BOUSSOLE Monthly Cruise Report

Cruise 54
June 11 - 13, 2006

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

Science Personnel: Guislain Bécu, Dominique Tailliez, Pierre Gernez

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

Fig 1. A MICREL© inclinometer has been installed in the head of the buoy inner space, as the DACNet inclinometer was suspected to be out of order.

BOUSSOLE project

ESA/ESRIN contract N° 17286/03/I-OL

Deliverable from WP#400/200

June 21, 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.

Cruise Summary

The Sea was calm and the sky was blue (with a slight and homogeneous haze) for all the cruise days. As the buoy was exchanged the day before the cruise, and as it was working very well, the divers didn't come on site to clean and check the sensors. So the ship could stay 3 days on site, allowing to perform more SPMR/SMSR profiles simultaneously to the buoy measurements, in order to proceed to an intense comparison between both instruments.
CIMEL hand held sun photometer was still out of order at the date of the cruise, so no atmospheric measurements could have been performed.

Sunday 11 June 2006

Departure was delayed from about one hour as the instruments and material couldn't be installed on the cruise eve. The first operation when arrived on site was to attempt a buoy connection and data download, which was successfully realized. Then, the first data of that freshly deployed buoy were processed to check if everything was alright. The only problem was with the Es sensor, which was still protected with its cap, so that Guislain Bécu had to climb on the buoy head to remove it. Otherwise, all others instruments seemed to work perfectly.
Others realized operations were more usual: 2 CTD casts (among them one was realized at night) with water sampling (HPLC, Ap, dry weights), 4 SPMR/SMSR profiles and 1 Secchi disk. The ship had to come back towards coasts to catch GSM network, as Divers had to be informed that there was no need to dive to check and clean the sensors as they work properly.
The ship stayed on site during night in order to realize more SPMR/SMSR the next day in the morning. These casts are crucial to compare them with the first buoy measurements, and furthermore the next day there was a MERIS overpass in the left part of the swath.

Monday 12 June 2006

13 SPMR/SMSR profiles were realized this day, as well as 2 CTD casts and 1 Secchi disk measurement. The ship still stayed on site for the night.

Tuesday 13 June 2006

6 SPMR/SMSR profiles were performed, as well as 8 CTD casts (among which 6 on transect and 1 at point B+). The rosette was also used to sample sea water at 5 m depth for dry weights.

Cruise Report

11 June 2006 (UTC)

0540 Departure from port of Nice.
0915 Buoy data retrieval and first processing.
1058 CTD 01 (buoy, 400 m) with water sampling at 200, 100, 80, 70, 60, 50, 40, 30, 20, 10 and 5 meters for HPLC and Ap.
1230 Guislain Bécu remove MVD cap on buoy head.
1340 SPMR profiles 1, 2, 3 and 4 with floating structure.
1445 Secchi disk 01 (18 m) close to the buoy.
1530 water sampling at 5 meters depth with rosette for dry weights operation.
1540 sailing toward coast to catch GSM network (call divers to avoid diving operations).
1927 CTD 02 (buoy, 400 m) with water sampling at 250, 150, 80, 70, 60, 50, 40, 30, 20, 10 and 5 meters for HPLC and Ap.

12 June 2006

0700 SPMR profiles 5, 6 and 7 with floating structure.
0824 CTD 03 (buoy, 400 m) with water sampling at 200, 150, 80, 70, 60, 50, 40, 30, 20, 10 and 5 meters for HPLC and Ap.
0915 SPMR profiles 8, 9 and 10.
1120 Secchi disk measurement 02 (19 m) close to the buoy.
1220 SPMR profiles 11, 12, 13 and 14 with floating structure.
1420 CTD 04 (buoy, 400 m) with water sampling at 10 and 5 metres, for triplicate HPLC/Ap and for dry weights.
1512 SPMR profiles 15, 16 and 17 with floating structure.

13 June 2006

0503 CTD 05 (buoy, 400 m) with water sampling at 200, 150, 80, 70, 60, 50, 40, 30, 20, 10 and 5 meters for HPLC and Ap.
0550 SPMR profiles 18, 19, 20 with floating structure and profiles 21, 22 and 23 without floating structure.
0730 water sampling with rosette at 5 meters for dry weights operation.
0812 CTD 06 at station 1 (43°25’N 07°48’E).
0915 CTD 07 at station 2 (43°28’N 07°42’E).
1023 CTD 08 at station 3 (43°31’N 07°37’E).
1124 CTD 09 at station 4 (43°34’N 07°31’E).
1227 CTD 10 at station 5 (43°37’N 07°25’E).
1318 CTD 11 at station 6 (43°39’N 07°21’E).
1401 CTD 12 at point B+ (43°41’N 07°19’E)
1435 Arrival at port of Nice.

Calculated Swath paths for MERIS Sensor (ESOV Software)

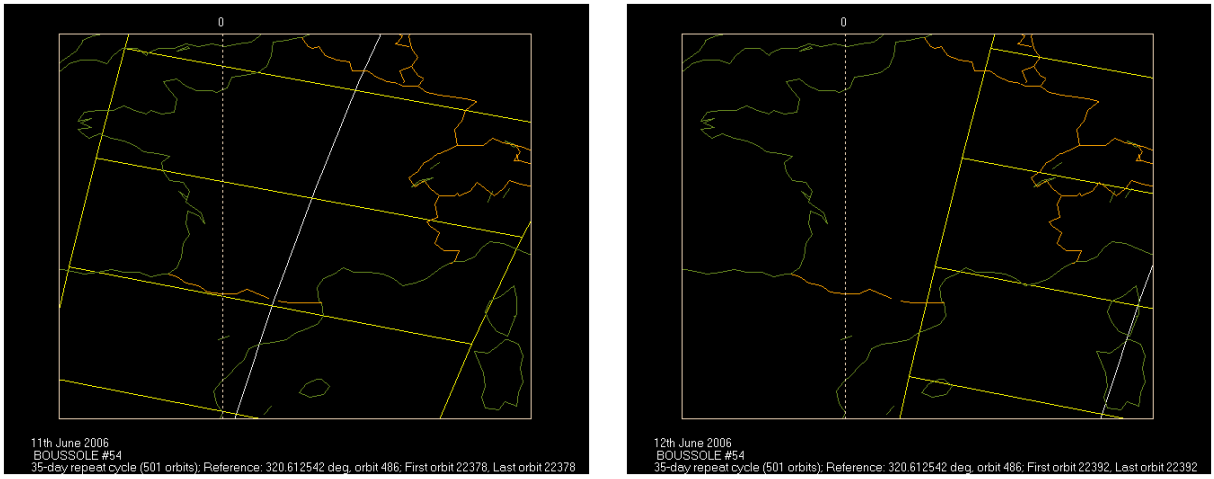
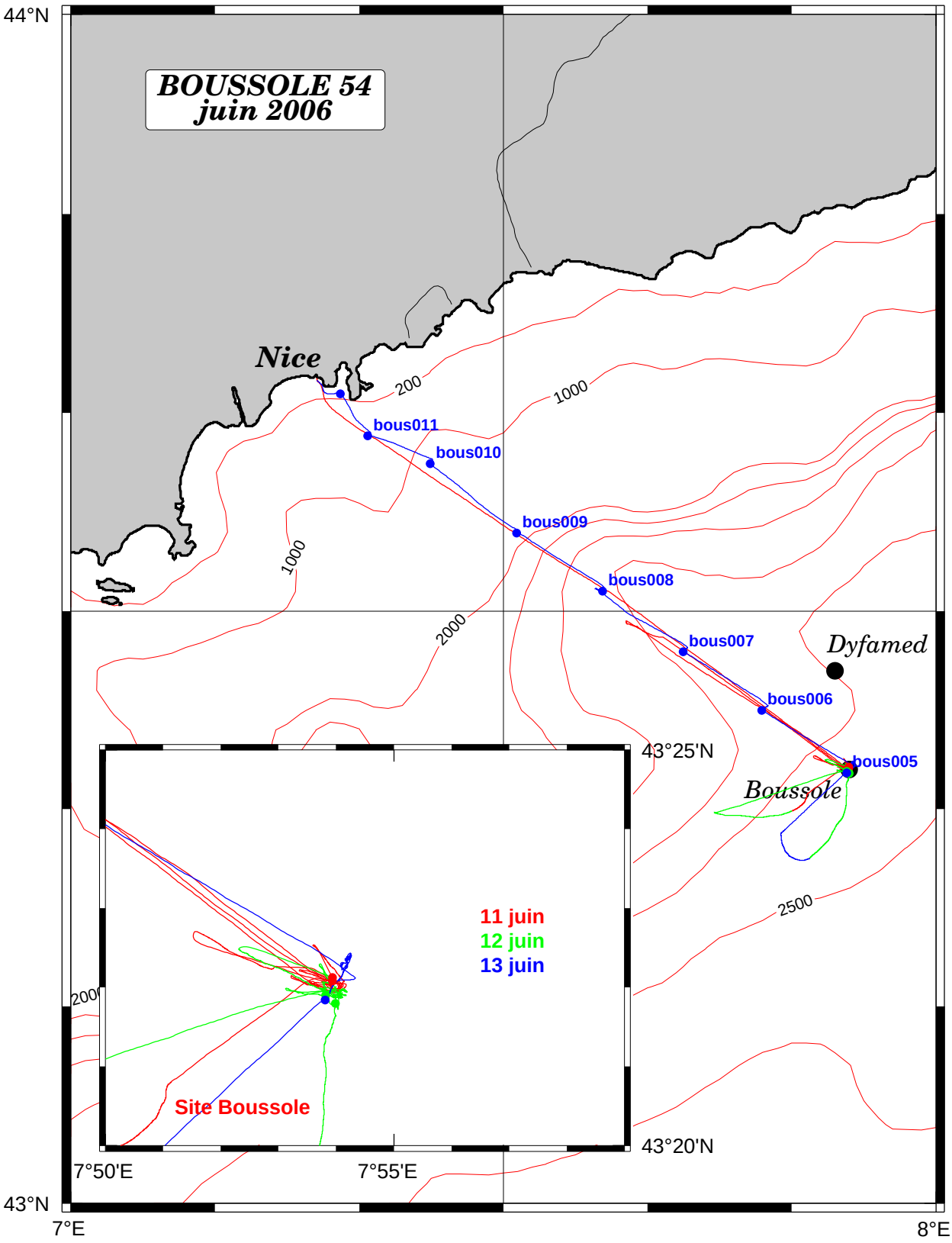


Figure 2. Calculated swath paths for MERIS (Esov software) above BOUSSOLE site for 11 and 12 June 2006.

Appendix

Cruise Summary Table for Boussole 54

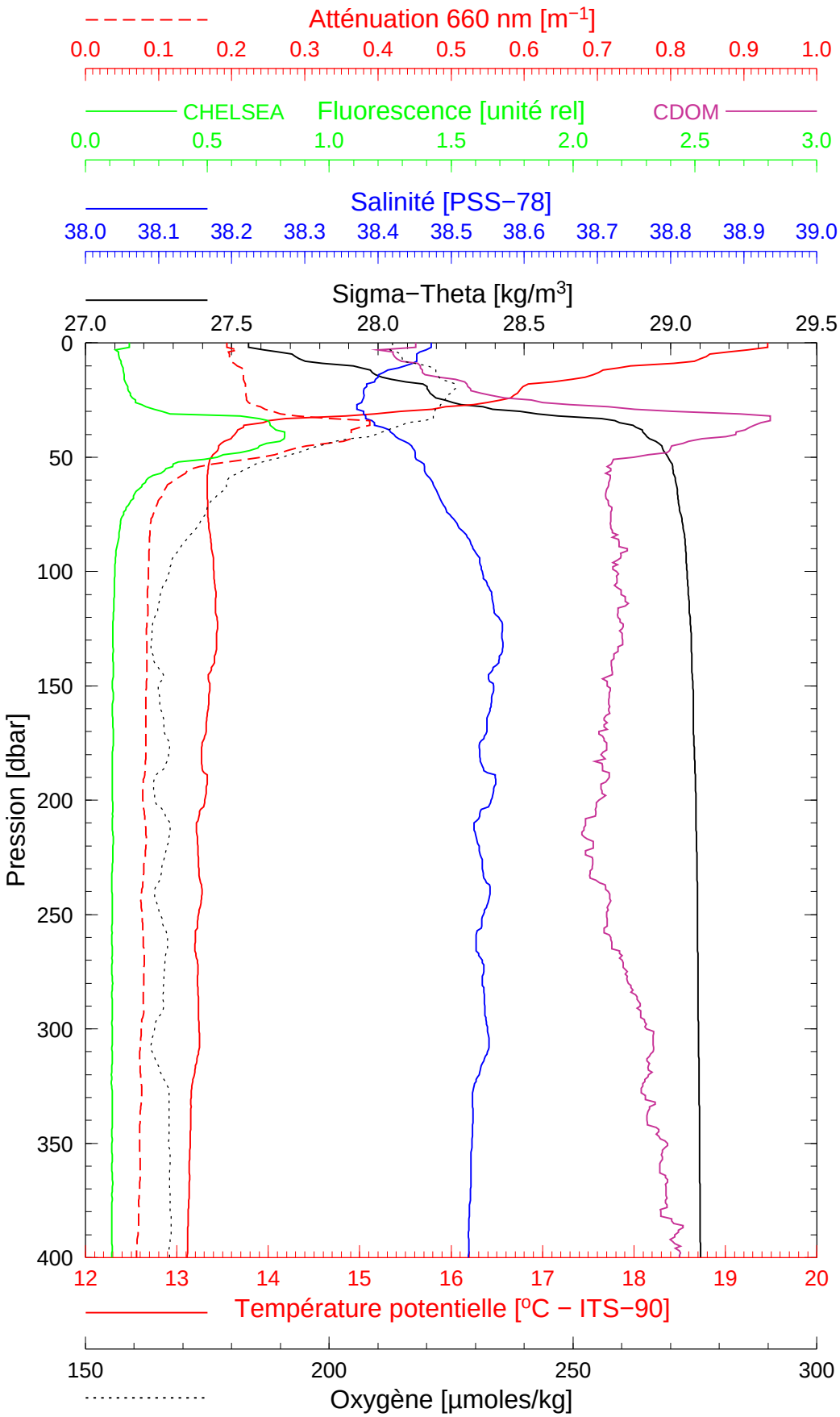
Date	Black names	Profile names	CTD notées /	Start Time	Duration	Depth max	Latitude (N)		longitude		Other sensors	Their cast	Start/Finish				Weather							Sea		
	(file ext: ".raw")	(file extension: ".raw")	satellite overpass	GMT (hour.min)	(min.sec)	(meter)	(Degree)	(Minute)	(Degree)	(Minute)				Sky	Clouds	Quantity (#/8)	Wind speed	Wind dir.	Atm. Pressure	humidity	Visibility	T air	T water	Sea	Swell height	Swell dir.	Whitecaps
			CTDBOUS001	10:58	26:00	400	43	22.082	7	53.938				blue	Ci	3	9 kn	120	1023.9	84	very good	19.3	19.4	calm	0,6 m		some
	bou110606black1			13:17	03:00																						
		bou110606spmratsurfaceAA		13:42	08:37	200	43	22.035	7	53.500				blue	slight high fog	0	11 kn	115	1024.0	82	very good	19.6		calm	0,6 m		some
		bou110606spmratsurfaceAB		14:07	12:14	200	43	21.955	7	53.971				blue	slight high fog	0	11 kn	115	1024.0	82	very good	19.6		calm	0,6 m		some
11/06/2006		bou110606spmratsurfaceAC		14:35	14:45	215	43	21.981	7	54.011				blue	slight high fog	0	11 kn	115	1024.0	82	very good	19.6		calm	0,6 m		some
		bou110606spmratsurfaceAD		15:04	15:07	200	43	21.986	7	54.129				blue	slight high fog	0	11 kn	115	1024.0	82	very good	19.6		calm	0,6 m		some
	bou11606black2			15:31	03:00																						
				14:45	05:00	18	43	22.000	7	54.000	Secchi disk 1			blue	slight high fog	0					very good			calm	0,5 m		some
			rosette water sampl.	15:35	05:00	5	43	22.000	7	54.000																	
			CTDBOUS002	19:27	31:00	400	43	22.123	7	53.842				night	night	2 (?)	8 kn	6	1024.6	88	very good	19.4	19.3	calm	0,5 m		some
	bou120606black1			06:57	03:00																						
		bou120606spmratsurfaceAA		07:06	09:40	210	43	21.920	7	54.089				blue	slight high fog	0	9 kn	85	1026.8	67	excellent	19.6		calm	0,7 m		no
		bou120606spmratsurfaceAB		07:26	08:36	185	43	21.905	7	54.091				blue	slight high fog	0	9 kn	85	1026.8	67	excellent	19.6		calm	0,7 m		no
		bou120606spmratsurfaceAC		07:45	06:20	207	43	21.908	7	54.166				blue	slight high fog	0	9 kn	85	1026.8	67	excellent	19.6		calm	0,7 m		no
	bou12606black2			07:58	03:00																						
			CTDBOUS003	08:24	28:00	400	43	21.906	7	53.822				blue	slight high fog	1	7 kn	80	1027.0	61	excellent	21.5	19.0	calm	0,6 m		no
	bou120606black3			08:57	03:00																						
		bou120606AD		09:15	04:20	200	43	21.967	7	54.133				blue	slight high fog	0	6 kn	89	1027.1	67	excellent	19.3		calm	0,5 m		no
		bou120606AE		09:30	04:17	200	43	21.952	7	54.156				blue	slight high fog	0	6 kn	89	1027.1	67	excellent	19.3		calm	0,5 m		no
		bou120606AF		09:45	04:34	200	43	21.870	7	54.073				blue	slight high fog	0	6 kn	89	1027.1	67	excellent	19.3		calm	0,5 m		no
	bou12606black4			09:55	03:00																						
12/06/2006				11:20	05:00	7	43	22.000	7	54.000	Secchi disk 2			blue	slight high fog	0					very good			calm	0,5 m		no
	bou120606black5			12:07	03:00																						
		bou120606spmratsurfaceAG		12:22	12:22	177	43	22.234	7	53.769				blue	slight high fog	0	2 kn	95	1026.5	59	excellent	20.6		calm	0,3 m		no
		bou120606spmratsurfaceAH		12:44	12:44	170	43	22.064	7	53.814				blue	slight high fog	0	2 kn	95	1026.5	59	excellent	20.6		calm	0,3 m		no
		bou120606spmratsurfaceAI		12:58	12:58	200	43	21.987	7	53.737				blue	slight high fog	0	2 kn	95	1026.5	59	excellent	20.6		calm	0,3 m		no
		bou120606spmratsurfaceAJ		13:16	13:16	200	43	21.949	7	53.824				blue	slight high fog	0	2 kn	95	1026.5	59	excellent	20.6		calm	0,3 m		no
	bou12606black6			13:32	03:00																						
			CTDBOUS004	14:20	27:00	400	43	21.800	7	53.987				blue	slight high fog	0	1 kn	289	1026.1	49	excellent	23.1	19.2	calm	0,3 m		no
	bou120606black7			14:57	03:00																						
		bou120606AK		15:12	04:24	200	43	21.905	7	53.973				blue	slight high fog	0	2 kn	95	1026.5	59	excellent	20.6		calm	0,3 m		no
		bou120606AL		15:24	04:01	195	43	21.795	7	53.968				blue	slight high fog	0	2 kn	95	1026.5	59	excellent	20.6		calm	0,3 m		no
		bou120606AM		15:37	04:26	203	43	21.682	7	53.974				blue	slight high fog	0	2 kn	95	1026.5	59	excellent	20.6		calm	0,3 m		no
	bou12606black8			18:09	03:00																						
			CTDBOUS005	05:03	27:00	400	43	21.841	7	53.813				blue	slight high fog	1	6 kn	202	1024.4	90	very good	19.4	19.2	calm	0,3 m		no
	bou130606black1			05:41	03:00																						
		bou130606spmratsurfaceAA		05:52	11:12	170	43	22.264	7	54.076				blue	slight high fog	0	7 kn	222	1024.8	82	very good	19.7		calm	0,2 m		no
		bou130606spmratsurfaceAB		06:12	06:00	165	43	22.228	7	54.100				blue	slight high fog	0	7 kn	222	1024.8	82	very good	19.7		calm	0,2 m		no
		bou130606spmratsurfaceAC		06:29	04:50	175	43	22.319	7	54.174				blue	slight high fog	0	7 kn	222	1024.8	82	very good	19.7		calm	0,2 m		no
		bou130606AD		06:44	04:29	190	43	22.363	7	54.156				blue	slight high fog	0	7 kn	222	1024.8	82	very good	19.7		calm	0,2 m		no
		bou130606AE		06:59	04:07	200	43	22.347	7	54.161				blue	slight high fog	1	10 kn	87	1024.9	87	very good	19.5		calm	0,2 m		rare
		bou130606AF		07:16	04:19	200	43	22.093	7	54.082				blue	slight high fog	1	10 kn	87	1024.9	87	very good	19.5		calm	0,2 m		rare
13/06/2006	bou13606black2			07:37	03:00																						
			rosette water sampl.	07:30	05:00	5	43	22.000	7	54.000					slight high fog												
			CTDBOUS006	08:12	25:00	400	43	24.998	7	47.936				blue	slight high fog	0	8 kn	230	1024.8	82	very good	19.5	19.6	calm	0,5 m		no
			CTDBOUS007	09:15	24:00	400	43	27.969	7	42.464				blue	slight high fog	0	10 kn	221	1024.5	86	very good	19.9	19.5	calm	0,5 m		no
			CTDBOUS008	10.23	25:00	400	43	31.002	7	36.886				blue	slight high fog	0	11 kn	229	1024.1	85	very good	19.9	20.2	calm	0,5 m		no
			CTDBOUS009	11:24	25:00	400	43	33.953	7	30.924				blue	slight high fog	1	14 kn	226	1023.6	85	very good	20.5	20.7	calm	0,5 m		no
			CTDBOUS010	12:27	25:00	400	43	37.441	7	24.926				blue	slight high fog	1	10 kn	230	1023.5	77	very good	20.7	20.6	calm	0,3 m		no
			CTDBOUS011	13:18	23:00	400	43	38.844	7	20.577				blue	slight high fog	1	6 kn	238	1023.2	72	very good	20.8	20.6	calm	0,2 m		no
			CTDBOUS012	14:01	10:00	140	43	40.969	7	18.705				blue	slight high fog	1	6 kn	238	1023.2	72	very good	20.8	21.4	calm	0,2 m		no



GMT 2006 Jun 19 15:30:57

Boussole 54 **11/06/2006** **BOUS060611_01**

BOUS001

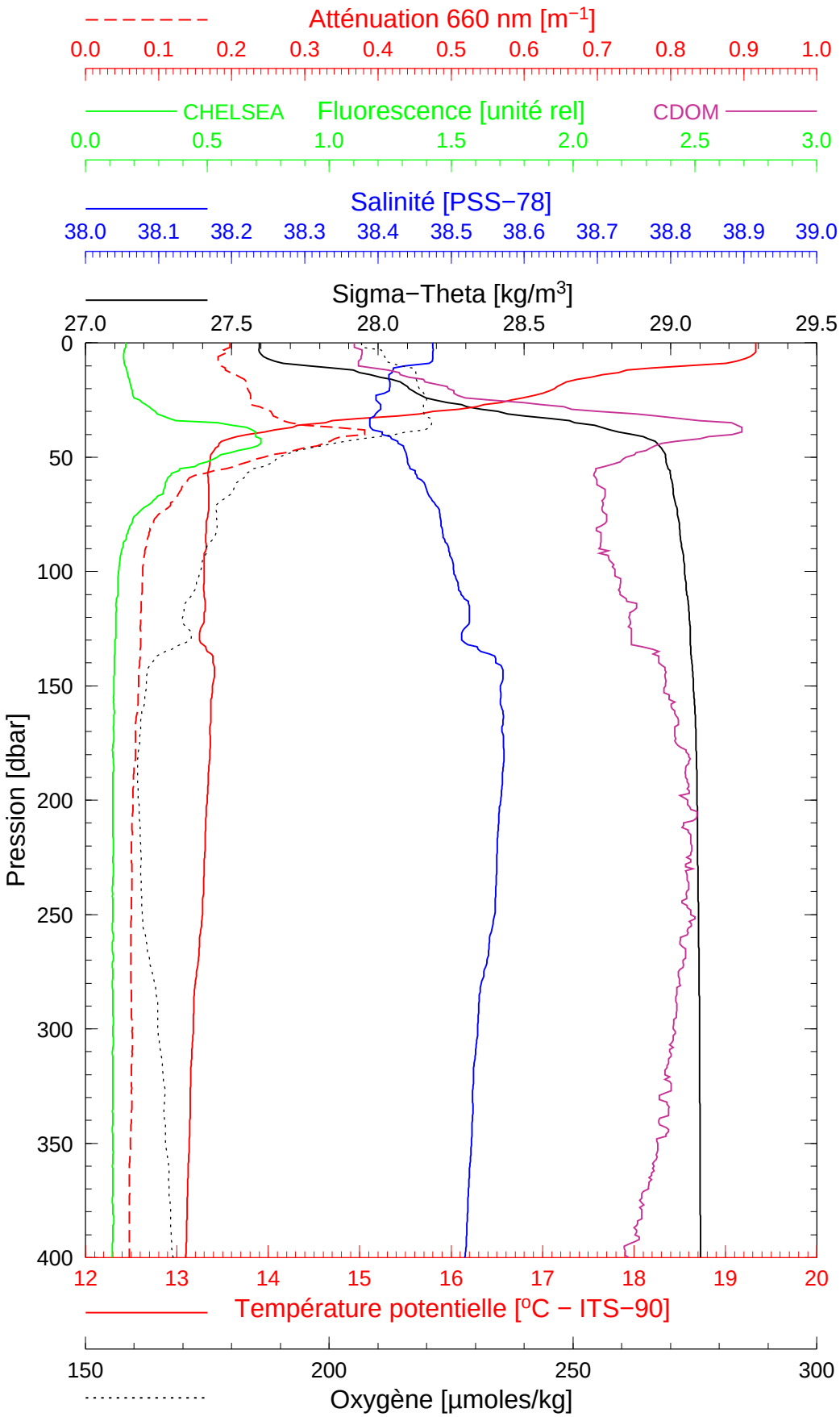


Date *11/06/2006* *Latitude* *43°22.082 N*

Heure déb *10h 58min [TU]* *Longitude* *07°53.938 E*

Boussole 54 **11/06/2006** **BOUS060611_02**

BOUS002



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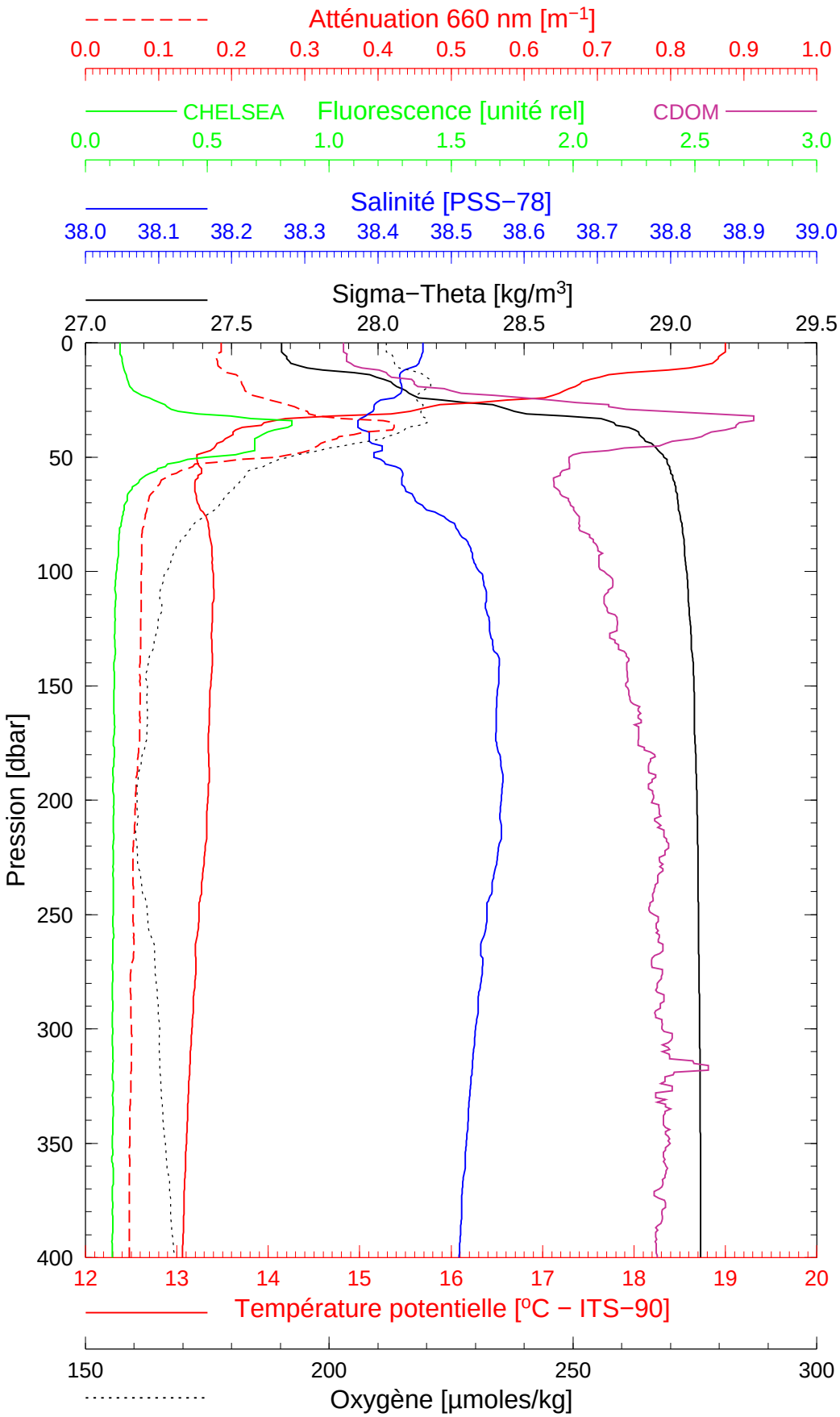
Boussole 54 **12/06/2006** **BOUS060612_01**

BOUS003



Date *12/06/2006* *Latitude* *43°21.906 N*

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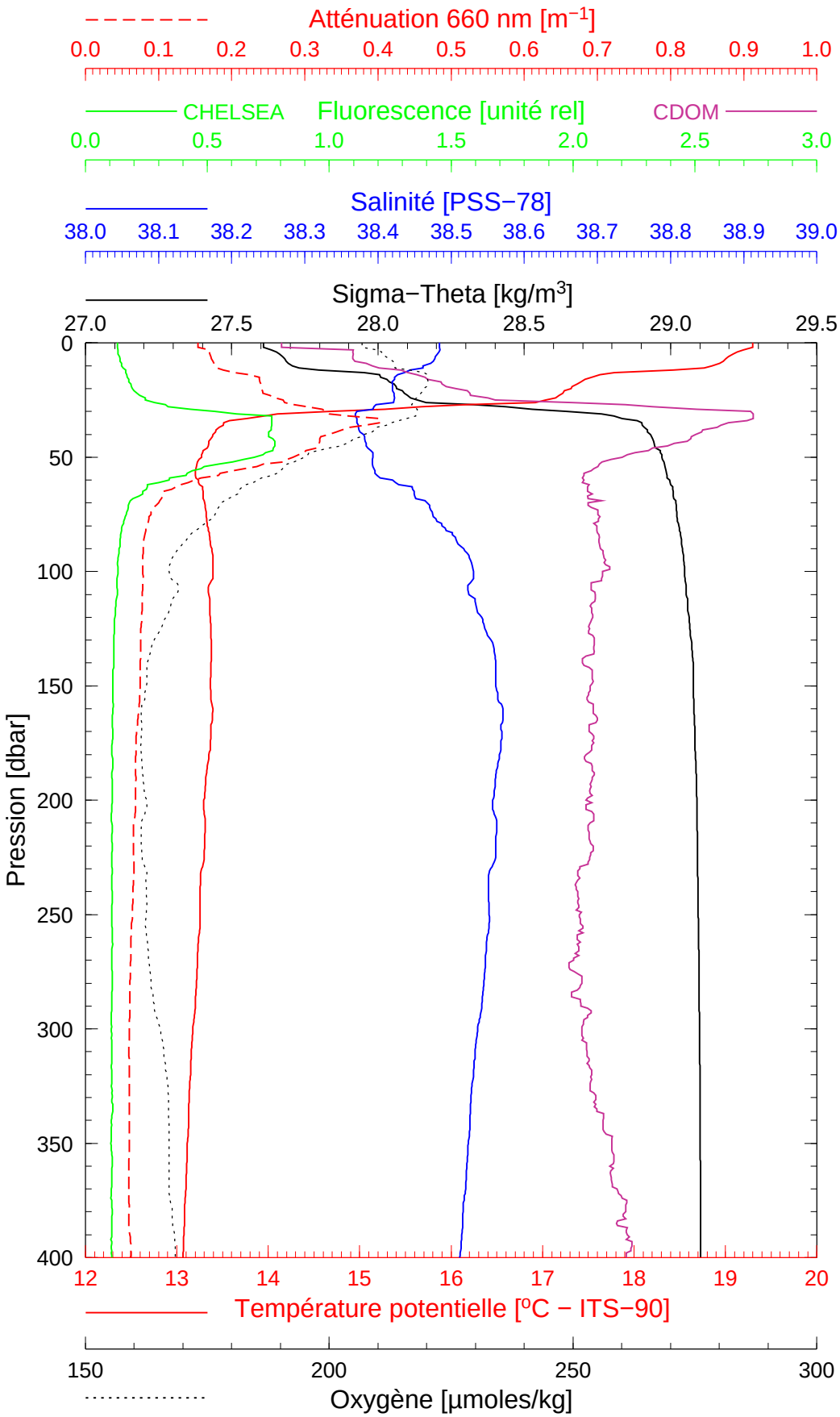
Boussole 54 **12/06/2006** **BOUS060612_02**

BOUS004

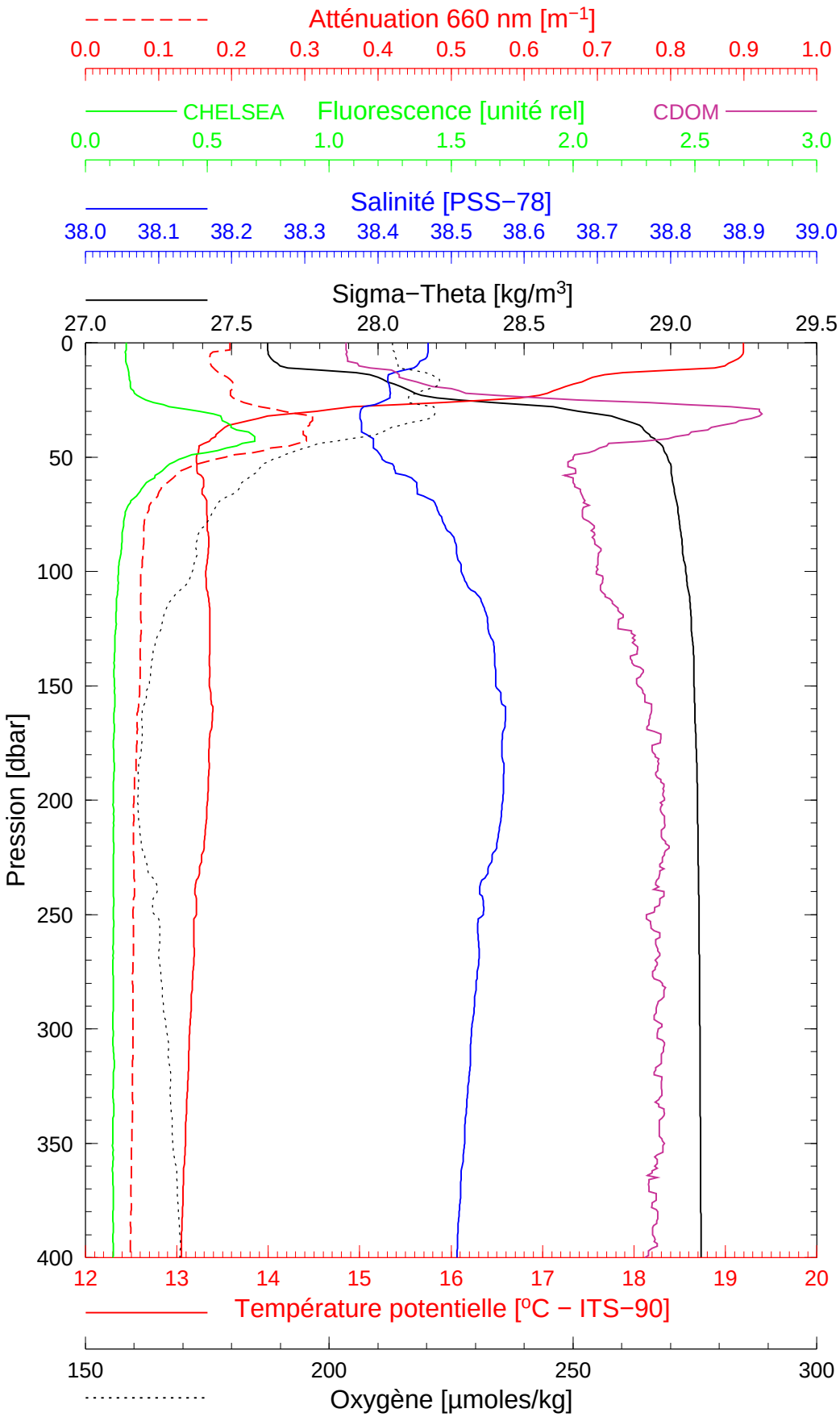


Date *12/06/2006* *Latitude* *43°21.800 N*

Heure déb *14h 20min [TU]* *Longitude* *07°53.987 E*

Boussole 54 **13/06/2006** **BOUS060613_01**

BOUS005

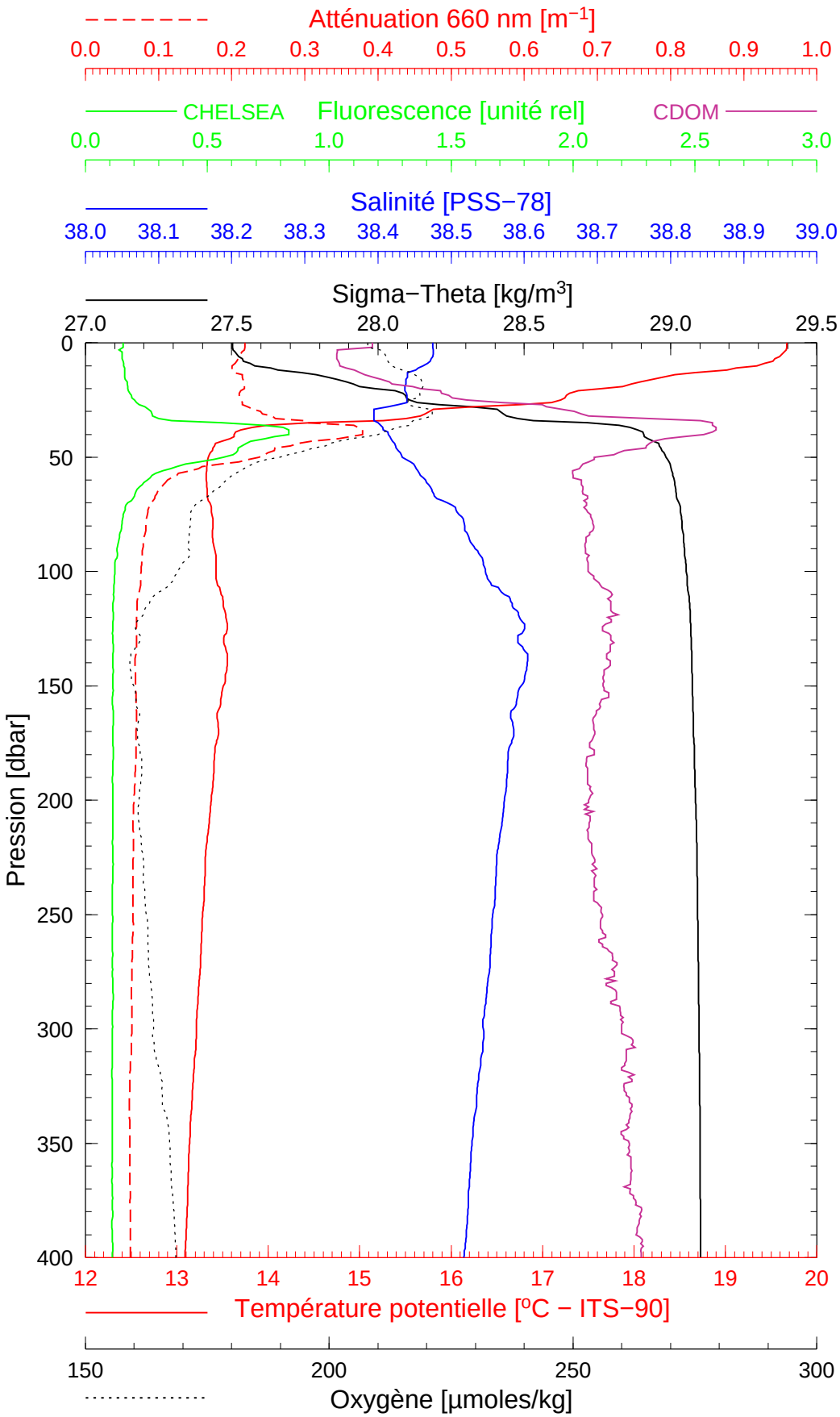


Date *13/06/2006* *Latitude* *43°21.841 N*

Heure déb *05h 03min [TU]* *Longitude* *07°53.813 E*

Boussole 54 **13/06/2006** **BOUS060613_02**

BOUS006

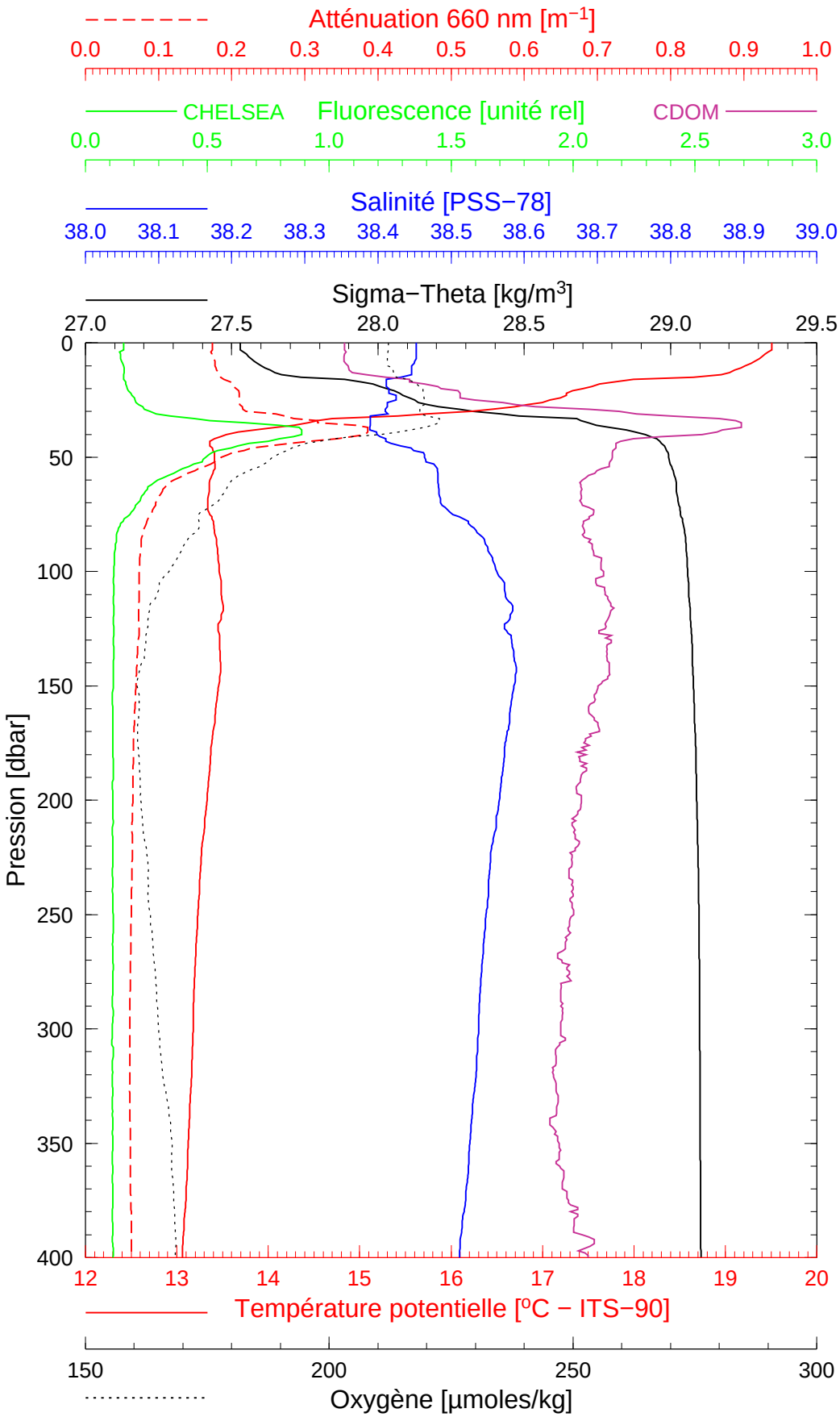


Date *13/06/2006* *Latitude* *43°24.998 N*

Heure déb *08h 12min [TU]* *Longitude* *07°47.936 E*

Boussole 54 **13/06/2006** **BOUS060613_03**

BOUS007

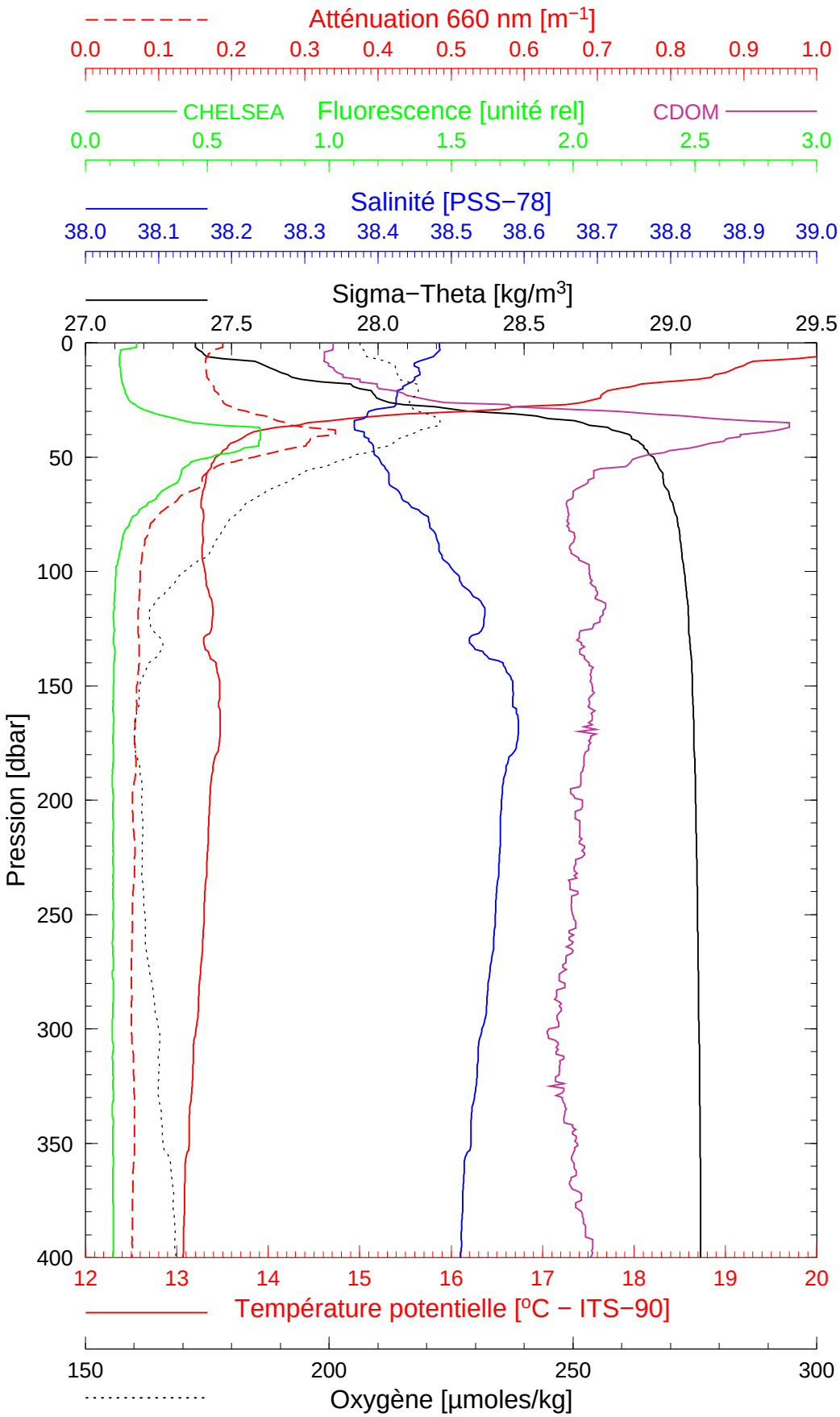


Date *13/06/2006* *Latitude* *43°27.969 N*

Heure déb *09h 15min [TU]* *Longitude* *07°42.464 E*

Boussole 54 **13/06/2006** **BOUS060613_04**

BOUS008

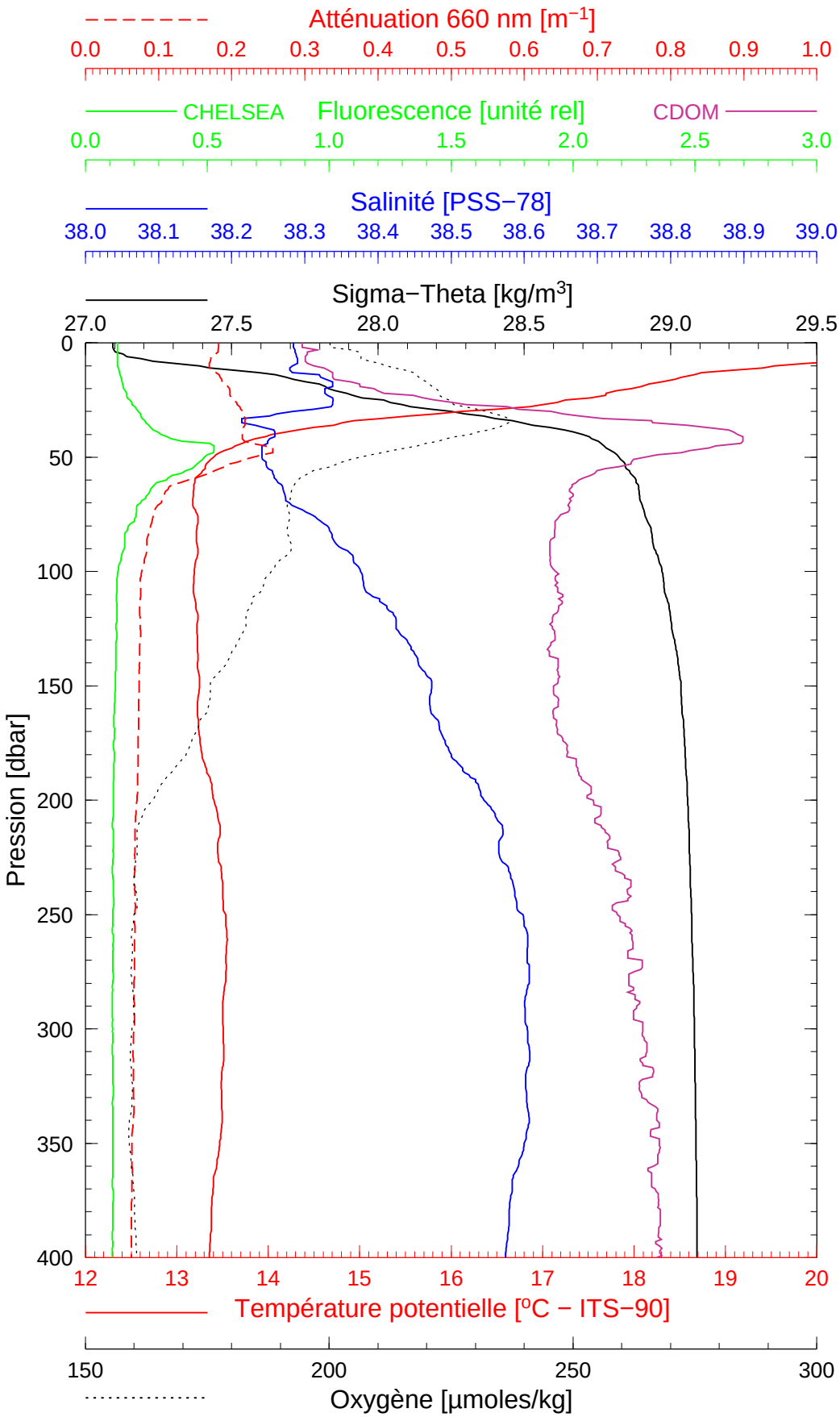


Date *13/06/2006* *Latitude* *43°31.002 N*

Heure déb *10h 23min [TU]* *Longitude* *07°36.886 E*

Boussole 54 **13/06/2006** **BOUS060613_05**

BOUS009

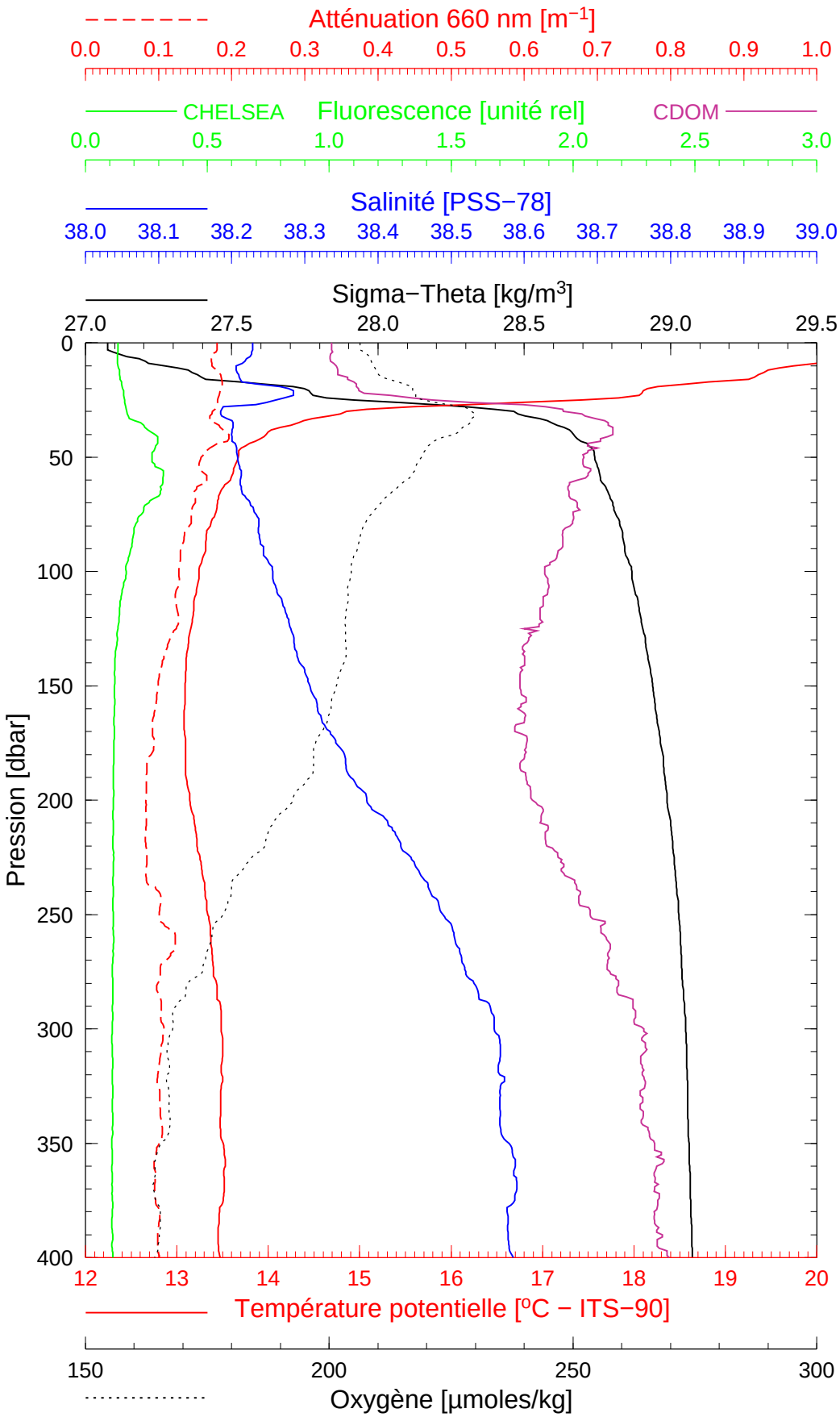


Date *13/06/2006* *Latitude* *43°33.953 N*

Heure déb *11h 24min [TU]* *Longitude* *07°30.924 E*

Boussole 54 **13/06/2006** **BOUS060613_06**

BOUS010



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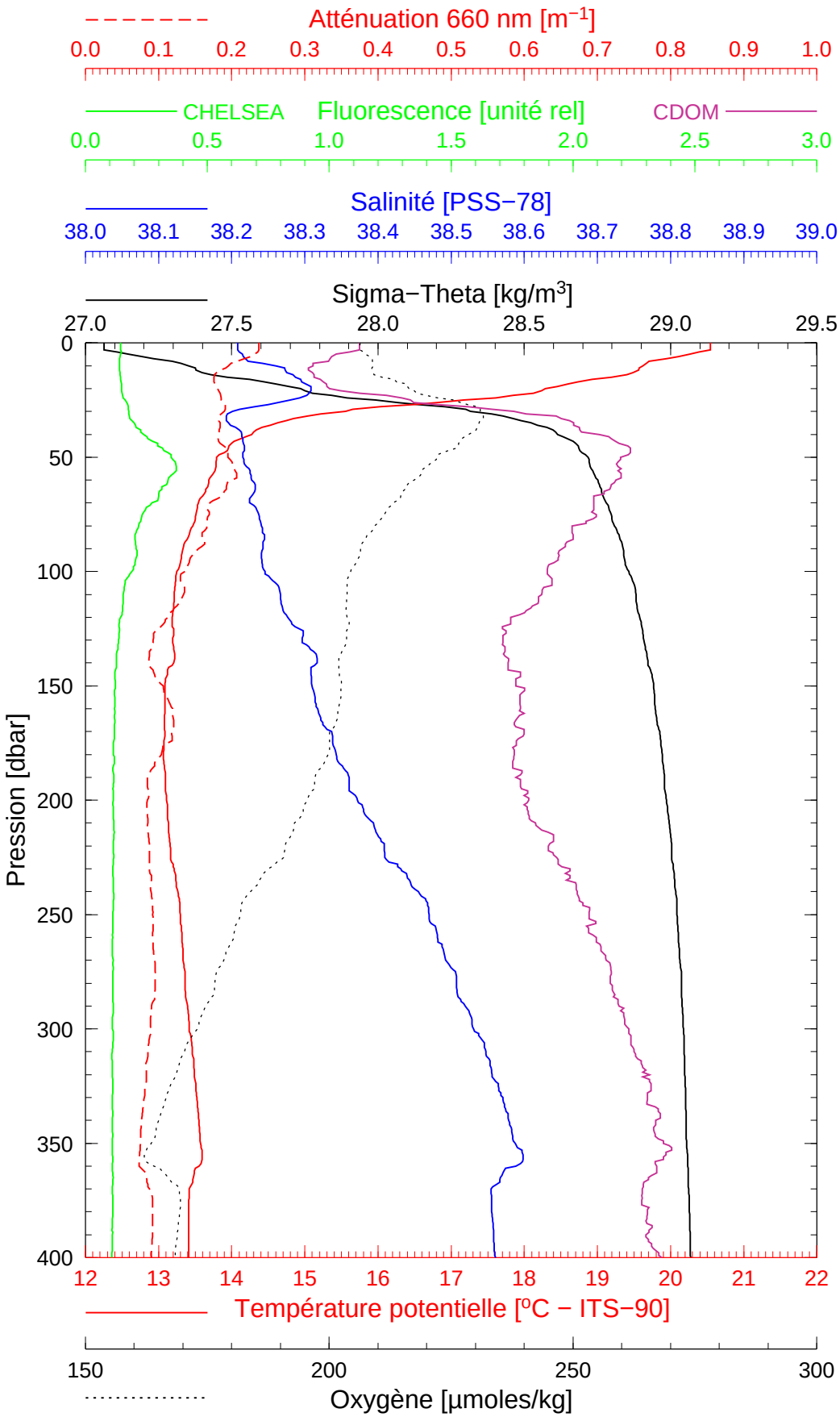
Heure déb *12h 27min [TU]* *Longitude* *07°24.926 E*

Boussole 54 **13/06/2006** **BOUS060613_07**

BOUS011

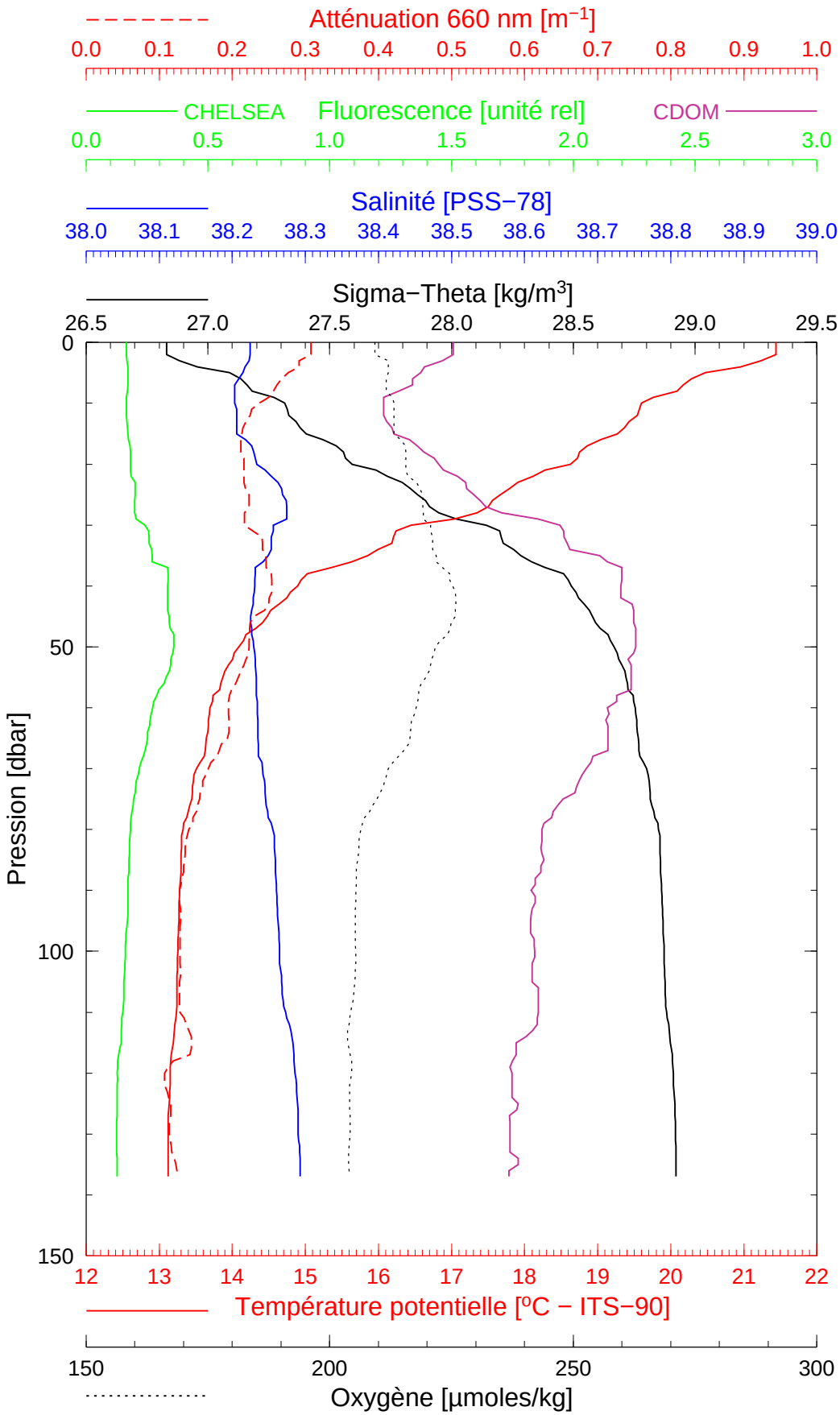


Date *13/06/2006* *Latitude* *43°38.844 N*

Heure déb *13h 18min [TU]* *Longitude* *07°22.577 E*

Boussole 54 **13/06/2006** **BOUS060613_08**

BOUS012 / Point B+



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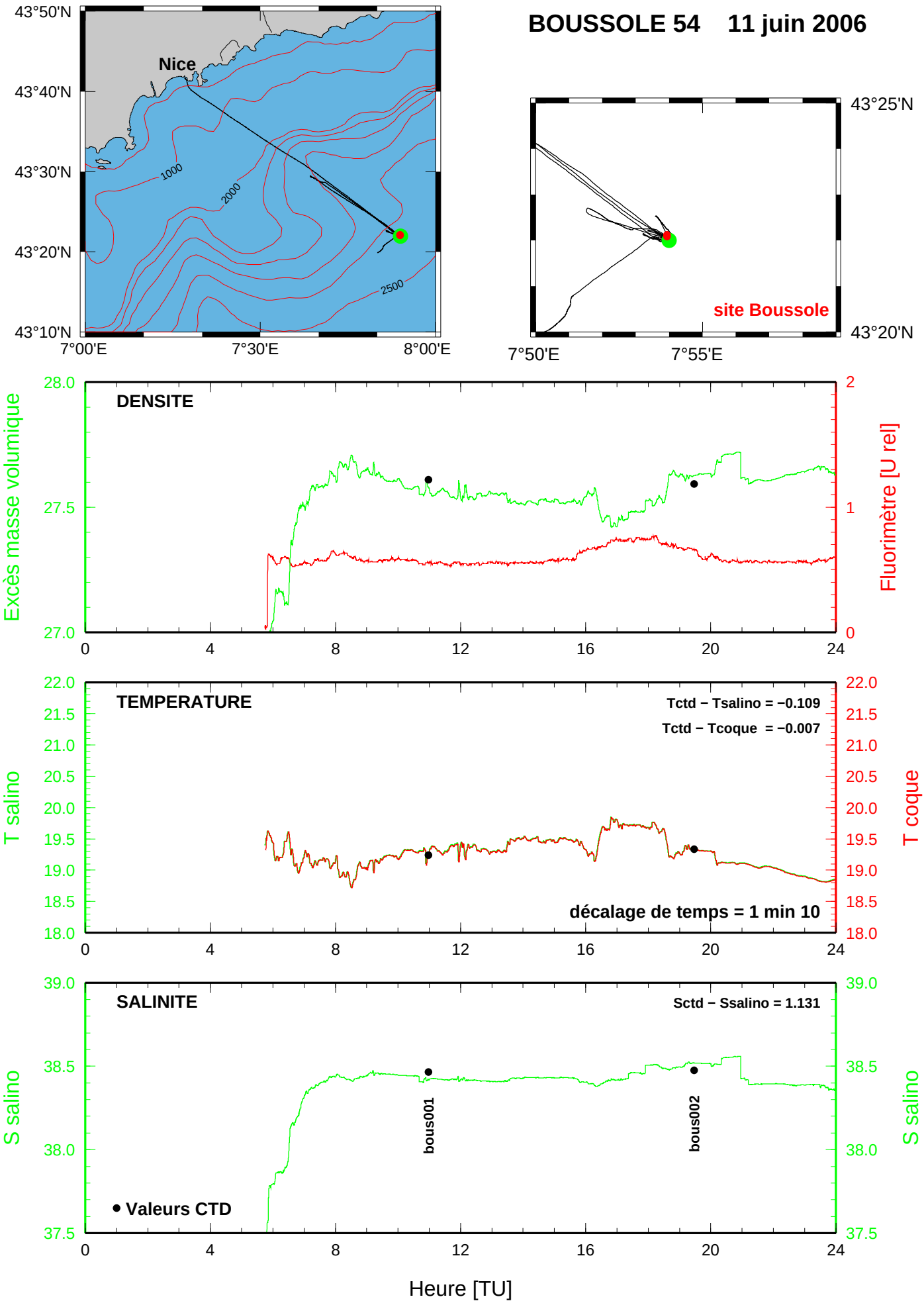
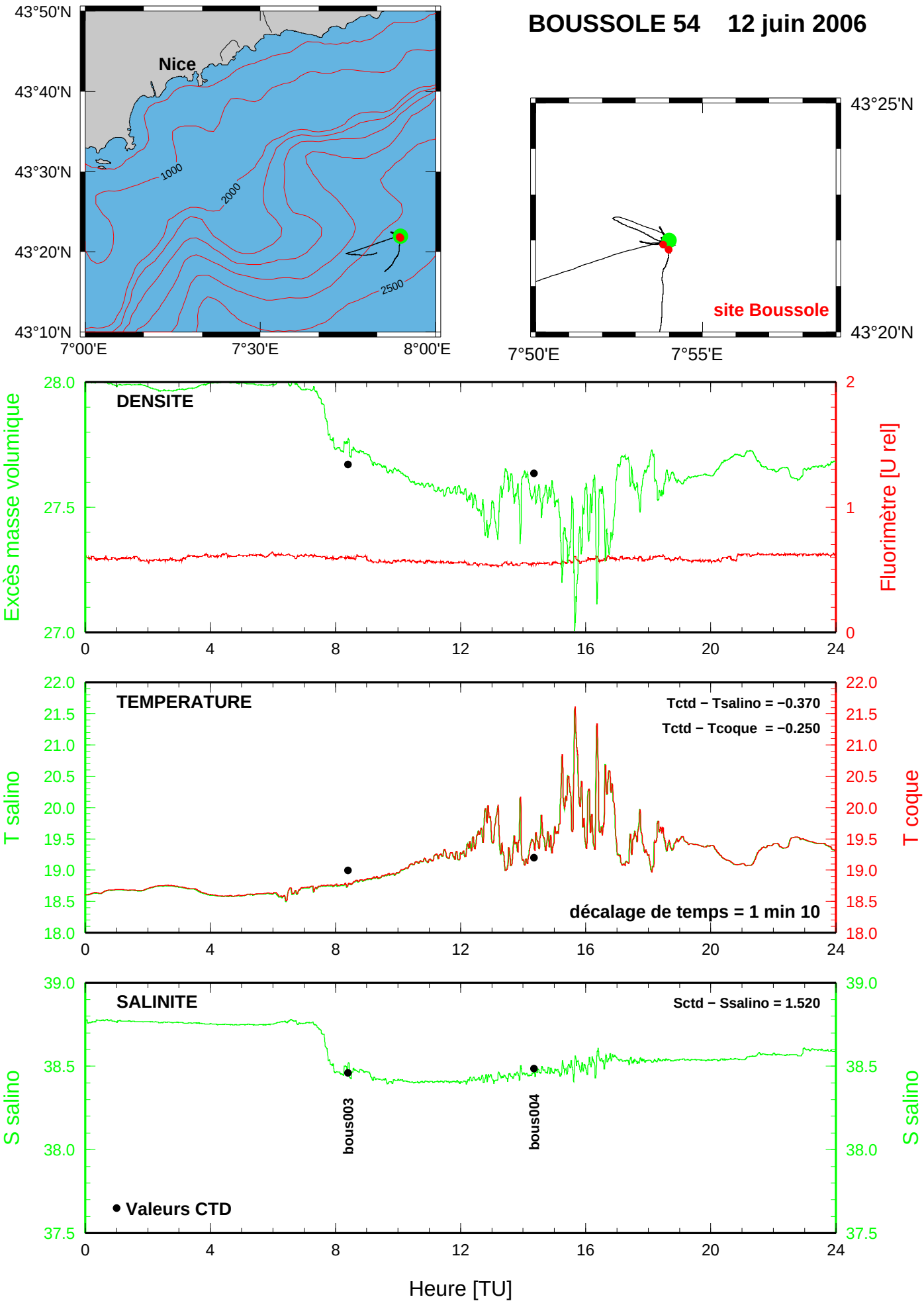
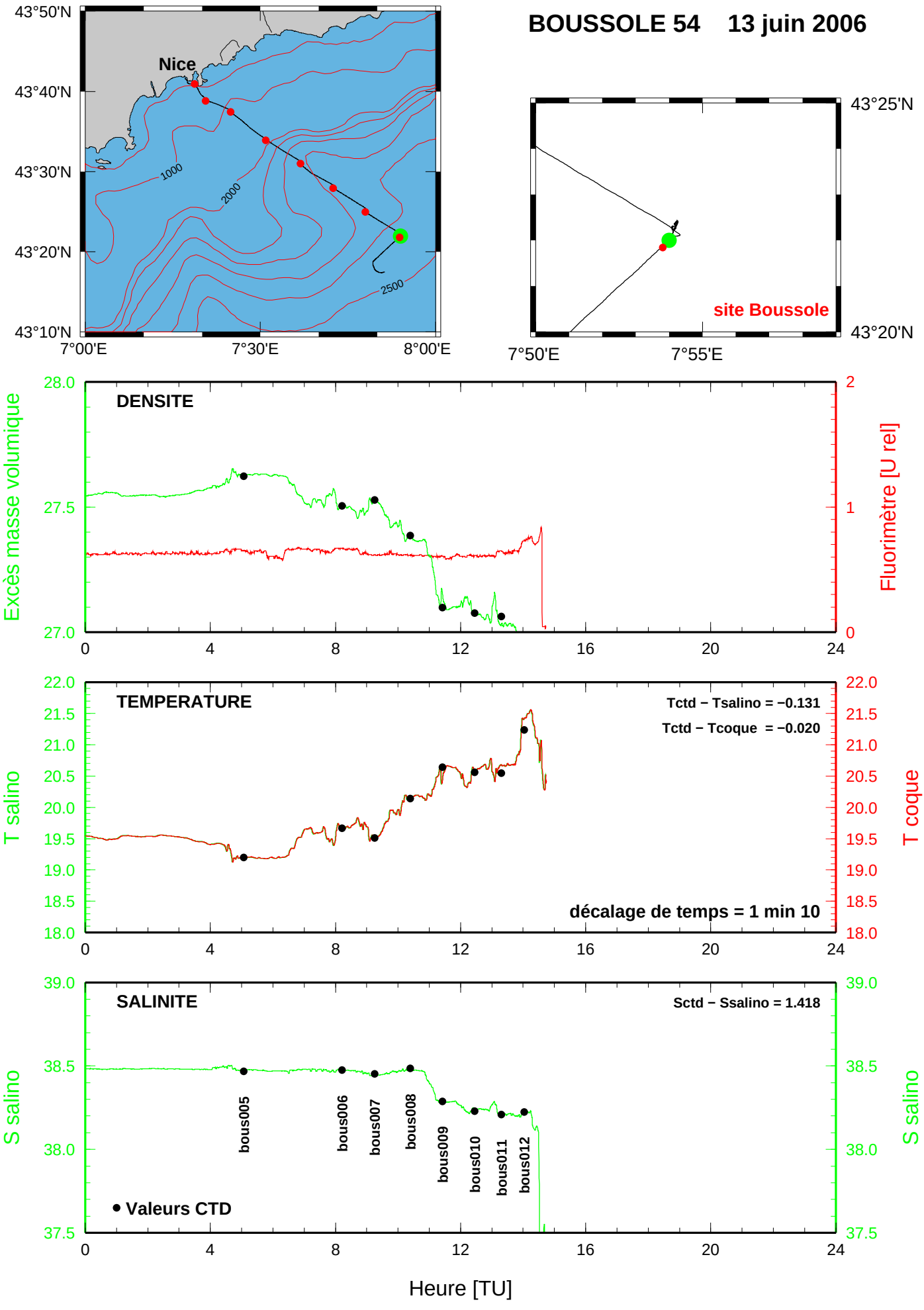
Heure déb *14h 01min [TU]* *Longitude* *07°18.705 E*


BOUSSOLE 54 11 juin 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 = −0.109
Tctd − Tcoque = −0.007
décalage de temps = 1 min 10
T salino
T coque
SALINITE
Sctd − Ssalino = 1.131
bous001
bous002
• Valeurs CTD
S salino
Heure [TU]


BOUSSOLE 54 12 juin 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 = −0.370
Tctd − Tcoque = −0.250
décalage de temps = 1 min 10
T salino
T coque
SALINITE
Sctd − Ssalino = 1.520
bous003
bous004
• Valeurs CTD
S salino
Heure [TU]


BOUSSOLE 54 13 juin 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 = −0.131
Tctd − Tcoque = −0.020
décalage de temps = 1 min 10
T salino
T coque
SALINITE
Sctd − Ssalino = 1.418
bous005
bous006
bous007
bous008
bous009
bous010
bous011
bous012
• Valeurs CTD
S salino
Heure [TU]