BOUSSOLE Monthly Cruise Report

Cruise 51
March 14 - 17, 2006

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

Science Personnel: Guislain Bécu, Dominique Tailliez, Fanny Tièche, Thibaut Wagener, Nordine Souaïdia, 3 divers (David Luquet, Laurent Gilletta, Pierre-Alain Manoni) and 1 Météo-France technician (Raymond Le Guen)

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

Fig 1. Very clear waters in March 2006.

BOUSSOLE project

ESA/ESRIN contract N° 17286/03/I-OL

Deliverable from WP#400/200

March 21, 2006

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Cruise Objectives

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.

3 divers (David Luquet, Laurent Giletta and Pierre-Alain Manoni) will be onboard on 15 March 2006 to take some pictures and clean and check the buoy structure under the sea surface.

Nordine Souaïdia, PhD. Student between Miami University and LOV will be onboard during the whole cruise to deploy the Polrads radiances camera.

1 Météo-France technician (Raymond Le Guen) will be onboard on 15 March 2006 to exchange 6 instruments on the Météo-France buoy.

Thibaut Wagener from LOV will be onboard on 16 March 2006 to take some clean water samples at 40, 20, 10 and 5 meters for trace metals detection.

Cruise Summary

The weather was rather favourable for all the cruise days. It was a little bit agitated on 16 March and on 17 March in the morning.

The ship encountered a technical problem, which delayed the departure on 16 March 2006.

The most significant characteristic of the cruise are the clear waters conditions; the Secchi disk measurements revealed a visibility of 40 meters.

Tuesday 14 March 2006

Departure was a little bit delayed as the ship arrived at port of Nice a 0740 local time. Departure was at 0950 local time. 3 SPMR/SMSR profiles with pyramidal floating system as well as 7 CTD profiles were realized, among these 6 were realized on the transect between BOUSSOLE site and Port of Nice. 1 Secchi disk measurement was also performed, revealing a 40 meters visibility.
Polrads radiances camera were deployed, but a mass isolation problem avoided to trigger the 3 camera simultaneously.

Wednesday 15 March 2006

2 Météo-France technicians were supposed to be onboard, but one forgot his mission order and had to stay in Nice, the other could come onboard and exchanged 6 instruments on the Météo-France buoy. CIMEL sun photometer was still out of order, despite it worked fine at LOV after batteries were changed and batteries charger was reconnected.
Divers went twice at Sea (they saw 2 kings of herish fishs again) and performed 3 x 200 m plankton net profiles for Gaby Gorsky.

Thursday 16 March 2006

This day was the worst of the mission regarding the weather conditions. The seas were choppy and just 1 CTD profile was performed (HPLC, Ap, UltraPath and CDOM) as well as trace metals clean water sampling.

Friday 17 March 2006

The seas were still choppy in the morning, but became calm very quickly at midday. 1 CTD profile, as well as 8 SPMR profiles were performed. Polrads radiances camera was also deployed, but connected directly on an isolated 200V power supply and without transformer, and this solved the simultaneous trigger problem.

Cruise Report

14 March 2006 (UTC)

0850 Departure from port of Nice.
1209 CTD 1 at buoy, with water sampling at 200, 100, 80, 70, 60, 50, 40, 30, 20, 10 and 5 meters for HPLC and Ap.
1300 Secchi disk 1 (40 m).
1320 Polrads deployment 1.
1435 SPMR profiles 1, 2 and 3 with pyramidal floating system.
1614 CTD 2 at station 1 (43°25'N 07°48'E).
1714 CTD 3 at station 2 (43°28'N 07°42'E).
1814 CTD 4 at station 3 (43°31'N 07°37'E).
1915 CTD 5 at station 4 (43°34'N 07°31'E).
2014 CTD 6 at station 5 (43°37'N 07°25'E).
2105 CTD 7 at station 6 (43°39'N 07°21'E).
2205 Arrival to port of Nice.

15 March 2006

0600 Departure from port of Nice.
0930 Divers at sea.
1113 CTD 8 with water sampling at 5 and 10 m for triplicate HPLC/Ap and also for dry weights.
1206 SPMR profiles 4, 5 and 6 with pyramidal floating system.
1315 Buoy data offloading.
1330 Divers at sea for the second time.
1335 3 x 200 m plankton net profiles (for divers and Gaby Gorsky).
1440 Météo-France buoy maintenance (exchange 6 instruments).
1930 Arrival at port of Nice.

16 March 2006

0920 Departure from port of Nice.
1251 CTD 9 at buoy with water sampling at 200, 100, 80, 70, 60, 50, 40, 30, 20, 10 and 5 meters for UltraPath, CDOM HPLC and Ap.
1335 Clean water sampling at 40, 20, 10 and 5 meters for trace metals.
2045 Arrival at port of Nice.

17 March 2006

0640 Departure for port of Nice.
1009 SPMR profiles 7, 8 and 9.
1204 CTD 10 with water sampling at 5 and 10 meters for triplicate filtrations (HPLC, Ap and dry weights).
1240 Polrads deployment 2.
1340 SPMR profiles 10, 11, 12, 13 and 14.
1800 Arrival at port of Nice.

Calculated Swath paths for MERIS Sensor (ESOV Software)

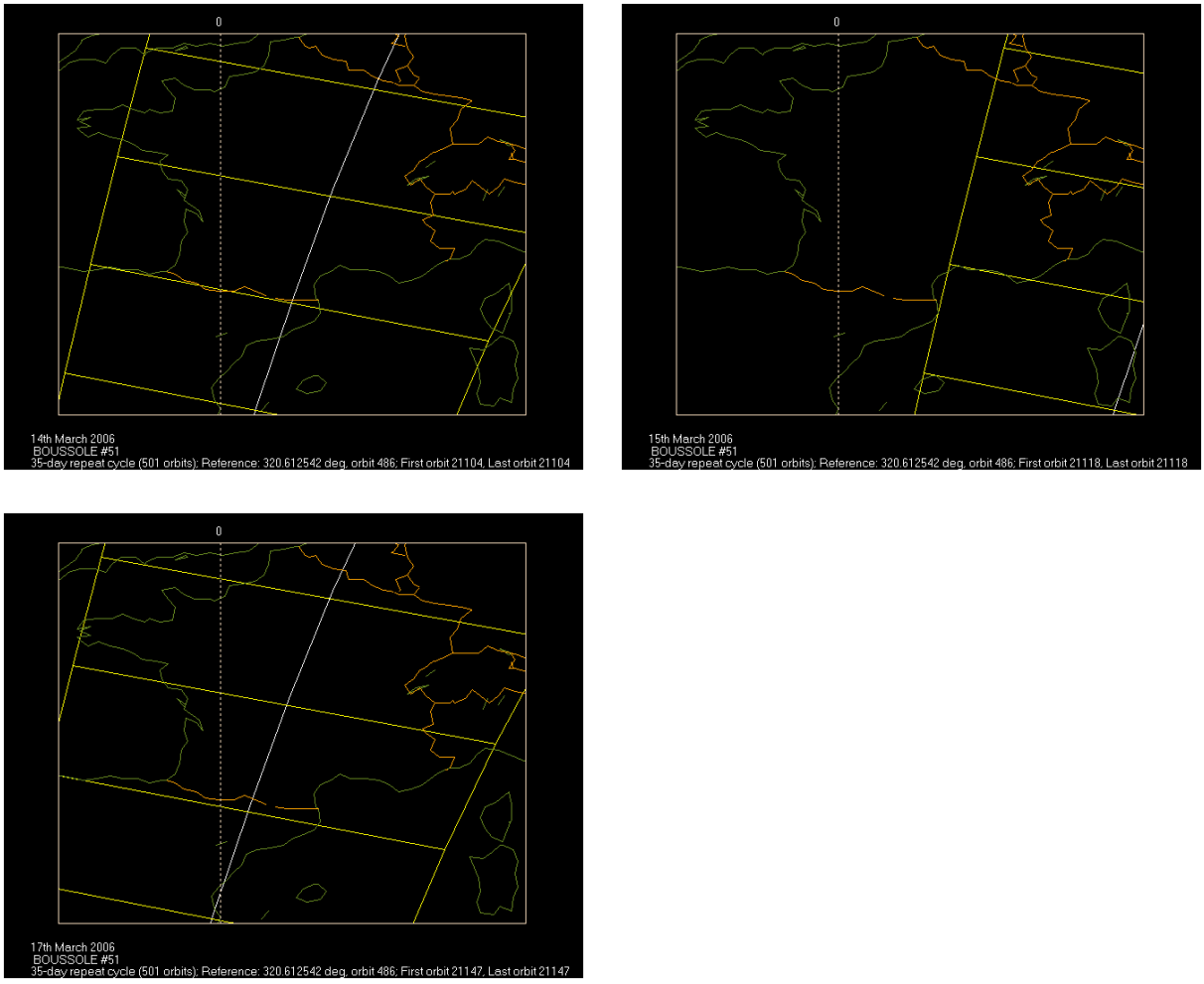
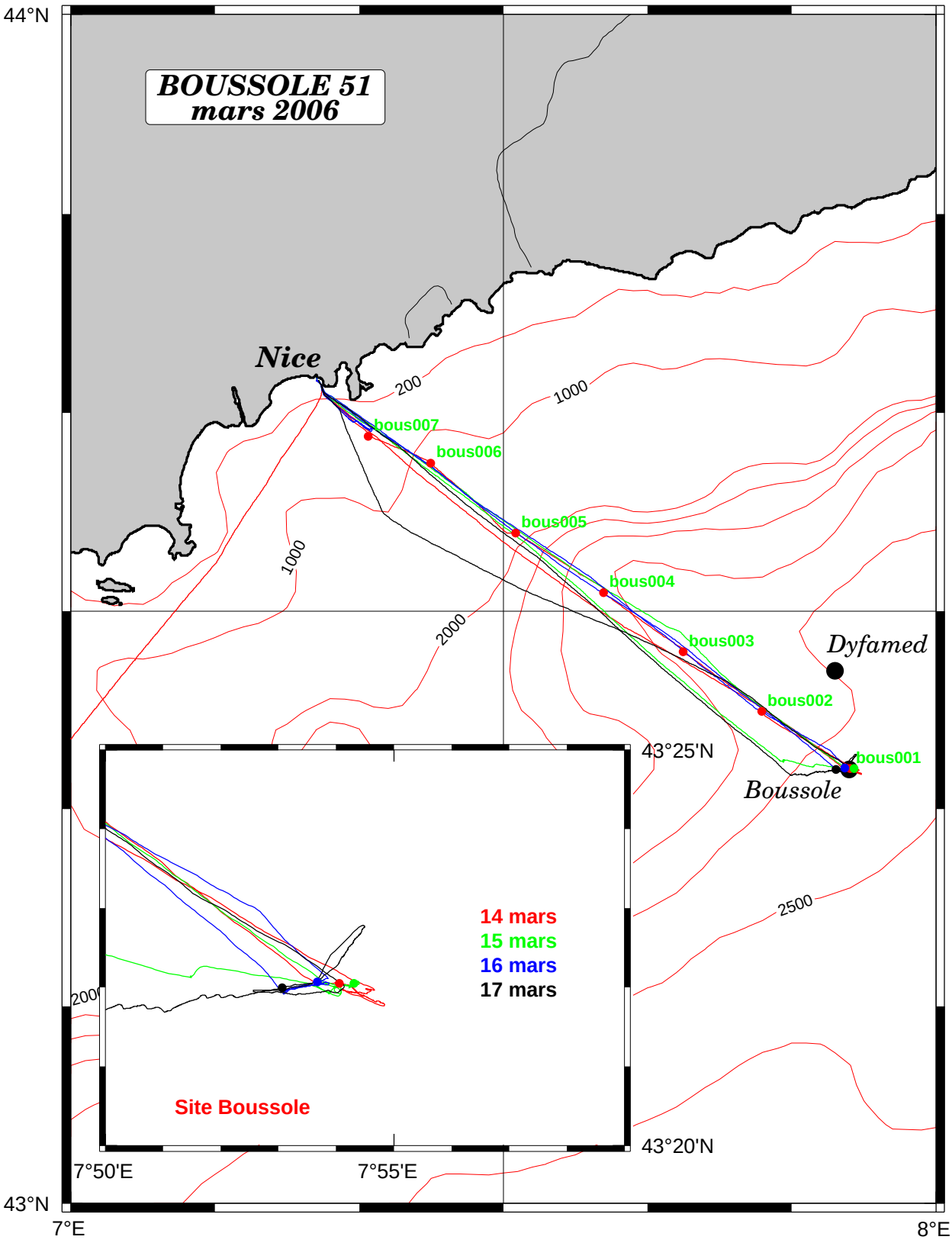


Figure 3. Calculated swath paths for MERIS (Esov software) above BOUSSOLE site for 14, 15 and 17 March 2006.

Appendix

Cruise Summary Table for Boussole 51

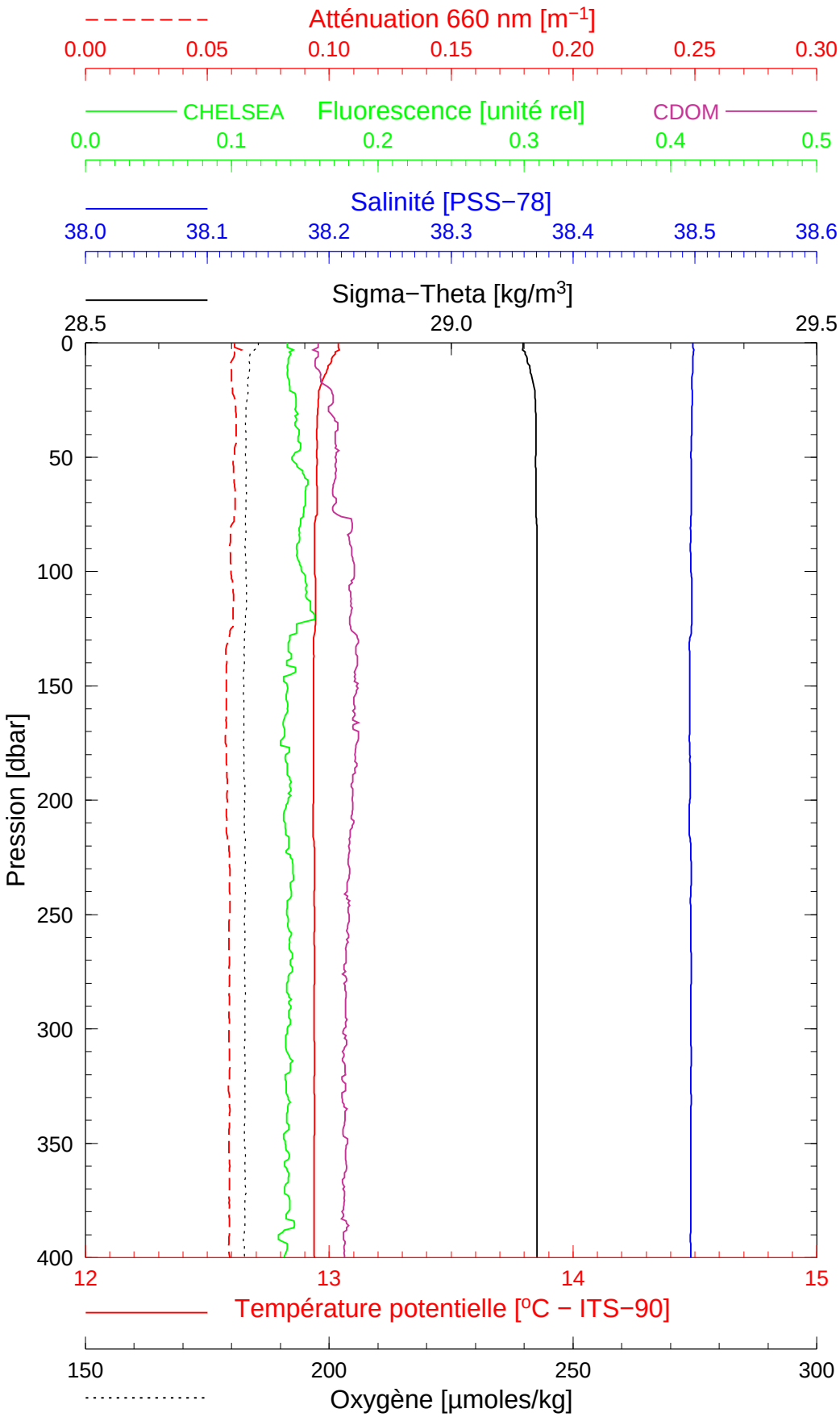
Date	Black names	Profile names	CTD notées /	Start Time	Duration	Depth max	Latitude (N)		longitude		Other sensors	Their cast	Start/Finish			Weather							Sea		
	(file ext: *.raw*)	(file extension: *.raw*)	satellite overpass	GMT (hour.min)	(min.sec)	(meter)	(Degree)	(Minute)	(Degree)	(Minute)				Sky	Clouds	Quantity (#/8)	Wind speed	Wind dir.	Atm. Pressure	humidity	Visibility	T air	T water	Sea	Swell height	Swell dir.	White horses
			CTDBOUS001	12:09	31:00	400	43	22.053	7	54.058				blue	no	0	9 kn	226	1016.1	62	excellent	11.3	13.1	calm	0,6 m		no
				13:00	05:00	40	43	22.000	7	54.000	Secchi disk 1			blue	no	0					excellent			calm	0,6 m		no
	bou140306black1			12:37	03:00																						
				13:20	25:00	0	43	22.000	7	54.000	Polrads 1			blue	no	0					excellent			calm	0,6 m		no
	bou140306black2			14:04	03:00																						
		bou140306spmratsurfaceAA		14:35	07:20	205	43	21.945	7	54.251				blue, slight milk	-	0	10 kn	203	1015.4	59	excellent	11.7		calm	0,6 m		no
		bou140306spmratsurfaceAB		14:52	07:56	200	43	21.928	7	54.469				blue, slight milk	-	0	10 kn	203	1015.4	59	excellent	11.7		calm	0,6 m		no
14/03/2006		bou140306spmratsurfaceAC		15:15	07:25	200	43	21.980	7	54.519				blue, slight milk	-	0	10 kn	203	1015.4	59	excellent	11.7		calm	0,6 m		no
	bou140306black3			15:43	03:00																						
			CTDBOUS002	16:14	26:00	400	43	24.941	7	47.921				blue	no	0	11 kn	198	1015.2	55	excellent	11.7	13.0	calm	0,6 m		no
			CTDBOUS003	17:14	26:00	400	43	27.958	7	42.480				blue	no	0	12 kn	202	1015.5	63	excellent	11.5	13.1	calm	0,6 m		no
			CTDBOUS004	18:14	26:00	400	43	30.941	7	36.935				blue	no	0	9 kn	204	1016.0	63	excellent	11.4	13.0	calm	0,6 m		no
			CTDBOUS005	19:15	24:00	400	43	33.938	7	30.837				blue	no	0	6 kn	232	1016.4	63	excellent	11.4	13.0	calm	0,5 m		no
			CTDBOUS006	20:14	24:00	400	43	37.478	7	24.956				blue	no	0 (night)	5 kn	280	1016.6	64	excellent	11.3	12.9	calm	0,4 m		no
			CTDBOUS007	21:05	24:00	400	43	38.819	7	20.624				blue	no	0 (night)	7 kn	285	1016.6	61	excellent	10.4	12.6	calm	0,4 m		no
			CTDBOUS008	11:13	24:00	400	43	22.053	7	54.313				covered	heter.	4	7 kn	182	1016.7	68	very good	11.5	13.1	calm	0,5 m		no
	bou150306black1			11:41	03:00																						
15/03/2006		bou150306spmratsurfaceAA		12:06	07:44	205	43	22.056	7	53.833				covered	heter.	6	8 kn	180	1016.1	66	very good	11.2		calm	0,5 m		no
		bou150306spmratsurfaceAB		12:24	08:20	200	43	22.057	7	53.750				covered	heter.	6	8 kn	180	1016.1	66	very good	11.2		calm	0,5 m		no
		bou150306spmratsurfaceAC		12:44	08:30	200	43	22.075	7	53.673				covered	heter.	6	8 kn	180	1016.1	66	very good	11.2		calm	0,5 m		no
	bou150306black2			13:03	03:00																						
16/03/2006			CTDBOUS009	12:51	23:00	400	43	22.072	7	53.676				slight. covered	heter.	1	20 kn	60 ???	1014.8	59	excellent	11.3	13.0	choppy	1,0 m		yes
	bou170306black1			10:04	03:00																						
		bou170306AA		10:09	05:18	205	43	21.960	7	53.837				slight haze	Ci + fog	2	10 kn	7	1017.1	61	very good	10.7		choppy	0,9 m		some
		bou170306AB		10:21	05:30	200	43	21.907	7	53.312				slight haze	Ci + fog	2	10 kn	7	1017.1	61	very good	10.7		choppy	0,9 m		some
		bou170306AC		10:34	04:59	200	43	21.939	7	53.014				slight haze	Ci + fog	2	10 kn	7	1017.1	61	very good	10.7		choppy	0,9 m		some
	bou170306black2			10:48	03:00																						
			CTDBOUS010	12:04	23:00	400	43	21.998	7	53.069				slight. covered	heter.	1	13 kn ???	60 ???	1016.9	56	very good	11.3	13.0	choppy	0,9 m		some
				12:40	30:00	0	43	22.000	7	54.000	Polrads 2			slight haze	Ci + fog	1					very good			calm	0,6 m		no
17/03/2006	bou170306black3			13:25	03:00																						
		bou170306AD		13:38	04:48	205	43	21.740	7	50.841				slight haze	Ci + fog	1	5 kn	55	1016.1	64	very good	11.7		calm	0,6 m		no
		bou170306AE		13:50	04:53	205	43	21.758	7	50.698				slight haze	Ci + fog	1	5 kn	55	1016.1	64	very good	11.7		calm	0,6 m		no
		bou170306AF		14:02	04:27	205	43	21.738	7	50.420				slight haze	Ci + fog	1	5 kn	55	1016.1	64	very good	11.7		calm	0,6 m		no
		bou170306AG		14:12	05:01	205	43	21.751	7	50.297				slight haze	Ci + fog	1	5 kn	55	1016.1	64	very good	11.7		calm	0,6 m		no
		bou170306AH		14:24	04:19	205	43	21.752	7	50.125				slight haze	Ci + fog	1	5 kn	55	1016.1	64	very good	11.7		calm	0,6 m		no
	bou170306black4			14:39	03:00																						



GMT 2006 Mar 27 16:41:26

Boussole 51 **14/03/2006** **BOUS060314_01**

BOUS001

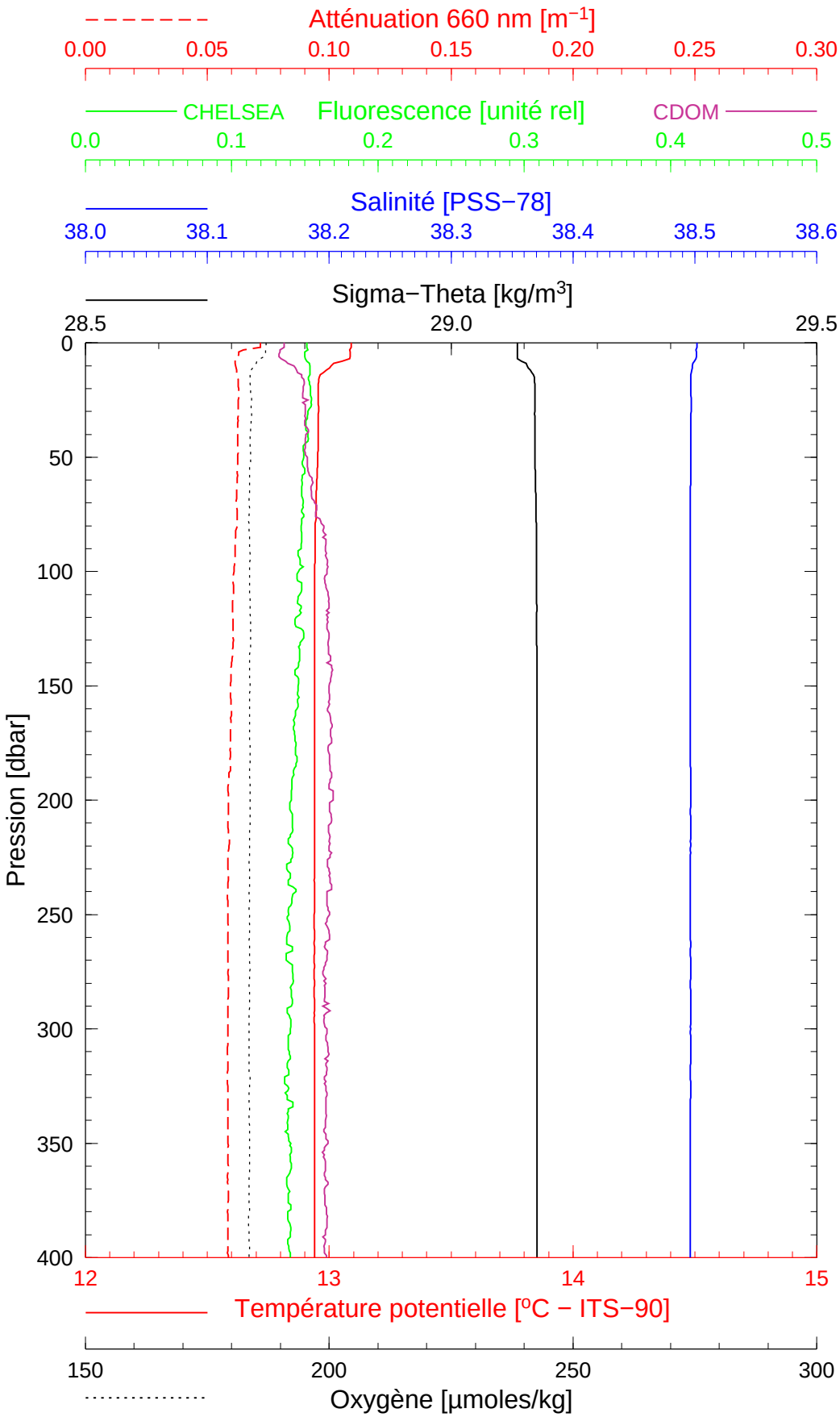


Date *14/03/2006* *Latitude* *43°22.053 N*

Heure déb *12h 08min [TU]* *Longitude* *07°54.058 E*

Boussole 51 **14/03/2006** **BOUS060314_02**

BOUS002



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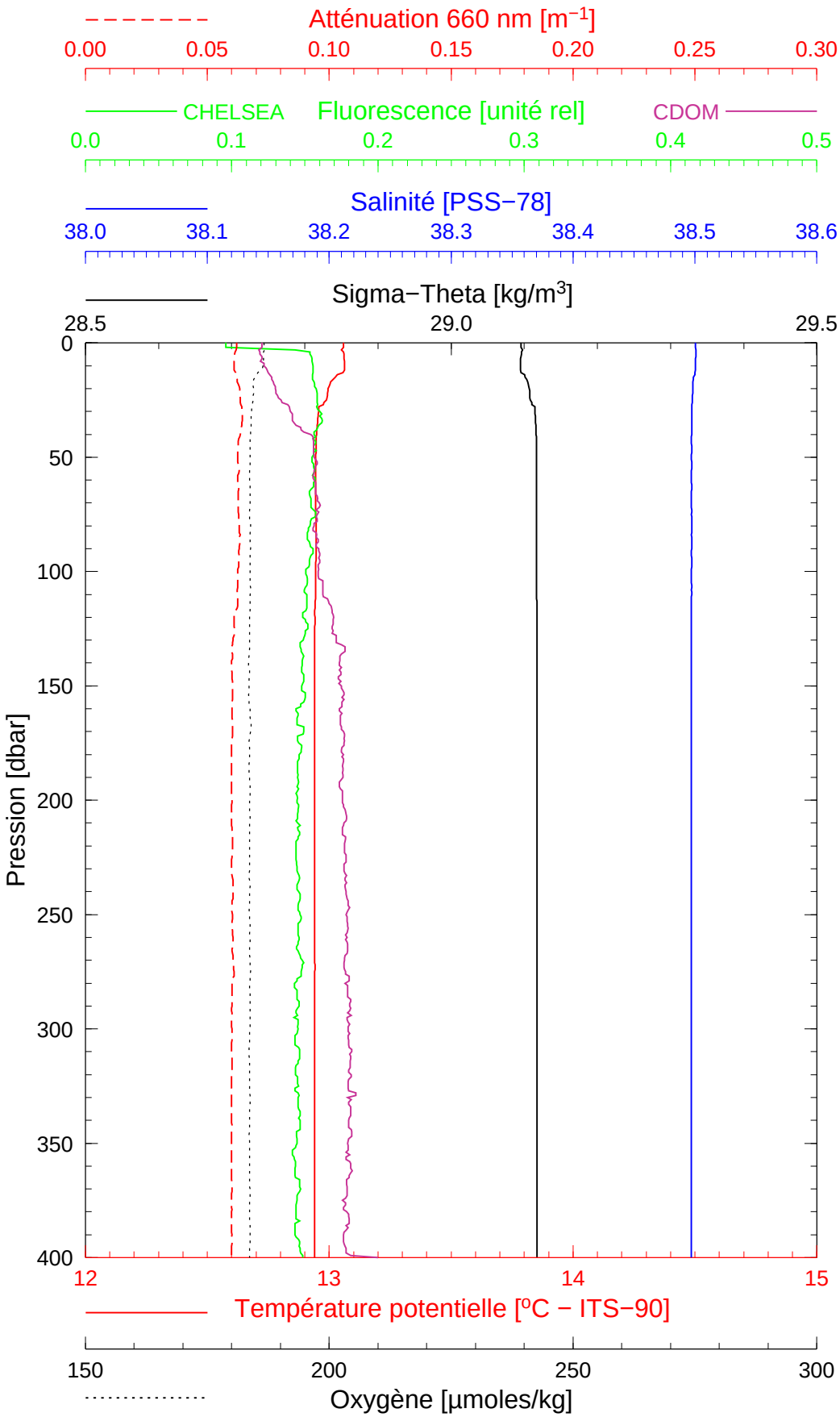
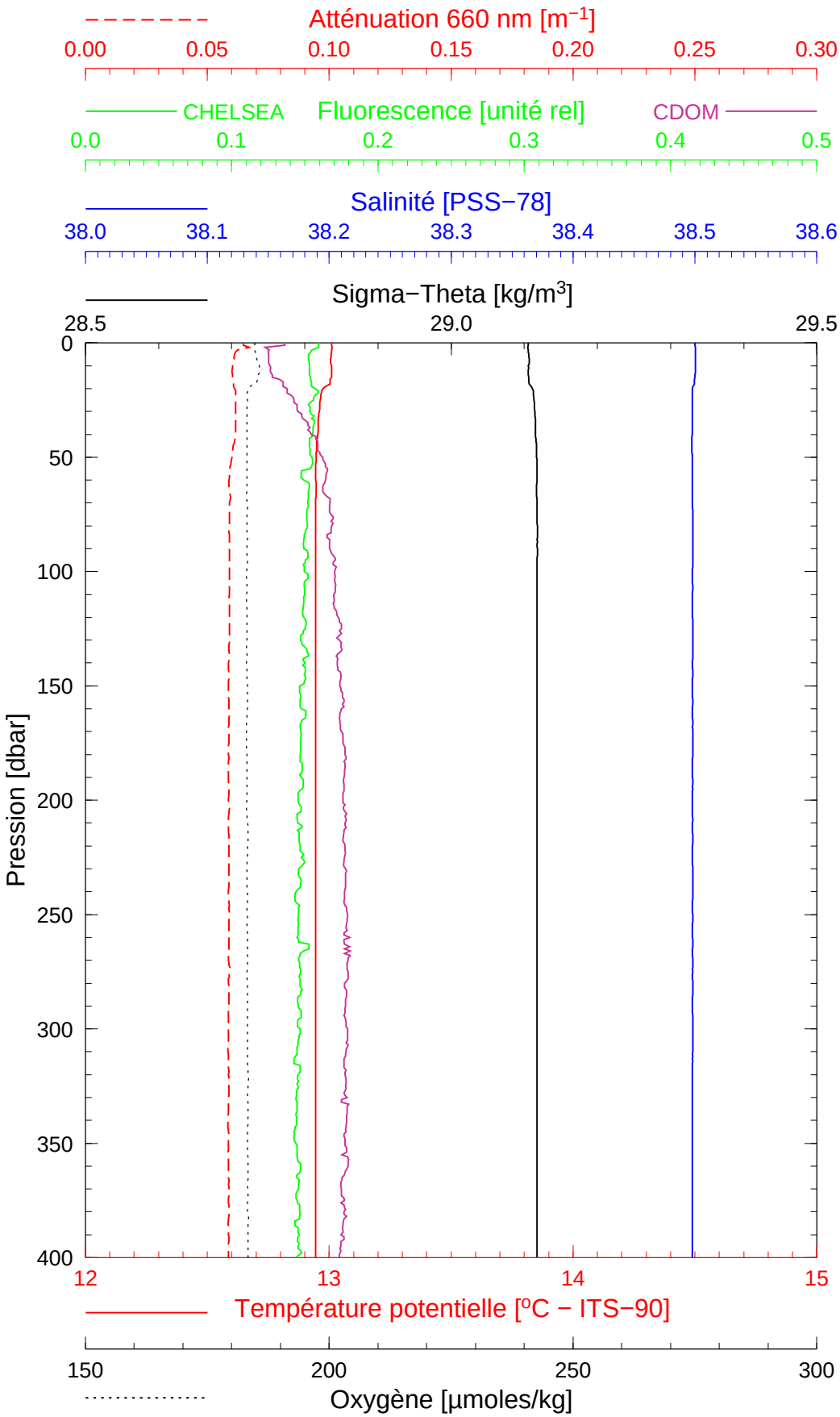


Date *14/03/2006* *Latitude* *43°27.958 N*

Heure déb *17h 14min [TU]* *Longitude* *07°42.480 E*

Boussole 51 **14/03/2006** **BOUS060314_04**

BOUS004

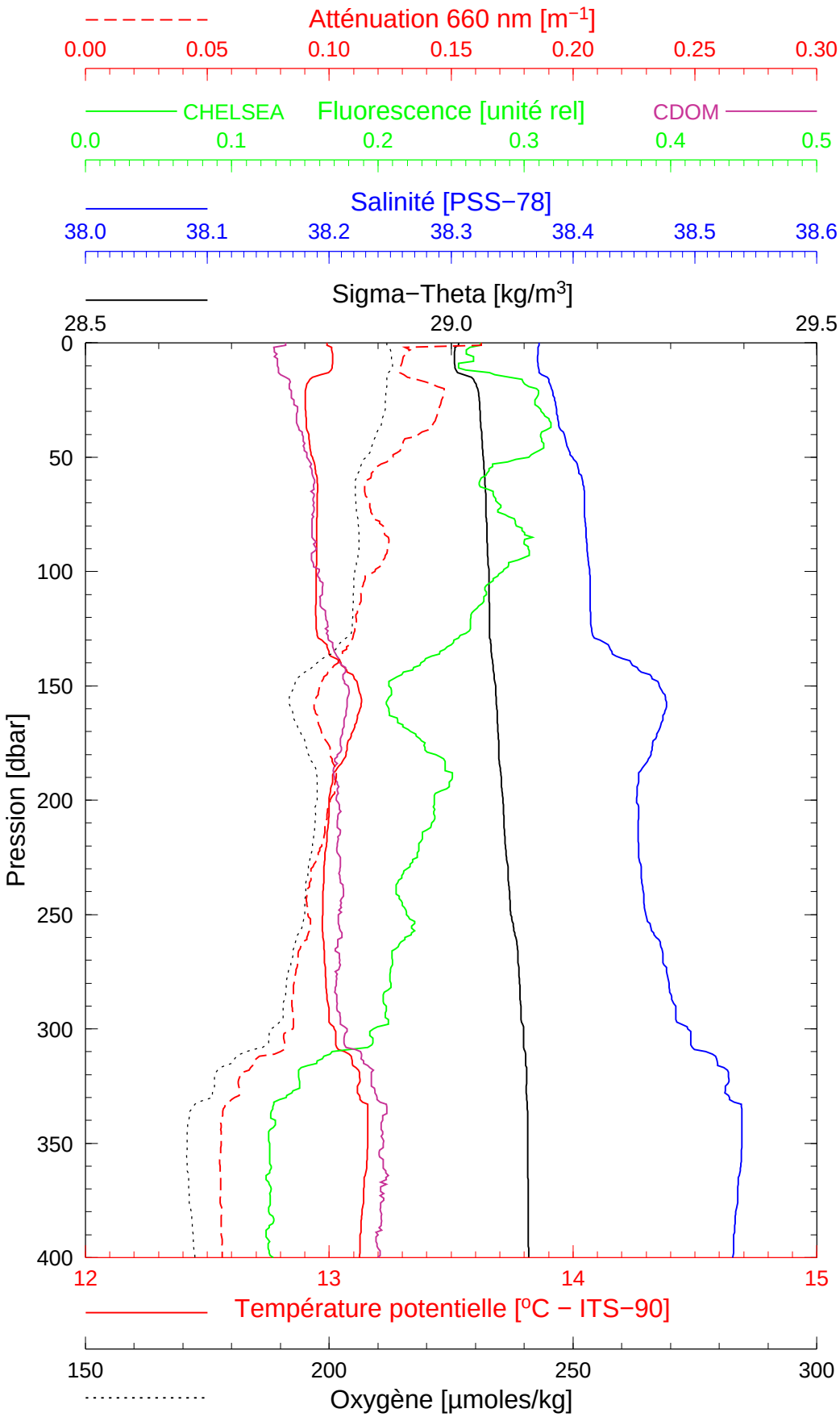


Date *14/03/2006* *Latitude* *43°30.941 N*

Heure déb *18h 13min [TU]* *Longitude* *07°36.935 E*

Boussole 51 **14/03/2006** **BOUS060314_05**

BOUS005



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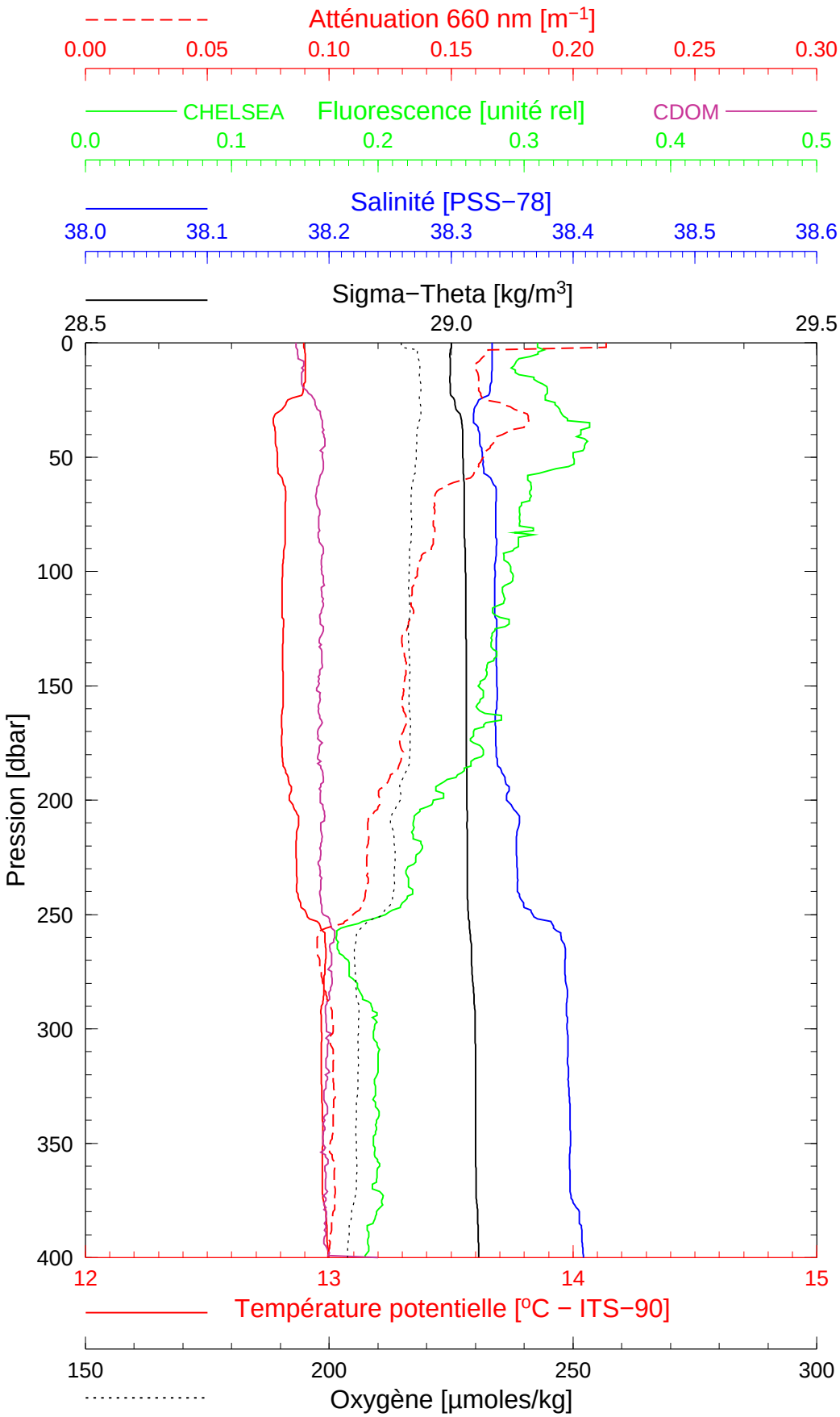
Boussole 51 **14/03/2006** **BOUS060314_06**

BOUS006



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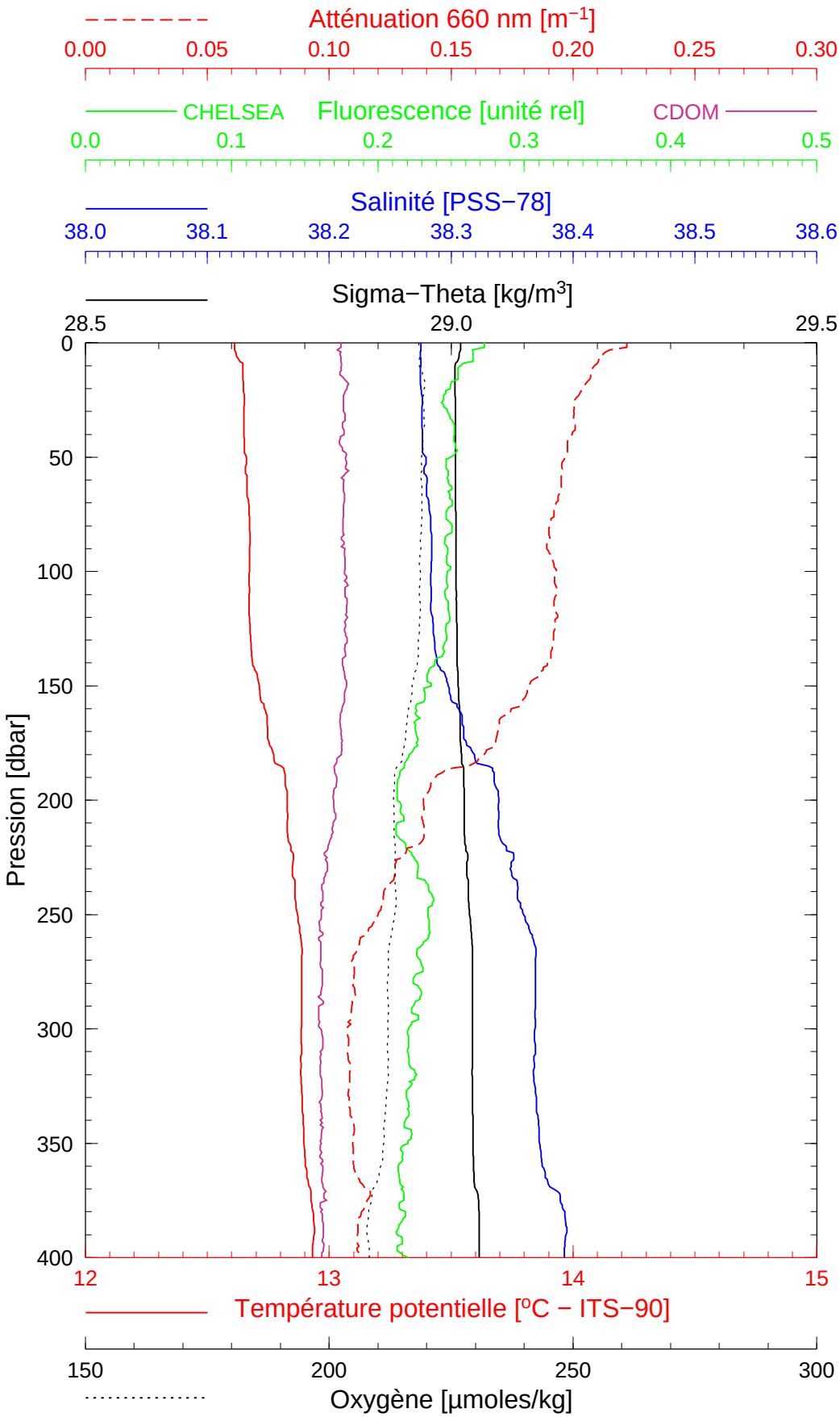
Boussole 51 **14/03/2006** **BOUS060314_07**

BOUS007



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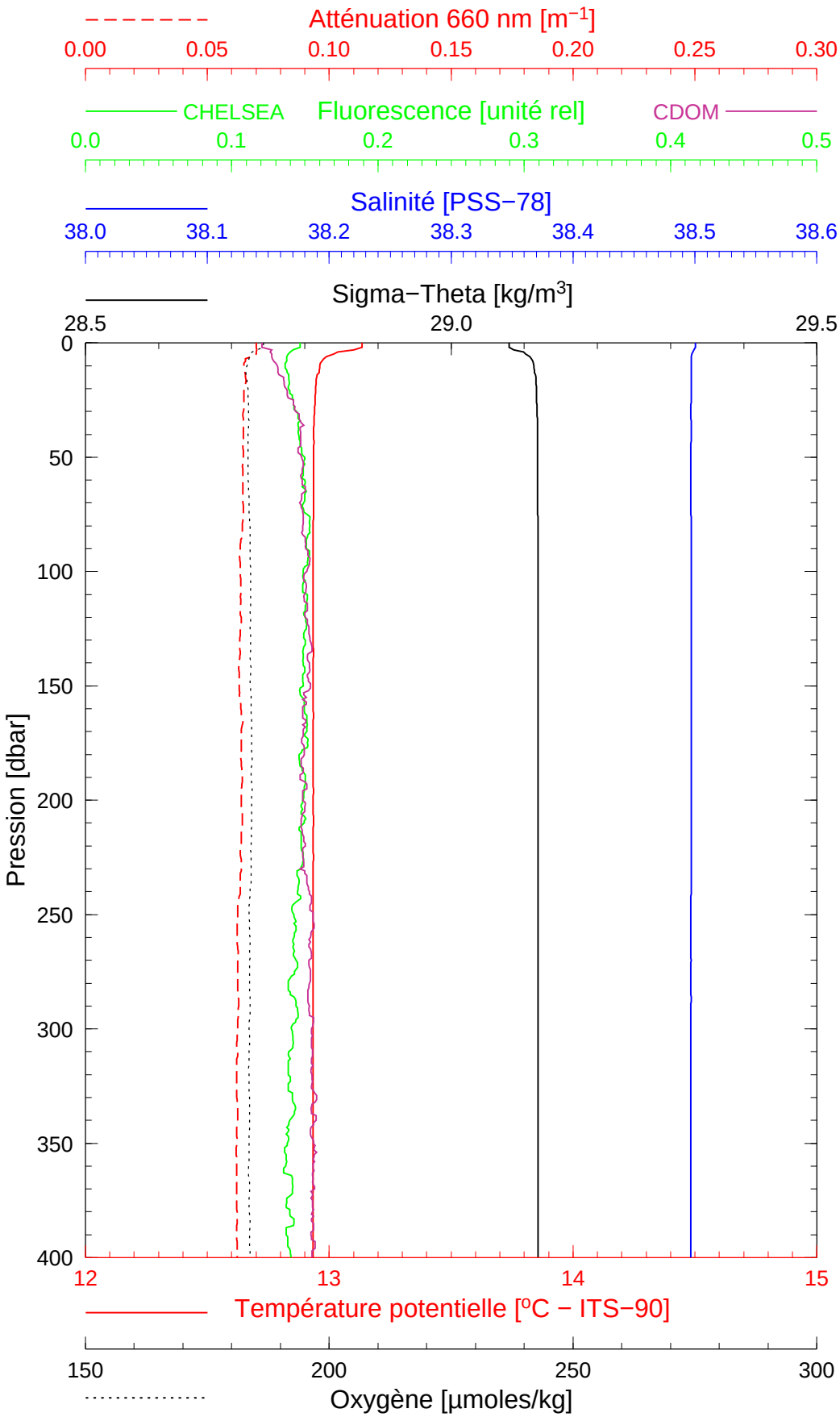

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Boussole 51 **16/03/2006** **BOUS060316_01**

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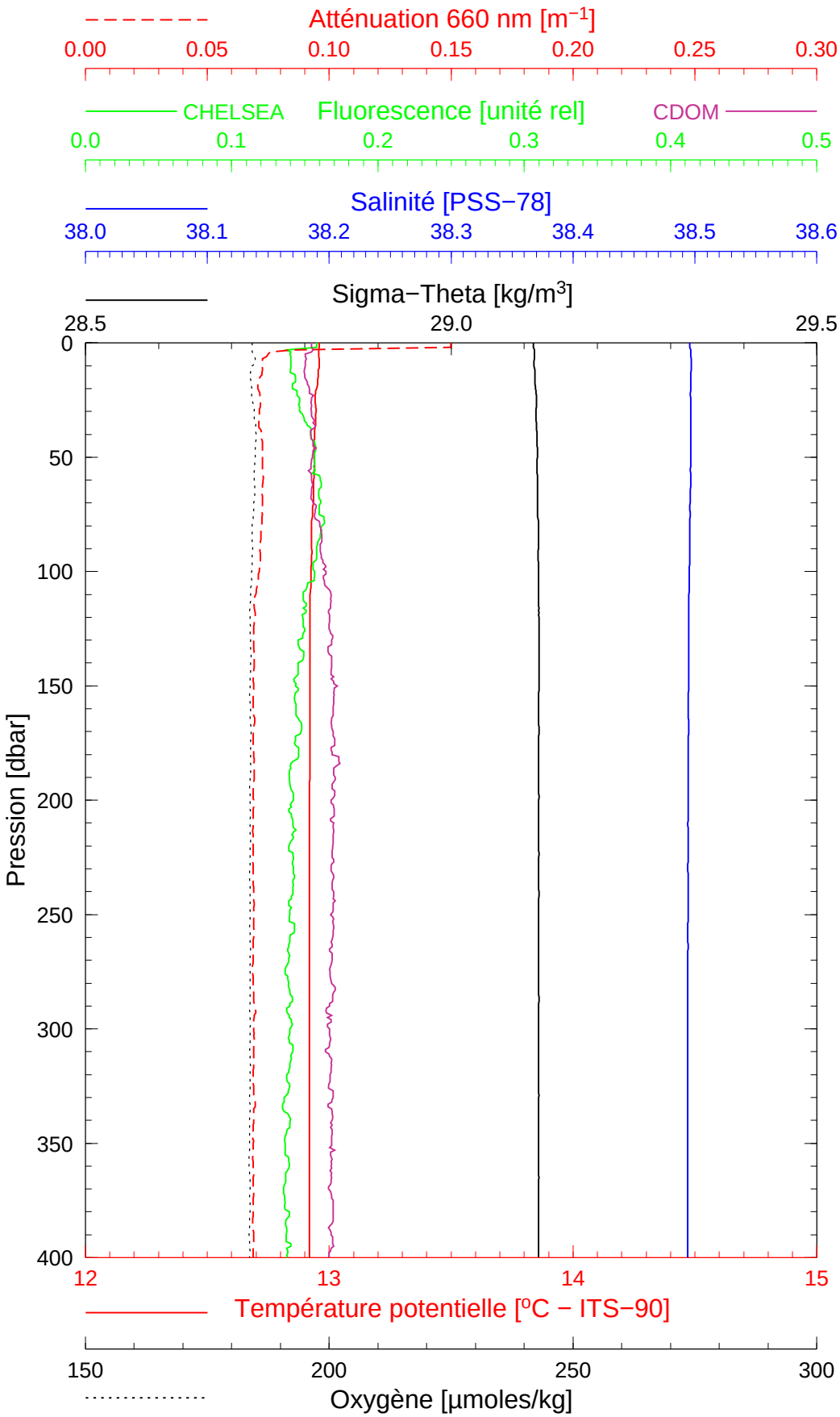

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Boussole 51 **17/03/2006** **BOUS060317_01**

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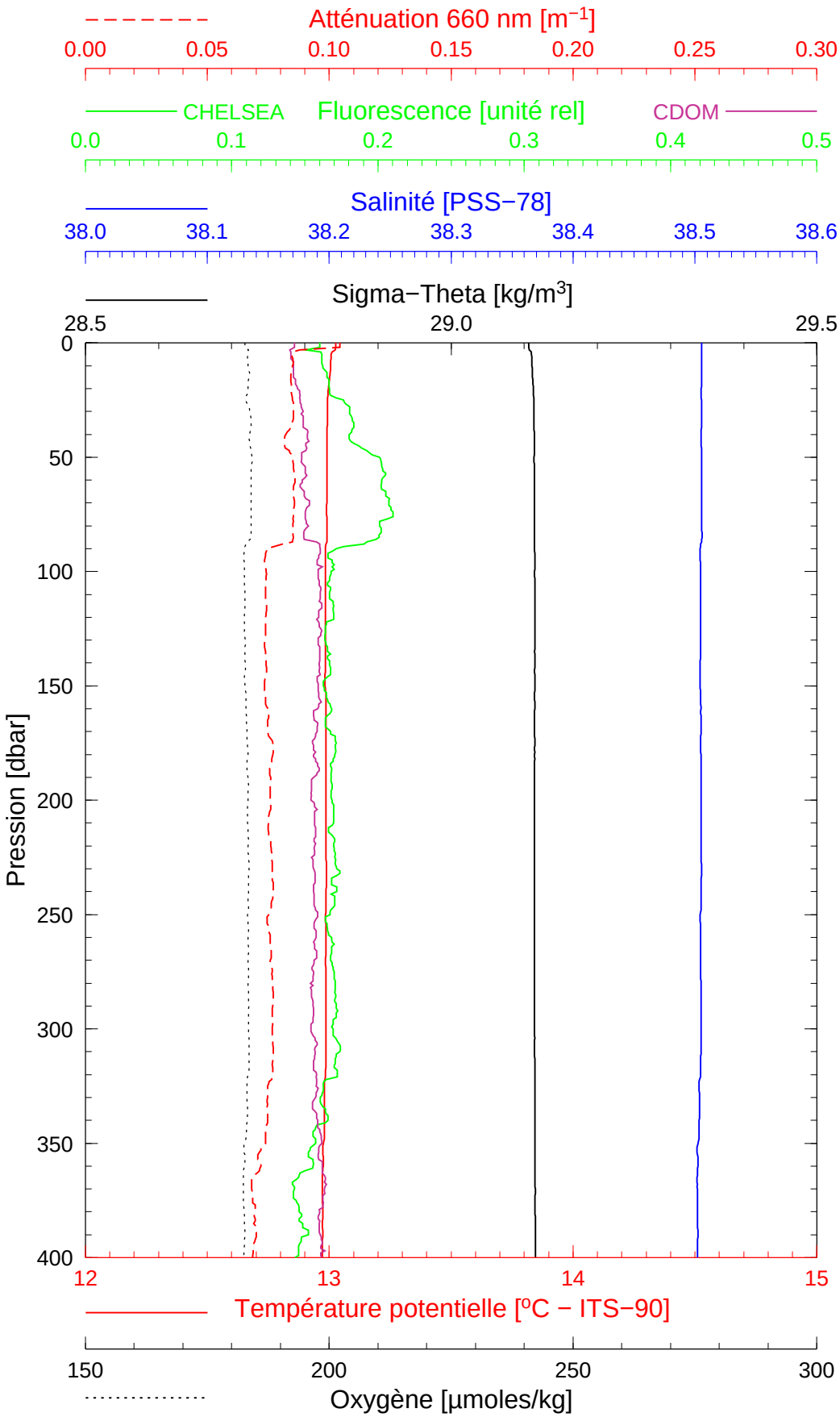

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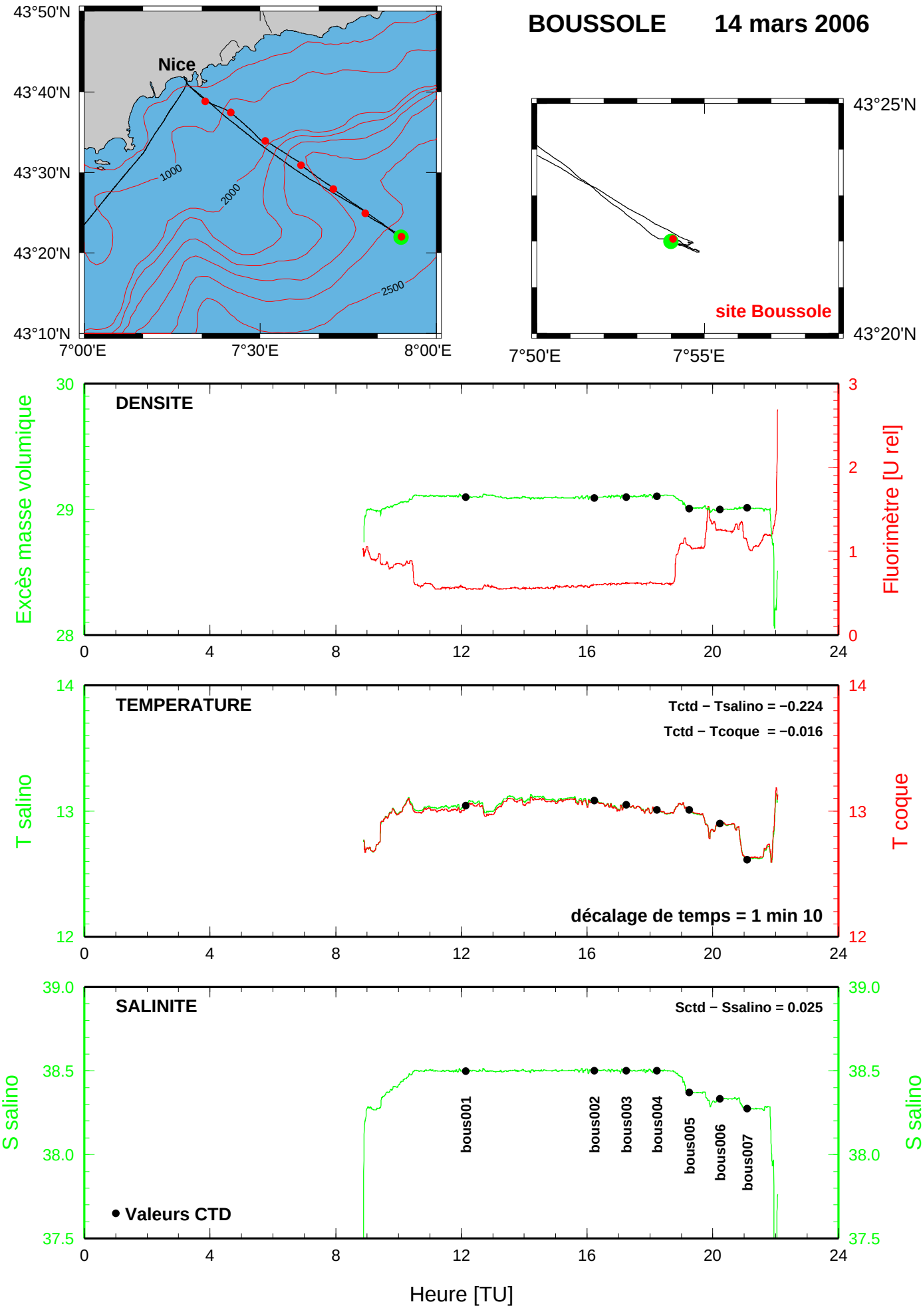
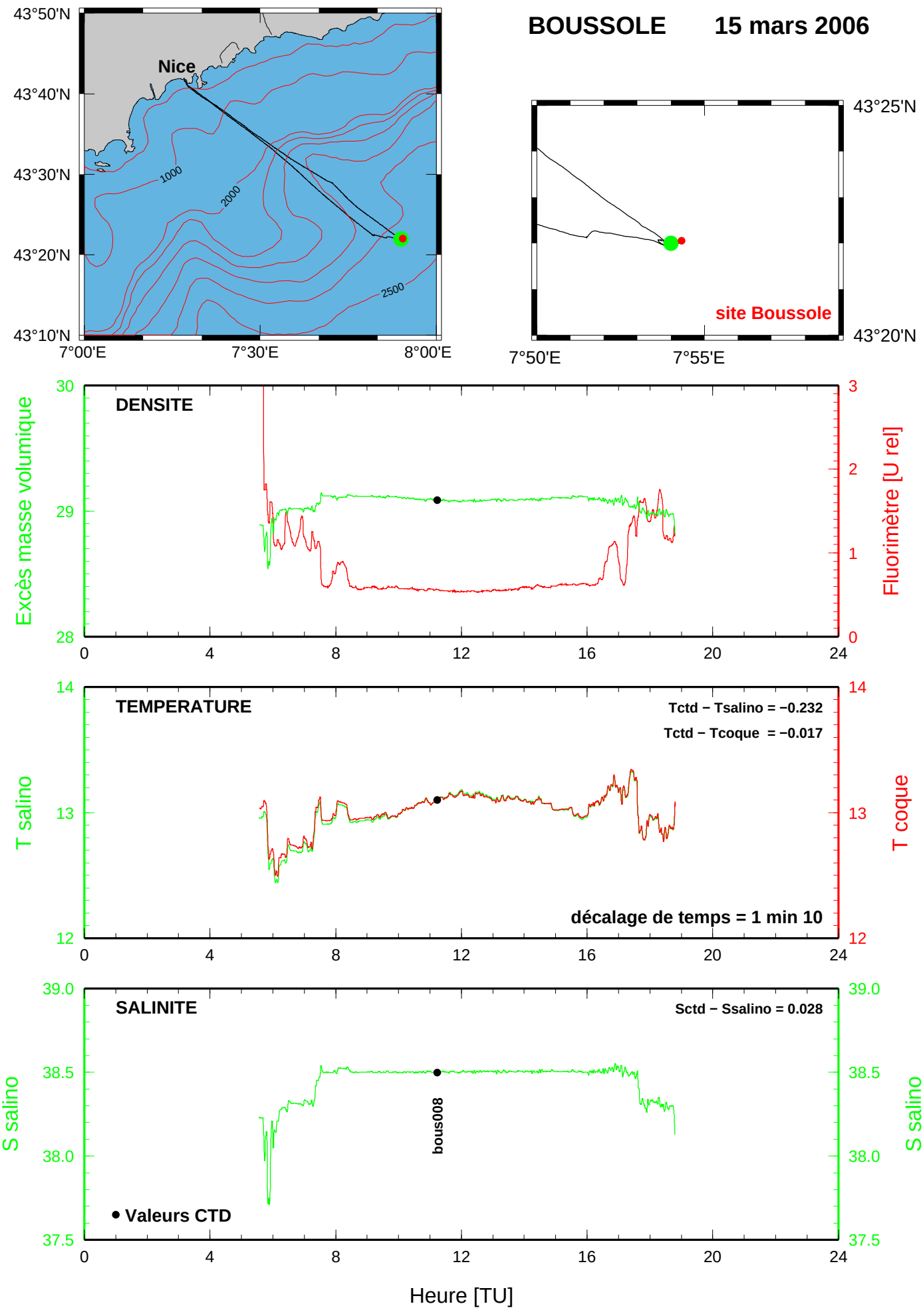
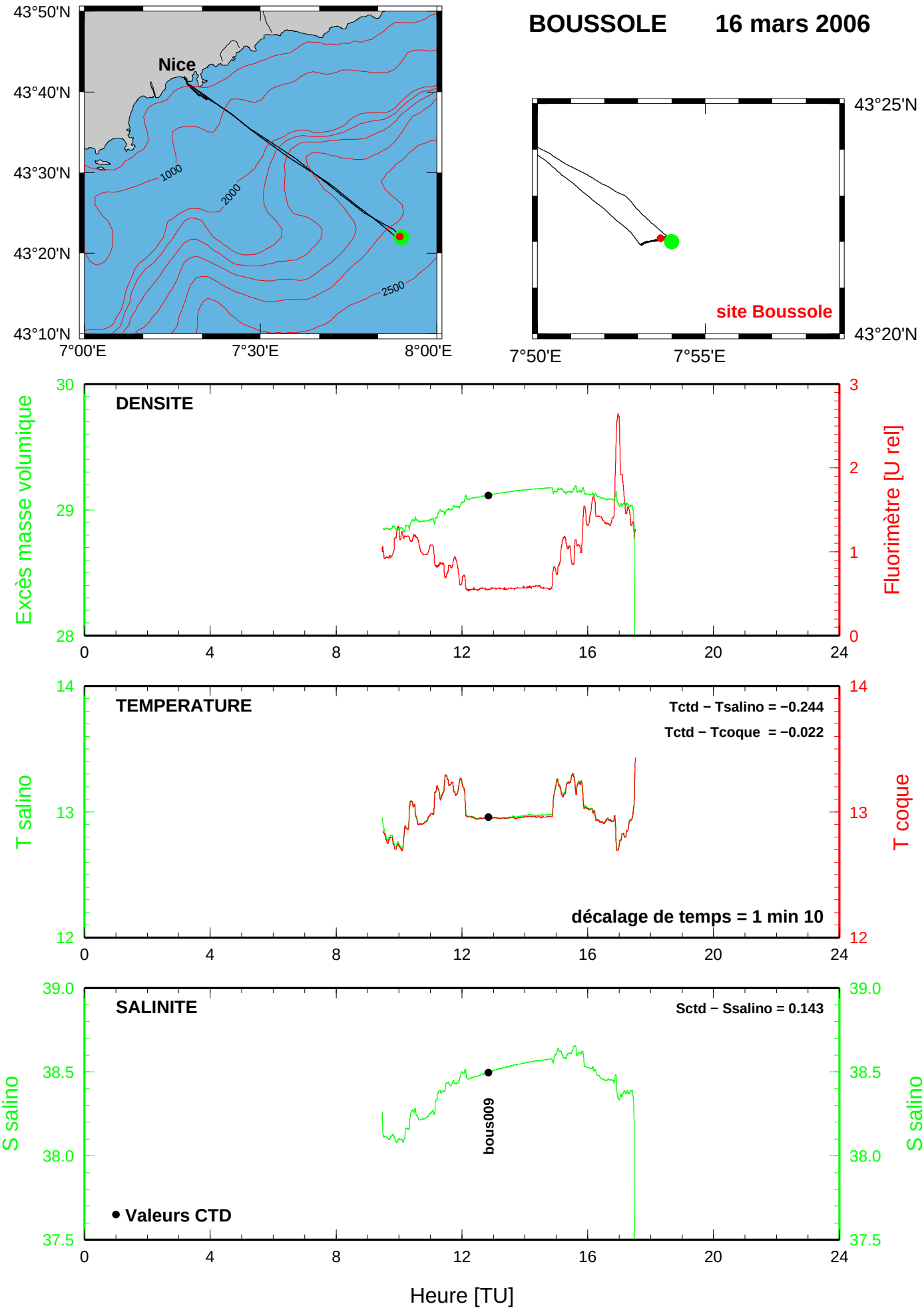
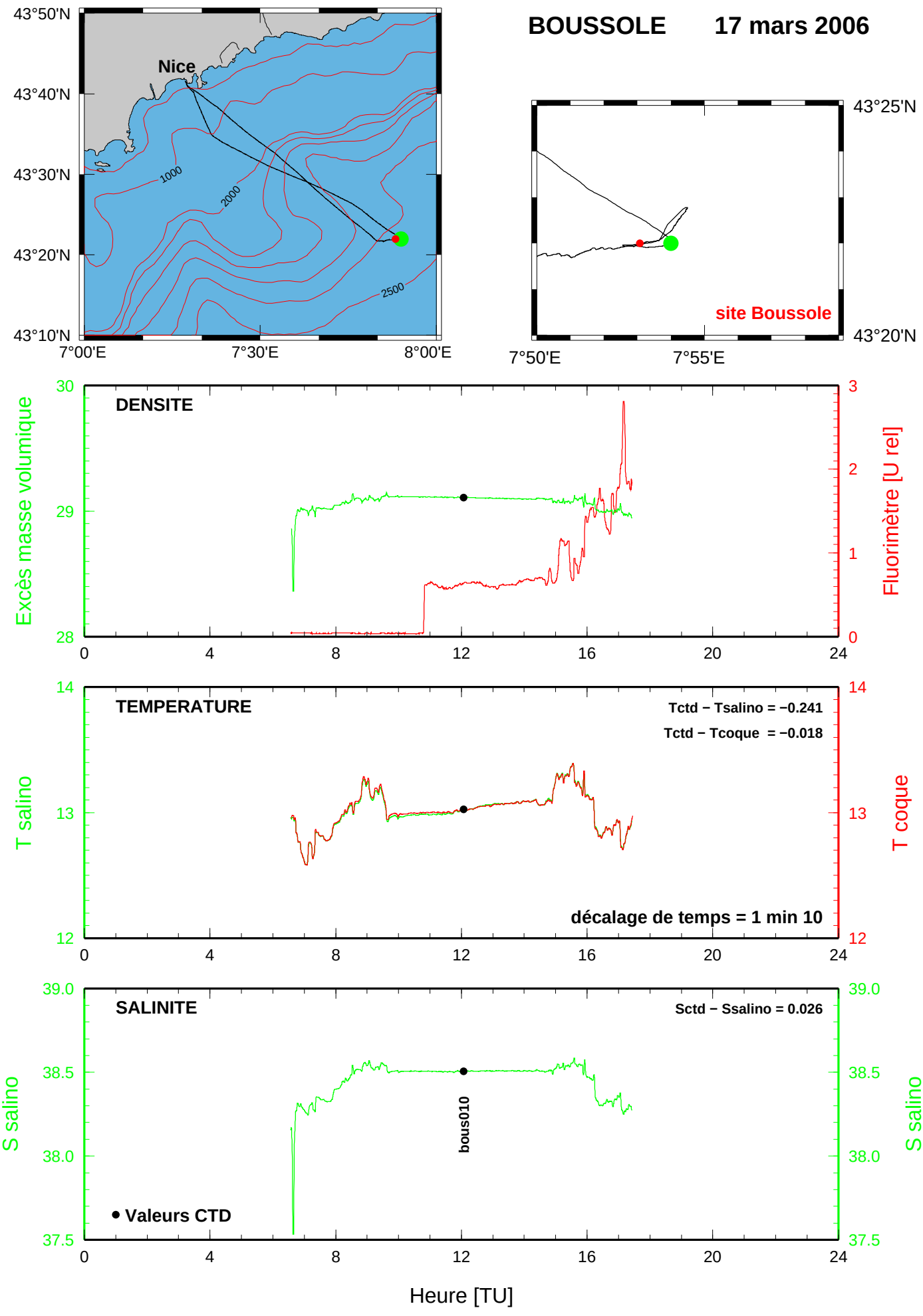

BOUSSOLE 14 mars 2006
Nice
43°50'N
43°40'N
43°30'N
43°20'N
43°10'N
7°00'E
7°30'E
8°00'E
1000
2000
2500
43°25'N
43°20'N
7°50'E
7°55'E
site Boussole
DENSITE
Excès masse volumique
Fluorimètre [U rel]
TEMPERATURE
Tctd − Tsalino = −0.224
Tctd − Tcoque = −0.016
T salino
T coque
décalage de temps = 1 min 10
SALINITE
Sctd − Ssalino = 0.025
S salino
bous001
bous002
bous003
bous004
bous005
bous006
bous007
• Valeurs CTD
Heure [TU]


BOUSSOLE 15 mars 2006
Nice
43°50'N
43°40'N
43°30'N
43°20'N
43°10'N
7°00'E
7°30'E
8°00'E
1000
2000
2500
43°25'N
43°20'N
7°50'E
7°55'E
site Boussole
DENSITE
Excès masse volumique
Fluorimètre [U rel]
TEMPERATURE
Tctd − Tsalino = −0.232
Tctd − Tcoque = −0.017
T salino
T coque
décalage de temps = 1 min 10
SALINITE
Sctd − Ssalino = 0.028
S salino
bous008
• Valeurs CTD
Heure [TU]


BOUSSOLE 16 mars 2006
Nice
43°50'N
43°40'N
43°30'N
43°20'N
43°10'N
7°00'E
7°30'E
8°00'E
1000
2000
2500
43°25'N
43°20'N
7°50'E
7°55'E
site Boussole
DENSITE
Excès masse volumique
Fluorimètre [U rel]
TEMPERATURE
Tctd − Tsalino = −0.244
Tctd − Tcoque = −0.022
T salino
T coque
décalage de temps = 1 min 10
SALINITE
Sctd − Ssalino = 0.143
S salino
bous009
Valeurs CTD
Heure [TU]


BOUSSOLE 17 mars 2006
Nice
43°50'N
43°40'N
43°30'N
43°20'N
43°10'N
7°00'E
7°30'E
8°00'E
1000
2000
2500
43°25'N
43°20'N
7°50'E
7°55'E
site Boussole
DENSITE
Excès masse volumique
Fluorimètre [U rel]
TEMPERATURE
Tctd − Tsalino = −0.241
Tctd − Tcoque = −0.018
T salino
T coque
décalage de temps = 1 min 10
SALINITE
Sctd − Ssalino = 0.026
S salino
bous010
• Valeurs CTD
Heure [TU]