BOUSSOLE Monthly Cruise Report

Cruise 58
November 6 - 9, 2006

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

Science Personnel: Guislain Bécu, Dominique Tailliez, Katarzyna Niewiadomska, Serge Le Reste, Xavier André, Antoine Poteau, Frédéric Bailleul, David Luquet, Laurent Gilletta, Pierre-Alain Manoni, and 2 Mare Nostrum diver.

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

Fig 1. The Buoy DACNet brought in the ship lab by the divers for inspection (buoy stopped measurements since October 27, 2006).

BOUSSOLE project

ESA/ESRIN contract N° 17286/03/I-OL

Deliverable from WP#400/200

November 15, 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 activities

The SLOCUM glider will be again deployed from the ship and will try its first transect from the BOUSSOLE site to the coast.

Two PROVOR profilers (1 PROBIO and 1 PNG) will also be deployed from the ship at the BOUSSOLE site, and will be recovered at the end of the cruise.

Frédéric Bailleul, from the CEBC (“Centre d’Etudes Biologiques de Chizé”, CNRS, France) will test 12 micro CTD sensors by attaching them on the CTD carousel and by intercomparing their data to the BOUSSOLE CTD data during the transect. These sensors will be later glued on Sea Horses at Kerguelen in the frame of the SEaOS (Southern Elephant seals as Oceanographic Samplers) program.

Cruise Summary

Sea conditions were rather good for the entire cruise but the last day. All planned operations were carried out, although 3 divers had to come an additional day to remove the DACNet from the buoy and bring it back on the ship deck for inspection (buoy stopped recording data and stopped communications since 21 October). It was found that the DACNet works properly, but the junction box (the electronic component that distributes the solar panels energy to the charge load controller) was out of order. Unfortunately, weather conditions of the last day prevented the removal of the junction box to bring it back to the lab for repair.

Monday 06 November 2006

Departure from port of Nice was delayed due to bad weather slowly improving, and because of a late truck availability. The two PROVOR profilers were deployed, 3 SPMR profiles were performed, as well as 7 CTD/AC9+ profiles (with micro CTD sensors). The buoy data download was unsuccessful.

Tuesday 07 November 2006

Three divers were onboard, and a direct connection from the top of the buoy with a diver shortcutting the AK port of the DACNet (the port that force a connection between the buoy and a laptop) was attempted, but again unsuccessfully. 3 SPMR profiles were performed, as well as another CTD cast.
The PROVOR “PROBIO” was recovered to check its first deployment day, and was redeployed.

The glider performed some tests close to the ship (new trajectory software), and was finally deployed for its first transect from the BOUSSOLE site to the port of Nice. The ship was waiting for it at its first "surface station", but didn't find it, and finally left for the port of Nice. Later in the evening, an Iridium communication was established at LOV, reassuring Katarzyna Niewiadomska and Hervé Claustre that the glider was not lost…

Wednesday 08 November 2006

1 Secchi disk measurement, 1 CTD cast and the mooring of a "Surfact" buoy at the Meteo France buoy (Surfact sensor is a conductivity and salinity sensor floating at the sea surface, developed by LOCEAN, University of Paris VI) were performed. The remaining of the day was dedicated to the DACNet removal from the buoy by the divers, and to the DACNet inspection in the ship lab to troubleshoot the buoy problem. It was attributed to a faulty junction box; power comes from solar panels, but do not leave the junction box, and therefore the main buoy battery should have been a little bit discharged, and the system doesn't power up anymore.

Thursday 09 November 2006

Sea conditions were rough this day (H1/3 of 1.2 m), and only the recovering of the two PROVOR profilers and of the glider was possible.

Cruise Report

06 November 2006 (UTC)

0800 Departure from the port of Nice.
1130 PROVOR "PROBIO" and "PNG" deployment close to the buoy.
1230 SPMR profiles 1, 2 and 3.
1247 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.
1522 CTD 02 at station 1 (43°25'N 07°48'E).
1623 CTD 03 at station 2 (43°28'N 07°42'E).
1724 CTD 04 at station 3 (43°31'N 07°37'E).
1825 CTD 05 at station 4 (43°34'N 07°31'E).
1941 CTD 06 at station 5 (43°37'N 07°25'E).
2038 CTD 07 at station 6 (43°39'N 07°21'E).
2145 Arrival at the port of Nice.

07 November 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.
1020 Guislain BECU on buoy head to try a direct connection with diver David Luquet shortcutting AK port of the DACNet (unsuccessful).
1015 Divers at sea to check, clean and take pictures of the under surface buoy structure.
1100 SPMR profiles 1, 2 and 3.
1230 3 x 100 meters plankton net.
1306 CTD 08, 400 m, close to the buoy, with water sampling at 5 and 10 meters for triplicate HPLC and Ap.
1430 PROVOR "PROBIO" recovering about 2 miles away from the buoy.
1605 PROVOR "PROBIO" at sea again, close to the buoy.
1700 Glider at sea close to the buoy for a transect till port of Nice.
1745 The ship stopped at the "glider station 1" to check its good working. The glider was not seen!
2130 Arrival at the port of Nice.
2230 Glider gave some news via Iridium communication (seen at LOV).

08 November 2006

0530 Departure from the port of Nice.
0930 Divers at sea to bring the DACNet on the ship deck.
1000 Secchi disk 01 (19 m) close to the buoy.
1010 DACNet inspection. Found to be OK, downloaded data till 27 October.

1031 CTD 09, 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.
1145 Guislain BECU on buoy head to test the Junction Box with a voltmeter. Found to be out of order (12V-14V at input from solar panels, 0.06V at output, even with switch on “ON”).
1230 Divers at sea to install the DACNet again.
1330 Surfact sensor (conductivity and salinity, from LOCEAN, Paris VI) on “ON”.
1400 Divers at Sea at the Meteo France buoy to moor the Surfact sensor to the buoy.
1430 Departure from the BOUSSOLE site.
1800 Arrival at the Port of Nice.

09 November 2006

0530 Departure from port of Nice.
0835 Glider recovering at 43°27.705’N, 7°30.611’E.
1040 PROVOR “PNG” recovering at 43°16.680’N, 7°50.940’E.
1140 PROVOR “PROBIO” recovering at 43°22.724’N, 7°54.880’E.
1155 Departure from the BOUSSOLE site.
1525 Arrival at the Port of Nice.

Calculated Swath paths for the MERIS Sensor (ESOV Software)

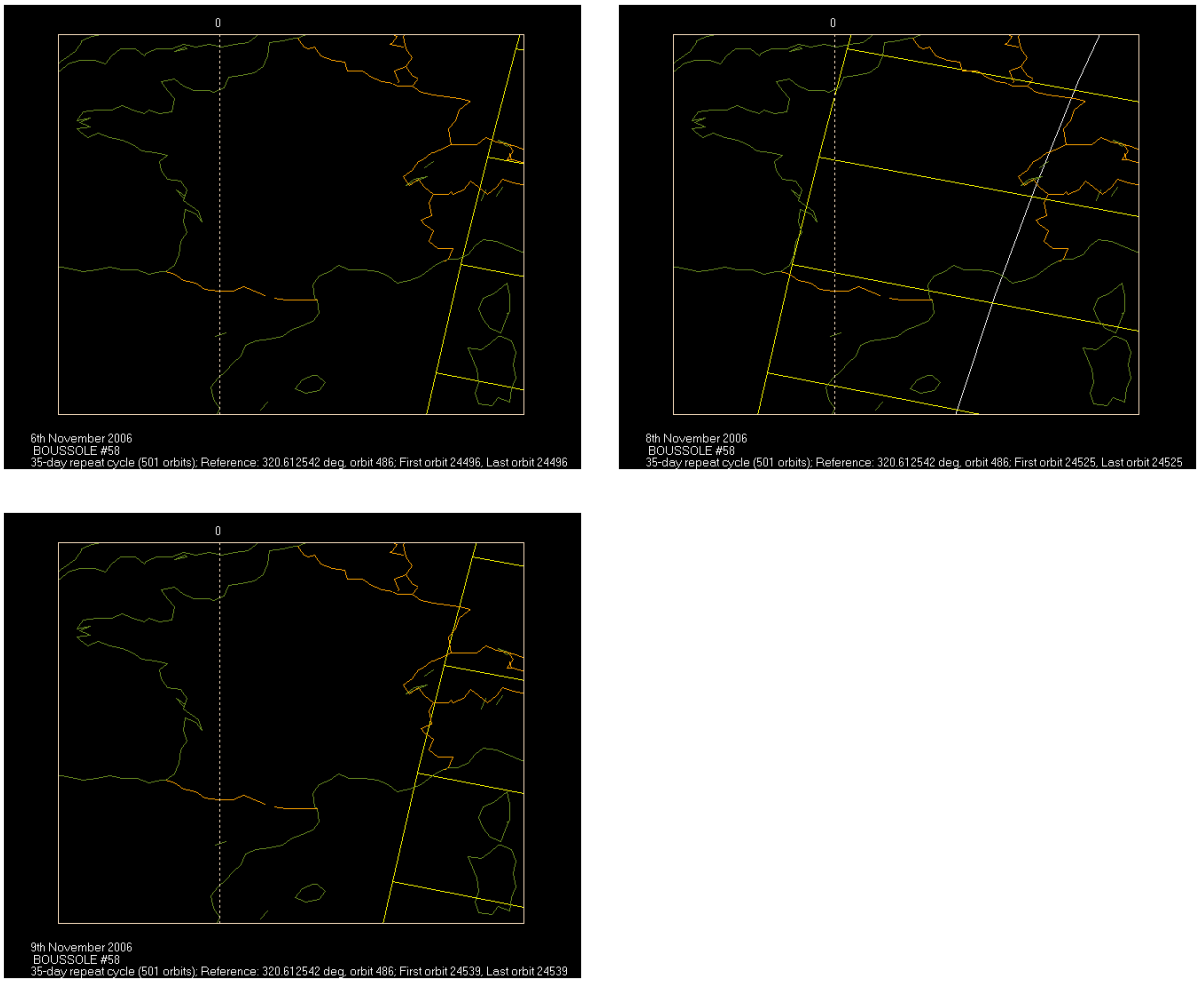
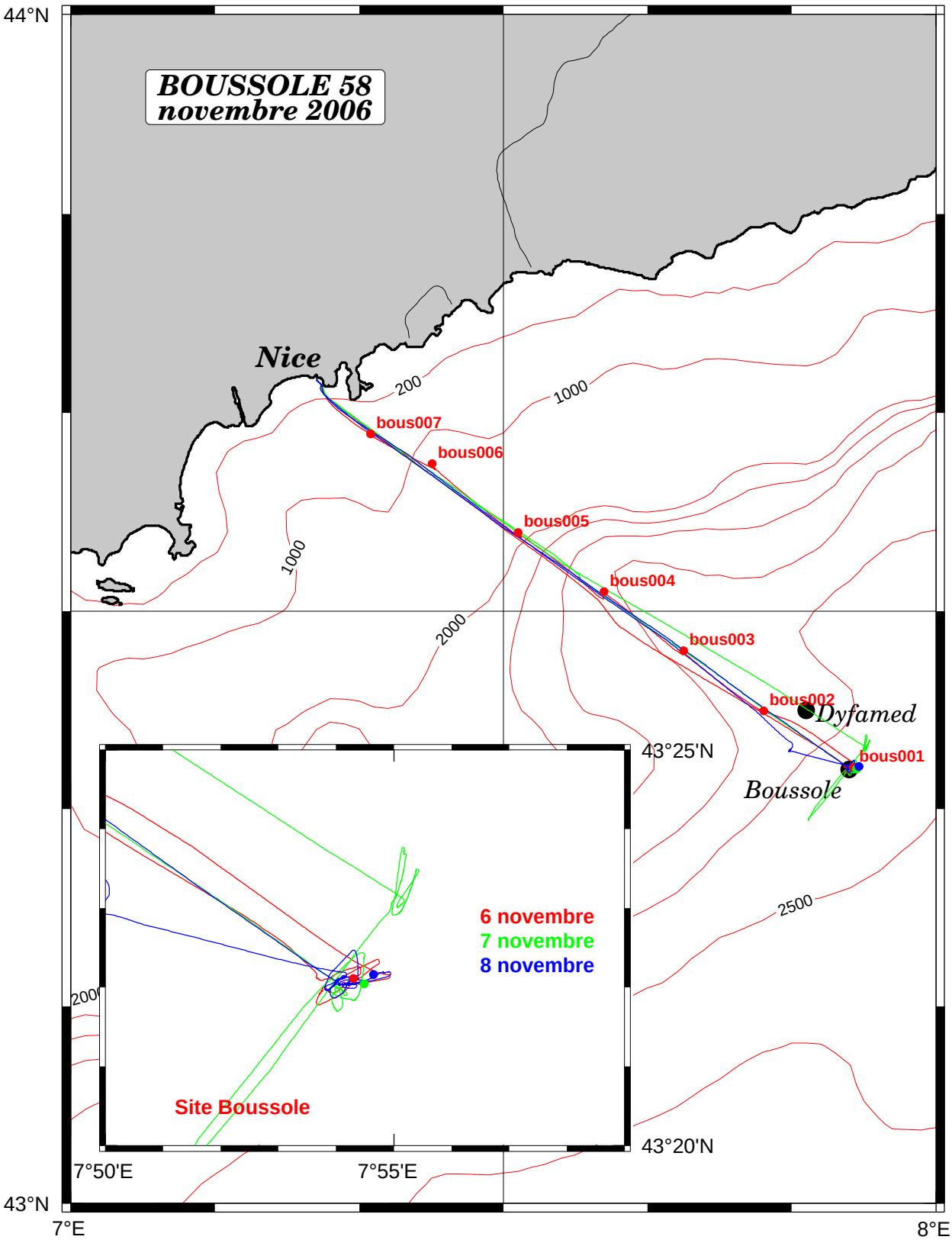


Figure 2. Calculated swath paths for MERIS (Esov software) above BOUSSOLE site for November 06, 08 and 09, 2006.

Appendix

Cruise Summary Table for Boussole 58

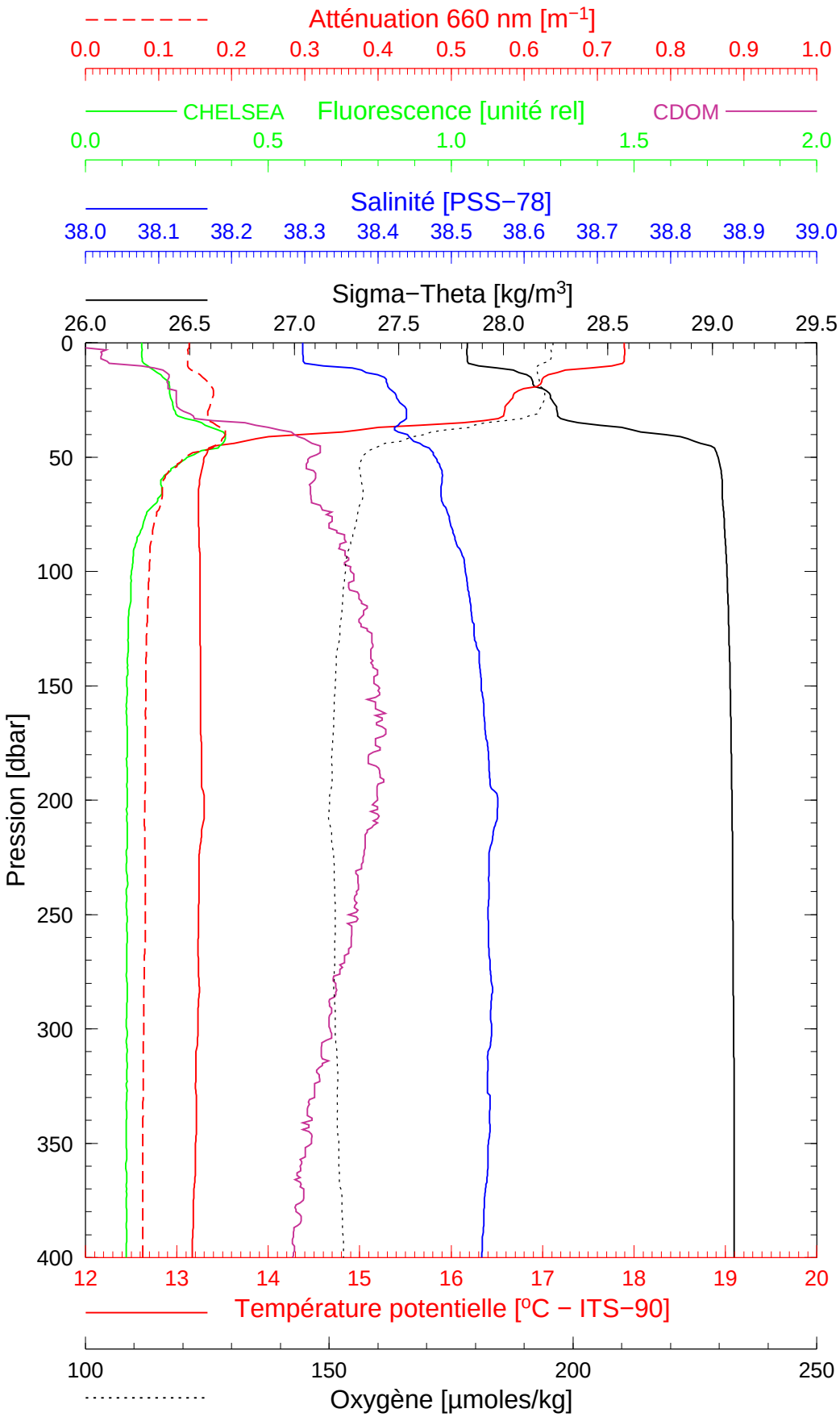
Date	Black names	Profile names	CTD notées /	Start Time	Duration	Depth max	Latitude (N)		longitude		Other sensors	Their cast	Start/Finish				Weather							Sea		
	(file ext: ".raw")	(file extension: ".raw")	satellite overpass	GMT (hour.min)	(min.sec)	(meter)	(Degree)	(Minute)	(Degree)	(Minute)				Sky	Clouds	Quantity (#/8)	Wind speed	Wind dir.	Atm. Pressure	humidity	Visibility	T air	T water	Sea	Swell height	Swell dir.	Whitecaps
06/11/2006				11:30			43	22.000	7	54.000	probio and png															
	bou061106black1			12:43	03:00																					
		bou061106AA		12:48	04:31	205	43	22.115	7	53.984				quite blue	Ci	3	13 kn	238	1025.5	64	excellent	16.3		lil' bit choppy			yes
		bou061106AB		12:58	04:21	205	43	22.017	7	53.814				quite blue	Ci	3	13 kn	238	1025.5	64	excellent	16.3		lil' bit choppy			yes
		bou061106AC		13:11	04:29	200	43	22.002	7	53.814				quite blue	Ci	3	13 kn	238	1025.5	64	excellent	16.3		lil' bit choppy			yes
	bou061106black2			13:31	03:00																					
			CTDBOUS001	13:47	29:00	400	43	22.115	7	54.302				covered	Ci	2	12 kn	242	1025.3	66	excellent	16.2	17.9	lil' bit choppy			yes
			CTDBOUS002	15:22	24:00	400	43	24.963	7	48.062				covered	Ci	2	9 kn	247	1025.3	67	excellent	16.6	19.2	lil' bit choppy			yes
			CTDBOUS003	16:23	26:00	400	43	28.005	7	42.509				covered	Ci	4	8 kn	241	1025.5	66	excellent	17.1	19.8	lil' bit choppy			yes
			CTDBOUS004	17:24	24:00	400	43	30.992	7	36.992				covered	Ci	8	6 kn	243	1025.9	72	excellent	16.8	19.8	choppy			yes
			CTDBOUS005	18.30	24:00	400	43	33.978	7	31.035				covered	Ci	night	6 kn	239	1026.1	74	night	16.7	19.8	choppy			yes
			CTDBOUS006	19:41	25:00	400	43	37.340	7	25.070				covered	Ci	night	3 kn	244	1026.4	71	night	16.9	19.8	choppy			yes
			CTDBOUS007	20:38	25:00	400	43	38.933	7	20.797				covered	Ci	night	3 kn	289	1026.9	70	night	16.4	19.8	choppy			yes
07/11/2006	bou071106black1			10:55	03:00																					
		bou071106AA		11:01	04:25	205	43	21.920	7	53.956				quite covered	Ci	4	7 kn	210	1027.9	78	excellent	16.8		calm - flat			no
		bou071106AB		11:14	04:33	205	43	21.787	7	53.944				quite covered	Ci	4	7 kn	210	1027.9	78	excellent	16.8		calm - flat			no
		bou071106AC		11:25	04:28	211	43	21.793	7	54.040				quite covered	Ci	4	7 kn	210	1027.9	78	excellent	16.8		calm - flat			no
	bou071106black2			11:41	03:00																					
			CTDBOUS008	13:06	26:00	400	43	22.043	7	54.485				quite blue	Ci	2	6 kn	189	1027.1	77	excellent	16.5	18.1	calm - flat			no
				14:30			43	19.659	7	51.406	probio recup.															
				16:05							probio & glider deployment															
08/11/2006				10:00	02:00	19	43	22.000	7	54.000	Secchi disk 1			covered	heterog.	6					excellent			calm - flat			no
			CTDBOUS009	10:31	28:00	400	43	22.164	7	54.644				covered	heterog.	6	6 kn	220	1029.5	74	excellent	17.4	18.2	calm - flat			no
				14:00			43	22.000	7	52.000	surfact deployment															
09/11/2006				08:35			43	27.705	7	30.611	glider recup.															
				10:40			43	16.680	7	50.940	png recup.															
				11:40			43	22.724	7	54.880	probio recup.															



GMT 2006 Nov 10 11:53:52

Boussole 58 **06/11/2006** **BOUS061106_01**

BOUS001

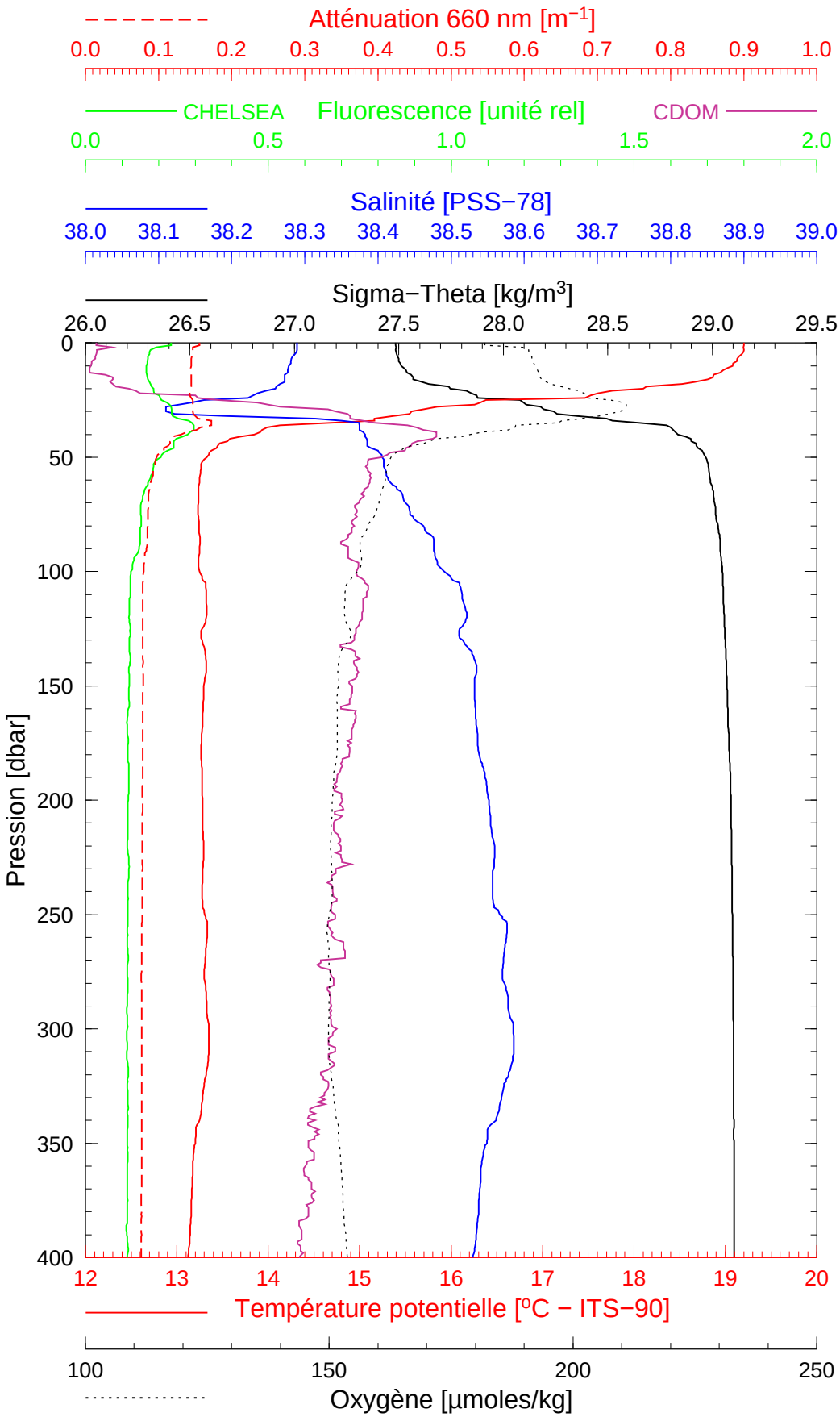


Date *06/11/2006* *Latitude* *43°22.115 N*

Heure déb *13h 47min [TU]* *Longitude* *07°54.302 E*

Boussole 58 **06/11/2006** **BOUS061106_02**

BOUS002

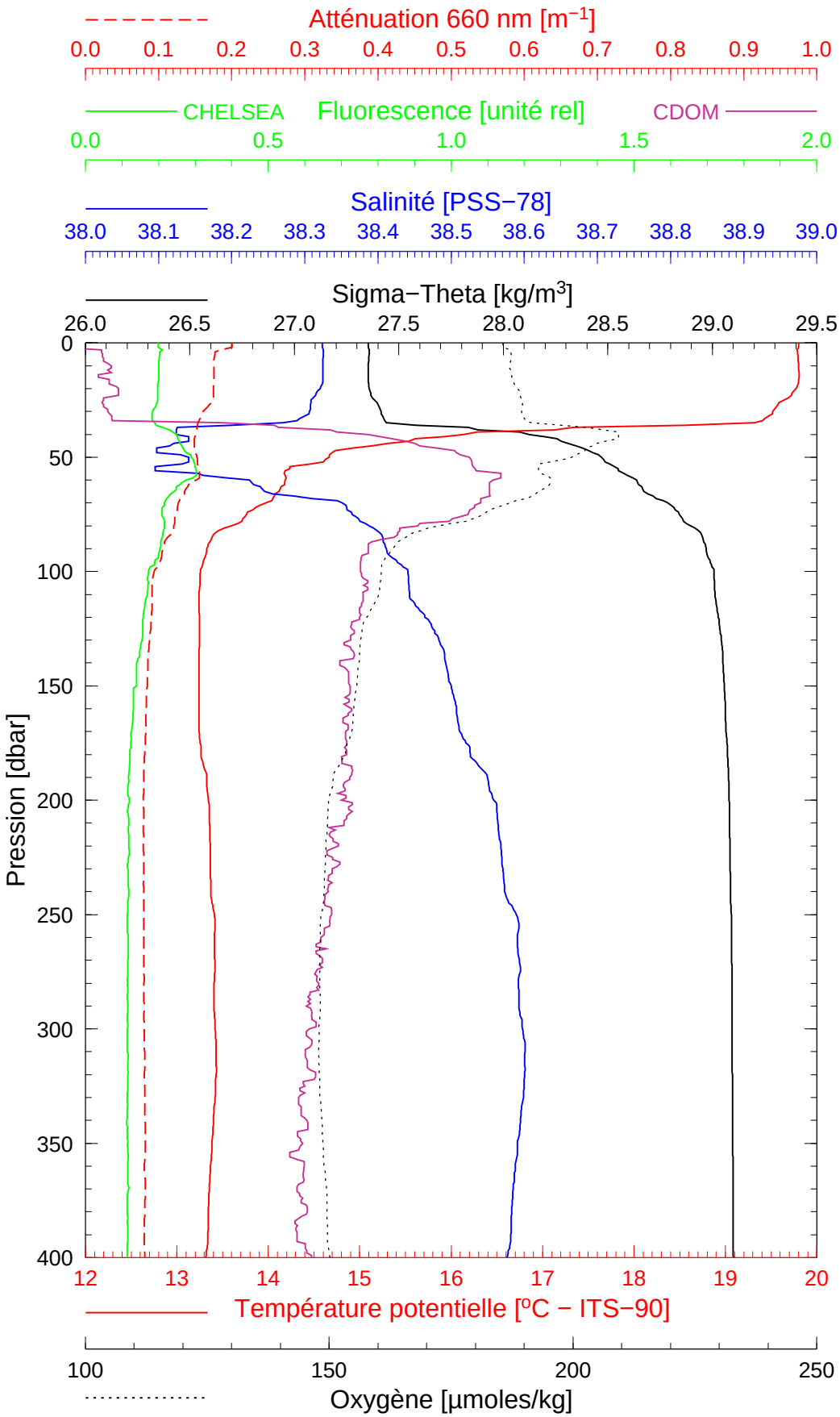


Date *06/11/2006* *Latitude* *43°24.963 N*

Heure déb *15h 22min [TU]* *Longitude* *07°48.062 E*

Boussole 58 **06/11/2006** **BOUS061106_03**

BOUS003

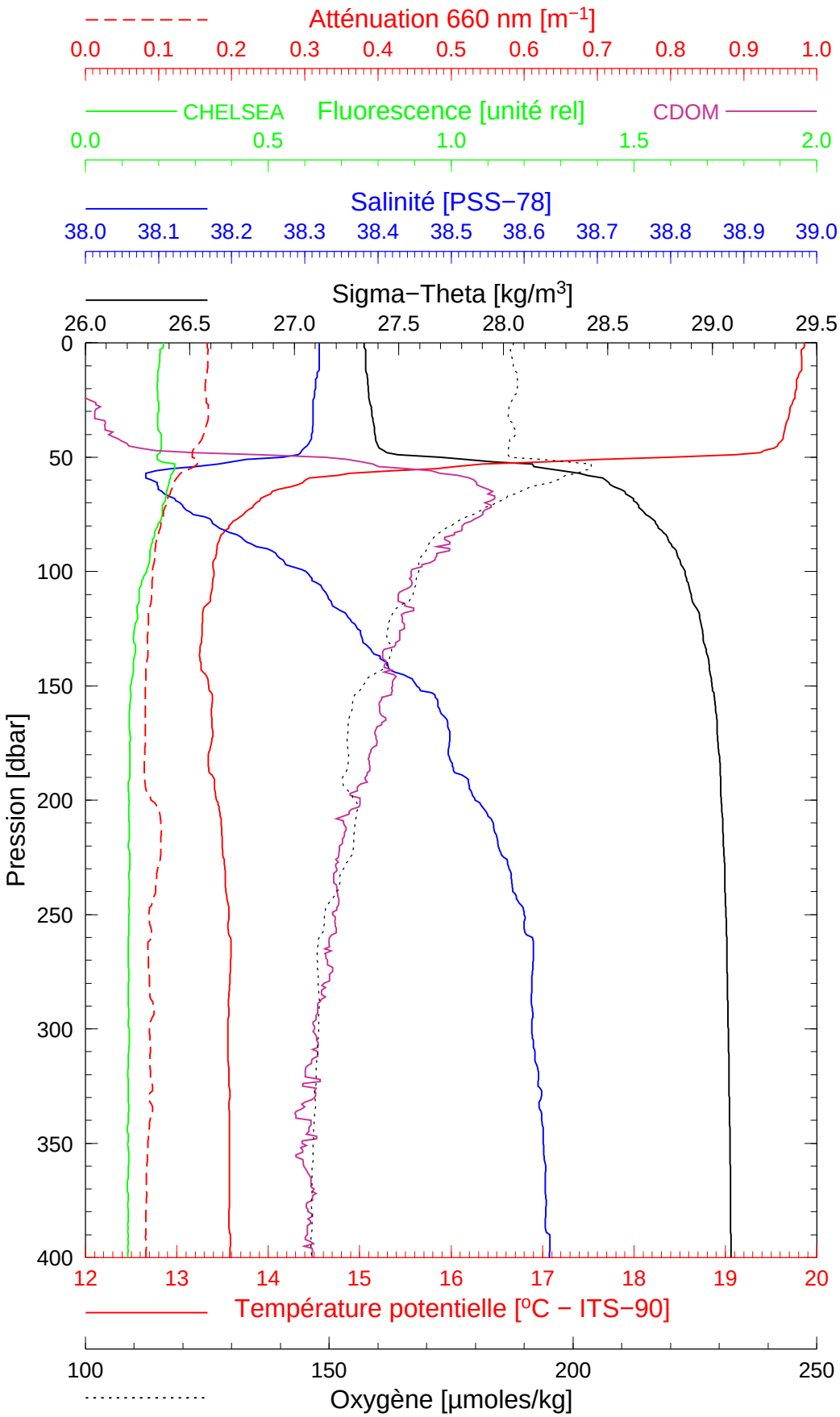


Date *06/11/2006* *Latitude* *43°28.005 N*

Heure déb *16h 23min [TU]* *Longitude* *07°42.509 E*

Boussole 58 **06/11/2006** **BOUS061106_04**

BOUS004

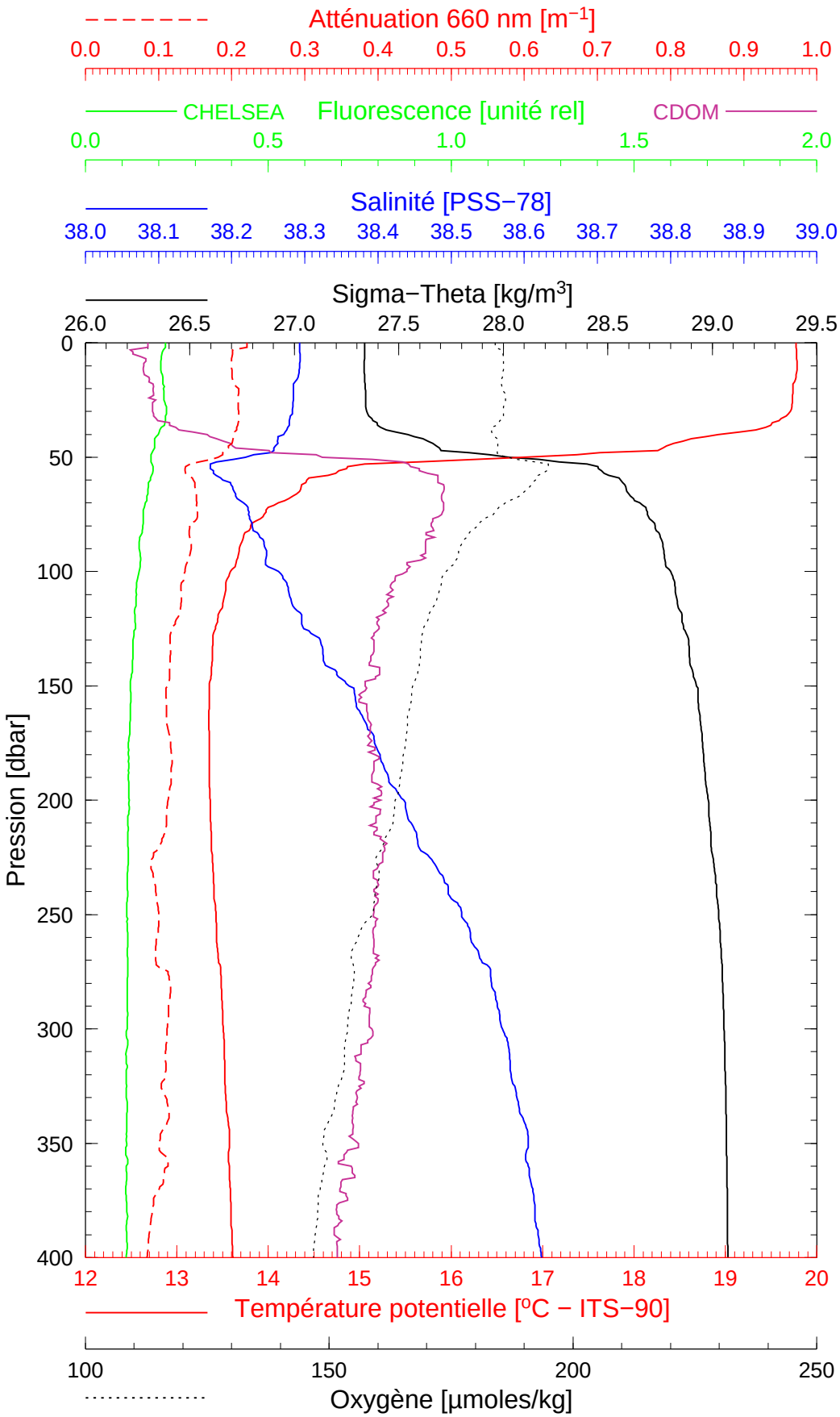


Date *06/11/2006* *Latitude* *43°30.992 N*

Heure déb *17h 24min [TU]* *Longitude* *07°36.992 E*

Boussole 58 **06/11/2006** **BOUS061106_05**

BOUS005

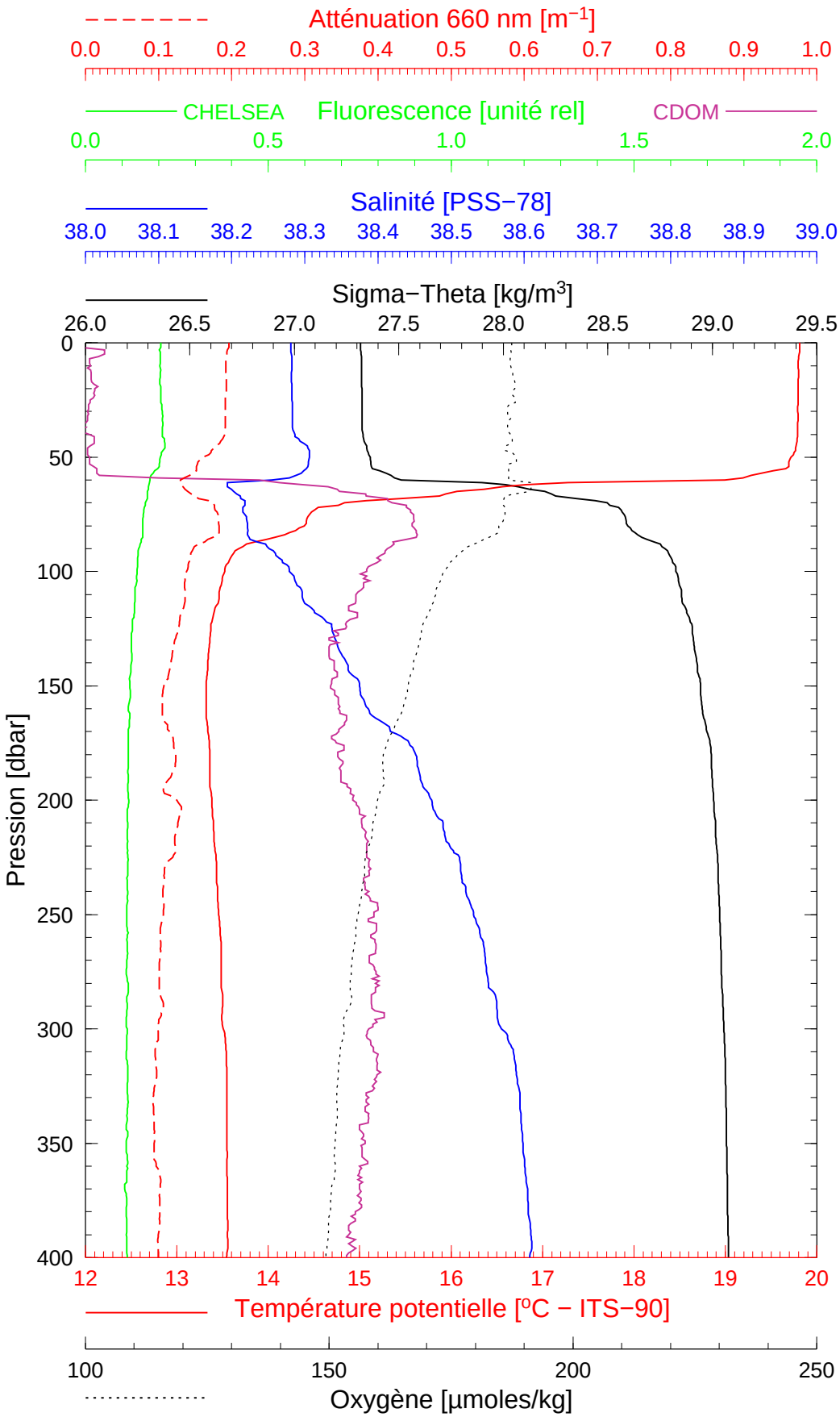


Date *06/11/2006* *Latitude* *43°33.978 N*

Heure déb *18h 30min [TU]* *Longitude* *07°31.035 E*

Boussole 58 **06/11/2006** **BOUS061106_06**

BOUS006

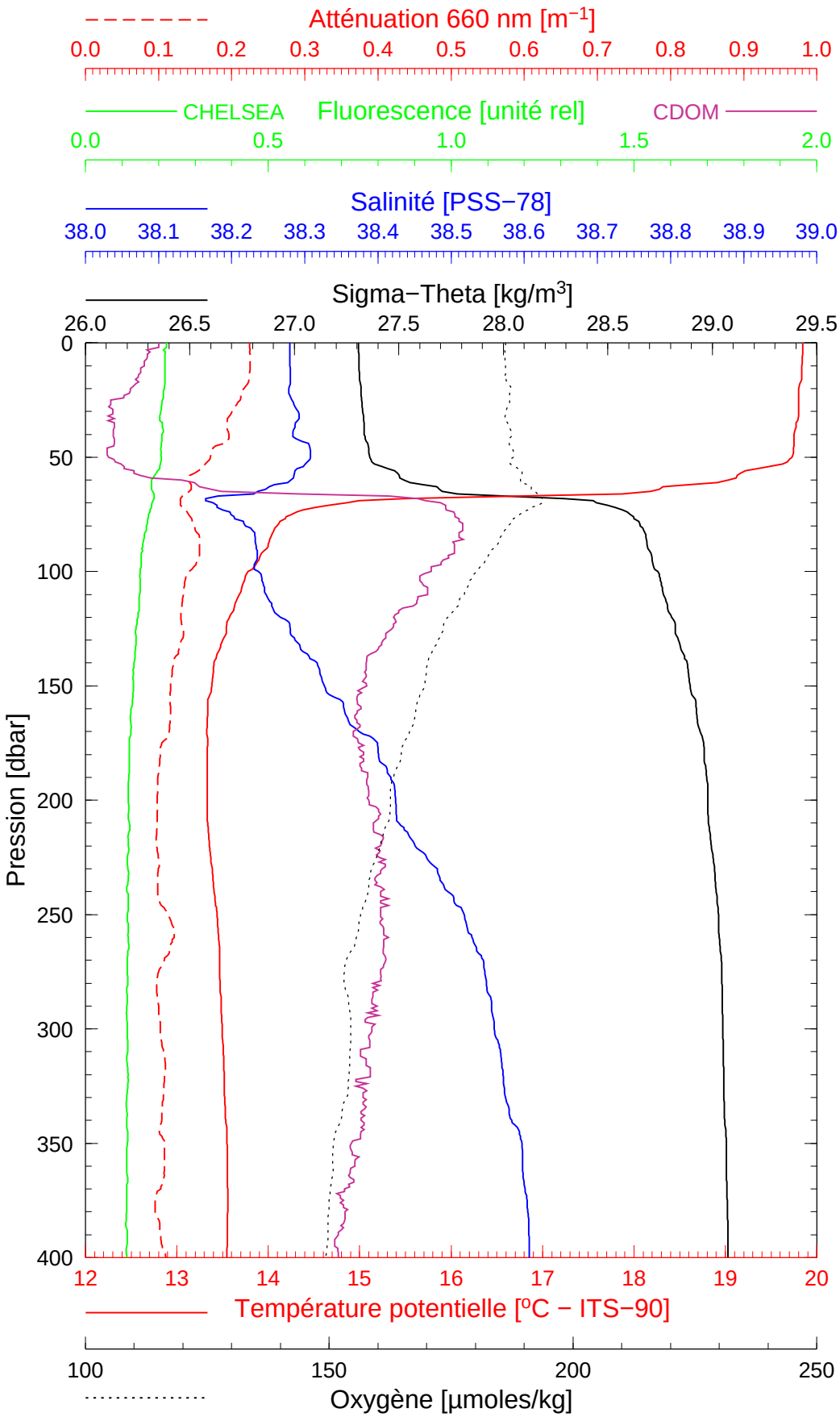


Date *06/11/2006* *Latitude* *43°37.440 N*

Heure déb *19h 41min [TU]* *Longitude* *07°25.070 E*

Boussole 58 **06/11/2006** **BOUS061106_07**

BOUS007

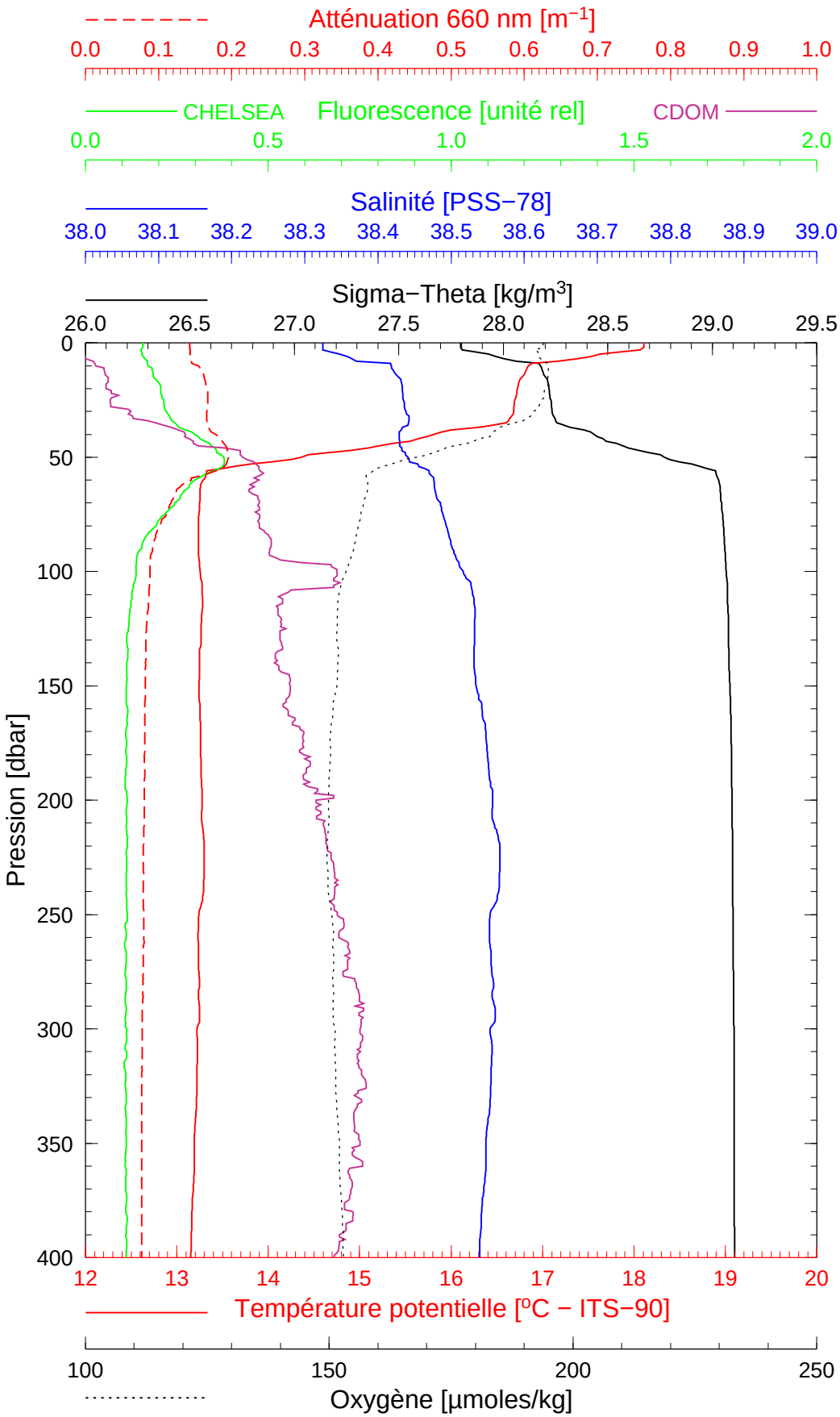


Date *06/11/2006* *Latitude* *43°38.933 N*

Heure déb *20h 38min [TU]* *Longitude* *07°20.797 E*

Boussole 58 **07/11/2006** **BOUS061107_01**

BOUS008

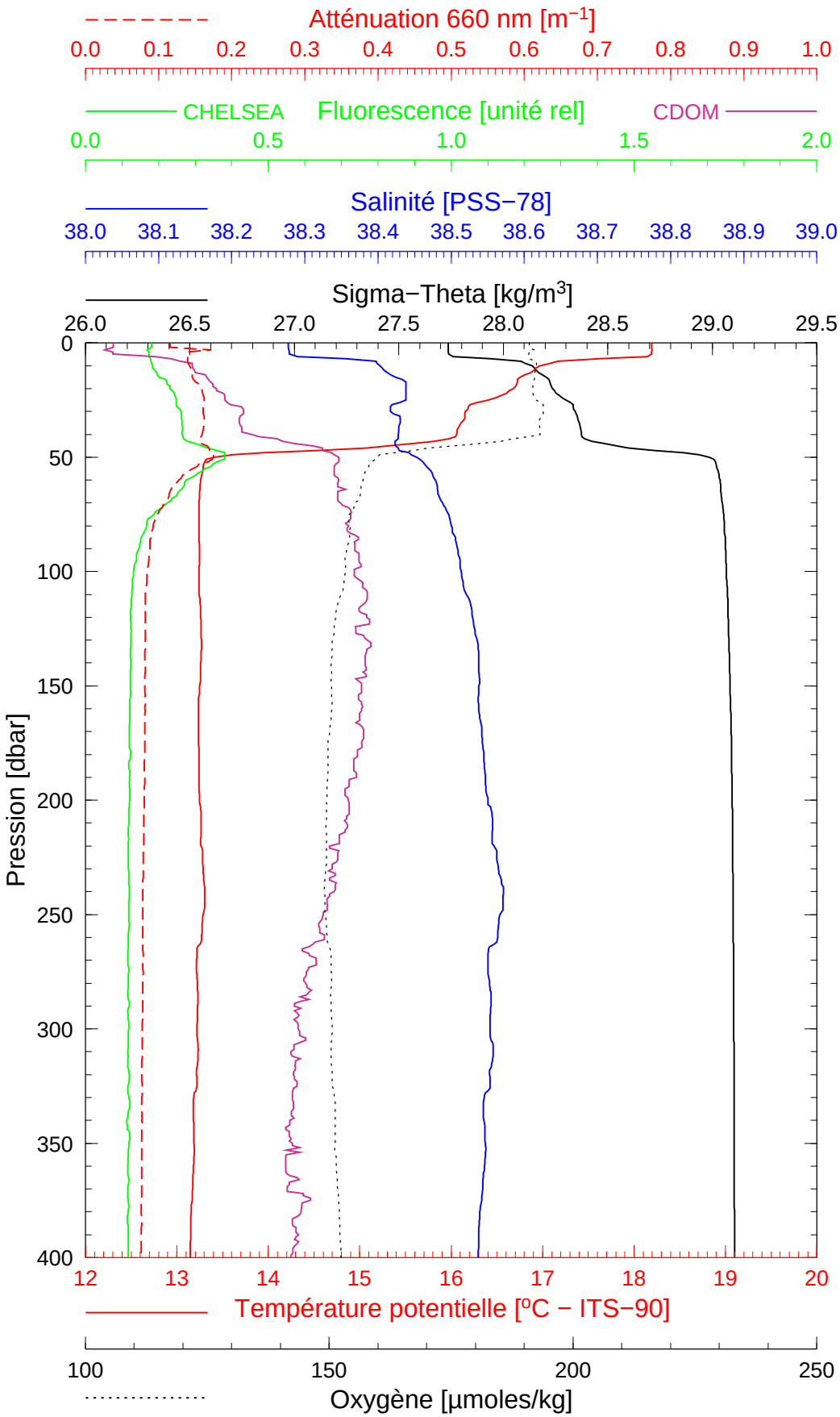


Date *07/11/2006* *Latitude* *43°22.043 N*

Heure déb *13h 06min [TU]* *Longitude* *07°54.485 E*

Boussole 58 **08/11/2006** **BOUS061108_01**

BOUS009

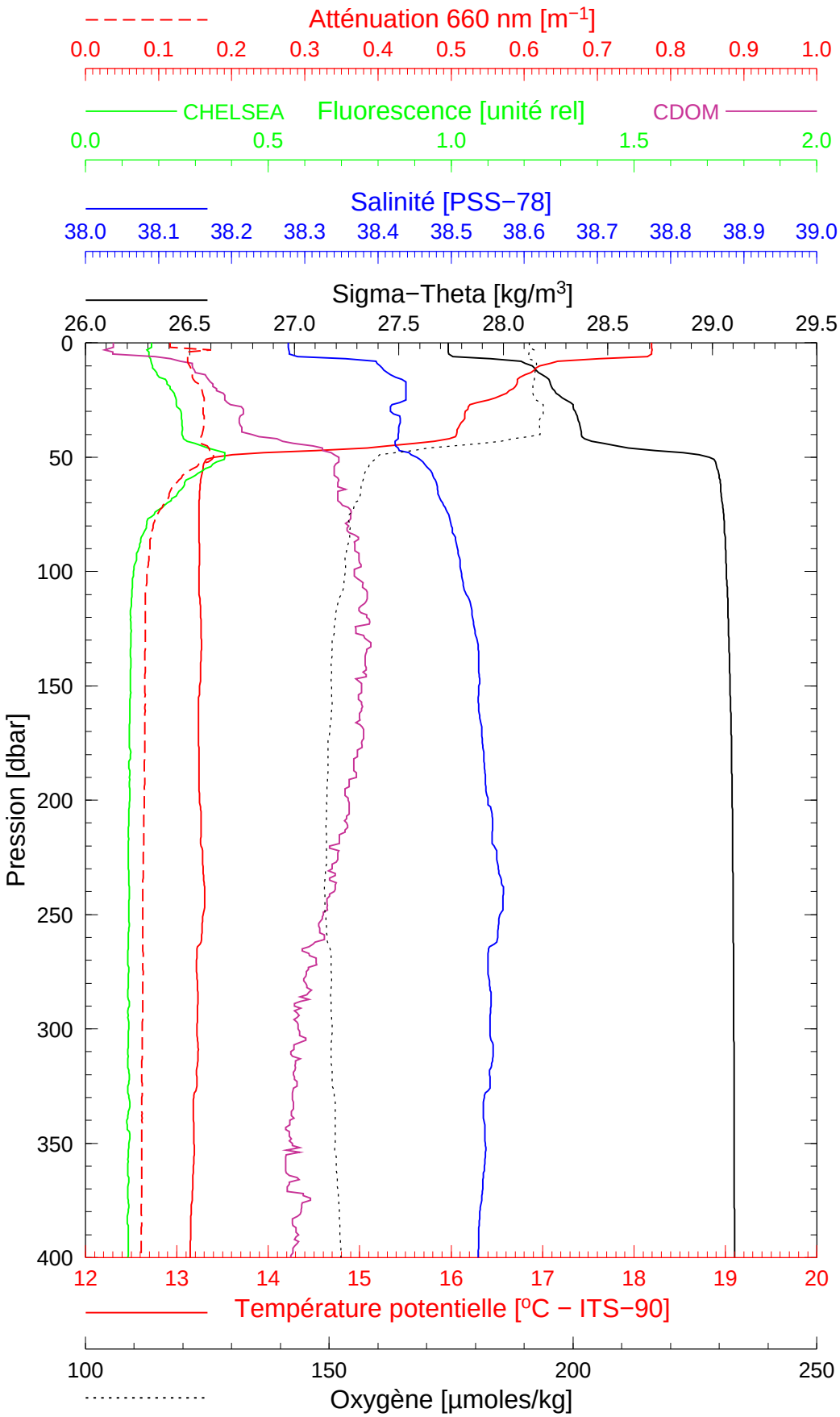


Date *08/11/2006* *Latitude* *43°22.164 N*

Heure déb *10h 31min [TU]* *Longitude* *07°54.644 E*

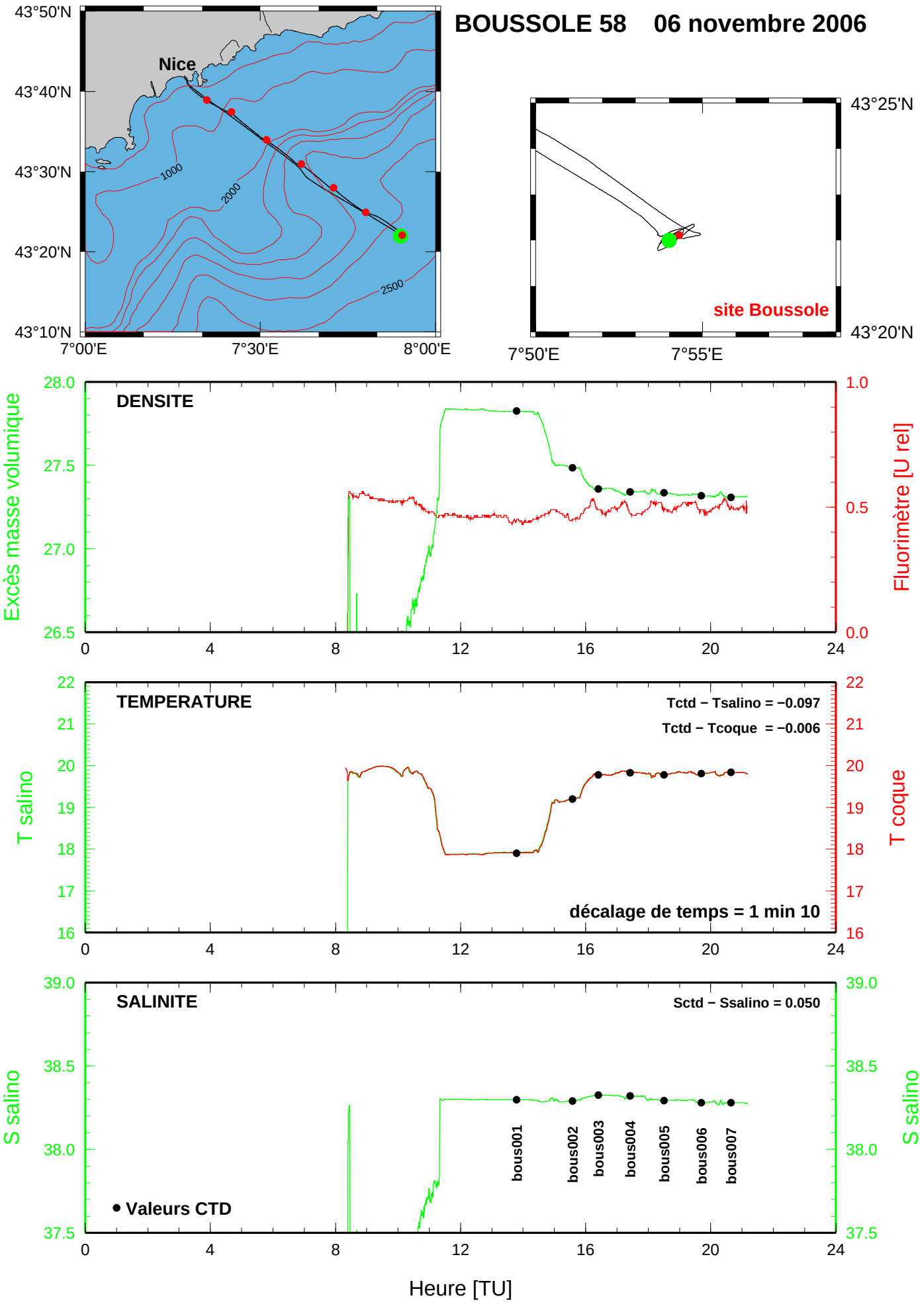
Boussole 58 **08/11/2006** **BOUS061109_01**

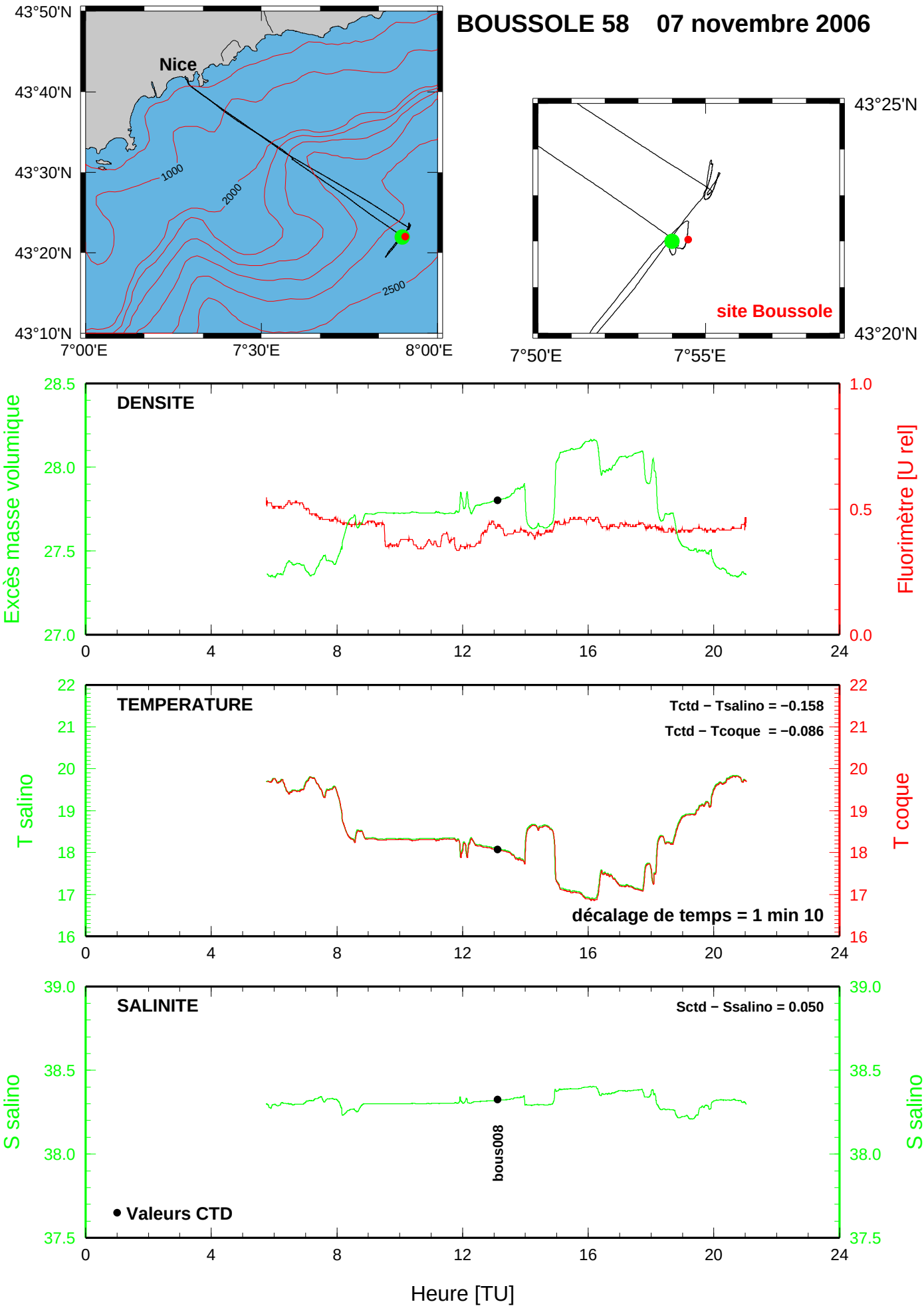
BOUS009

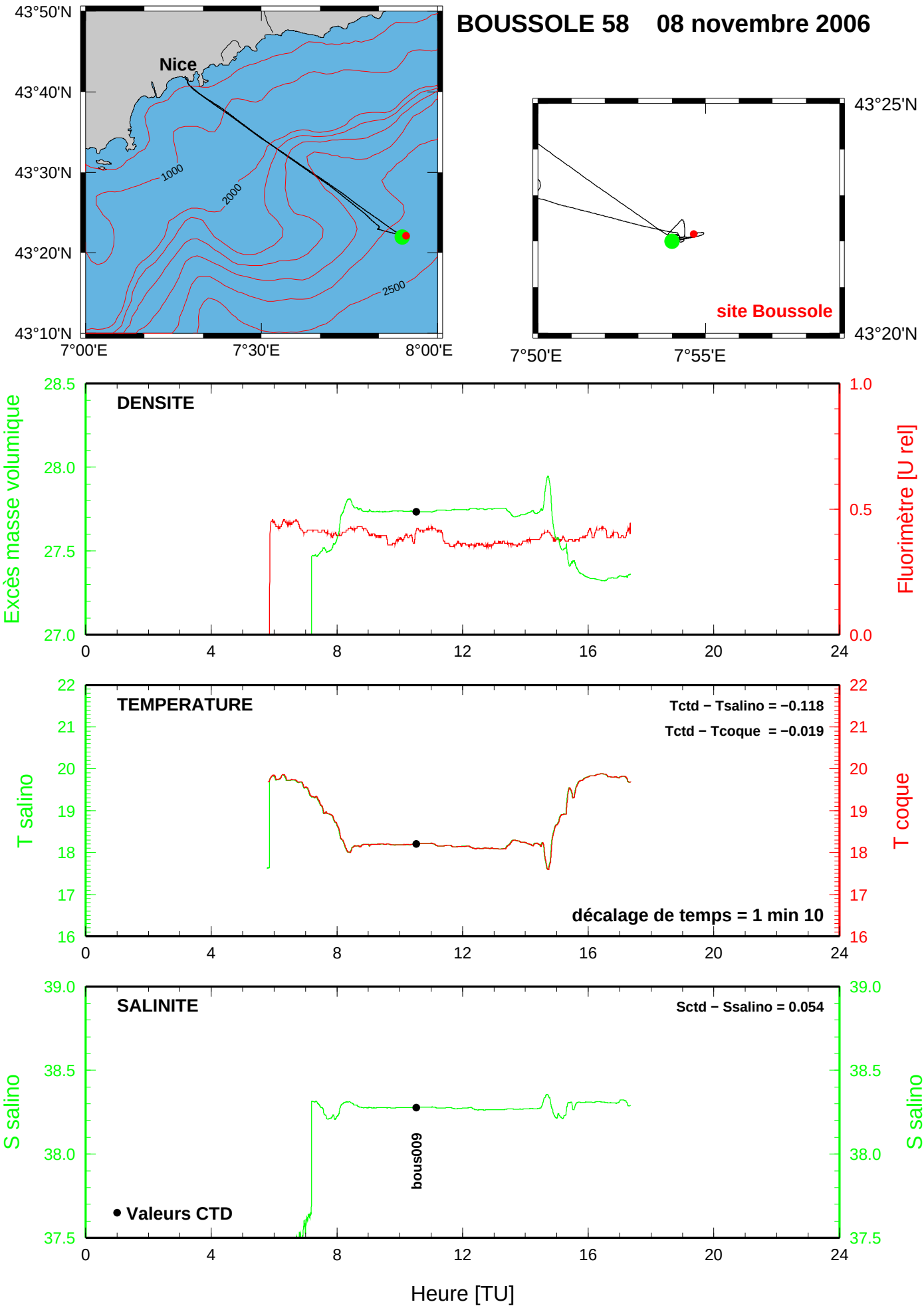


Date *08/11/2006* *Latitude* *43°22.164 N*

Heure déb *10h 31min [TU]* *Longitude* *07°54.644 E*


BOUSSOLE 58 06 novembre 2006
Nice
1000
2000
2500
43°50'N
43°40'N
43°30'N
43°20'N
43°10'N
7°00'E
7°30'E
8°00'E
site Boussole
43°25'N
43°20'N
7°50'E
7°55'E
DENSITE
Excès masse volumique
Fluorimètre [U rel]
TEMPERATURE
Tctd − Tsalino = −0.097
Tctd − Tcoque = −0.006
T salino
T coque
décalage de temps = 1 min 10
SALINITE
Sctd − Ssalino = 0.050
S salino
bous001
bous002
bous003
bous004
bous005
bous006
bous007
• Valeurs CTD
Heure [TU]


BOUSSOLE 58 07 novembre 2006
Nice
1000
2000
2500
43°50'N
43°40'N
43°30'N
43°20'N
43°10'N
7°00'E
7°30'E
8°00'E
site Boussole
43°25'N
43°20'N
7°50'E
7°55'E
DENSITE
Excès masse volumique
Fluorimètre [U rel]
TEMPERATURE
Tctd − Tsalino = −0.158
Tctd − Tcoque = −0.086
T salino
T coque
décalage de temps = 1 min 10
SALINITE
Sctd − Ssalino = 0.050
S salino
bous008
• Valeurs CTD
Heure [TU]


BOUSSOLE 58 08 novembre 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 = −0.118
Tctd − Tcoque = −0.019
T salino
T coque
décalage de temps = 1 min 10
SALINITE
Sctd − Ssalino = 0.054
S salino
bous009
• Valeurs CTD
Heure [TU]