BOUSSOLE Monthly Cruise Report

Cruise 59
December 1 - 4, 2006

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

Science Personnel: Guislain Bécu, Dominique Tailliez, Eric Viano, Saïd Boukhelf.

Laboratoire d'Océanographique de Villefranche (LOV), 06238 Villefranche sur mer cedex, FRANCE

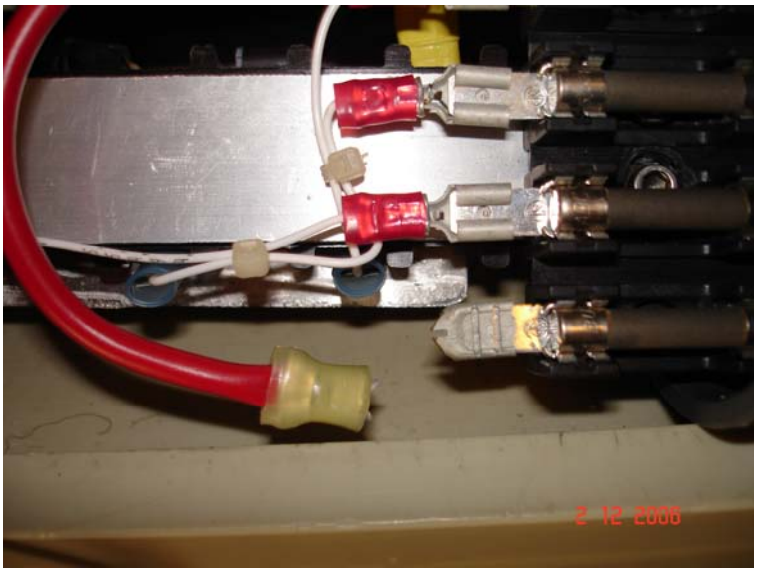


Fig 1. A broken pod in the Junction Box prevented the continuous charge of the main battery and thus the data acquisition.

BOUSSOLE project

ESA/ESRIN contract N° 17286/03/I-OL

Deliverable from WP#400/200

December 8, 2006

Contents

Cruise Objectives

Routine operations

Multiple SPMR profiles are to occur within 1 hour of satellite overhead passes of MERIS 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 N_2 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 one day of 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.

Additional operations

The “Junction Box” that collects power from solar panels and redistribute it to the Battery via the “Charge Load Controller” will be brought back on the ship deck for inspection as it was found to be out of order during the last cruise.

Cruise Summary

Sea conditions were rather good for the entire cruise but the last day. A major breakdown of the engine of the vessel prevented any operation at sea on the first day of the cruise, so that all operations were (successfully) carried out during the second and third day.
The 3 divers were onboard for the underwater sensors cleaning on the first day, but others divers had to come on the second day, due to the motor breakdown.

Friday 01 December 2006

The departure from Nice harbour was delayed due to bad weather slowly improving. One hour before reaching BOUSSOLE site, a major breakdown of the ship engine compelled to stop the cruise and to go back very slowly to the port of Nice. The OOV divers that were onboard this day couldn’t clean the buoy sensors.
The engine was repaired during the night.

Saturday 02 December 2006

Divers from a private company were onboard to clean the subsurface sensors and to take some pictures of them, before and after the cleaning. They noted that the anodes that are just above the floating sphere needed to be replaced, as they are completely worn. The Junction Box was brought back in the ship laboratory for inspection. It was found that a “ground” female pod was cleanly broken. The corresponding cable was soldered on the male pod. The magnetic switch that allows cutting the power distribution to the CLC was found to be hard to manipulate. As the same switch was out of order on the buoy battery a few months ago, it was decided to shortcut it.
Others operations this day were 3 SPMR profiles, as well as 7 CTD casts, among which 6 were performed on the transect between the BOUSSOLE site and Nice.

Sunday 03 December 2006

This day was a “standard” BOUSSOLE cruise day, i.e. 6 SPMR profiles, 2 CTD casts and 1 Secchi disk measurements were performed.

Monday 04 December 2006

Sea conditions were too rough to go at site (H1/3 of 2.5 m).

Cruise Report

01 December 2006 (UTC)

0940 Departure from the port of Nice.
1200 Breakdown of the ship engine, so departure to the port of Nice.
1830 Arrival at the port of Nice and repair during the night.

02 December 2006

0530 Departure from the port of Nice.
0920 Divers at sea to check the buoy structure, clean the sensors and take some pictures of them.
0930 Junction Box maintenance.
1030 Junction Box installation.
1133 CTD 01, 400 m, close to the buoy, with water sampling at 200, 150, 80, 70, 60, 50, 40, 30, 20, 10 and 5 meters for HPLC and Ap.
1218 SPMR 01, 02, 03.
1300 Water sampling at 5 meters for TSM.
1343 CTD 02 at station 1 (43°25’N 07°48’E).
1436 CTD 03 at station 2 (43°28’N 07°42’E).
1536 CTD 04 at station 3 (43°31’N 07°37’E).
1633 CTD 05 at station 4 (43°34’N 07°31’E).
1737 CTD 06 at station 5 (43°37’N 07°25’E).
1827 CTD 07 at station 6 (43°39’N 07°21’E).
1915 Arrival at the port of Nice.

03 December 2006

0530 Departure from the port of Nice.
0911 CTD 08, 400 m, close to the buoy, with water sampling at 200, 150, 80, 70, 60, 50, 40, 30, 20, 10 and 5 meters for HPLC and Ap.
1000 Secchi disk 01 (14 m) close to the buoy.
1009 SPMR 04, 05, 06.
1206 CTD 09, 400 m, close to the buoy, with water sampling at 10 and 5 meters for triplicate HPLC, Ap and TSM.
1258 SPMR 07, 08, 09.
1325 Departure from the BOUSSOLE site.
1700 Arrival at Port of Nice.

04 December 2006

Bad weather prevented departure.

Calculated Swath paths for the MERIS Sensor (ESOV Software)

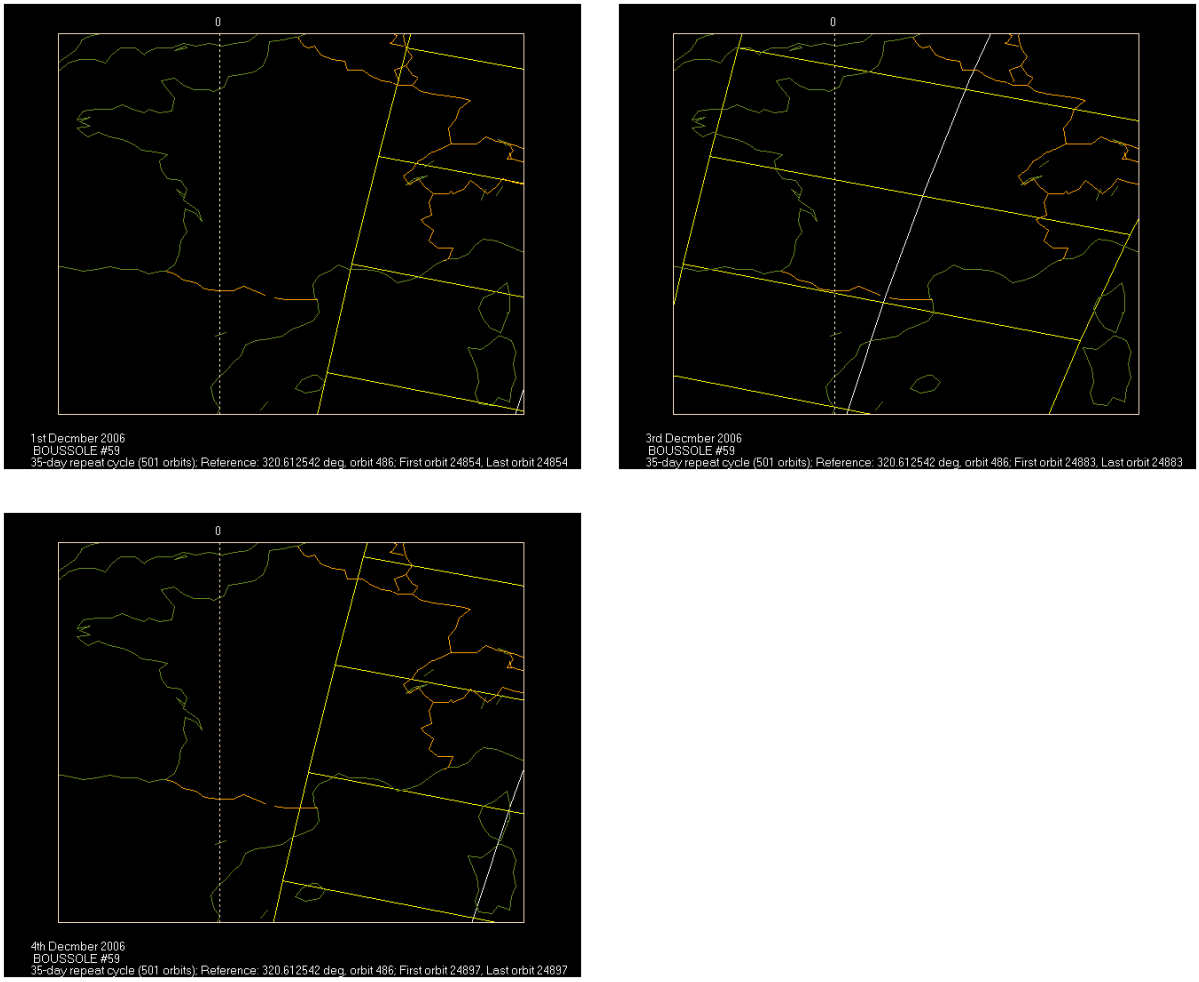
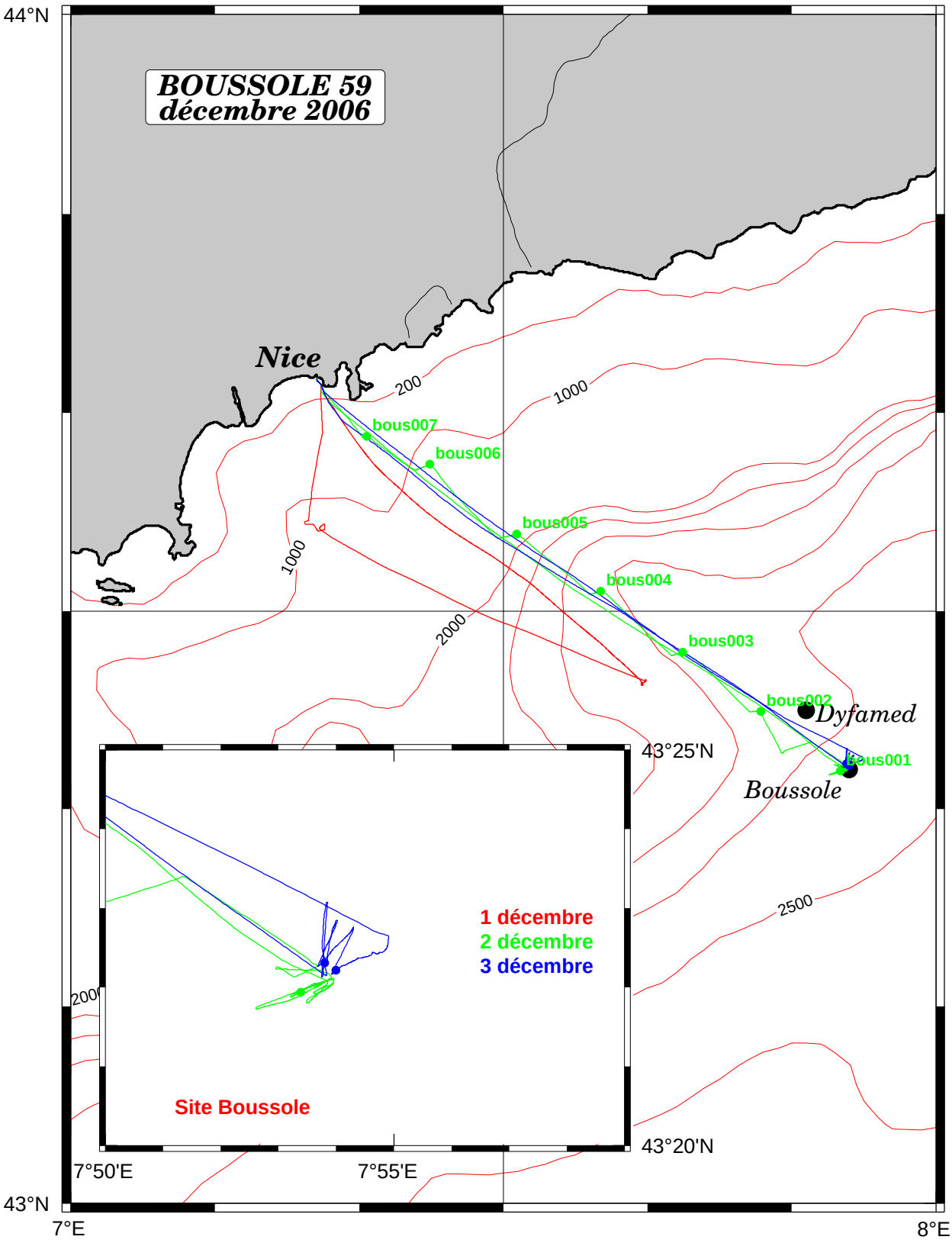


Figure 2. Calculated swath paths for MERIS (Esov software) above BOUSSOLE site for December 01, 03 and 04, 2006.

Appendix

Cruise Summary Table for Boussole 59

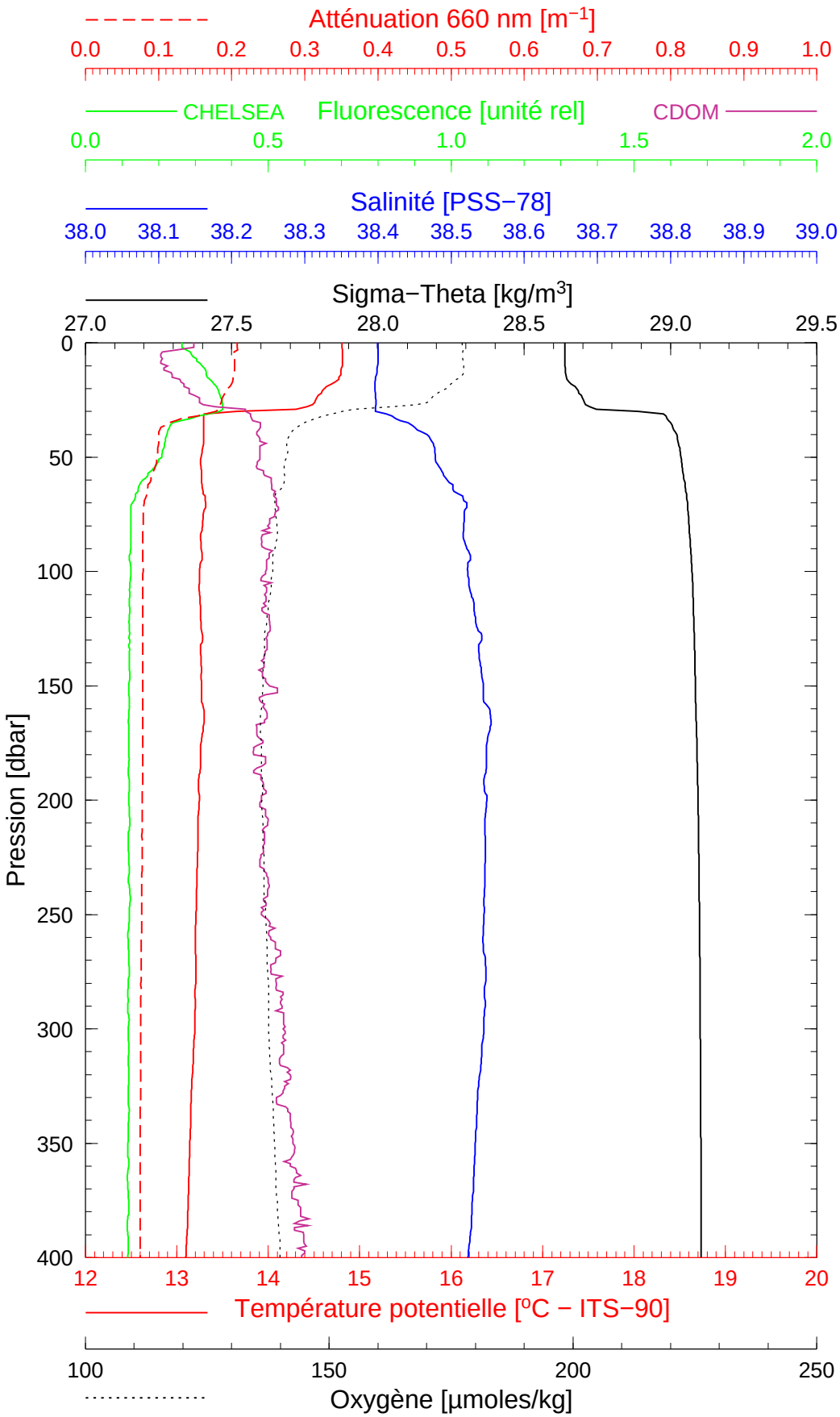
Date	Black names	Profile names	CTD notées /	Start Time	Duration	Depth max	Latitude (N)		longitude		Other sensors	Their cast	Start/Finish			Weather							Sea		
	(file ext: ".raw")	(file extension: ".raw")	satellite overpass	GMT (hour.min)	(min.sec)	(meter)	(Degree)	(Minute)	(Degree)	(Minute)				Sky	Clouds	Quantity (#/8)	Wind speed	Wind dir.	Atm. Pressure	humidity	Visibility	T air	T water	Sea	Swell height	Swell dir.	Whitecaps
			CTDBOUS001	11:33	29:00	400	43	21.939	7	53.390				covered	homog.	6	12 kn	69	1026.4	80	good	14.3	14.8	choppy			yes
	bou021206black1			12:12	03:00																						
		bou021206AA		12:18	03:23	150	43	22.208	7	53.745				overcast	homog.	7	11 kn	76	1026.0	82	good	14.7		choppy			yes
		bou021206AB		12:26	03:45	150	43	22.219	7	53.545				overcast	homog.	7	11 kn	76	1026.0	82	good	14.7		choppy			yes
		bou021206AC		12:37	03:36	150	43	22.224	7	53.288				overcast	homog.	7	11 kn	76	1026.0	82	good	14.7		choppy			yes
02/12/2006	bou021206black2			12:51	03:00																						
			CTDBOUS002	13:43	23:00	400	43	24.951	7	47.855				covered	homog.	6	14 kn	67	1025.1	84	good	14.3	15.4	choppy			yes
			CTDBOUS003	14:36	27:00	400	43	27.935	7	42.444				cov., rain	homog.	6	14 kn	63	1025.1	87	good	13.8	15.5	choppy			yes
			CTDBOUS004	15:36	25:00	400	43	31.820	7	36.846				cov., rain	homog.	6	14 kn	76	1025.2	93	good	13.8	15.8	choppy			yes
			CTDBOUS005	16.33	29:00	400	43	33.901	7	30.912				cov., rain	homog.	6	14 kn	81	1025.3	91	good	13.6	17.0	choppy			yes
			CTDBOUS006	17:37	26:00	400	43	37.416	7	24.878				cov., rain	homog.	6	14 kn	69	1025.6	91	good	13.7	18.2	choppy			yes
			CTDBOUS007	18:27	24:00	400	43	38.824	7	20.529				cov., rain	homog.	6	14 kn	57	1025.7	87	good	13.8	18.3	choppy			yes
			CTDBOUS006	09:11	31:00	400	43	22.310	7	53.804				covered	homog.	6	13 kn	188	1022.4	89	good	15.7	15.0	choppy			yes
				10:00	05:00	14	43	36.000	7	54.000	Secchi disk 01			overcast	homog.	7	12 kn										
	bou031206black1			09:51	03:00																						
		bou031206AA		10:09	03:26	150	43	22.315	7	53.841				overcast, rain	homog.	7	12 kn	190	1022.1	91	good	15.6		choppy			yes
		bou031206AB		10:16	03:49	150	43	22.458	7	53.865				overcast, rain	homog.	7	12 kn	190	1022.1	91	good	15.6		choppy			yes
		bou031206AC		10:26	03:40	150	43	22.642	7	53.914				overcast, rain	homog.	7	12 kn	190	1022.1	91	good	15.6		choppy			yes
03/12/2006	bou031206black2			10:37	03:00																						
			CTDBOUS008	12:06	30:00	400	43	22.215	7	53.994				covered	homog.	6	10 kn	307	1021.6	87	good	14.0	15.0	choppy			yes
	bou031206black2			12:54	03:00																						
		bou031206AD		12:58	03:33	150	43	22.423	7	54.700				overcast	homog.	7	3 kn	2	1021.0	91	good	13.7		choppy			yes
		bou031206AE		13:07	03:52	150	43	22.443	7	54.808				overcast	homog.	7	3 kn	2	1021.0	91	good	13.7		choppy			yes
		bou031206AF		13:17	03:21	150	43	22.575	7	54.906				overcast	homog.	7	3 kn	2	1021.0	91	good	13.7		choppy			yes
	bou031206black4			13:32	03:00																						



GMT 2006 Dec 18 15:13:02

Boussole 59 **02/12/2006** **BOUS061202_01**

BOUS001

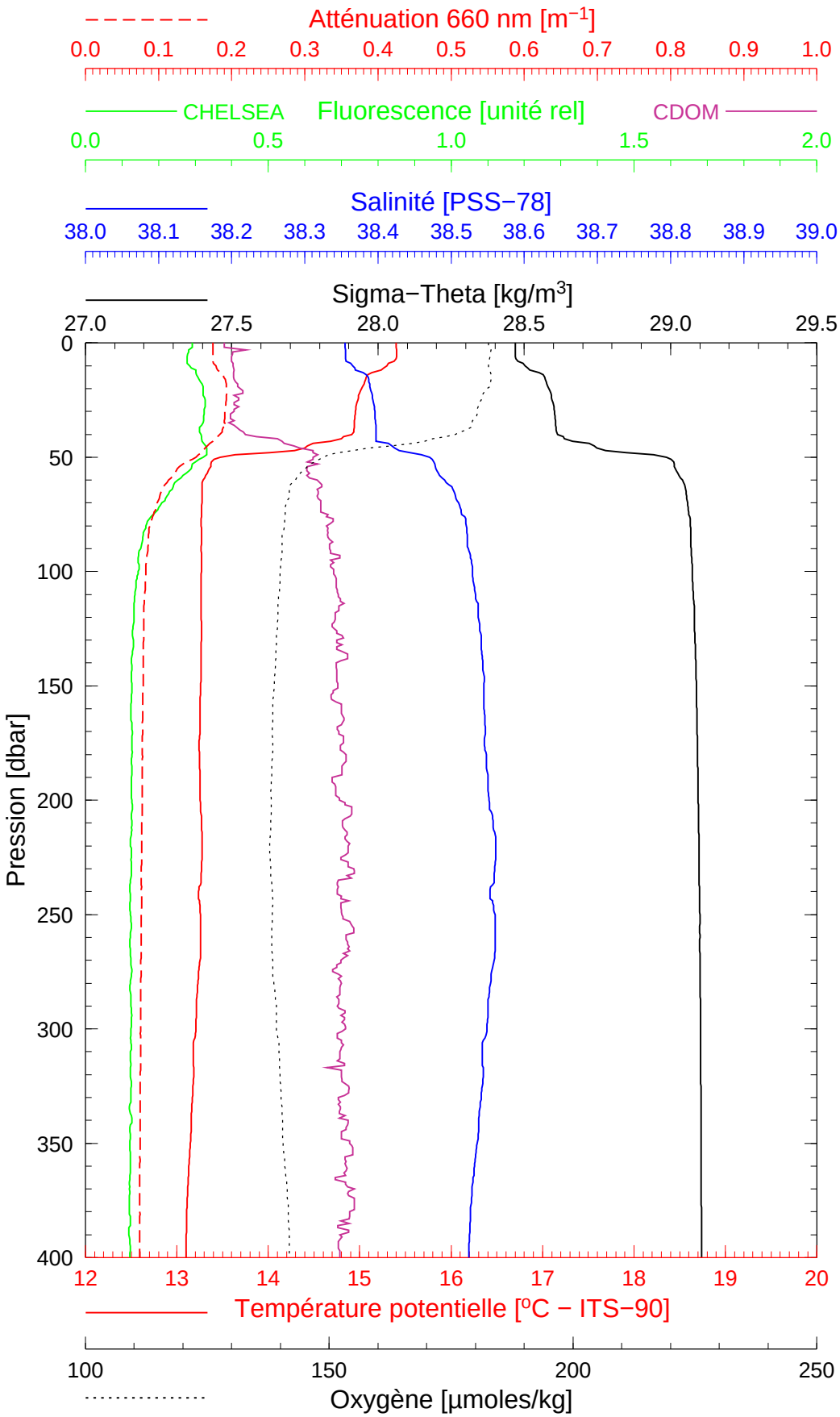


Date *02/12/2006* *Latitude* *43°21.939 N*

Heure déb *11h 33min [TU]* *Longitude* *07°53.390 E*

Boussole 59 **02/12/2006** **BOUS061202_02**

BOUS002

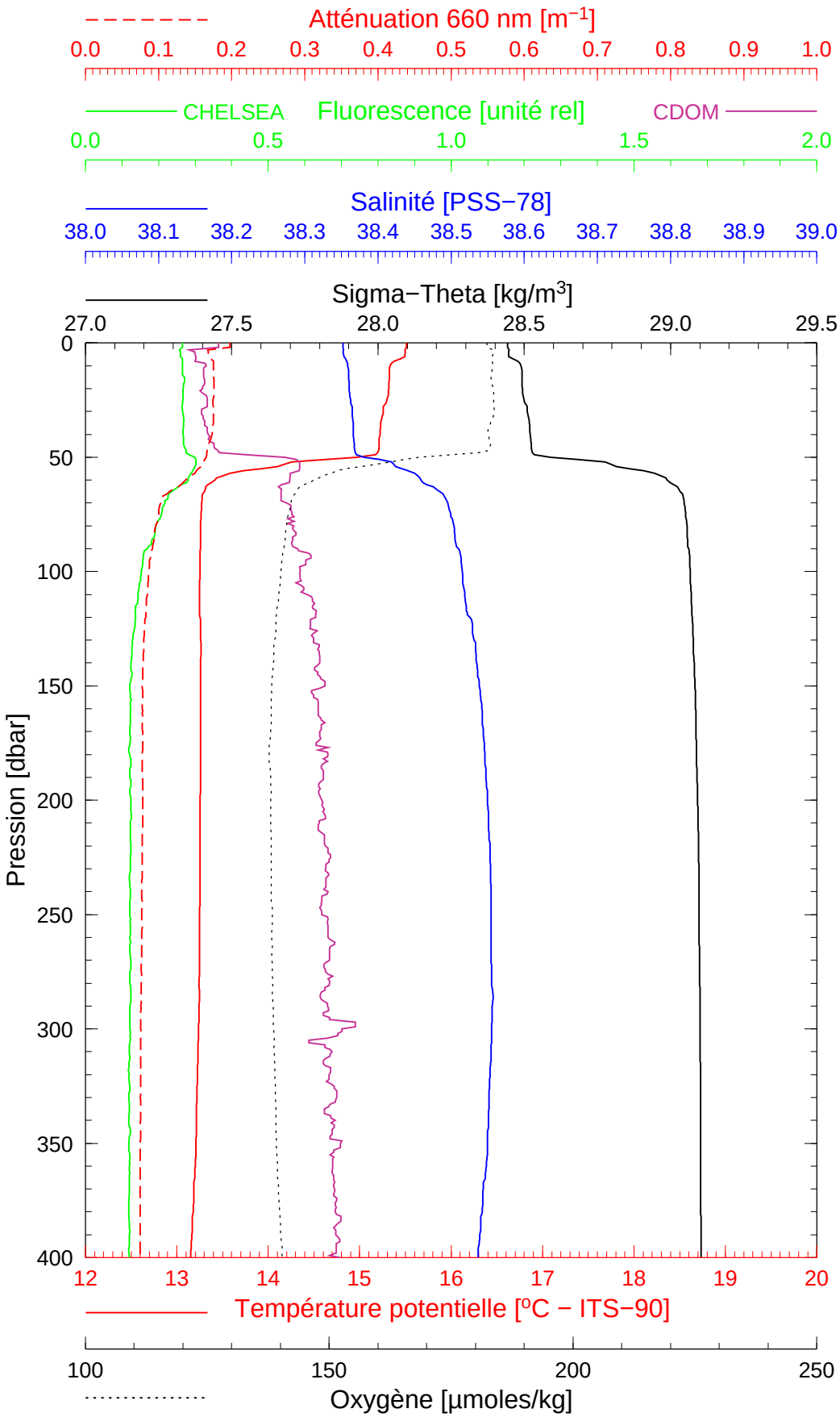


Date *02/12/2006* *Latitude* *43°24.951 N*

Heure déb *13h 43min [TU]* *Longitude* *07°47.855 E*

Boussole 59 **02/12/2006** **BOUS061202_03**

BOUS003

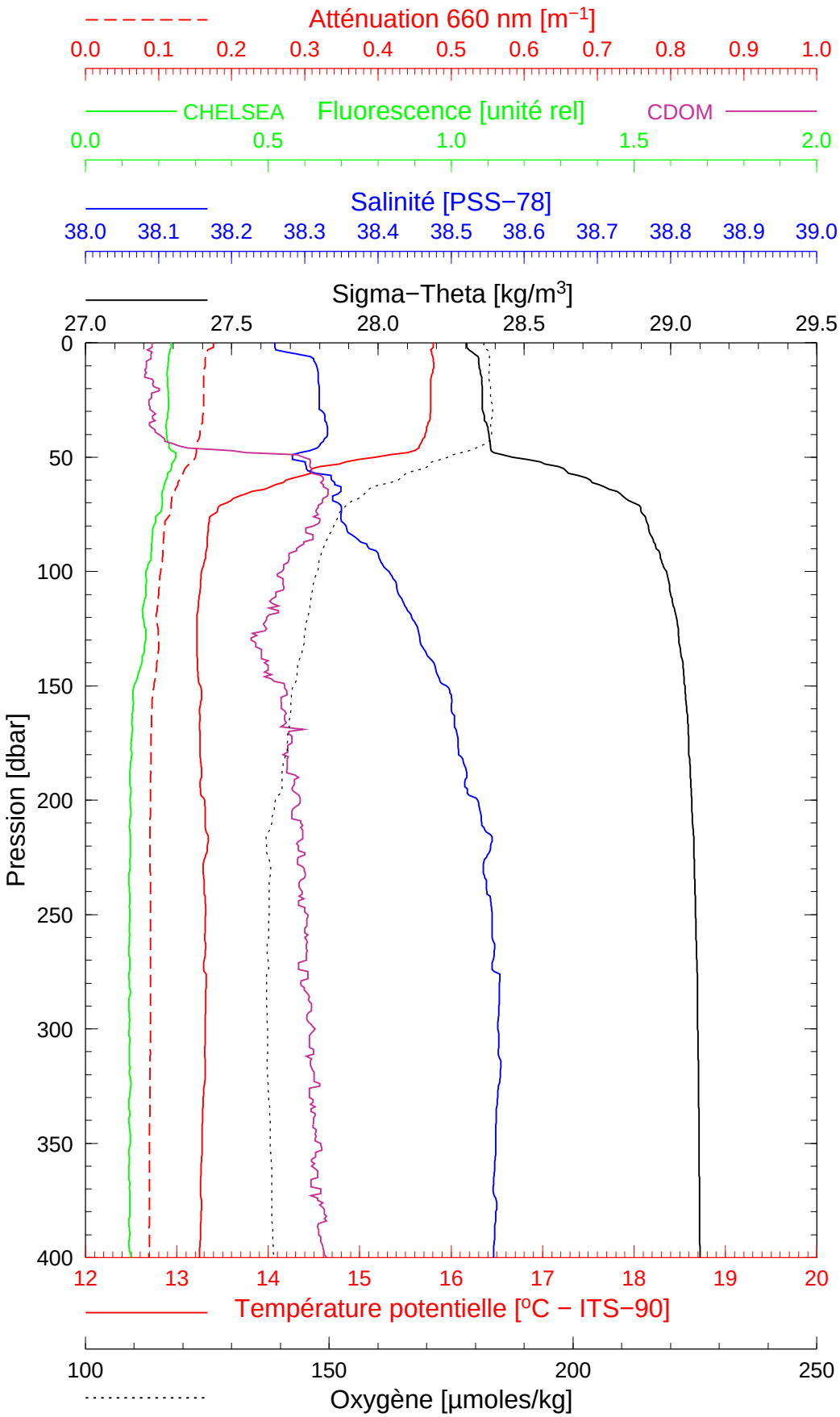


Date *02/12/2006* *Latitude* *43°27.935 N*

Heure déb *14h 36min [TU]* *Longitude* *07°42.444 E*

Boussole 59 **02/12/2006** **BOUS061202_04**

BOUS004

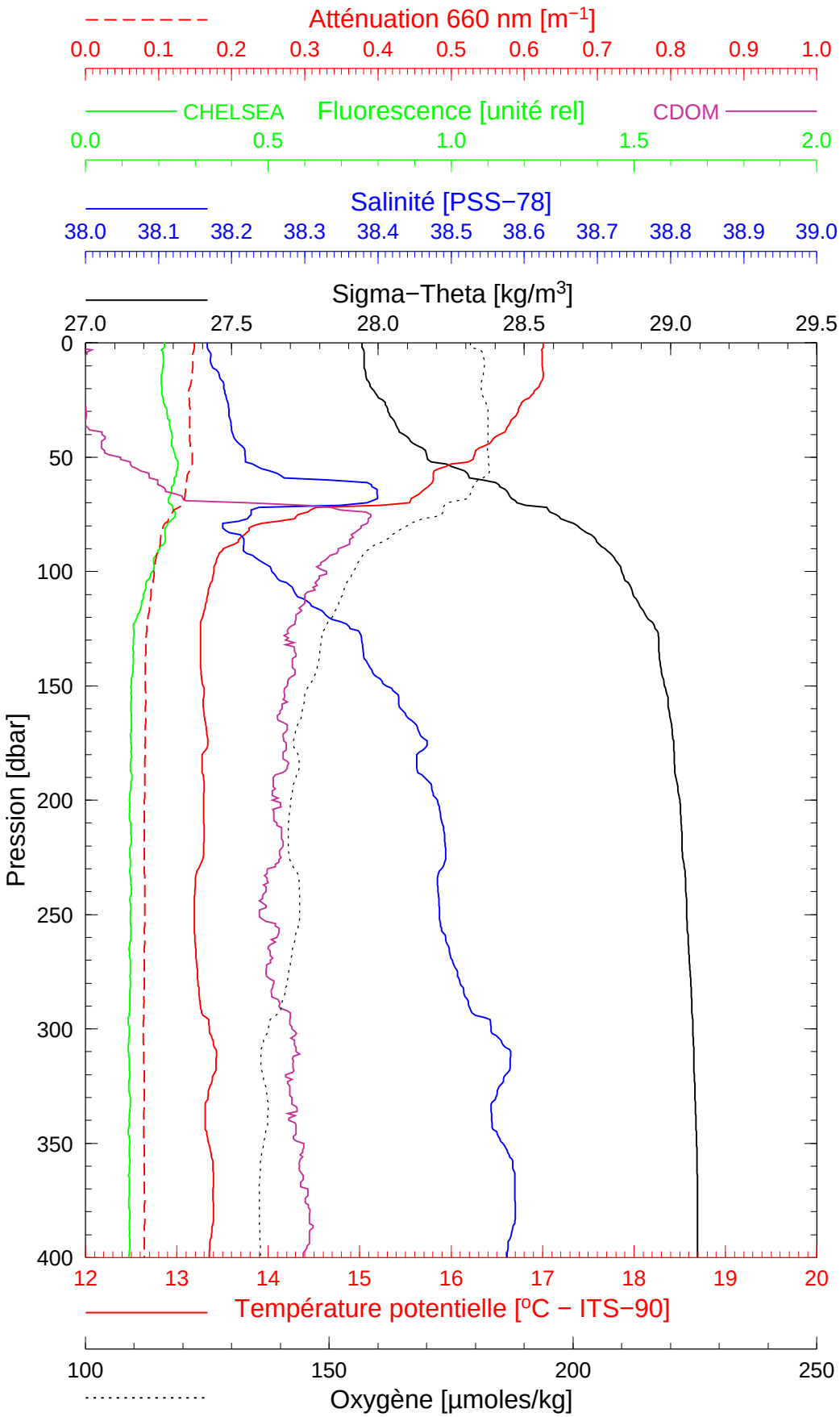


Date *02/12/2006* *Latitude* *43°31.013 N*

Heure déb *15h 36min [TU]* *Longitude* *07°36.762 E*

Boussole 59 **02/12/2006** **BOUS061202_05**

BOUS005

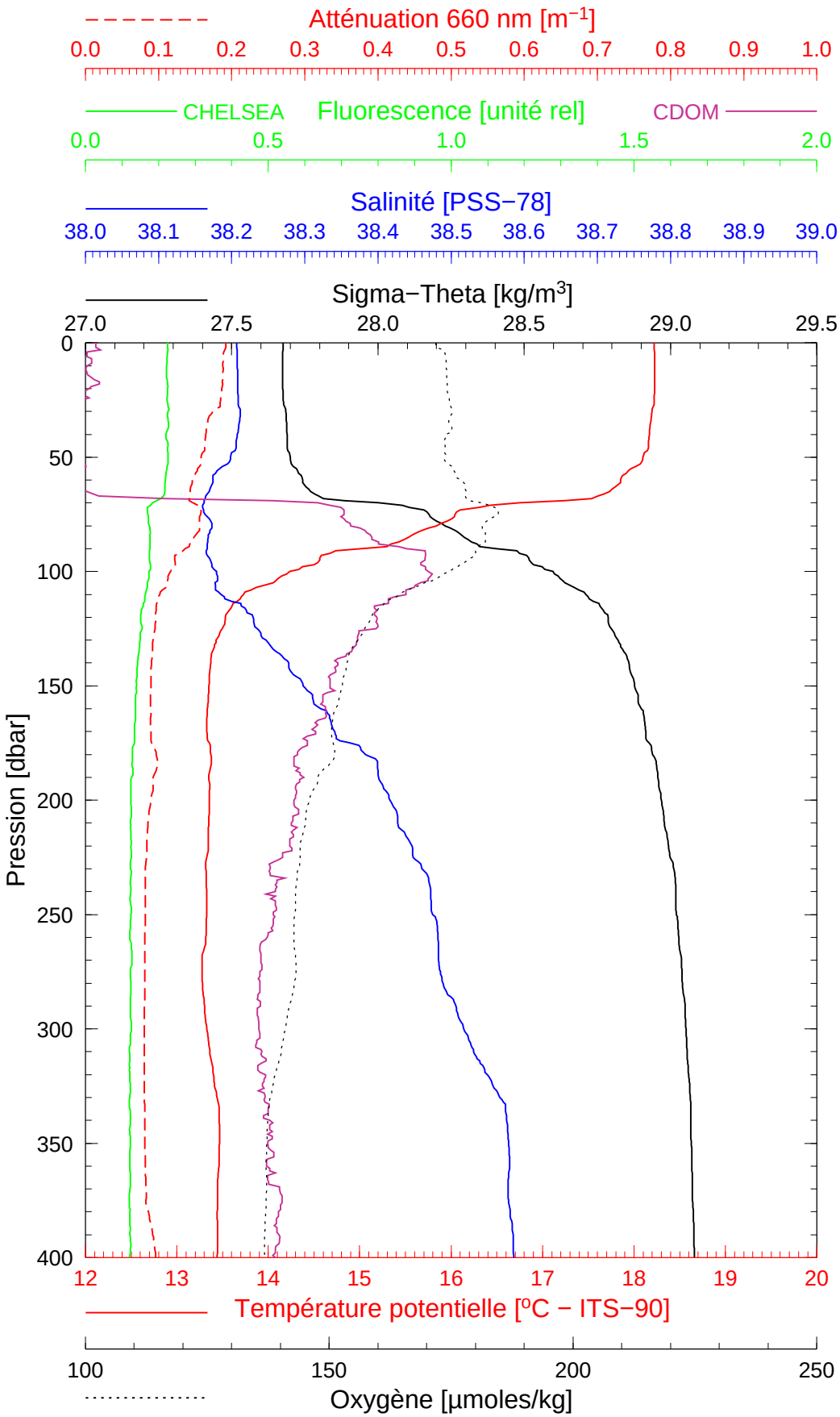


Date *02/12/2006* *Latitude* *43°33.901 N*

Heure déb *16h 33min [TU]* *Longitude* *07°30.912 E*

Boussole 59 **02/12/2006** **BOUS061202_06**

BOUS006

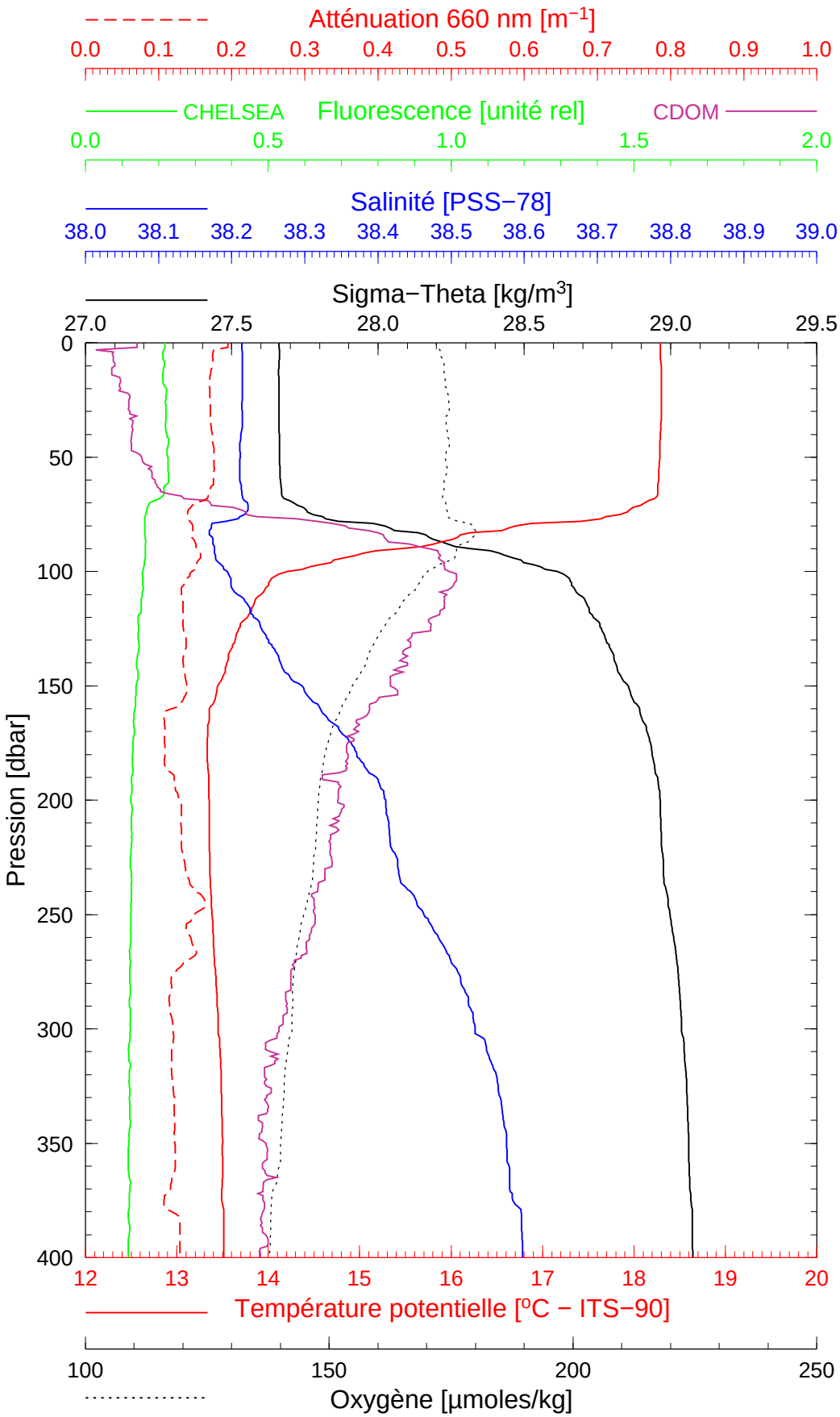


Date *02/12/2006* *Latitude* *43°37.416 N*

Heure déb *17h 37min [TU]* *Longitude* *07°24.878 E*

Boussole 59 **02/12/2007** **BOUS061202_07**

BOUS007

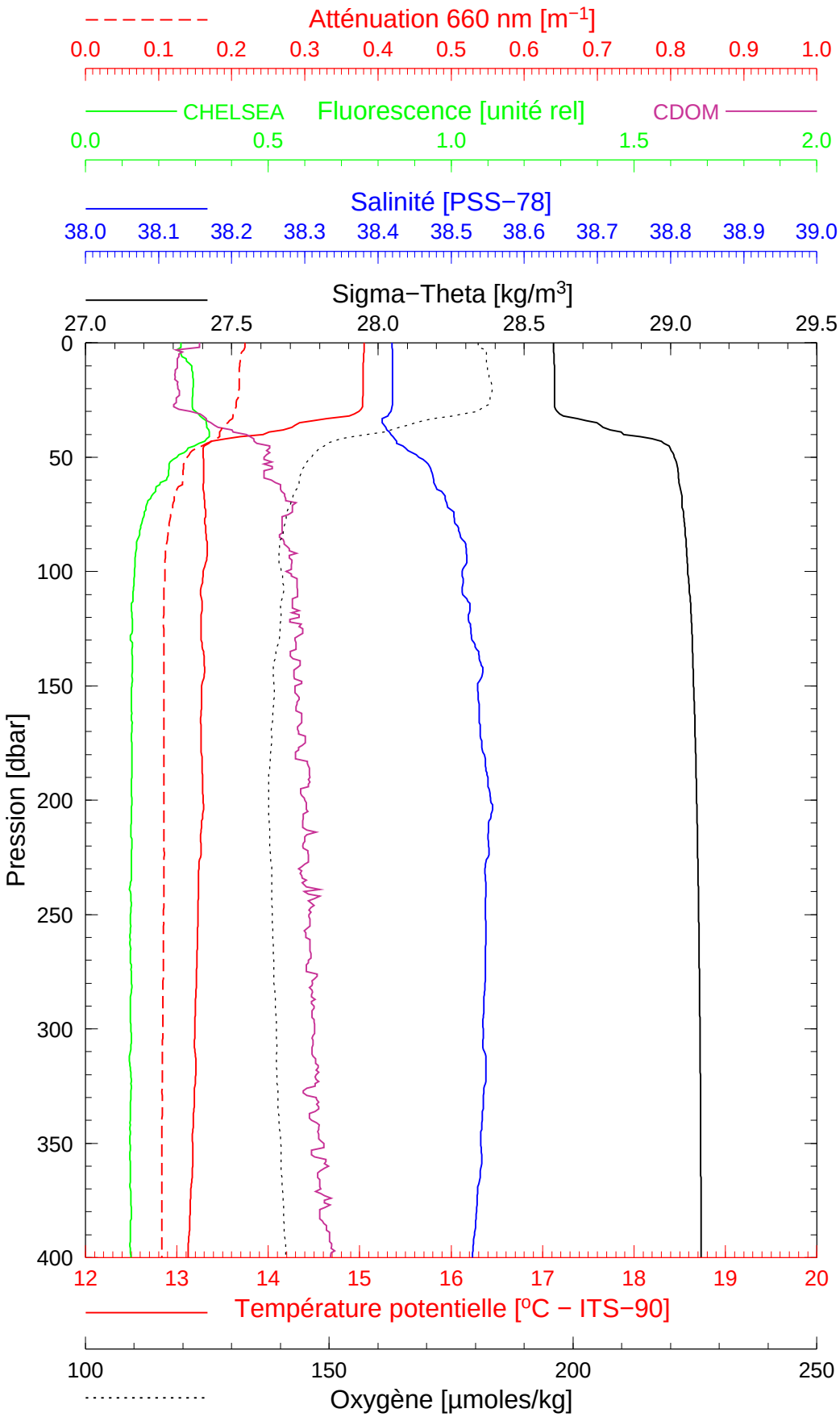


Date *02/12/2007* *Latitude* *43°38.824 N*

Heure déb *18h 27min [TU]* *Longitude* *07°20.529 E*

Boussole 59 **03/12/2006** **BOUS061203_01**

BOUS008



Date *03/12/2006* *Latitude* *43°22.310 N*

Heure déb *09h 11min [TU]* *Longitude* *07°53.804 E*

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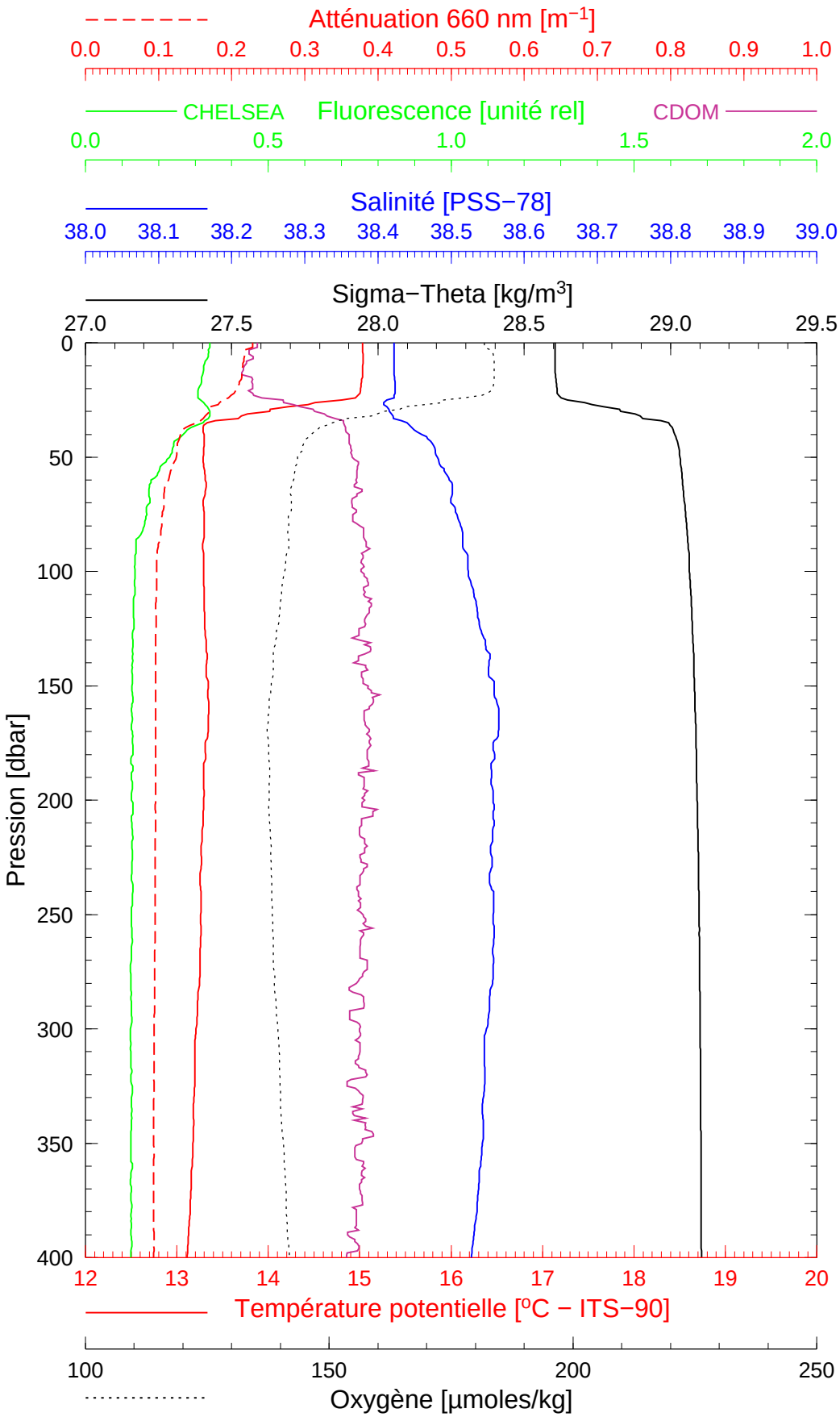
BOUS009



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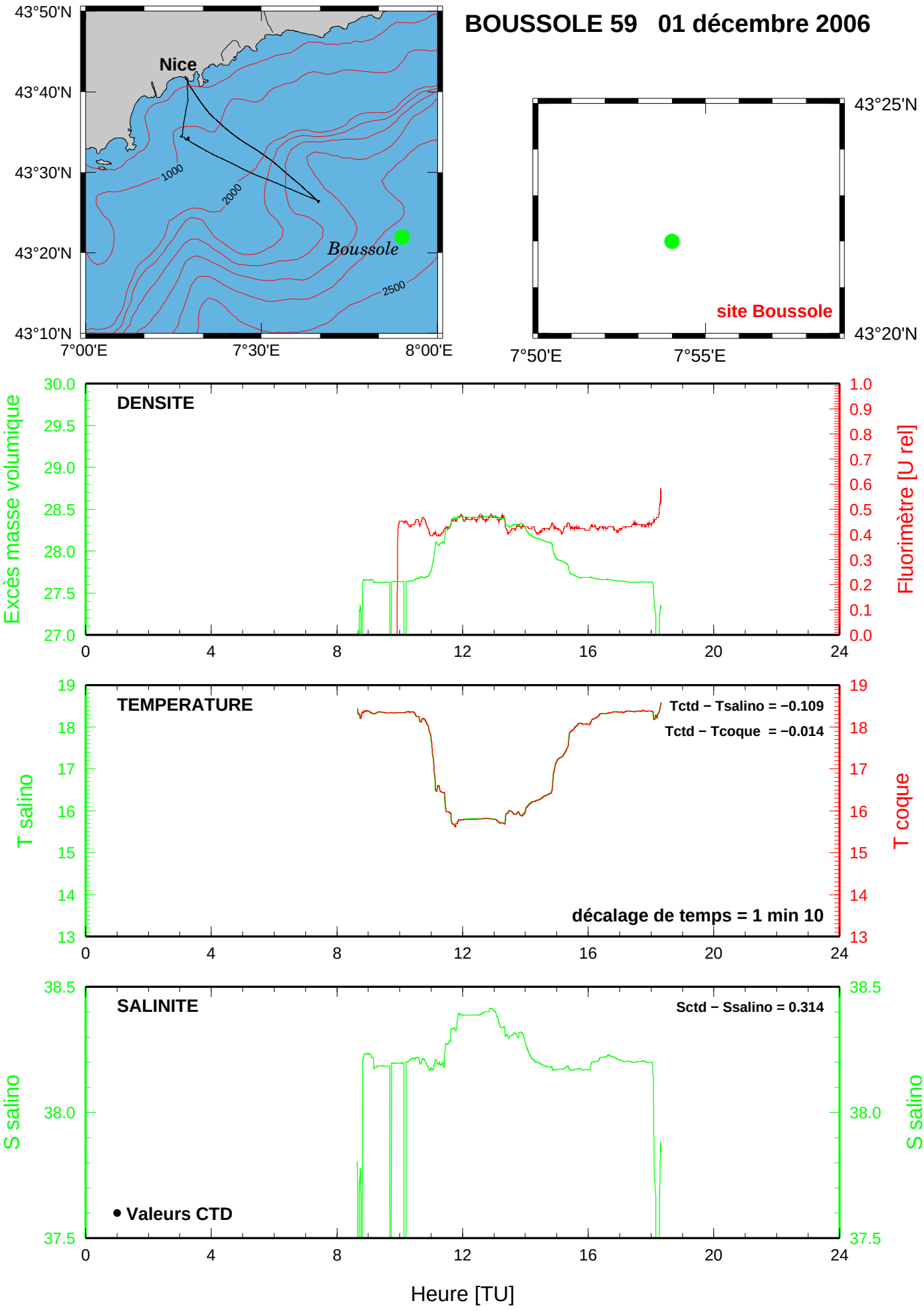
Heure déb *12h 05min [TU]* *Longitude* *07°53.994 E*


BOUSSOLE 59 01 décembre 2006
Nice
Boussole
1000
2000
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43°50'N
43°40'N
43°30'N
43°20'N
43°10'N
7°00'E
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7°55'E
site Boussole
DENSITE
Excès masse volumique
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décalage de temps = 1 min 10
SALINITE
Sctd − Ssalino = 0.314
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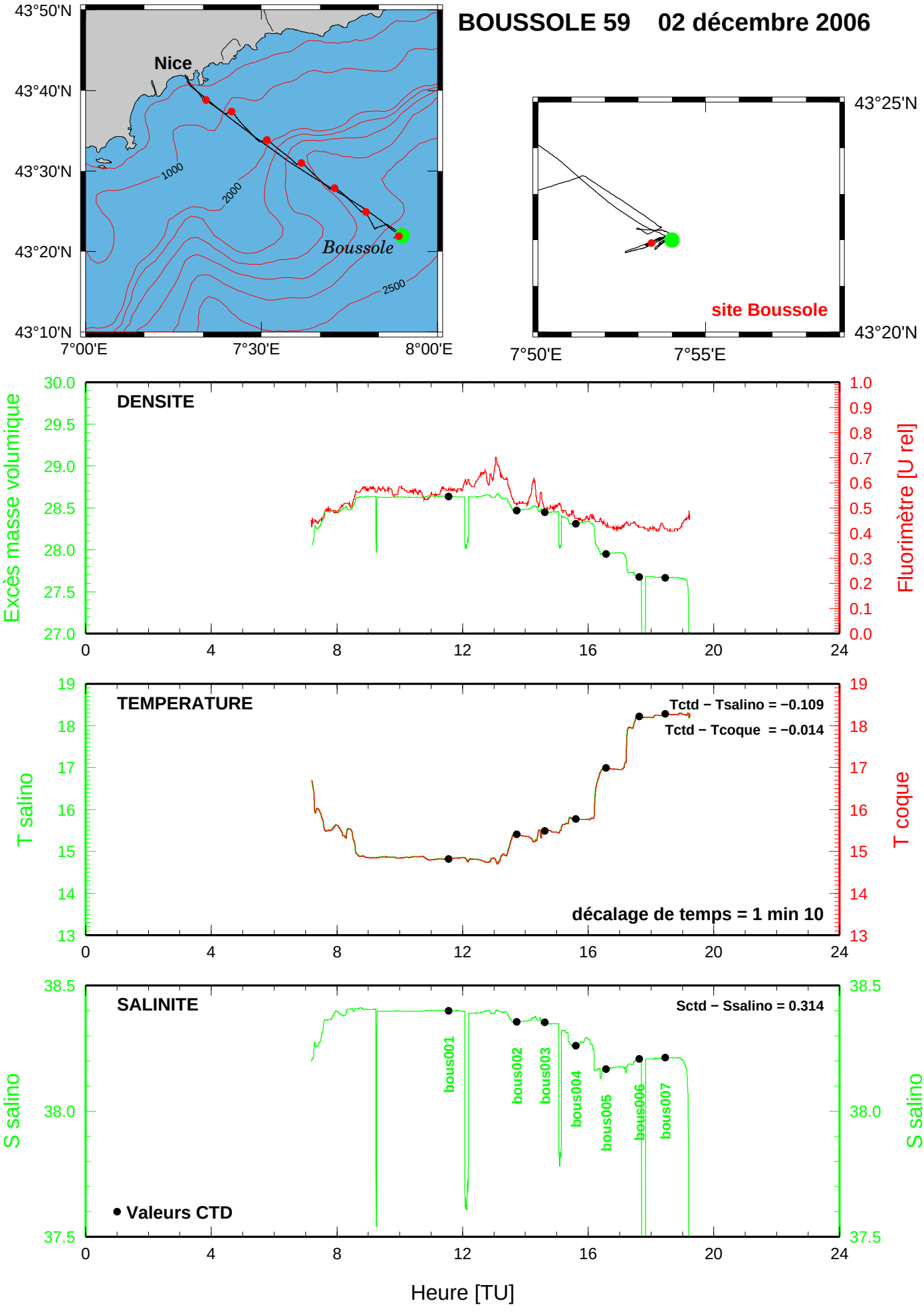
Heure [TU]


BOUSSOLE 59 02 décembre 2006
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site Boussole
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DENSITE
Excès masse volumique
Fluorimètre [U rel]
TEMPERATURE
Tctd − Tsalino = −0.109
Tctd − Tcoque = −0.014
décalage de temps = 1 min 10
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T coque
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Sctd − Ssalino = 0.314
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bous003
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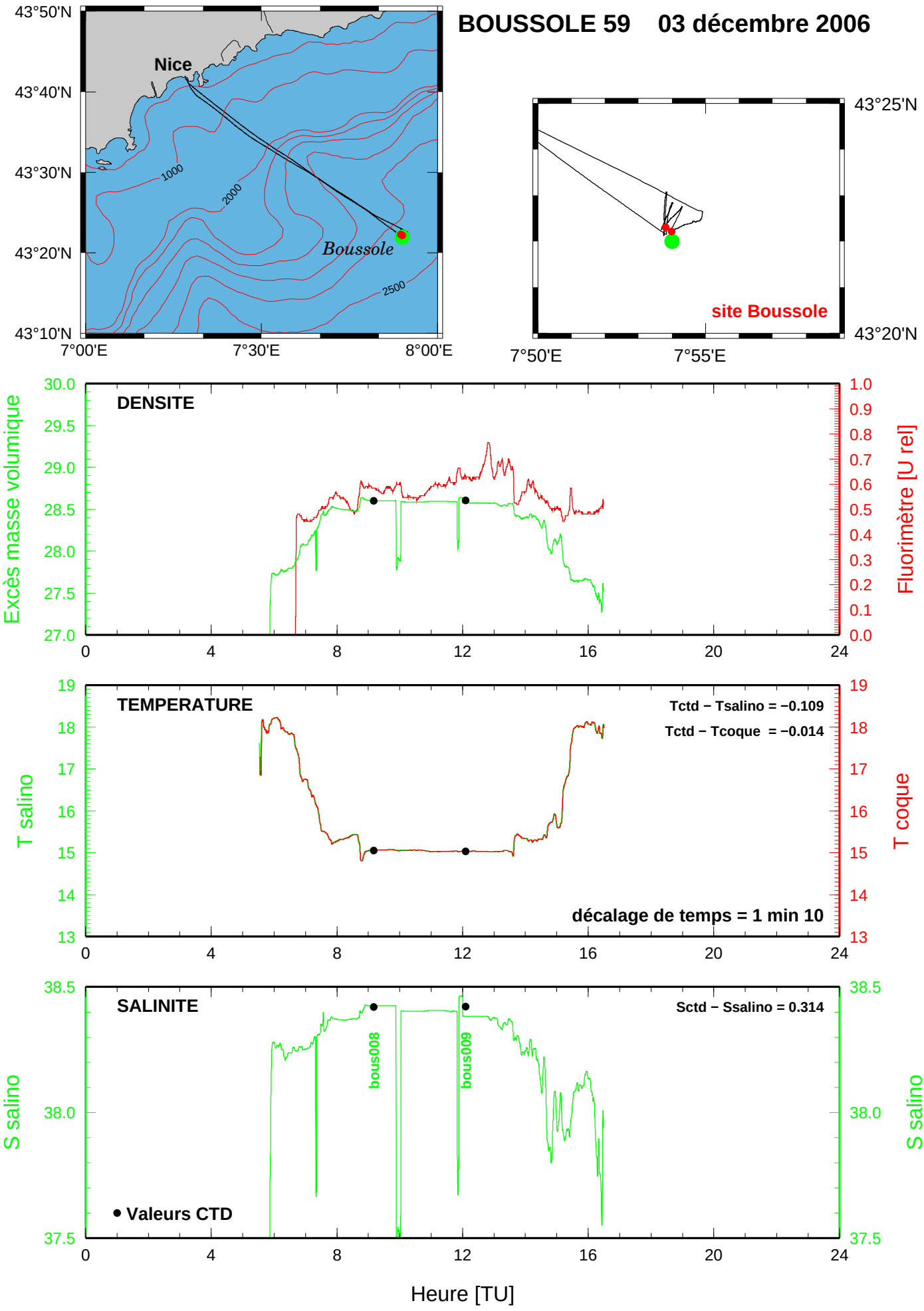
bous006
bous007
• Valeurs CTD
S salino
Heure [TU]


BOUSSOLE 59 03 décembre 2006
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43°50'N
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43°20'N
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8°00'E
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site Boussole
DENSITE
Excès masse volumique
Fluorimètre [U rel]
TEMPERATURE
Tctd − Tsalino = −0.109
Tctd − Tcoque = −0.014
T salino
T coque
décalage de temps = 1 min 10
SALINITE
Sctd − Ssalino = 0.314
bous008
bous009
S salino
• Valeurs CTD
Heure [TU]