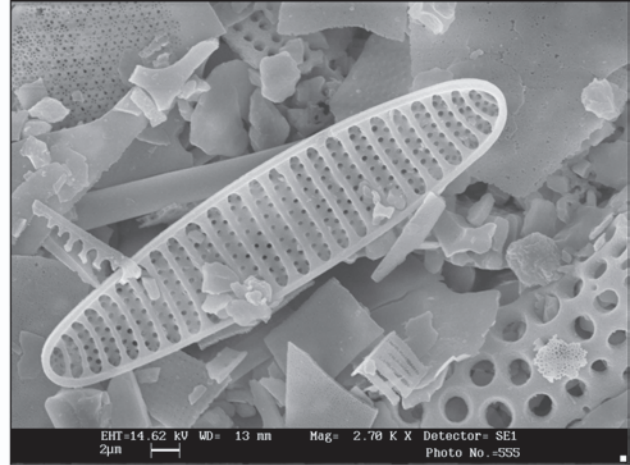
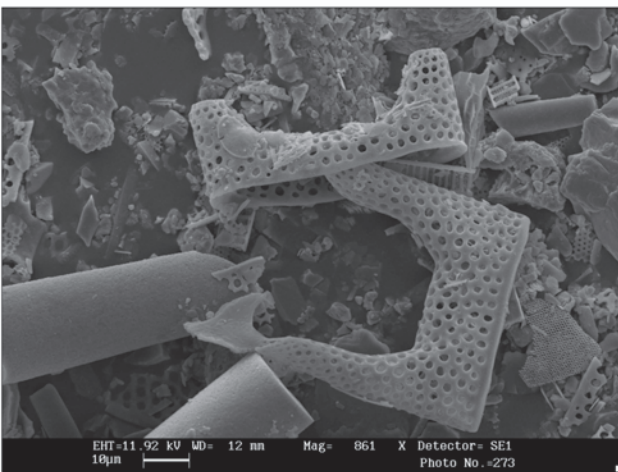


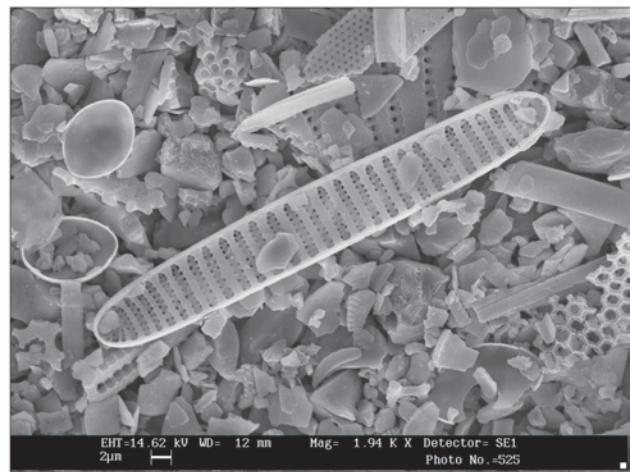
A. *Fragilariopsis curta* in Core Anta96-5bis (sample 40-42 cm bsf)



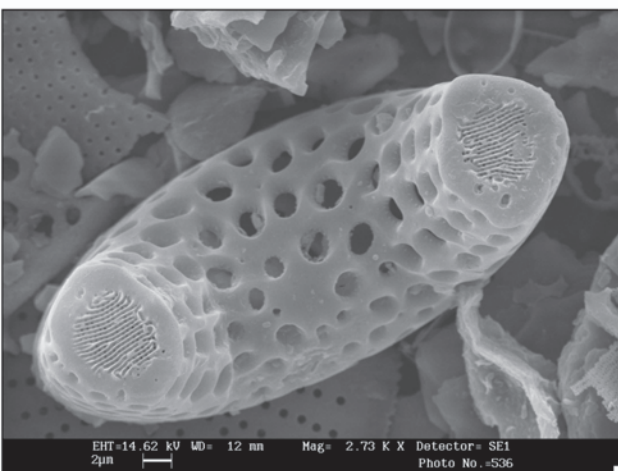
B. *Fragilariopsis kerguelensis* in Core Anta99-23 (sample 2-3 cm bsf)



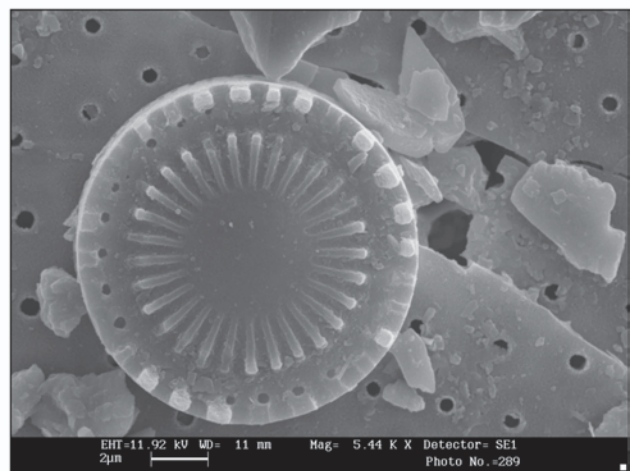
C. *Eucampia antarctica* var. *recta* in Core Anta96-5bis (sample 167-169 cm bsf) (terminal pointed valve and intercalary valve).



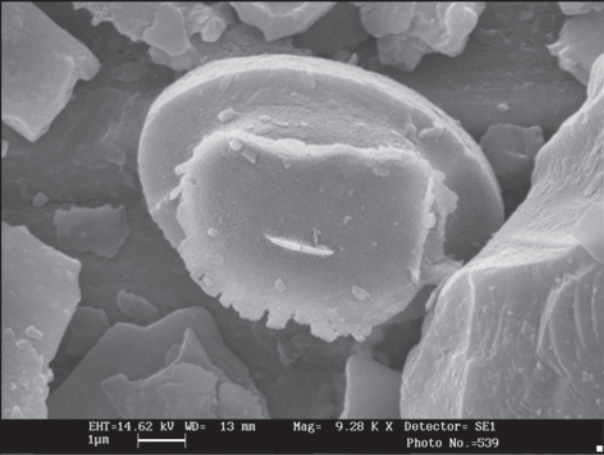
D. *Fragilariopsis obliquecostata* and *Chaetoceros* resting spores on the left in Core Anta99-23 (sample 91-92 cm bsf).



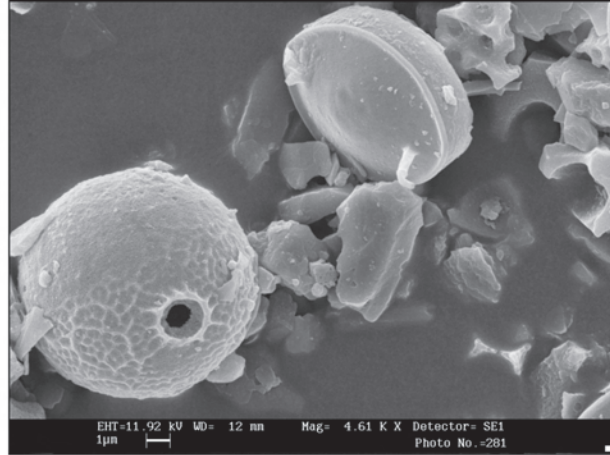
E. *Eucampia antarctica* var. *recta* in Core Anta96-5bis (sample 167-169 cm bsf) (particular of the pores fields).



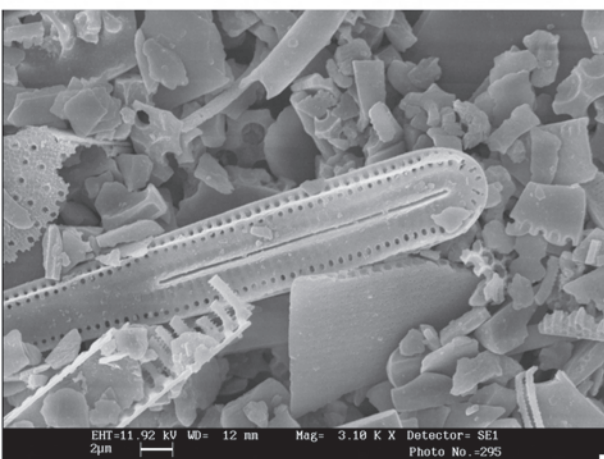
F. *Paralia sulcata* in Core Anta96-5bis (sample 298-300 cm bsf).



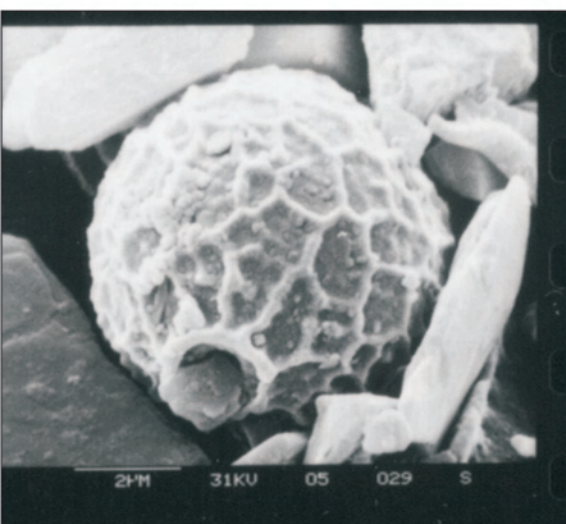
A. *Chaetoceros* spore in Core Anta99-23 (sample 91-92 cm bsf).



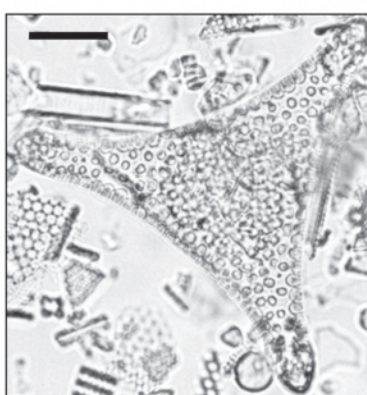
B. Chrysophyte cysts and *Chaetoceros* spore in Core Anta99-23 (sample 262-263 cm bsf).



C. *Rouxia diploneides* in Core Anta99-23 (sample 412-413 cm bsf).



E. Chrysophyte cysts in Core Anta96-5bis (sample 469-471 cm bsf).



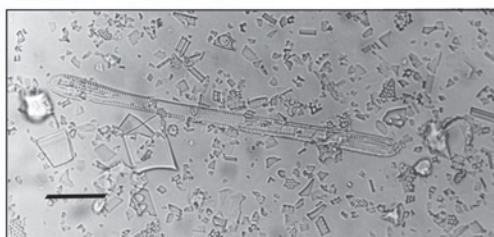
D. *Trinacria excavata* in Core Anta96-5bis (sample 570-573 cm bsf). Light immersion microscope (x1000). Scale bar equal 10 µm.



F. *Denticulopsis* sp. in Core Anta96-5bis (sample 469-471 cm bsf). Light immersion microscope (x1000). Scale bar equals 5 µm.



G. *Chaetoceros bulbosus* (vegetative cell.) in Core Anta99-23 (sample 262-263 cm bsf). Light immersion microscope (x1000). Scale bar equals 10 µm.



H. *Rouxia diploneides* in Core Anta99-23 (sample 472-473 cm bsf). Light immersion microscope (x1000). Scale bar equals 20 µm.

Figure S2. Gallery of electron microscope (SEM) and light images of some of the main diatom taxa.

Depth (cm)	TOC (%)	N (%)	C/N ratio	Units
2.5	0.21	0.08	3.06	U 23 d
6.5	0.18	0.06	3.50	
11.5	0.24	0.08	3.50	
16.5	0.19	0.07	3.17	
21.5	0.13	0.04	3.79	
26.5	0.09	0.04	2.63	
31.5	0.09	0.04	2.63	
36.5	0.09	0.05	2.10	
41.5	0.13	0.06	2.53	U 23 c
46.5	0.14	0.06	2.72	
51.5	0.16	0.02	9.33	
56.5	0.14	0.03	5.44	
61.5	0.16	0.04	4.67	
66.5	0.13	0.02	7.58	
71.5	0.16	0.02	9.33	
76.5	0.17	0.04	4.96	
81.5	0.17	0.03	6.61	
86.5	0.13	0.03	5.06	
91.5	0.09	0.02	5.25	
96.5	0.15	0.03	5.83	
101.5	0.07	0.02	4.08	
107.5	0.08	0.03	3.11	
112.5	0.07	0.22	0.37	
117.5	0.18	0.6	0.35	
122.5	0.13	0.05	3.03	
127.5	0.17	0.06	3.31	
132.5		0.06		
137.5	0.13	0.06	2.53	
142.5	0.13	0.07	2.17	
147.5	0.59	0.07	9.83	
152.5	0.23	0.17	1.58	
157.5	0.17	0.16	1.24	
162.5	0.2	0.17	1.37	
167.5	0.21	0.18	1.36	
172.5	0.17	0.1	1.98	
177.5	0.1	0.07	1.67	
182.5	0.08	0.07	1.33	
187.5	0.08	0.09	1.04	
192.5	0.11	0.13	0.99	
197.5	0.16	0.15	1.24	
202.5	0.28	0.12	2.72	
207.5	0.17	0.15	1.32	U 23 b
212.5	0.1	0.09	1.30	
217.5	0.1	0.09	1.30	
222.5	0.08	0.07	1.33	
227.5	0.11	0.16	0.80	
232.5	0.18	0.18	1.17	
237.5	0.15	0.14	1.25	
242.5	0.15	0.14	1.25	
247.5	0.43	0.16	3.14	
252.5	0.16	0.15	1.24	
257.5	0.22	0.18	1.43	
262.5	0.18	0.15	1.40	
267.5	0.24	0.18	1.56	
272.5	0.41	0.16	2.99	
277.5	0.12	0.11	1.27	
282.5	0.13	0.13	1.17	
287.5	0.17	0.18	1.10	
292.5	0.28	0.21	1.56	
297.5	0.22	0.26	0.99	
302.5	0.2	0.44	0.53	
307.5	0.15	0.32	0.55	
312.5	0.26	0.45	0.67	
317.5	0.26	0.48	0.63	
322.5	0.33	0.55	0.70	
327.5	0.48	0.42	1.33	
332.5	0.41	0.54	0.89	
337.5	0.38	0.49	0.90	
342.5	0.4	0.43	1.09	
347.5	0.34	0.53	0.75	
352.5	0.35	0.51	0.80	
357.5		0.43		
362.5	0.24	0.53	0.53	
367.5	0.3	0.5	0.70	
372.5	0.27	0.43	0.73	
377.5	0.24	0.55	0.51	
382.5	0.21	0.34	0.72	
387.5	0.25	0.51	0.57	
392.5	0.25	0.53	0.55	U 23 a
397.5	0.23	0.44	0.61	
402.5	0.38	0.73	0.61	
407.5	0.29	0.5	0.68	
412.5	0.29	0.55	0.62	
417.5	0.62	0.54	1.34	
422.5	0.36	0.5	0.84	
427.5	0.33	0.51	0.75	
432.5	0.39	0.54	0.84	
437.5	0.5	0.46	1.27	
442.5	0.39	0.49	0.93	
447.5	0.92	0.48	2.24	
452.5	0.59	0.49	1.40	
457.5	0.33	0.42	0.92	
462.5	0.39	0.53	0.86	
467.5	0.36	0.42	1.00	
472.5	0.52	0.51	1.19	
477.5	0.38	0.51	0.87	
482.5	0.42	0.42	1.17	
487.5	0.24	0.47	0.60	
492.5	0.37	0.4	1.08	
497.5	0.29	0.48	0.70	
502.5	0.25	0.47	0.62	
507.5	0.25	0.41	0.71	
512.5	0.32	0.36	1.04	
517.5	0.28	0.34	0.96	
527.5	0.45	0.54	0.97	
532.5	0.51	0.5	1.19	

Tab S2. Anta99-c23

Depth (cm)	TOC (%)	N (%)	C/N ratio	Units
1	0.70	0.10	7.94	U S e
5	0.88	0.13	8.21	
9	0.90	0.11	9.55	
13	0.91	0.12	8.85	
17	0.95	0.12	9.24	
21	0.85	0.10	9.51	
25	0.72	0.10	8.40	
31	0.72	0.11	7.94	
35	0.66	0.09	8.49	
41	0.54	0.08	8.45	
45	0.67	0.09	8.62	
49	0.62	0.08	8.97	
55	0.56	0.08	8.63	
61	0.33	0.04	8.67	
65	0.36	0.05	8.40	
71	0.36	0.05	8.40	
75	0.30	0.04	8.75	
81	0.20	0.02	15.17	U S d
85	0.22	0.03	8.56	
91	0.28	0.03	13.07	
95	0.28	0.05	7.26	
101	0.18	0.03	7.40	
105	0.27	0.04	7.88	
111	0.24	0.04	7.83	
115.5	0.18	0.03	8.17	
120	0.13	0.01	13.79	
126	0.20	0.03	7.58	
130	0.25	0.05	6.35	
136	0.26	0.04	7.44	
140	0.18	0.02	9.65	
145.75	0.22	0.04	7.17	
151	0.18	0.03	6.81	
155	0.20	0.03	9.10	
159	0.14	0.01	11.50	
165	0.21	0.03	9.80	
169	0.23	0.03	8.94	
177	0.18	0.01	16.06	
181.5	0.24	0.04	6.85	
181.5	0.12	0.02	7.00	
187.5	0.22	0.03	8.36	
187.5	0.10	0.02	7.39	
191.25	0.29	0.03	13.30	U S c
199	0.24	0.03	10.13	
205	0.31	0.04	8.90	
211	0.39	0.06	8.27	
215	0.31	0.04	8.90	
220.5	0.28	0.03	11.50	
224	0.37	0.04	10.65	
230	0.31	0.06	6.58	
234	0.33	0.04	9.63	
240	0.26	0.02	13.24	
244	0.29	0.04	9.50	
250	0.30	0.04	8.75	
254.5	0.32	0.04	9.19	
260.5	0.29	0.03	10.84	
270	0.34	0.05	7.93	
278.5	0.34	0.04	11.30	
287.5	0.34	0.05	7.82	
293.5	0.29	0.05	6.65	
299	0.19	0.02	10.78	
303	0.27	0.04	7.73	
309.5	0.27	0.07	4.76	
315.5	0.45	0.04	15.00	
321	0.27	0.03	12.03	
328.5	0.27	0.04	9.00	
334.5	0.31	0.04	9.04	
340.5	0.39	0.04	12.20	
346.5	0.30	0.05	6.88	
352.5	0.31	0.03	11.38	
361	0.27	0.05	7.00	
365	0.19	0.03	7.19	
371	0.26	0.08	3.79	
375	0.22	0.01	25.08	
384	0.25	0.04	8.17	U S b
388	0.26	0.04	7.44	
392	0.24	0.04	7.83	
401	0.07	0.01	7.58	
405	0.07	0.01	16.33	
411	0.06	0.01	12.83	
414.5	0.07	0.01	15.17	
419	0.09	0.01	10.50	
422	0.05	0.00	0.00	
426	0.21	0.03	9.80	
430	0.18	0.01	20.42	
430	0.17	0.02	9.92	
432	0.19	0.02	11.08	
436	0.22	0.03	10.03	
442	0.28	0.04	9.17	
451.5	0.43	0.05	9.92	U S a
469.5	0.47	0.05	12.19	
490.5	0.42	0.04	12.25	
511.5	0.44	0.04	12.69	
529.5	0.42	0.04	12.10	
550.5	0.42	0.04	12.10	
571.5	0.45	0.05	10.38	
589.5	0.43	0.04	12.40	
607.5	0.42	0.05	10.89	
628.5	0.49	0.05	12.70	
634.5	0.46	0.05	11.93	

Tab S4. ANTA96-5bis