BOUSSOLE Monthly Cruise Report

Cruise 56
September 5 - 7, 2006

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

Science Personnel: Guislain Bécu, Dominique Tailliez, Katarzyna Niewiadomska, Fionuala Harvey, Pierre Gernez, David Luquet, Jean de Vaugelas, Pierre-Alain Manoni

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

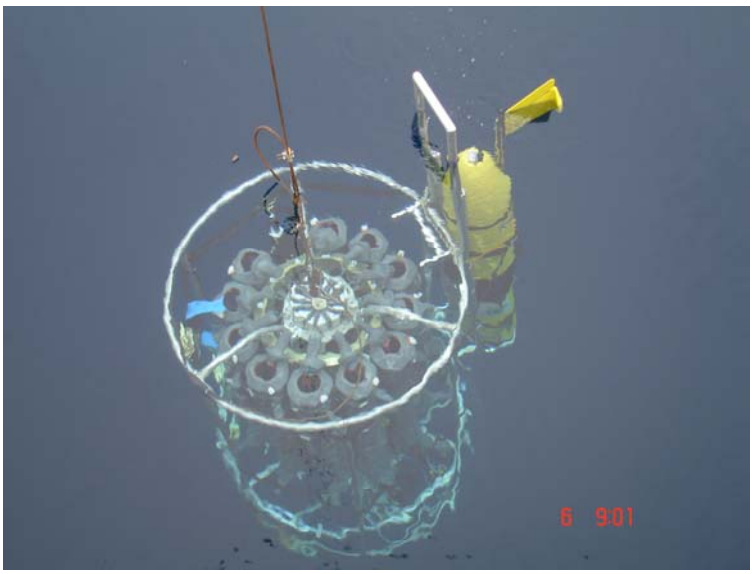


Fig 1. The SLOCUM glider fixed on the SeaBird carousel to inter calibrate the 2 CTD.

BOUSSOLE project

ESA/ESRIN contract N° 17286/03/I-OL

Deliverable from WP#400/200

September 13, 2006

Contents

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.

A SLOCUM glider, newly acquired by the LOV (Hervé Claustre), will be onboard for its first tests and missions. Divers will also take some pictures and videos of its behaviour at sea.

Cruise Summary

Sea conditions were very good, but atmospheric conditions were very poor (maritime entries, slightly dissipating during the day, but resulting in heterogeneous skies conditions). CIMEL hand held sun photometer was unused, as the sun was never directly viewable during the entire cruise.

Tuesday 05 September 2006

The SLOCUM glider was attached on the SeaBird carousel to inter calibrate the 2 CTDs during a unique profiling cast. But a problem with the laptop PC (COM ports malfunctioning) prevent to perform this operation. While Dominique Tailliez tried to fix his laptop problem, divers went at sea to clean the buoy sensors and take some pictures. They didn't see anything abnormal. The glider was then deployed for a while to perform some behaviour tests, and then it was deployed for its first mission. Apart some little residual tilt, no serious problem was detected, and this first mission was declared satisfying. Others operations realized this day were buoy data retrieval, and some others glider deployments (after having disembarking the divers at Nice on the evening, the ship returned to BOUSSOLE site to deploy again the glider at night). The laptop problem was not fixed, so that CTD and AC9 casts control were realized from another laptop.

Wednesday 06 September 2006

No problems occur this day; the glider/carousel common profiling cast was realized on the morning (see cover figure) of this day. After while 7 others CTD were realized (among which 6 on the transect), as well as 3 SPMR profiles with the floating structure, and 2 glider deployment (the second was at night when the ship came back at BOUSSOLE site).

Thursday 07 September 2006

2 CTD casts were performed this day, as well as 5 SPMR profiles with the floating structure, 2 Secchi disk measurements, and a visit on the buoy head to clean the ARGOS beacon contact and the MVD sensors.

Cruise Report

05 September 2006 (UTC)

0530 Departure from port of Nice.
0915 CTD 01 (buoy, 400 m) with the SLOCUM glider attached on SBE carousel to inter calibrate the 2 CTD. But there was a COM port connection problem between the CTD desktop unit and laptop.
1015 divers at sea to check, clean and take pictures of the under surface buoy structure.
1145 glider at sea for some tests (mission 1).
1300 glider at sea (mission 2)
1310 3 x 100 meters plankton net.
1315 buoy data retrieval.
1530 departure to Port of Nice to disembark the divers
1830 arrival at and departure from port of Nice
2200 arrival at BOUSSOLE site and deployment of the glider (mission 3).

06 September 2006

0615 glider recovering.
0751 CTD 01 coupled with the glider (mission 4), 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.
0844 SPMR profiles 1, 2 and 3 with floating structure.
1100 glider at sea (mission 5)
1247 CTD 02 (400 m, buoy) with water sampling at 10 and 5 meters for HPLC/Ap, and dry weights.
1454 CTD 03 at station 1 (43°25'N 07°48'E).
1549 CTD 04 at station 2 (43°28'N 07°42'E).
1642 CTD 05 at station 3 (43°31'N 07°37'E).
1737 CTD 06 at station 4 (43°34'N 07°31'E).
1834 CTD 07 at station 5 (43°37'N 07°25'E).
1918 CTD 08 at station 6 (43°39'N 07°21'E).
2005 arrival at port of Nice, divers disembarkation, departure to BOUSSOLE site
2215 arrival at BOUSSOLE site and glider deployment (mission 6).

07 September 2006

0727 CTD 09 (buoy, 400 m) with water sampling at 200, 150, 80, 70, 60, 50, 40, 30, 20, 10 and 5 meters for HPLC and Ap.
0824 SPMR profiles 4, 5, 6, 7 and 8 with floating structure.
0954 Secchi disk 01 (21 m) close to the buoy.
1025 Secchi disk 02 (20 m) close to the buoy.
1202 CTD 10 (400 m, buoy) with water sampling at 10 and 5 meters for HPLC/Ap, and dry weights.
1245 Guislain BECU on buoy head to clean ARGOS beacon contact and also the MVD sensor.
1515 departure from BOUSSOLE site.
1845 arrival at Port of Nice.

Calculated Swath paths for MERIS Sensor (ESOV Software)

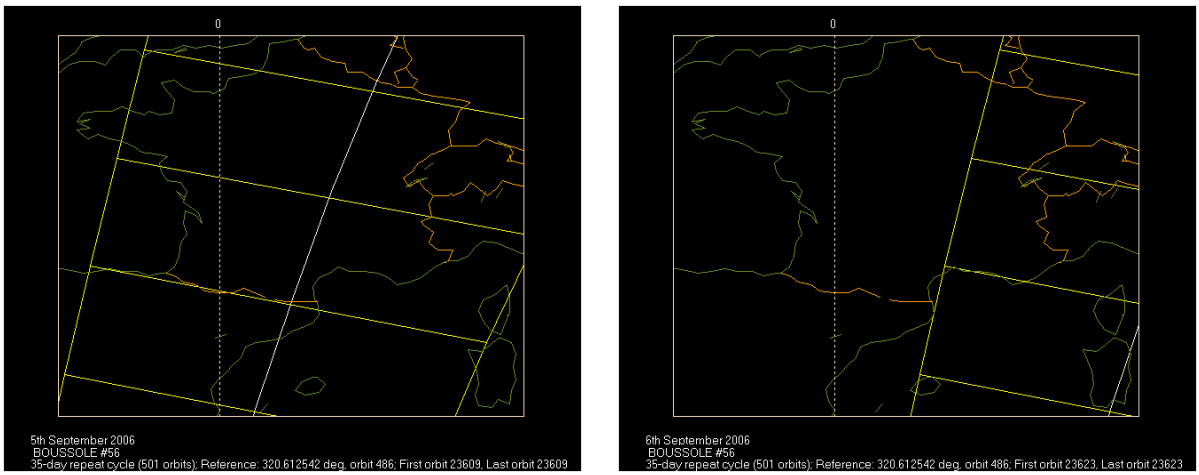
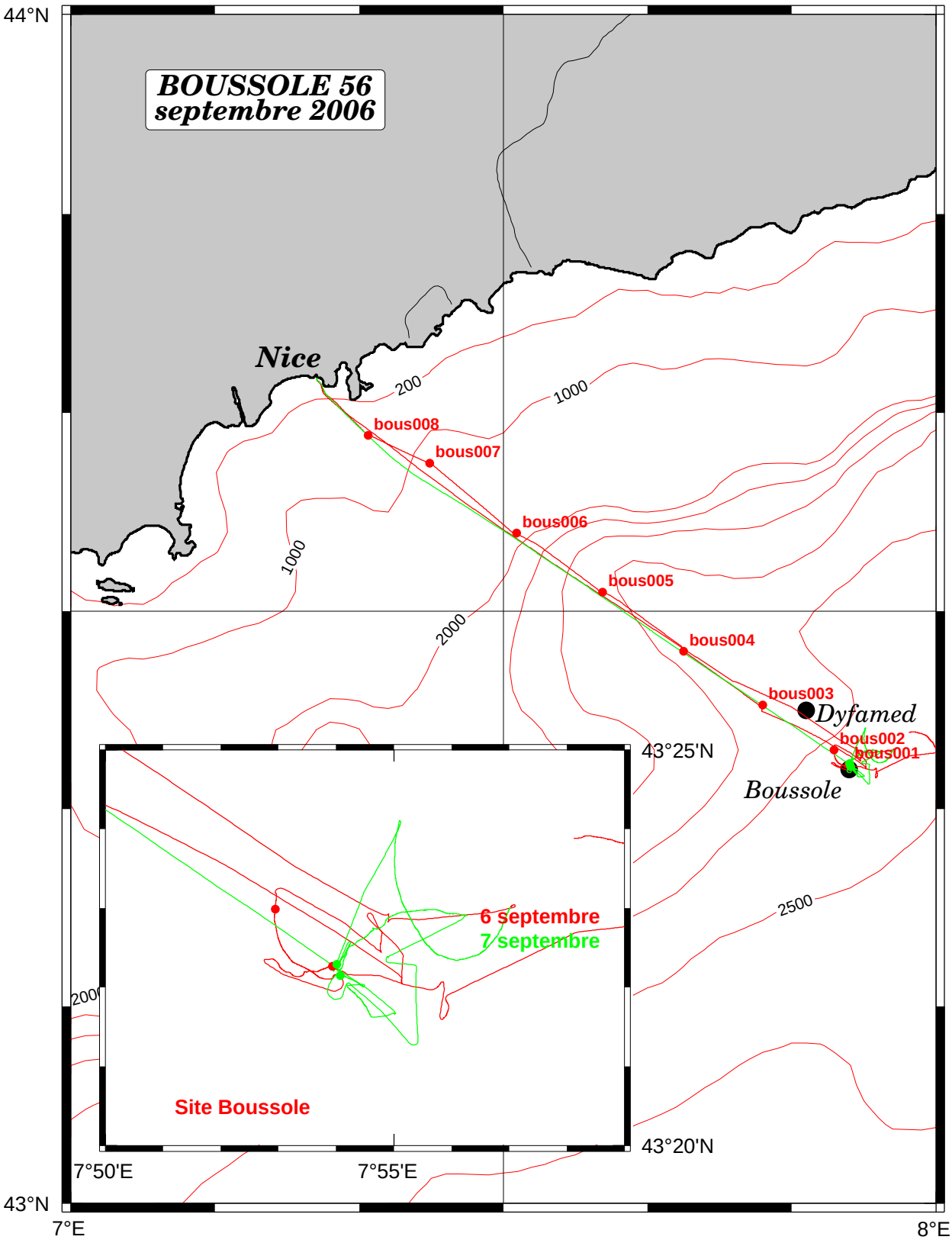


Figure 2. Calculated swath paths for MERIS (Esov software) above BOUSSOLE site for 05 and 06 September 2006.

Appendix

Cruise Summary Table for Boussole 56

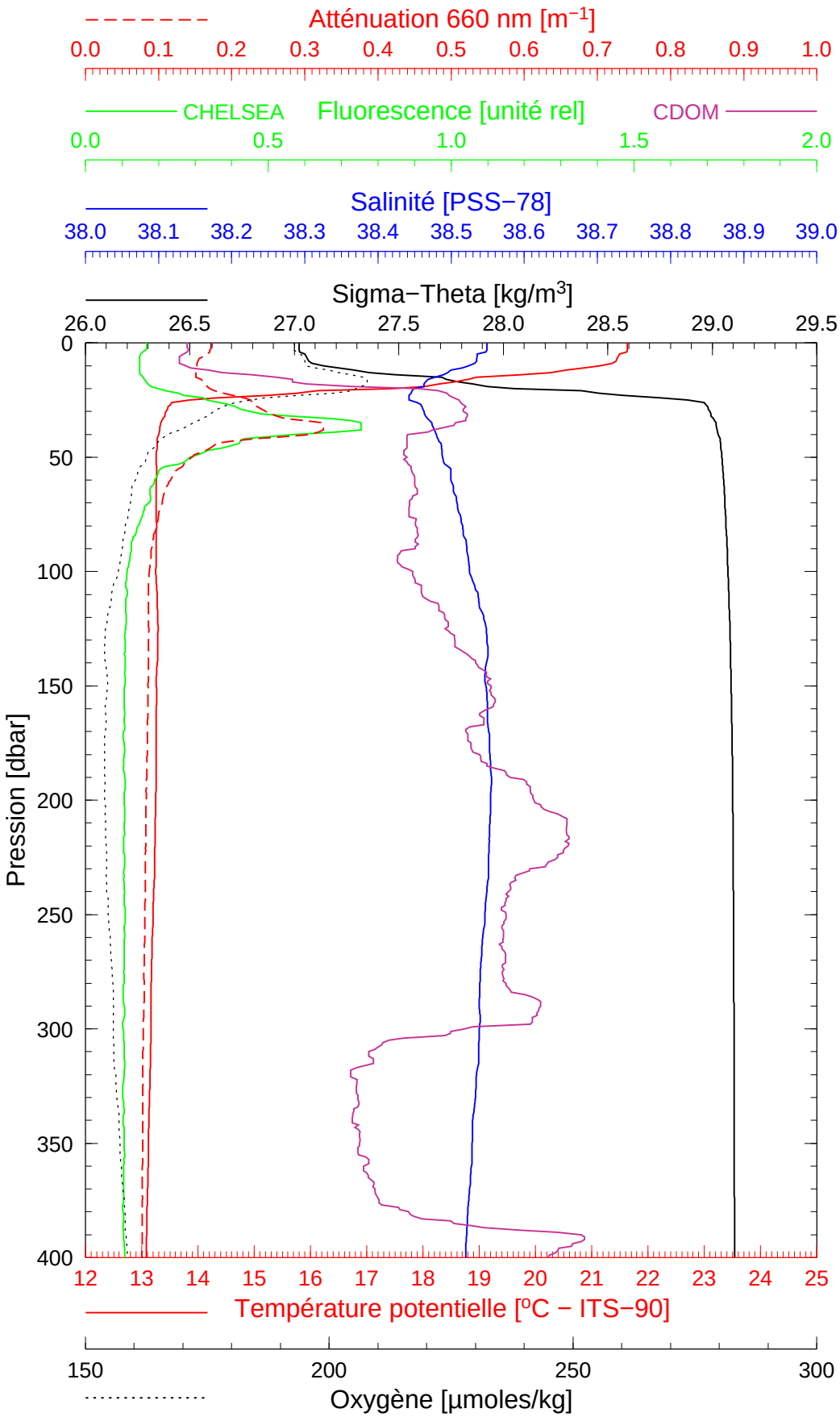
Date	Black names	Profile names	CTD notées /	Start Time	Duration	Depth max	Latitude (N)		longitude		Other sensors	Their cast	Start/Finish			Weather							Sea		
	(file ext: ".raw")	(file extension: ".raw")	satellite overpass	GMT (hour.min)	(min.sec)	(meter)	(Degree)	(Minute)	(Degree)	(Minute)				Sky	Clouds	Quantity (#/8)	Wind speed	Wind dir.	Atm. Pressure	humidity	Visibility	T air	T water	Sea	Swell height	Swell dir.	Whitecaps
				11:45	60:00	200	43	22.000	7	54.000	glider (1: tests)			covered	stratus	8				~90	good	~21.0	~22.0	calm - flat	-		no
05/09/2006				13:00	135:00	200	43	22.000	7	54.000	glider (2)			covered	stratus	8				~90	good	~21.0	~22.0	calm - flat	-		no
				21:59	495:00	200	43	22.000	7	54.000	glider (3)			covered	stratus	8				~90	good	~21.0	~22.0	calm - flat	-		no
			CTDBOUS001	07:51	30:00	400	43	22.266	7	53.933	glider (4)		until 8am	covered	homog.	8				~90	good	~21.0	~22.0	calm - flat	-		no
	bou060906black1			08:34	03:00																						
		bou060906spmratsurfaceAA		08:44	05:21	150	43	22.174	7	53.219				covered	stratus	8	3 kn	28	1020.7	86	good	21.6		calm - flat	-		no
		bou080906spmratsurfaceAB		08:59	05:12	150	43	22.259	7	53.026				covered	stratus	8	3 kn	28	1020.7	86	good	21.6		calm - flat	-		no
		bou080906spmratsurfaceAC		09:13	05:27	150	43	22.359	7	52.687				covered	stratus	8	3 kn	28	1020.7	86	good	21.6		calm - flat	-		no
	bou060906black2			09:26	03:00																						
				11:00	195:00	200	43	22.000	7	54.000	glider (5)			covered	stratus	8				~90	good	~21.0	~22.0	calm - flat	-		no
06/09/2006			CTDBOUS002	12:47	24:00	400	43	22.993	7	52.945				covered	stratus	3	6 kn	191	1019.3	88	good	21.4	22.4	calm - flat	-		no
			CTDBOUS003	14:54	20:00	400	43	25.265	7	47.984				partly covered	stratus	2	6 kn	186	1018.3	91	good	21.9	21.7	calm - flat	-		no
			CTDBOUS004	15:49	19:00	400	43	27.972	7	42.509				partly covered	stratus	2	6 kn	224	1017.9	93	good	22.0	22.1	calm - flat	-		no
			CTDBOUS005	16.42	19:00	400	43	30.974	7	36.896				partly covered	stratus	4	5 kn	242	1017.5	90	good	22.2	22.4	calm - flat	-		no
			CTDBOUS006	17:37	22:00	400	43	33.950	7	30.916				covered	stratus	7	8 kn	221	1017.3	91	good	22.3	22.7	calm - flat	-		no
			CTDBOUS007	18:34	20:00	400	43	37.466	7	24.886				covered	stratus	9	5 kn	244	1017.8	91	good	22.4	23.4	calm - flat	-		no
			CTDBOUS008	19:18	20:00	400	43	38.868	7	20.621				covered	stratus	9	2 kn	324	1017.4	89	good	22.5	23.3	calm - flat	-		no
				23:15	945:00	200	43	22.000	7	54.000	glider (6)			covered	stratus	8				~90	good	~21.0	~22.0	calm - flat	-		no
			CTDBOUS009	07:27	23:00	400	43	22.292	7	54.015				covered	stratus	8	1 kn	217	1017.0	90	good	21.8	21.6	calm - flat	-		no
	bou070906black1			08:07	03:00																						
		bou070906spmratsurfaceAA		08:24	06:11	150	43	22.329	7	54.125				covered	stratus	8	3 kn	73	1018.9	82	excellent	25.4		calm	0,2 m		no
		bou070906spmratsurfaceAB		08:39	04:59	150	43	22.543	7	54.402				covered	stratus	8	3 kn	73	1018.9	82	excellent	25.4		calm	0,2 m		no
		bou070906spmratsurfaceAC		08:55	04:44	150	43	22.639	7	54.517				covered	stratus	8	3 kn	73	1018.9	82	excellent	25.4		calm	0,2 m		no
07/09/2006		bou070906spmratsurfaceAD		09:09	05:29	150	43	22.744	7	54.651				covered	stratus	8	3 kn	73	1018.9	82	excellent	25.4		calm	0,2 m		no
		bou070906spmratsurfaceAE		09:23	05:31	150	43	22.772	7	54.813				covered	stratus	8	3 kn	73	1018.9	82	excellent	25.4		calm	0,2 m		no
	bou070906black2			09:37	03:00																						
				09:45	02:00	21	43	22.000	7	54.000	Secchi disk 1			covered	stratus	6					good			calm - flat	-		no
				10:25	02:00	20	43	22.000	7	54.000	Secchi disk 2			covered	stratus	7					good			calm - flat	-		no
			CTDBOUS010	12:05	20:00	400	43	22.152	7	54.070				covered	stratus	8	5 kn	184	1017.0	91	good	22.4	21.9	calm - flat	-		no



GMT 2006 Oct 6 00:49:45

Boussole 56 **06/09/2006** **BOUS060906_01**

BOUS001

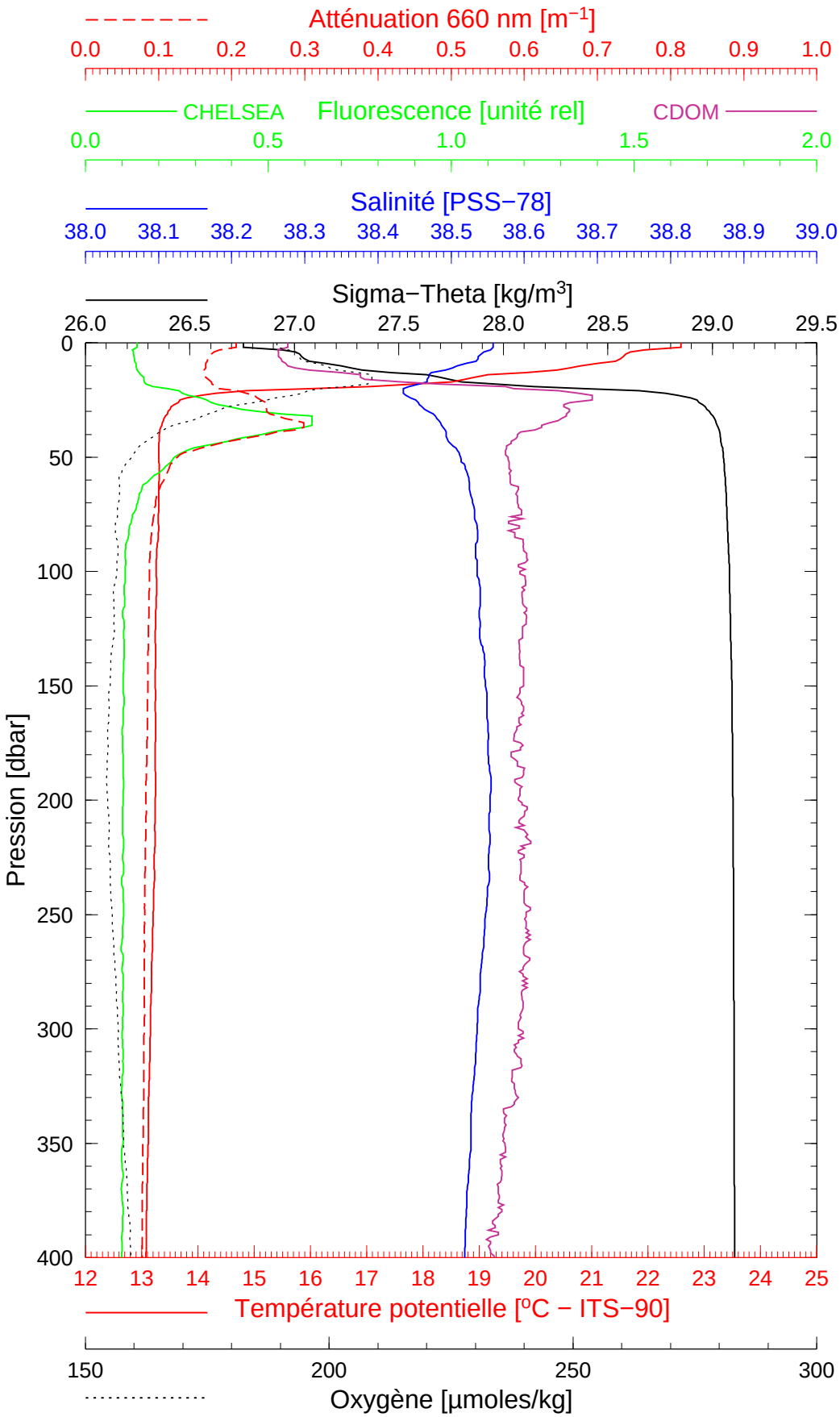


Date *06/09/2006* *Latitude* *43°22.266 N*

Heure déb *07h 51min [TU]* *Longitude* *07°53.933 E*

Boussole 56 **06/09/2006** **BOUS060906_02**

BOUS002

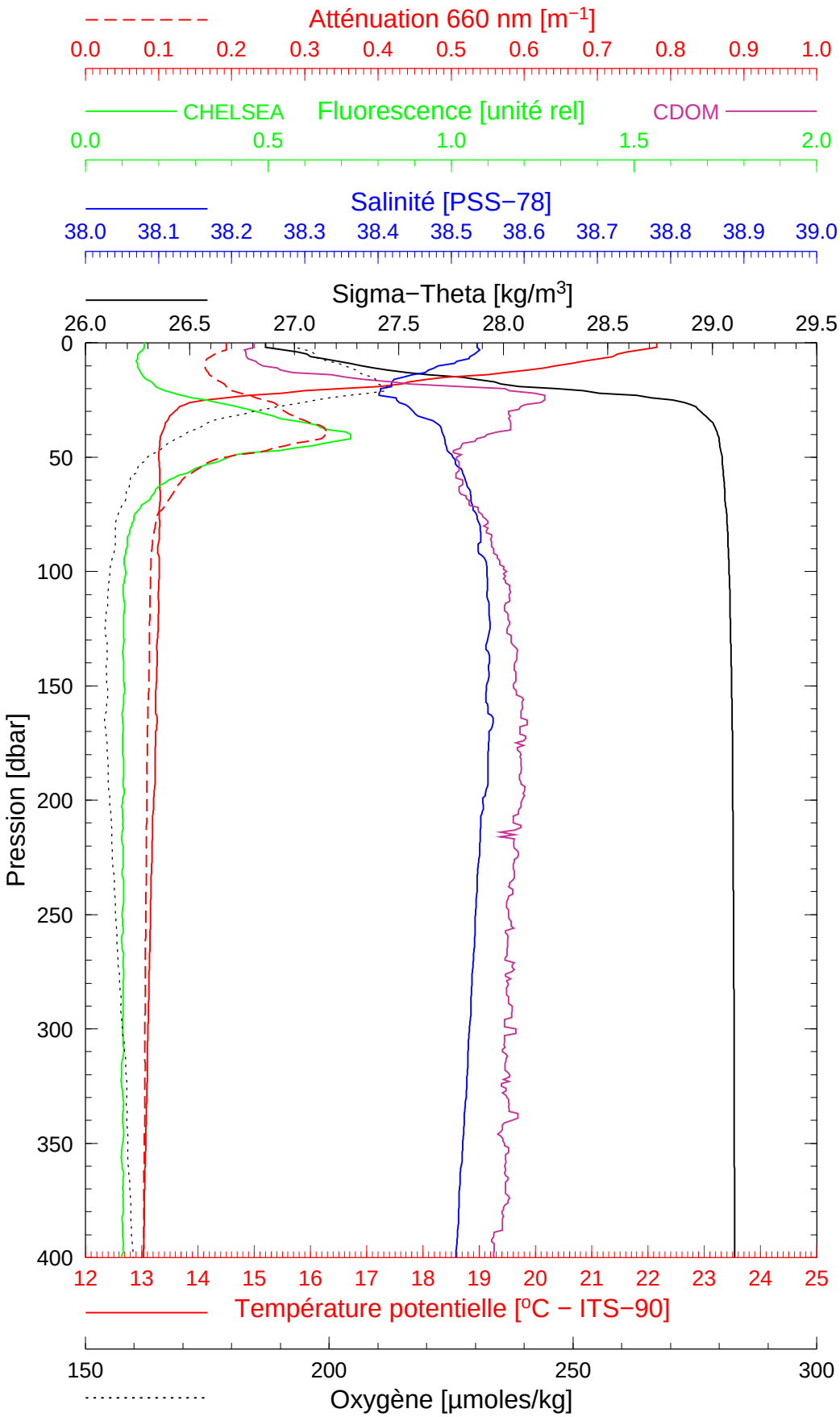


Date *06/09/2006* *Latitude* *43°22.993 N*

Heure déb *12h 47min [TU]* *Longitude* *07°52.945 E*

Boussole 56 **06/09/2006** **BOUS060906_03**

BOUS003

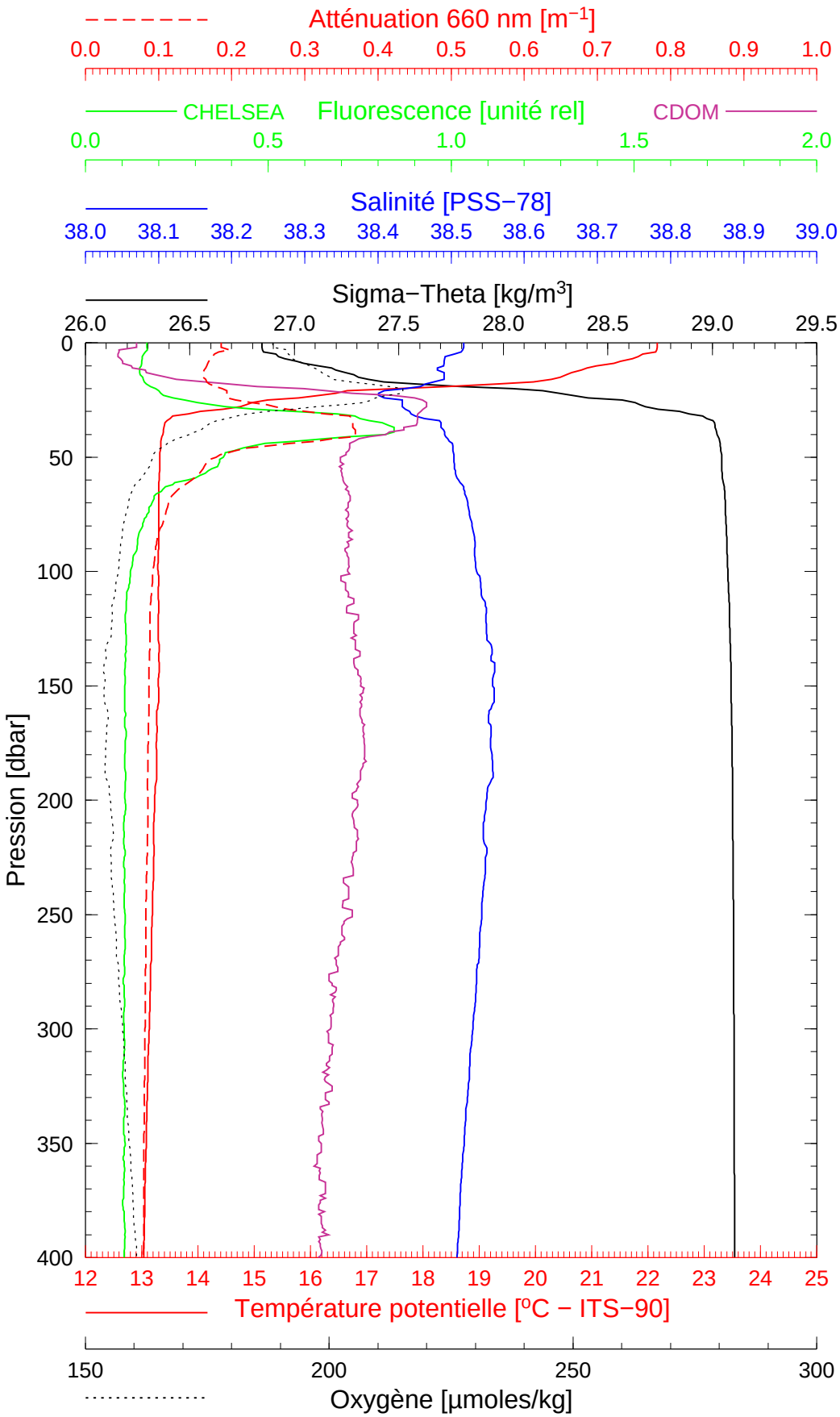


Date *06/09/2006* *Latitude* *43°25.265 N*

Heure déb *14h 54min [TU]* *Longitude* *07°47.984 E*

Boussole 56 **06/09/2006** **BOUS060906_04**

BOUS004

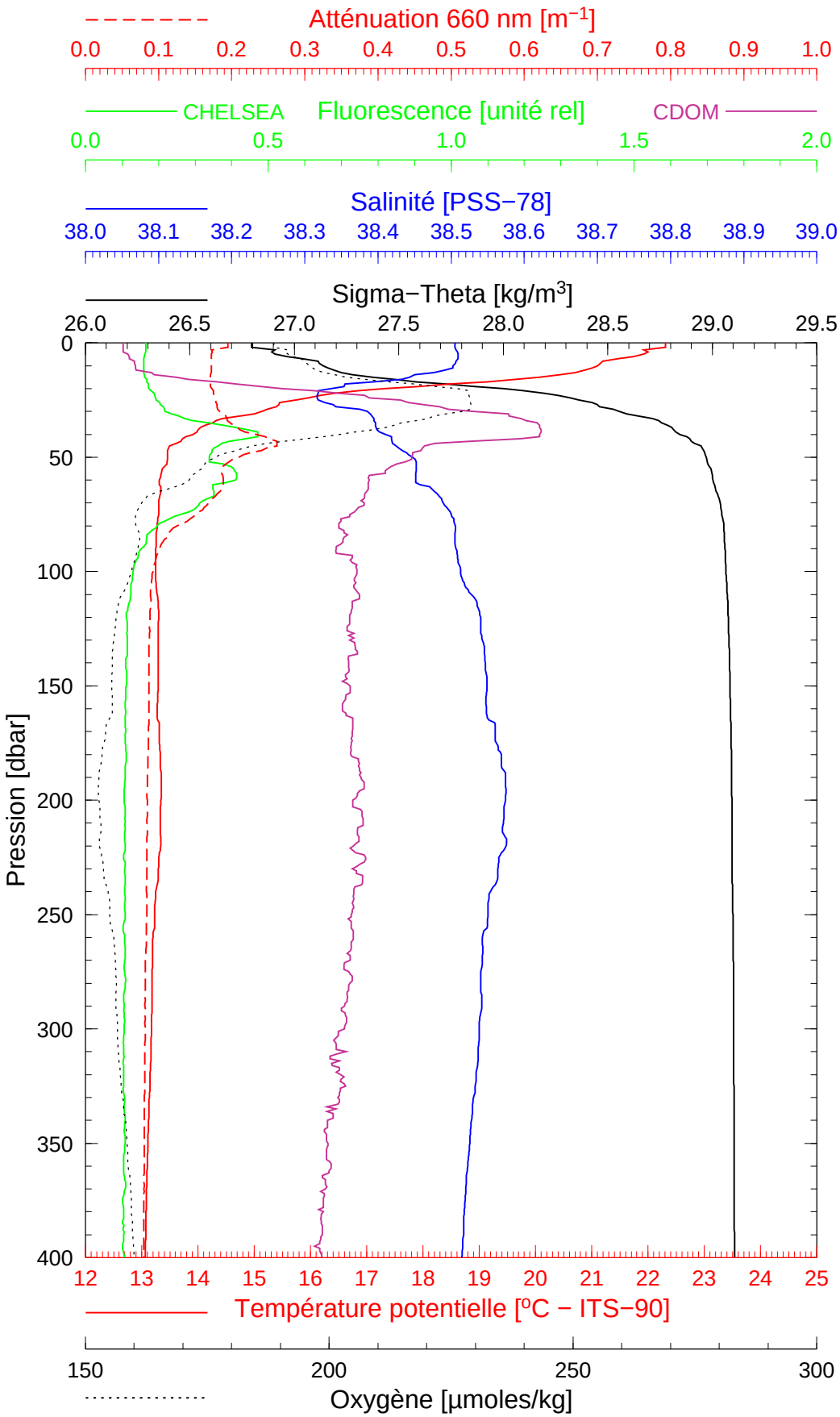


Date *06/09/2006* *Latitude* *43°27.972 N*

Heure déb *15h 49min [TU]* *Longitude* *07°42.509 E*

Boussole 56 **06/09/2006** **BOUS060906_05**

BOUS005

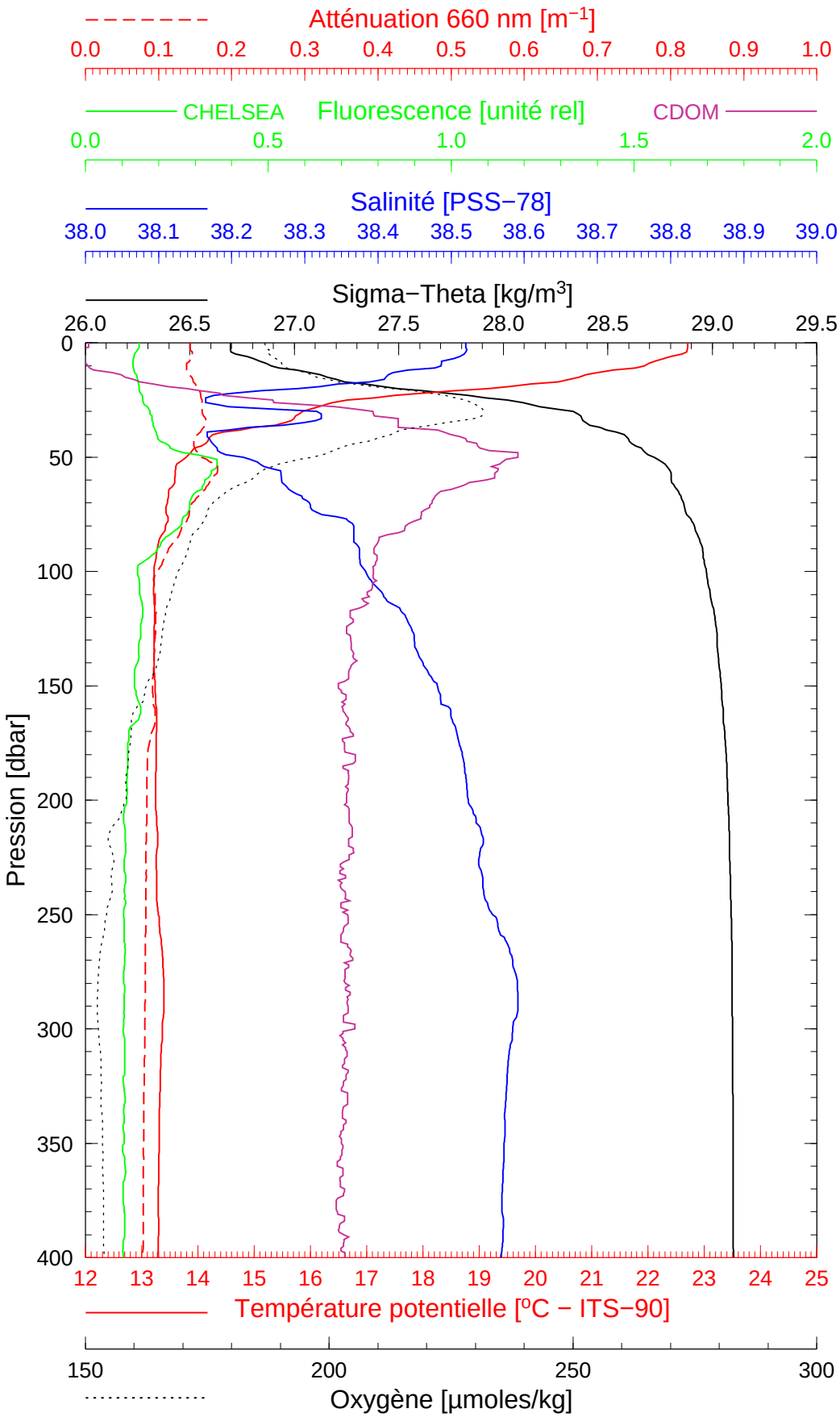


Date *06/09/2006* *Latitude* *43°30.974 N*

Heure déb *16h 42min [TU]* *Longitude* *07°36.896 E*

Boussole 56 **06/09/2006** **BOUS060906_06**

BOUS006

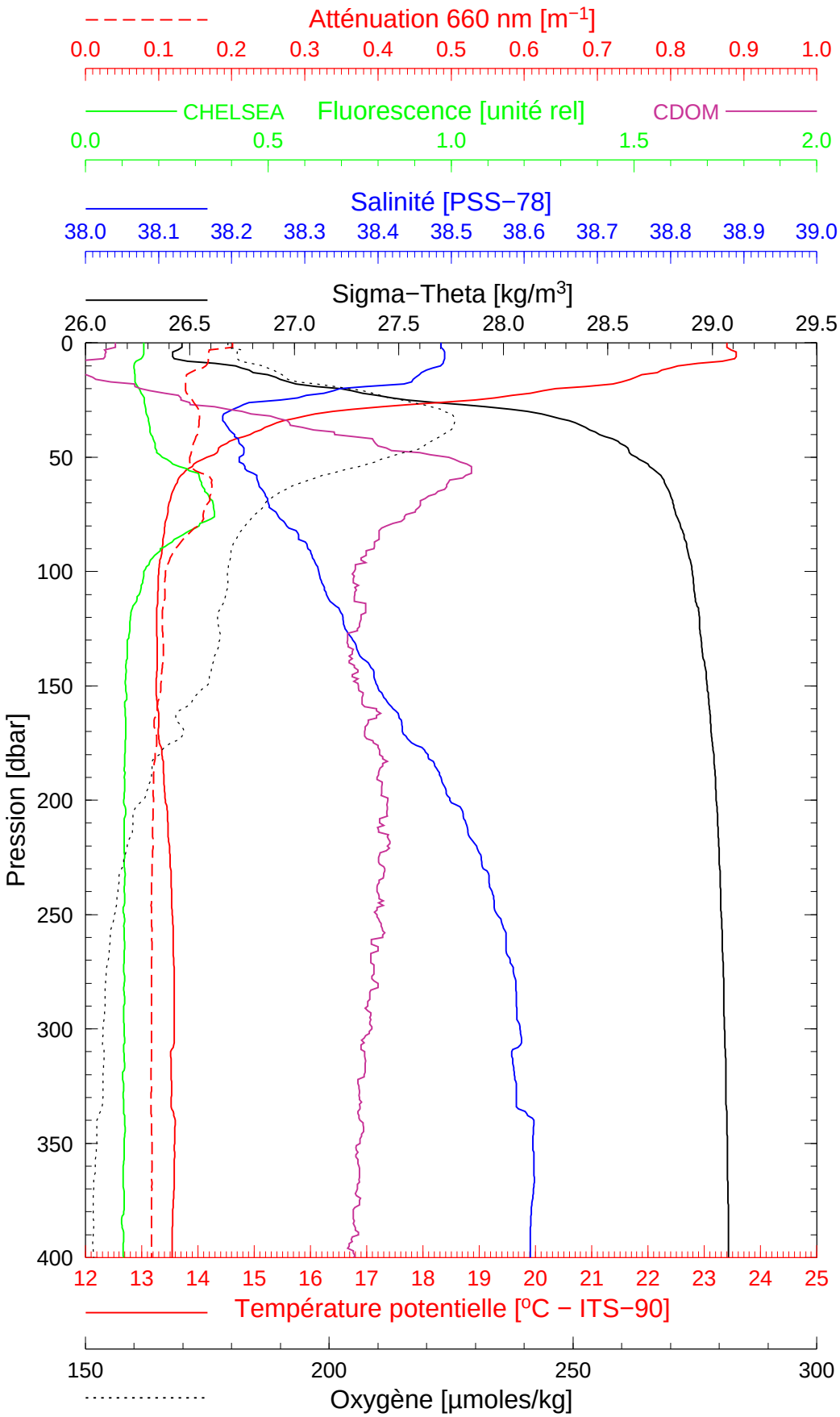


Date *06/09/2006* *Latitude* *43°33.950 N*

Heure déb *17h 37min [TU]* *Longitude* *07°30.916 E*

Boussole 56 **06/09/2006** **BOUS060906_07**

BOUS007

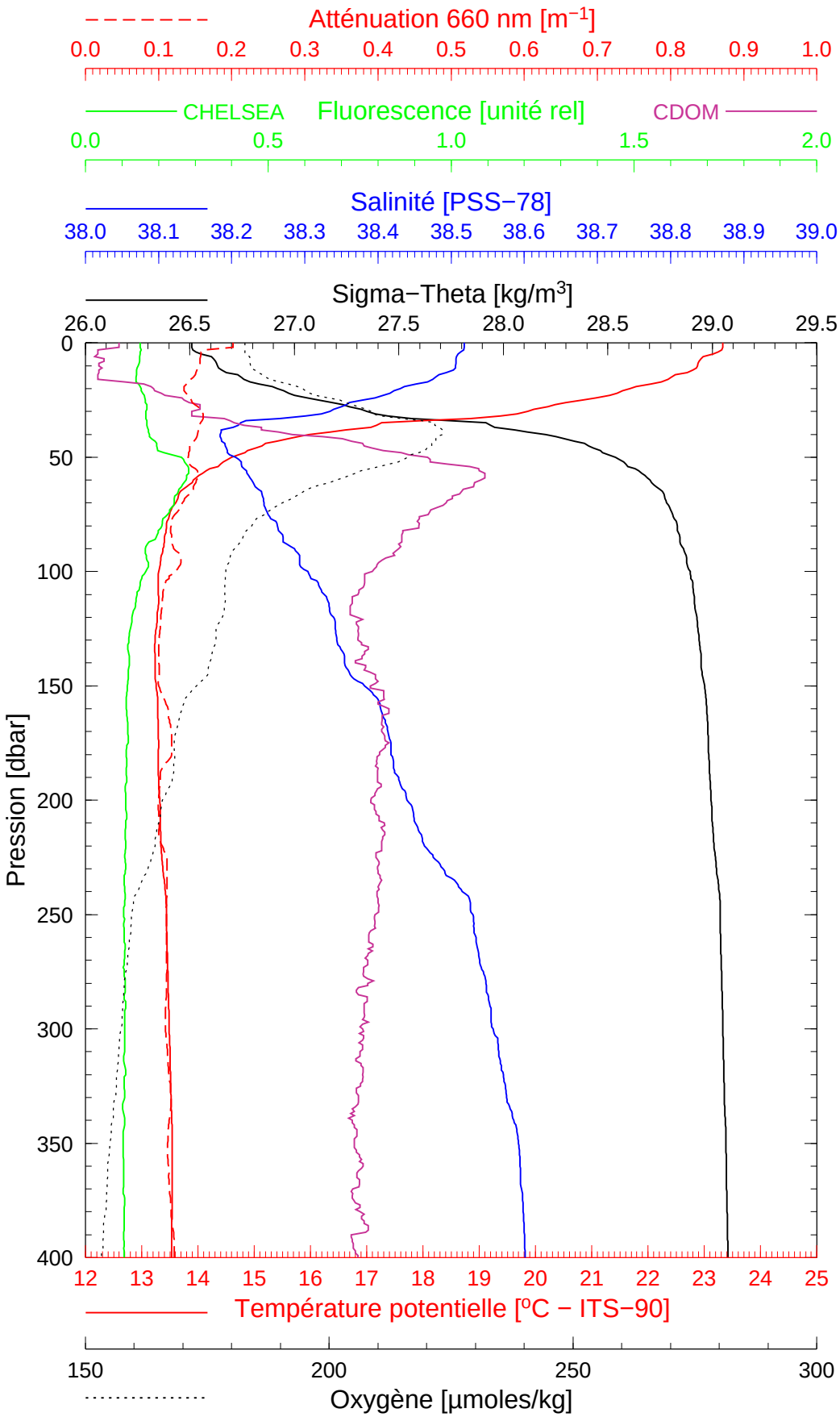


Date *06/09/2006* *Latitude* *43°37.466 N*

Heure déb *18h 34min [TU]* *Longitude* *07°24.886 E*

Boussole 56 **06/09/2006** **BOUS060906_08**

BOUS008

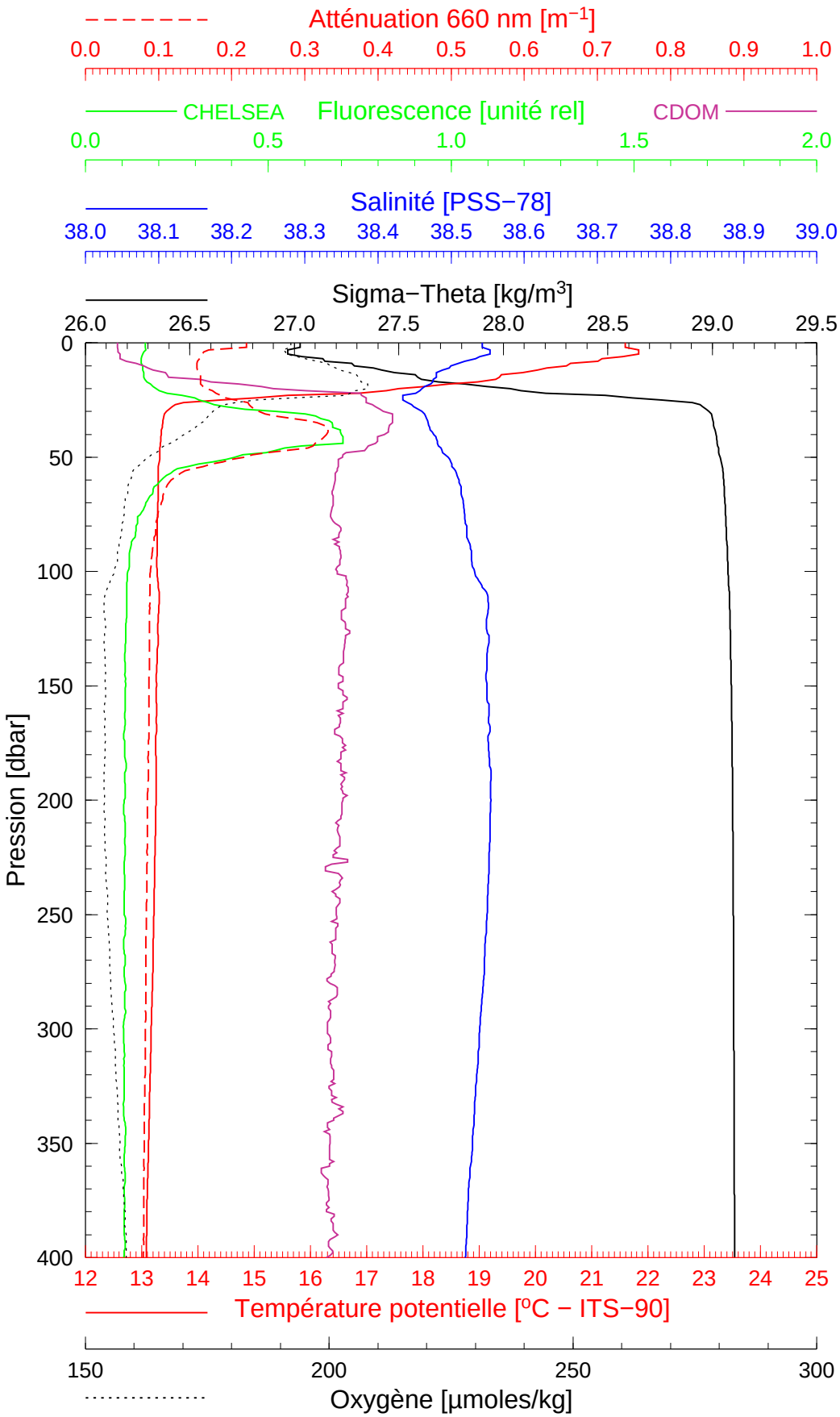


Date *06/09/2006* *Latitude* *43°37.466 N*

Heure déb *18h 34min [TU]* *Longitude* *07°24.886 E*

Boussole 56 **07/09/2006** **BOUS060907_01**

BOUS009

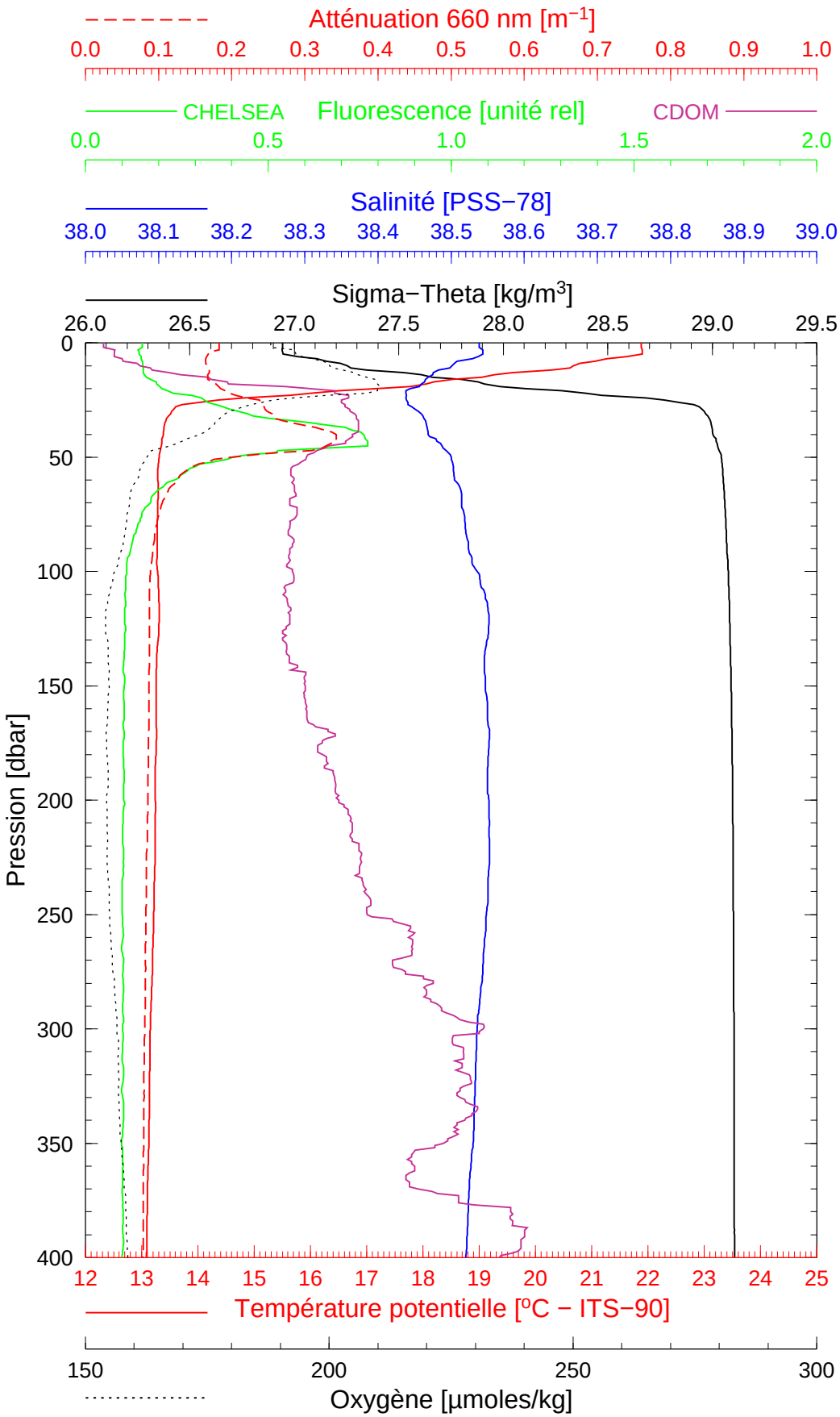


Date *07/09/2006* *Latitude* *43°22.292 N*

Heure déb *07h 27min [TU]* *Longitude* *07°54.015 E*

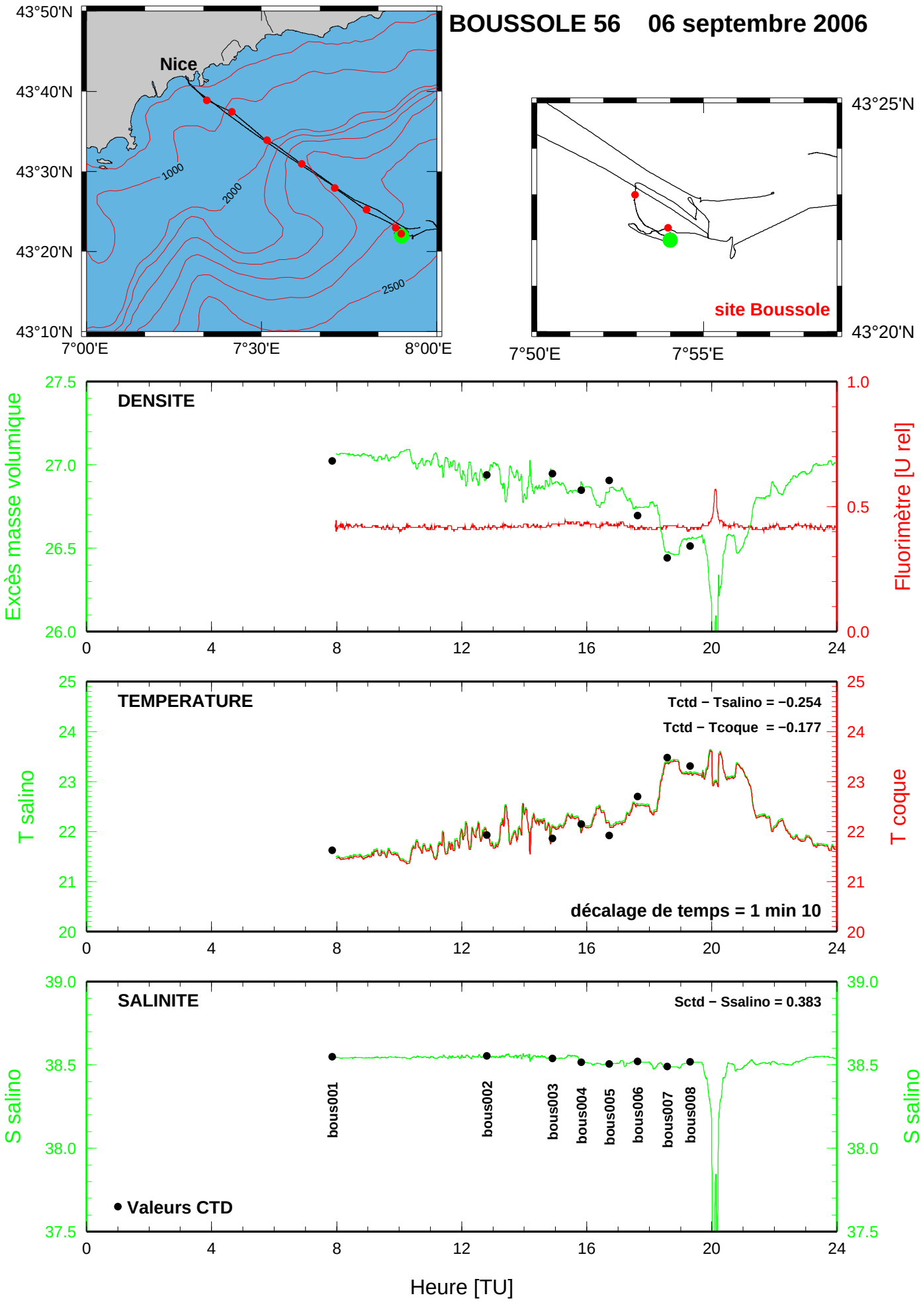
Boussole 56 **07/09/2006** **BOUS060907_02**

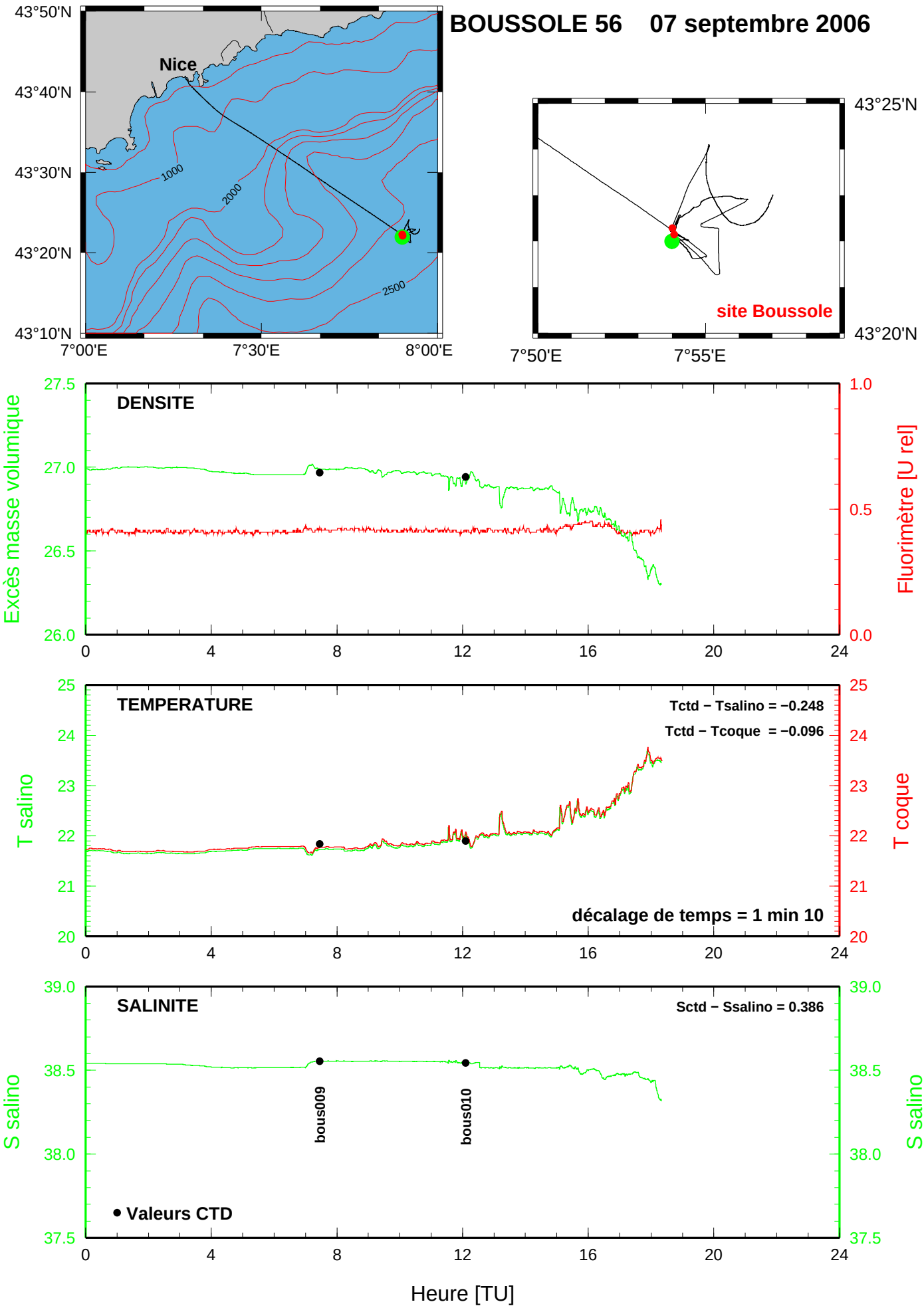
BOUS010



Date *07/09/2006* *Latitude* *43°22.152 N*

Heure déb *12h 05min [TU]* *Longitude* *07°54.070 E*


BOUSSOLE 56 06 septembre 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 = −0.254
Tctd − Tcoque = −0.177
décalage de temps = 1 min 10
T salino
T coque
SALINITE
Sctd − Ssalino = 0.383
bous001
bous002
bous003
bous004
bous005
bous006
bous007
bous008
• Valeurs CTD
S salino
Heure [TU]


BOUSSOLE 56 07 septembre 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
43°25'N
43°20'N
7°50'E
7°55'E
site Boussole
DENSITE
Excès masse volumique
Fluorimètre [U rel]
TEMPERATURE
Tctd − Tsalino = −0.248
Tctd − Tcoque = −0.096
T salino
T coque
décalage de temps = 1 min 10
SALINITE
Sctd − Ssalino = 0.386
S salino
bous009
bous010
• Valeurs CTD
Heure [TU]