BOUSSOLE Monthly Cruise Report

Cruise 36
October 15 – 19 (+23), 2004

Duty Chief: Guislain Bécu (guislain.becu@obs-vlfr.fr)
Vessel: R/V Téthys II
(Captain: Dany Deneuve)

Science Personnel: Guislain Bécu, Alec Scott, Fabrizio D'Ortenzio, Julia Uitz, David Luquet, 2 divers (SAMAR)

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Fig 1. The buoy as seen from under the Sea surface (approx. -12 m).

BOUSSOLE project

ESA/ESRIN contract N° 17286/03/I-OL

Deliverable from WP#400/200

December 2, 2005

Foreword

This report is part of the technical report series that is being established by the BOUSSOLE project.

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Cruise Objectives

Multiple SPMR profiles are to occur within 1 hour of satellite overhead passes of SeaWiFS and MERIS and around solar noon, under optimal conditions: clear blue skies and flat, calm sea surface. If the sky is clear and sea conditions are reasonably calm (no whitecaps or large swell), hand held CIMEL sun photometer measurements are to be performed consecutively where possible with SPMR profiles. If sea conditions are poor but sky is good, hand held CIMEL sun photometer measurements can be made at intervals throughout the day to measure atmospheric optical thickness. A floating platform is to be used to support the SPMR Eu sensor approximately 20cm below the surface for up to 3 minutes of stable light field before a release mechanism triggers the release of the profiler to start a descent as normal. Multiple descents ideally will be started in this way and the data will be used to assess near-surface Eu extrapolation model calculations. CTD deployments are required at the start and end of the SPMR profiling day and around noon in the longer summer days or when there is a high possibility of a satellite matchup. In addition to the depth profile from the CTD, CDOM fluorometer, Chl fluorometer and AC9, seawater samples are to be collected, filtered and stored in LN2 for HPLC pigment and particule absorption spectrophotometric filter analysis in the lab. A gimbled PAR sensor positioned on the foredeck and operated from the CTD computer serves as a light field stability indicator during SPMR profiling.

For each cruise, at the end of the optics measurements on site, there will be one ctd transect between the Boussole site and the Port of Nice. This transect consists of four fixed locations on-route from Boussole and a final two station positions to be decided during the transect in order to sample on both sides of the main frontal structure between the coastal waters and Ligurian Sea. The time of day of this transect should be similar for each cruise, if possible to minimise influence of diurnal variability.

Alec Scott, Julia Uitz, and Fabrizio D'Ortenzio will be assisting Guislain Bécu with CTD operations.

One CNRS diver and Two independent divers will be aboard (on 23rd October, due to bad weather during the 15th – 19th period)) to check on the physical state of the buoy below the surface, providing underwater photographs and cleaning and exchanging the sensors.

Other activities will also be performed on the buoy to download the data off the buoy and verify that everything is as expected above the waterline.

Cruise Summary

LOV AC9+ was used on BIOSOPE mission at the same time, so that another one was borrowed (in emergency) at Collin Roesler (Bigelow Laboratory for Ocean Sciences, U.S.A.). Dominique Tailliez tried to get it work the day before he left for BIOSOPE, but unfortunately, the AC9+ didn't communicate with the laptop, so that no configuration was possible. No AC9+ measurements were performed, so the transect between BOUSSOLE site and Nice was cancelled.

Usual filtration unit was also on BIOSOPE campaign. Francis Louis built another one, but didn't have time to test it. This was realized onboard.

Tethys-II thermofluorometer was also unavailable, because on repair, so that no quadrilateral screening of the zone was possible.

Finally, the pressure sensor giving the SPMR depth was also out of order, so that depth is not known when performing a profile…

Friday 15th October

The weather conditions were very bad; winds were about Beaufort force 5 or 6, with a lot of swell. A site trip was nevertheless attempted, but only buoy data were retrieved; realizing CTD and SPMR profiles was not possible.

Saturday 16th October
Weather conditions were too bad and prevented departure.

Sunday 17th October
Weather conditions were also too bad and prevented departure.

Monday 18th October
The weather conditions were very bad, but little less than the two previous days, and again, just buoy data retrieval was possible.

Tuesday 19th October
The weather conditions were a little better than the previous day, a CTD and two SPMR profiles were realized.

Saturday 23rd October
As the weather didn't allow the divers to work on the buoy during the 15th – 19th October, the 23rd October was borrowed to DYNAPROC, as the sea conditions were rather calm for this day. David Luquet (from CNRS) and 2 divers (from SAMAR) took some underwater pictures before and after sensors cleaning. They also tried to remove algal contamination on the metallic structure of the buoy to avoid too fast re-contamination of sensors, but the anti-fouling paint is not hard enough and flakes with a simple sponge cleaning. After cleaning and one hours measurements, radiometers were exchanged, Guislain Bécu changed the above surface irradiance meter (MVD), and the buoy data were a last time retrieved before the ship left to port of Nice.

Cruise Report

15th October, 2004 (Times UTC)
0545 Depart port of Nice
0915 Arrival at Boussole Site (43°22'N 7°54'E), too late for 0900 buoy communication…
1000 Buoy data retrieved, event log files download unsuccessful…
1015 Depart for port of Nice, as the conditions are too bad for CTD and SPMR profiles.
1400 Arrival in port of Nice

16th October, 2004
Staying in port of Nice - bad sea conditions

17th October, 2004
Staying in port of Nice - due to bad sea conditions

18th October, 2004
0530 Depart port of Nice
0900 Arrival at BOUSSOLE Site and buoy data retrieval
0915 Depart for port of Nice, as the conditions are too bad for CTD and SPMR profiles.
1300 Arrival in port of Nice

19th October, 2004
0550 Depart port of Nice
0920 Arrival at BOUSSOLE Site and SPMR profile (without pressure sensor = without depth measurements)
0940 buoy data retrieval and another (quite long) unsuccessful test to download event log files
1110 CTD profile with water sampling at 200, 100, 80, 70, 60, 50, 40, 30, 20, 10 and 5 m. Unfortunately, several air entry in the vacuum circuit resulted in a 6 hours filtration, too long for the filtered samples to be useful (degraded)
1230 SPMR profile
1300 buoy data retrieval and depart for port of Nice
1600 Arrival in port of Nice

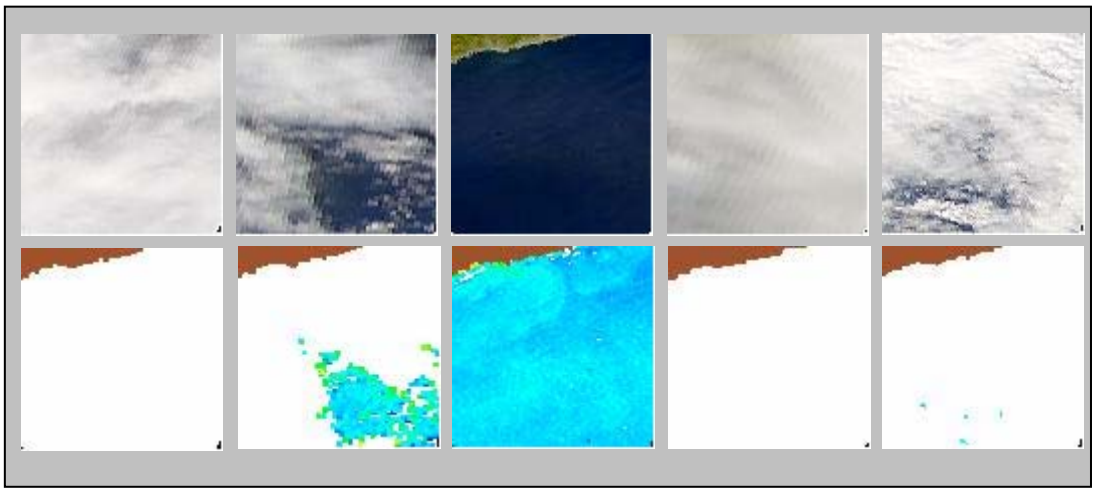
23rd October, 2004

0730 Depart port of Nice
1100 Arrival at BOUSSOLE Site; buoy data retrieval
1110 divers took pictures, checked the general state of the buoy, anode, etc…, and cleaned up the sensors
1300 divers exchanged the radiometers (put "b" set) ; Guislain Bécu exchanged the above-surface radiometer (MVD)
1400 buoy data retrieval and depart for port of Nice
1730 Arrival in port of Nice

Ligurian Sea and BOUSSOLE Site Satellite Images

http://seawifs.gsfc.nasa.gov/cgi/seawifs_region_extracts.pl

SeaWiFS



15th Oct. 2004 16th Oct. 2004 17th Oct. 2004 18th Oct. 2004 19th Oct. 2004

Figure 2. SeaWiFS images Level 1 (upper) and Level 2 (lower) images of the french coastline and Boussole site. (http://seawifs.gsfc.nasa.gov/cgi/seawifs_region_extracts)

Modis

Modis images not available at time of last edit

Calculated Swath paths for MERIS Sensor (ESOV Software)

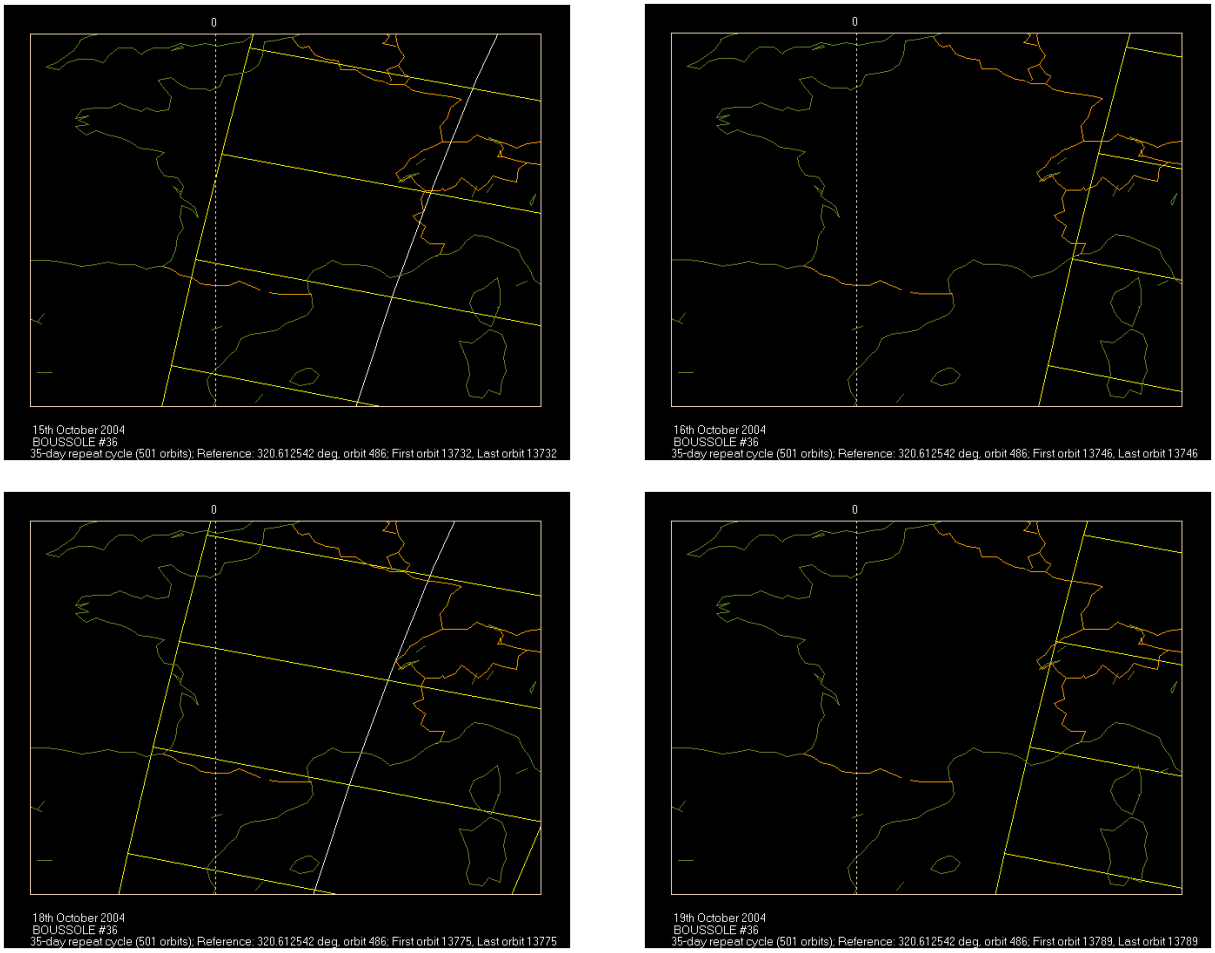
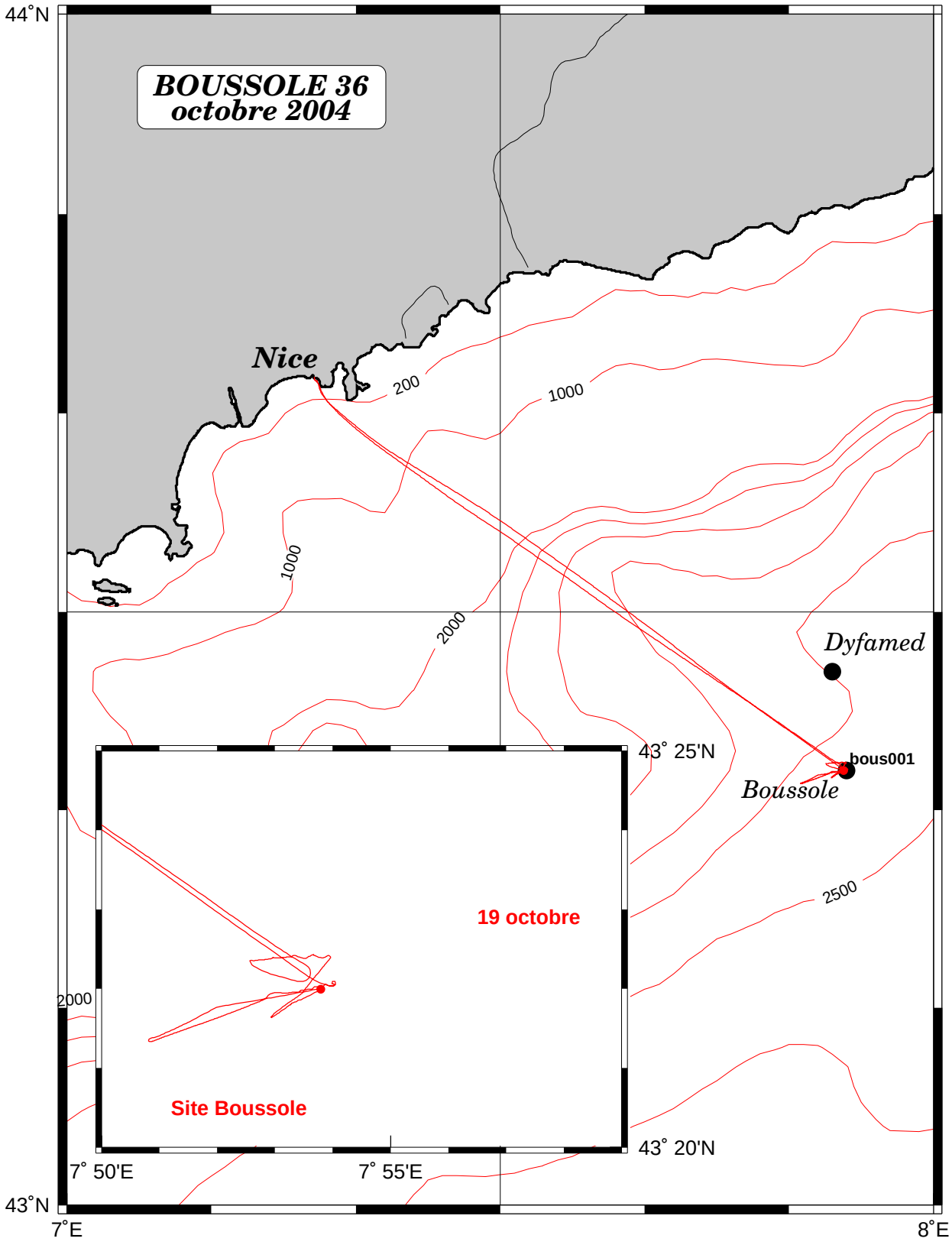


Figure 3. Calculated swath paths for MERIS (Esov software) above BOUSSOLE site for 15th, 16th, 18th and 19th October, 2004.

Appendix

Cruise Summary Table for Boussole 36

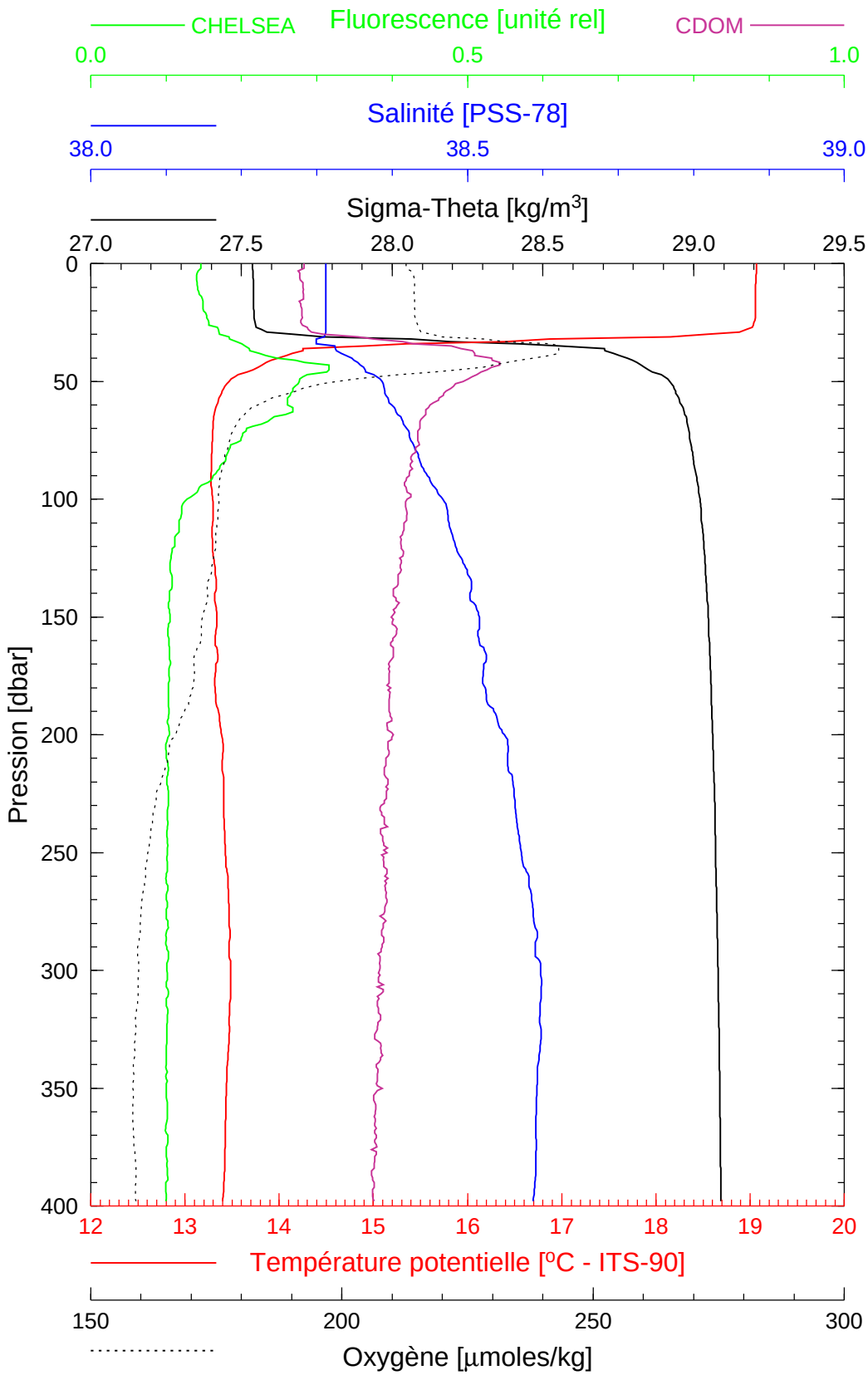
Date	Black names	Profile names	CTD notées /	Start Time	Duration	Depth max	Latitude (N)		longitude		Other sensors	Their cast	Start/Finish				Weather							Sea		
	(file ext: ".raw")	(file extension: ".raw")	satellite overpass	GMT (hour.min)	(min.sec)	(meter)	(Degree)	(Minute)	(Degree)	(Minute)				Sky	Clouds	Quantity (#/8)	Wind speed	Wind dir.	Atm. Pressure	humidity	Visibility	T air	T water	Sea	Swell height	Swell dir.	White horses
15/10/2004	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	F5-F6	-	-	-	-	-	-	-	2 m	-	yes
16/10/2004	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	F5-F6	-	-	-	-	-	-	-	1,8 m	-	yes
17/10/2004	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	F5-F6	-	-	-	-	-	-	-	1,5 m	-	yes
18/10/2004	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	F4-F5	-	-	-	-	-	-	-	1,5 m	-	yes
19/10/2004	bou191004black1			09:15	03:00		43	22.026	7	54.000																	
		bou191004A		09:22	04:00	150	43	22.036	7	53.530				cloudy	strato Cir	8	13 kn	312	1012.9	83	very good	18.1		choppy	1,3 m	-	yes
		bou191004B		09:31	04:00	150	43	22.030	7	53.706				cloudy	strato Cir	8	13 kn	312	1012.9	83	very good	18.1		choppy	1,3 m	-	yes
		bou191004C		09:42	04:00	450	43	21.983	7	53.478				cloudy	strato Cir	8	13 kn	312	1012.9	83	very good	18.1		choppy	1,3 m	-	yes
	bou191004black2			09:53	03:00		43	22.000	7	54.000													19.1				
			CTDBOUS001	10:56	33:00	400	43	21.996	7	53.791				cloudy	strato Cir	8	14 kn	314	1012.1	81	very good	18.1		choppy	1,3 m	-	yes
		bou191004D		12:36	04:00	150	43	22.422	7	53.343				cloudy	strato Cir	8	14 kn	314	1012.1	81	very good	18.1		choppy	1,3 m	-	yes
		bou191004E		12:45	04:00	150	43	22.388	7	53.050				cloudy	strato Cir	8	14 kn	314	1012.1	81	very good	18.1		choppy	1,3 m	-	yes
	bou191004black3			13:11	03:00		43	22.406	7	53.279																	
23/10/2004							43	22.132	7	54.139	CIMEL	-	08:49	milky	Ci ?	3 (far)											
							43	22.000	7	54.000	CIMEL	-	11:44	milky	Ci ?	3 (far)											
							43	22.000	7	54.000	CIMEL	-	13:50	milky	Ci ?	3 (far)											
							43	23.450	7	41.050	CIMEL	-	15:10	clear	-	1											
							43	31.007	7	36.320	CIMEL	-	15:30	clear	-	1											
							43	32.200	7	34.200	CIMEL	-	15:44	clear	-	1											



GMT 2005 Jun 28 00:38:31

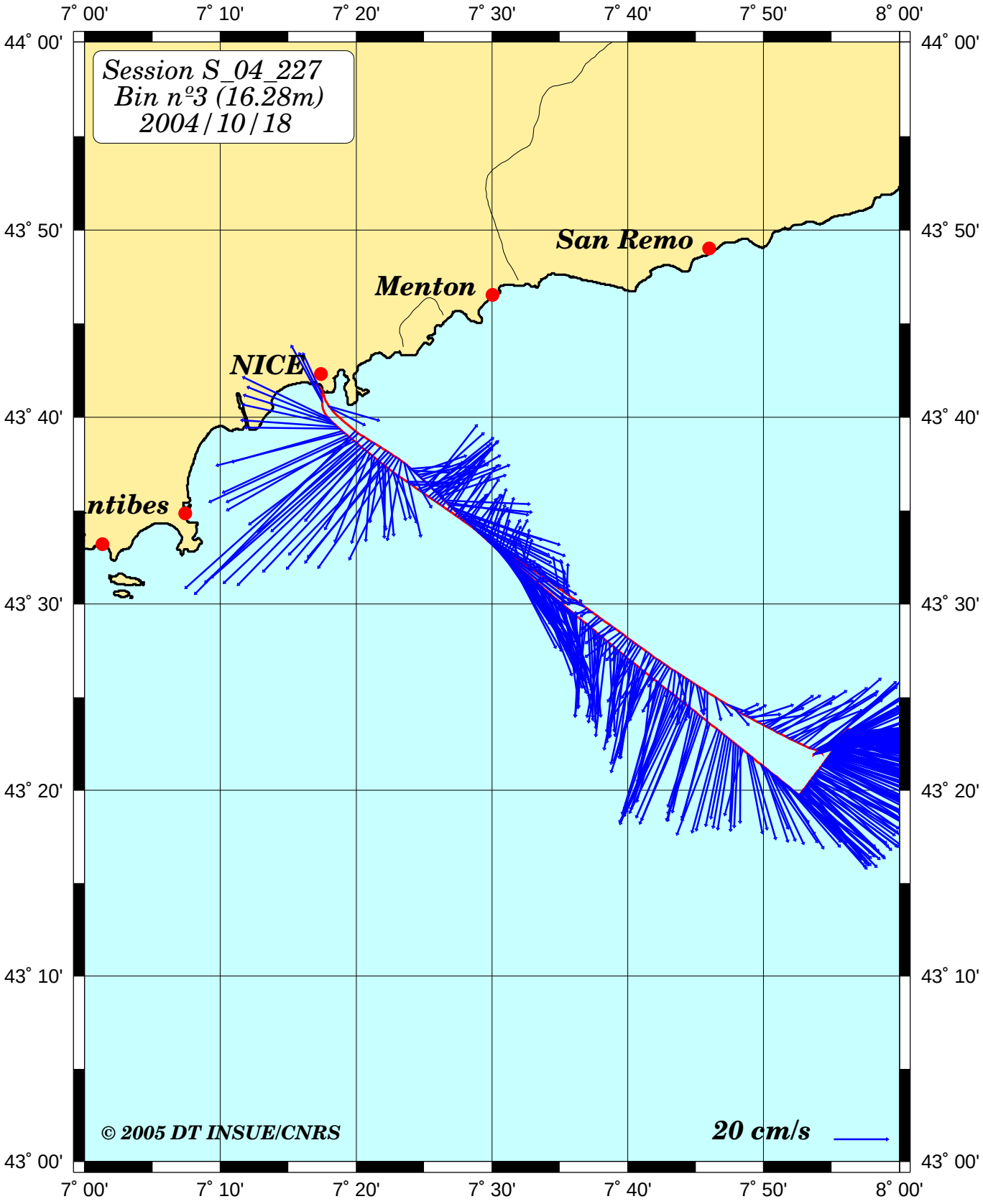
Boussole 36 **19/10/2004** **BOUS041019_01**

BOUS001



Date *19/10/2004* *Latitude* *43º21.996 N*

Heure déb *10h 56min [TU]* *Longitude* *07º53.791 E*



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