BOUSSOLE Monthly Cruise Report

Cruise 62
March 16 - 19, 2007

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

Science Personnel: Guislain Bécu, Dominique Tailliez, Antoine Poteau, Marc Picheral, David Luquet, Jean de Vaugelas and Pierre-Alain Manoni.

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

Fig 1. The BOUSSOLE cruise typical instrumentation: the buoy BOUSSOLE, the optical profiler SPMR hanging under the floating structure and the CTD rosette.

BOUSSOLE project

ESA/ESRIN contract N° 17286/03/I-OL

Deliverable from WP#400/200

March 23, 2007

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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

Divers will bring the emergency ARGOS beacon to the ship deck, to ensure that battery are still charged and that the beacon still emits correctly when put in the air. They also fix new anodes below the floating sphere of the buoy.
After the buoy data retrieval, the CTD files will be checked as no CTD data are transmitted in the daily ARGOS messages.
Marc Picheral will be onboard for one day to perform a 1000m profile with his PVM at the BOUSSOLE site.

Cruise Summary

Sea conditions were good for the two first days of the cruise, but had roughened for the third day afternoon and went either too windy to leave the Port of Nice on the last day.
Divers brought back the emergency ARGOS beacon on the deck of the ship, to check its batteries and functioning (all was OK, even if it required quite a lot of ARGOS messages to get a precise position to be sent at LOV), and they also fix new anodes below the floating sphere of the buoy.
The cruise timetable had to be a little bit modified to fetch a lost buoy that was seen by the crew of the ship a few days before the BOUSSOLR cruise. Finally, it was found to be a Greek buoy lent to IFREMER (Jean-François Rollin, Brest) and that was lost 20 nmi westward of the BOUSSOLE site. The buoy and mooring line retrieval began on 7pm of the first day and last until 3am of the second day. Departure of the third day was so delayed by one hour.
Marc Picheral was onboard on Saturday 17th March to perform a 1000m PVM profile at the BOUSSOLE site.

Friday 16 March 2007

The departure from Nice harbour was at usual time, i.e. 06h30 local time. Divers were onboard the first day. They began by bringing the emergency ARGOS beacon on the ship deck for some functioning tests, and then they went back again at sea to clean (symbolically as they were clean) the optical surfaces of the newly deployed sensors, and to attach 2 new anodes on the lower buoy structure. The CTD files retrieved from the buoy were checked and found to be ok (there was some suspicions as no CTD data are transmitted in the daily ARGOS messages). After what 2 CTD casts as well as 3 SPMR profiles, 3x100m plankton net profiles and 1 Secchi disk measurement were performed before sailing to the lost Greek buoy.

Saturday 17 March 2007

Operations at sea for this day were 3 SPMR profiles, 4 CIMEL atmospheric measurements, one PVM 1000m profile, 3 niskin bottle water sampling for TSM, as well as 7 CTD casts, among which 6 were performed on the transect between the BOUSSOLE site and Nice. The electric contacts of the ARGOS beacon that is on the top of the buoy were also cleaned with electric contact cleaner spray.

Sunday 18 March 2007

This day was a short BOUSSOLE cruise day, as weather roughened at the beginning of the afternoon. Only 1 CTD cast and 3 SPMR profiles were performed.

Monday 19 March 2007

Sea conditions were too rough to go at site (H1/3 up to 3.0 m).

Cruise Report

16 March 2007 (UTC)

0530 Departure from the port of Nice.
0910 Buoy data retrieval (CTD files and data found to be OK).
0930 Diving operations.
1045 Glider retrieval for a simultaneous profile with the CTD.
1111 CTD 01 with the glider attached on the rosette.
1315 3 x 100 m plankton net profiles.
1350 Glider deployment.
1415 SPMR profiles 01, 02 and 03 with the pyramidal floating structure.
1450 Secchi disk 01.
1516 CTD 02, 400, 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.
1600 Divers at sea to reinstall the emergency ARGOS beacon.
1640 Departure to the site where the lost Greek buoy was seen for the last time (about 20 nmi westward of the BOUSSOLE site).
1800 Arrival at the Greek buoy site, and beginning of sailors operations to retrieve the buoy and the its mooring line.
0000 Departure for the port of Nice.
0200 Arrival at the port of Nice.

17 March 2007

0650 Departure from the port of Nice.
1035 CTD 03, 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.
1051 CIMEL 01, close to the buoy.
1105 PVM 01, close to the buoy.
1211 SPMR 03, 04 and 05 with the pyramidal floating structure.
1220 CIMEL 02, close to the buoy.
1255 CIMEL 03, close to the buoy.
1315 ARGOS beacon (of the BOUSSOLE buoy) contacts cleaning.
1325 Water sampling with the rosette for TSM operations.
1412 CTD 04 at station 1 (43°25'N 07°48'E).
1414 CIMEL 04, station 1.
1512 CTD 05 at station 2 (43°28'N 07°42'E).
1612 CTD 06 at station 3 (43°31'N 07°37'E).
1715 CTD 07 at station 4 (43°34'N 07°31'E).
1816 CTD 08 at station 5 (43°37'N 07°25'E).
1905 CTD 09 at station 6 (43°39'N 07°21'E).
2000 Arrival at the port of Nice.

18 March 2007

0545 Departure from the port of Nice.
0915 Buoy data retrieval.
0911 CTD 10, 400 m, close to the buoy, with water sampling at 10 and 5 meters for triplicate HPLC and Ap.
1010 SPMR 07, 08 and 09.
1040 Departure from the BOUSSOLE site.
1410 Arrival at Port of Nice.

19 March 2007

Bad weather prevented departure.

Calculated Swath paths for the MERIS Sensor (ESOV Software)

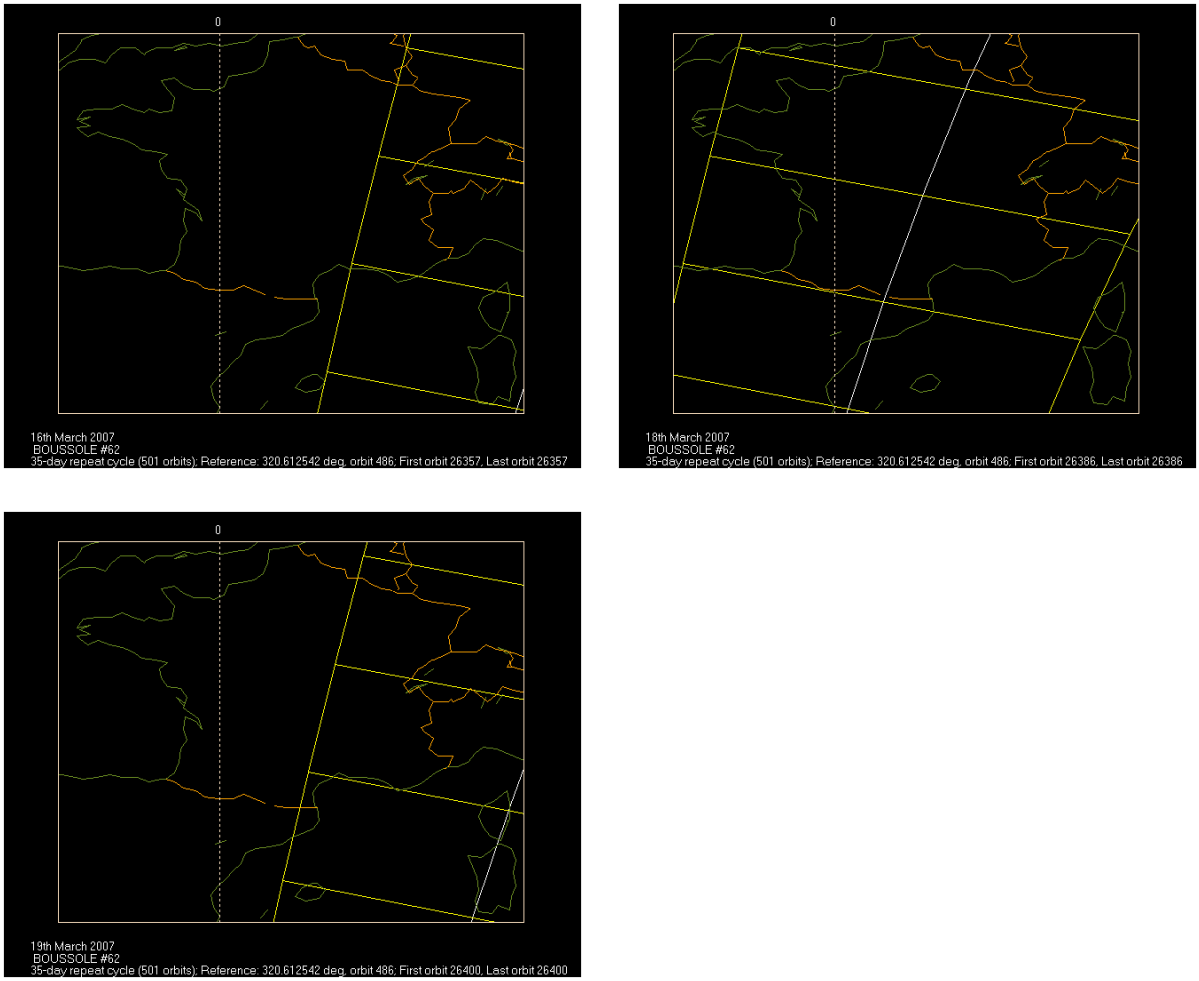
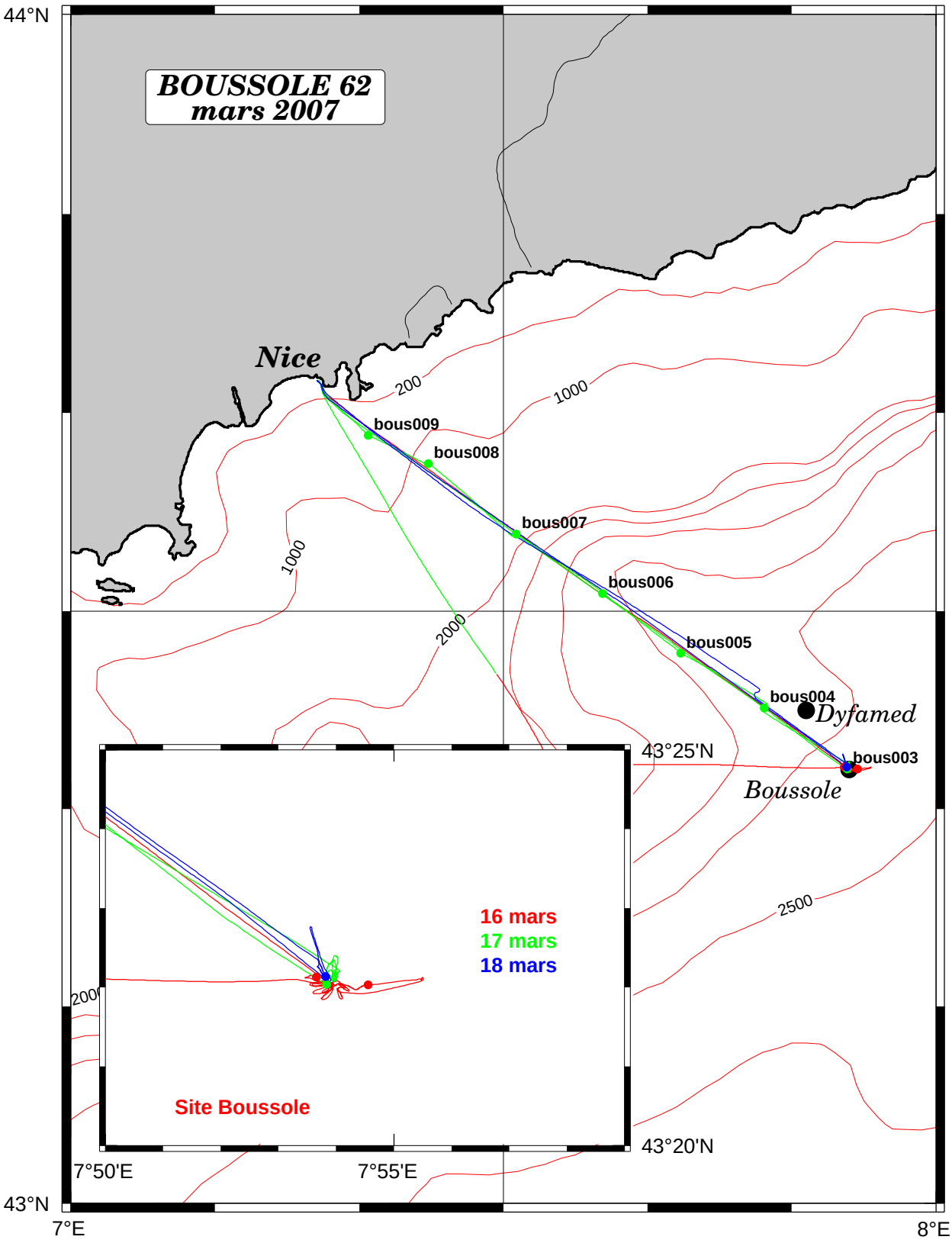


Figure 2. Calculated swath paths for MERIS (Esov software) above BOUSSOLE site for March 16, 18 and 19, 2007.

Appendix

Cruise Summary Table for Boussole 62

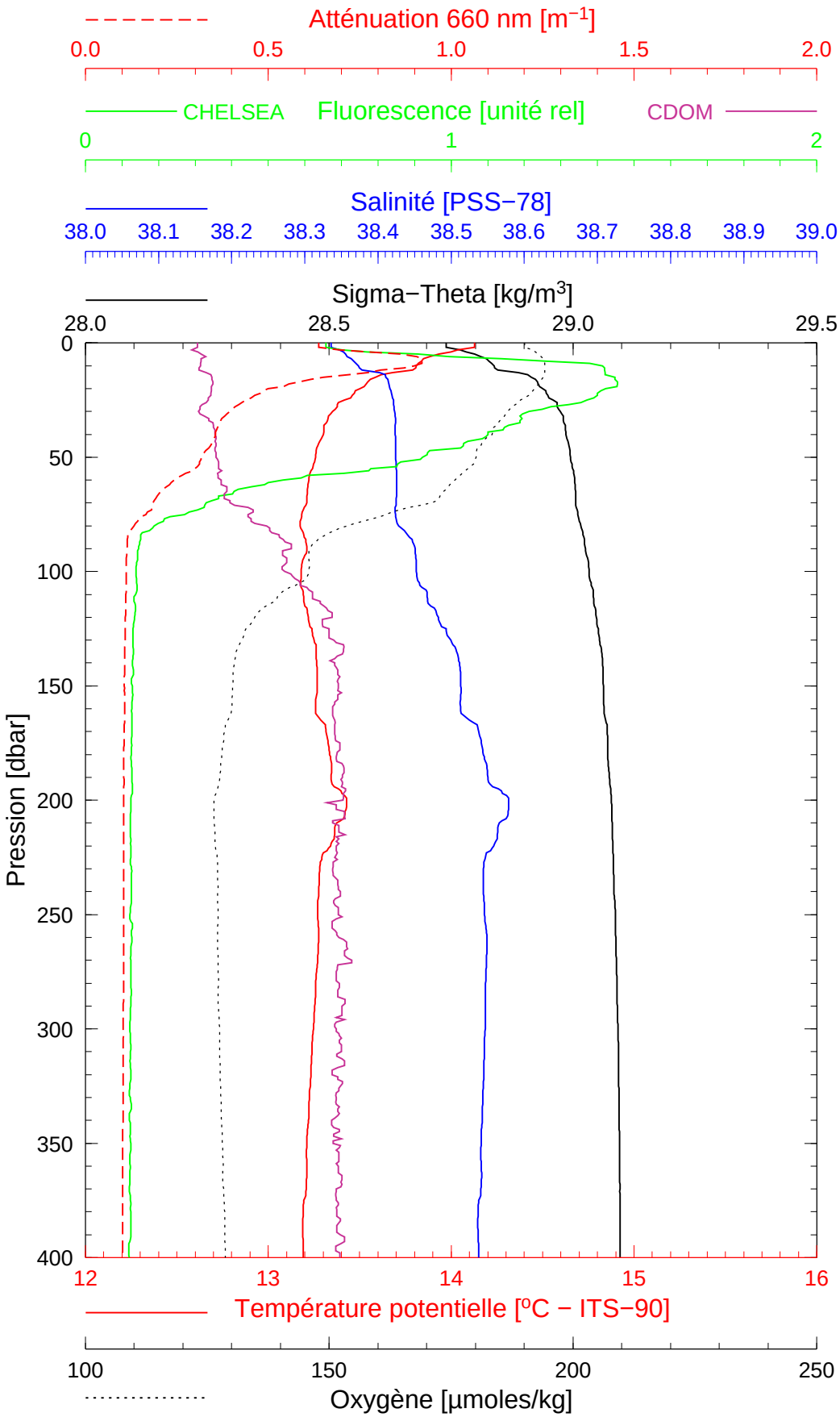
Date	Black names	Profile names	CTD notées /	Start Time	Duration	Depth max	Latitude (N)		longitude		Other sensors	Their cast	Start/Finish				Weather							Sea		
	(file ext: ".raw")	(file extension: ".raw")	satellite overpass	GMT (hour.min)	(min.sec)	(meter)	(Degree)	(Minute)	(Degree)	(Minute)				Sky	Clouds	Quantity (#/8)	Wind speed	Wind dir.	Atm. Pressure	humidity	Visibility	T air	T water	Sea	Swell height	Swell dir.	Whitecaps
			CTDBOUS001	11:11	26:00	400	43	22.034	7	54.552	glider intercomp.			light fog	no	0	3 kn	203	1024.6	94	good	11.7	14.0	calm	0,4 m		no
				13:15	3 x 10:00	100	43	22.000	7	54.000	plankton net (x3)																
	bou160307black1			13:09	03:00																						
		bou160307spmratsurfaceAA		14:15	06:24	150	43	21.928	7	53.751				light fog heter.	no	1	4 kn	235	1022.9	93	good	11.5		calm	0,4 m		no
16/03/2007		bou160307spmratsurfaceAB		14:32	06:25	150	43	21.898	7	53.791				light fog heter.	no	1	4 kn	235	1022.9	93	good	11.5		calm	0,4 m		no
		bou160307spmratsurfaceAC		14:51	06:24	150	43	22.022	7	53.719				blue	no	1	4 kn	235	1022.9	93	good	11.5		calm	0,4 m		no
	bou160307black2			15:04	03:00																						
				14:50	05:00	7.5	43	22.000	7	54.000	Secchi disk 01			blue	no	0											
			CTDBOUS002	15:16	28:00	400	43	22.132	7	53.660				blue	no	0	4 kn	230	1022.7	92	good	12.2	14.0	calm	0,4 m		no
			CTDBOUS003	10:35	26:00	400	43	22.040	7	53.834				light fog heter.	no	0	7 kn	225	1022.8	86	very good	14.2	14.1	calm	0,4 m		no
				10:51	02:00		43	22.000	7	54.000	CIMEL 01			light fog heter.	fog + little Cu	1			1023.0								
				11:05	45:00	1000	43	22.000	7	54.000	PVM 01																
	bou170307black1			11:48	03:00																						
		bou170307spmratsurfaceAA		12:11	06:57	180	43	22.151	7	53.895				blue	plane trace!	0	8 kn	244	1022.1	82	very good	15.3		calm	0,4 m		no
		bou170307spmratsurfaceAB		12:28	06:53	180	43	22.095	7	53.925				blue	no	0	8 kn	244	1022.1	82	very good	15.3		calm	0,4 m		no
		bou170307spmratsurfaceAC		12:45	07:26	180	43	22.121	7	53.981				blue	no	0	8 kn	244	1022.1	82	very good	15.3		calm	0,4 m		no
	bou170307black2			14:43	03:00																						
17/03/2007				12:20	02:00		43	22.000	7	54.000	CIMEL 02			blue	no	0			1022.3								
				12:55	02:00		43	22.000	7	54.000	CIMEL 03			blue	no	0			1022.0								
				13:25		5					water samp.																
			CTDBOUS004	14:12	26:00	400	43	25.116	7	48.080				homog. fog	homog.	4	10 kn	226	1021.3	89	very good	14.2	14.3	calm	0,4 m		no
				14:14	02:00		43	22.000	7	54.000	CIMEL 04			homog. fog	homog.	4			1021.2								
			CTDBOUS005	15:12	25:00	400	43	27.884	7	42.316				homog. fog	homog.	5	9 kn	225	1021.0	90	very good	14.2	14.5	calm	0,4 m		no
			CTDBOUS006	16.12	25:00	400	43	30.903	7	36.895				homog. fog	homog.	5	8 kn	236	1020.9	89	very good	14.2	15.0	calm	0,4 m		no
			CTDBOUS007	17:15	23:00	400	43	33.888	7	30.880				homog. fog	homog.	5	5 kn	232	1020.6	89	very good	14.2	15.0	calm	0,4 m		no
			CTDBOUS008	18:16	25:00	400	43	37.448	7	24.800				night	night	9	1 kn	225	1020.0	89	night	14.2	14.7	calm	0,3 m		no
			CTDBOUS009	19:05	24:00	400	43	38.856	7	20.634				night	night	9	4 kn	143	1020.3	89	night	14.5	14.4	calm	0,3 m		no
			CTDBOUS010	09:19	27:00	400	43	22.140	7	53.820				blue + light fog	homog.	3	6 kn	256	1016.9	79	very good	13.5	14.2	choppy + swel	1,1 m		some
	bou180307black1			09:49	03:00																						
18/03/2007		bou180307AA		10:10	03:27	150	43	22.110	7	53.846				blue + light fog	homog.	1 to 2	10 kn	238	1016.4	80	very good	13.6		choppy + swel	1,2 m		some
		bou180307AB		10:18	03:19	150	43	22.186	7	53.786				blue + light fog	homog.	1 to 2	10 kn	238	1016.4	80	very good	13.6		choppy + swel	1,2 m		some
		bou180307AC		10:26	03:32	150	43	22.261	7	53.743				blue + light fog	homog.	1 to 2	10 kn	238	1016.4	80	very good	13.6		choppy + swel	1,2 m		some
	bou180307black2			10:37	03:00																						



GMT 2007 Mar 19 18:24:52

Boussole 62 **16/03/2007** **BOUS070316_01**

BOUS001

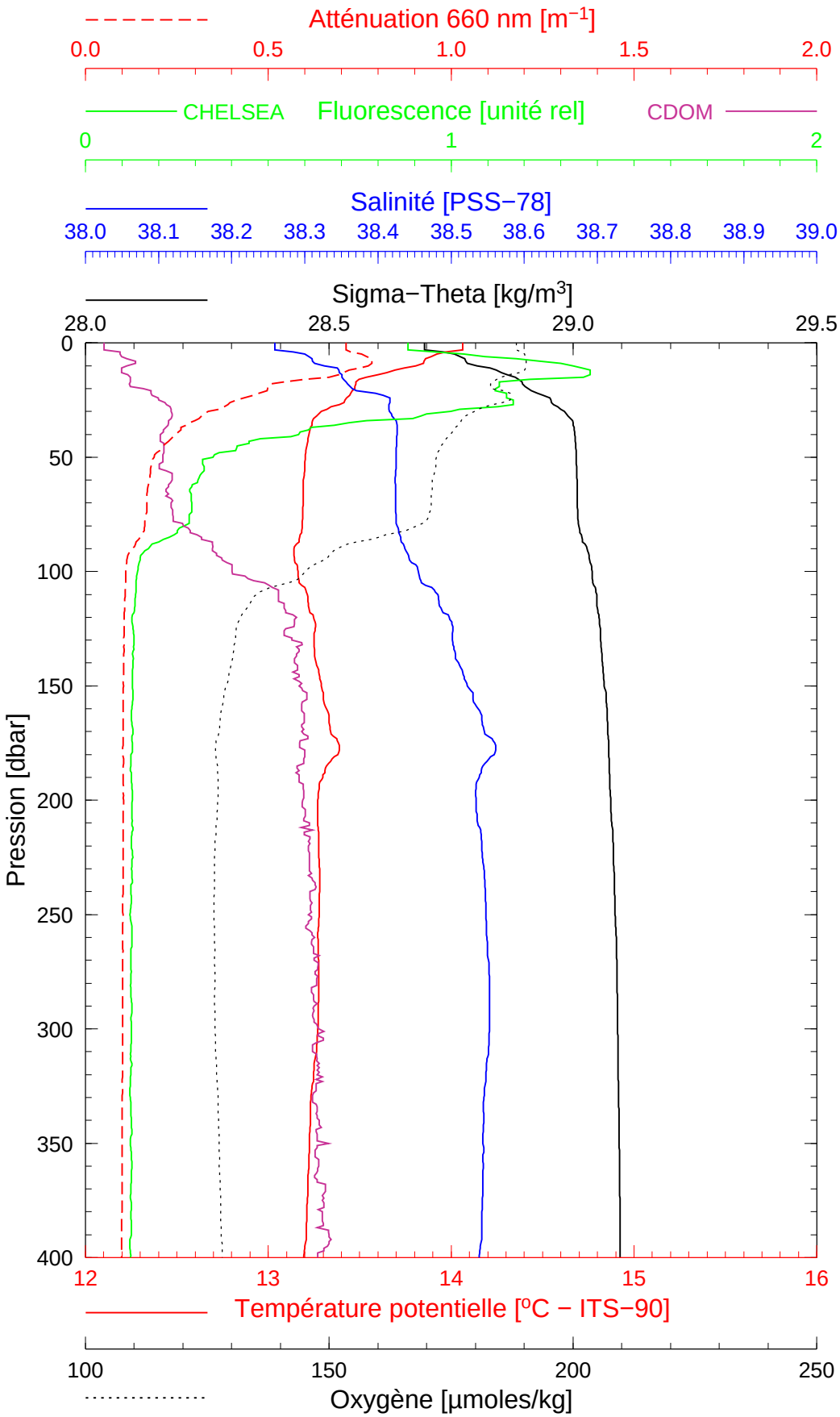


Date *16/03/2007* *Latitude* *43°22.034 N*

Heure déb *11h 11min [TU]* *Longitude* *07°54.552 E*

Boussole 62 **16/03/2007** **BOUS070316_02**

BOUS002

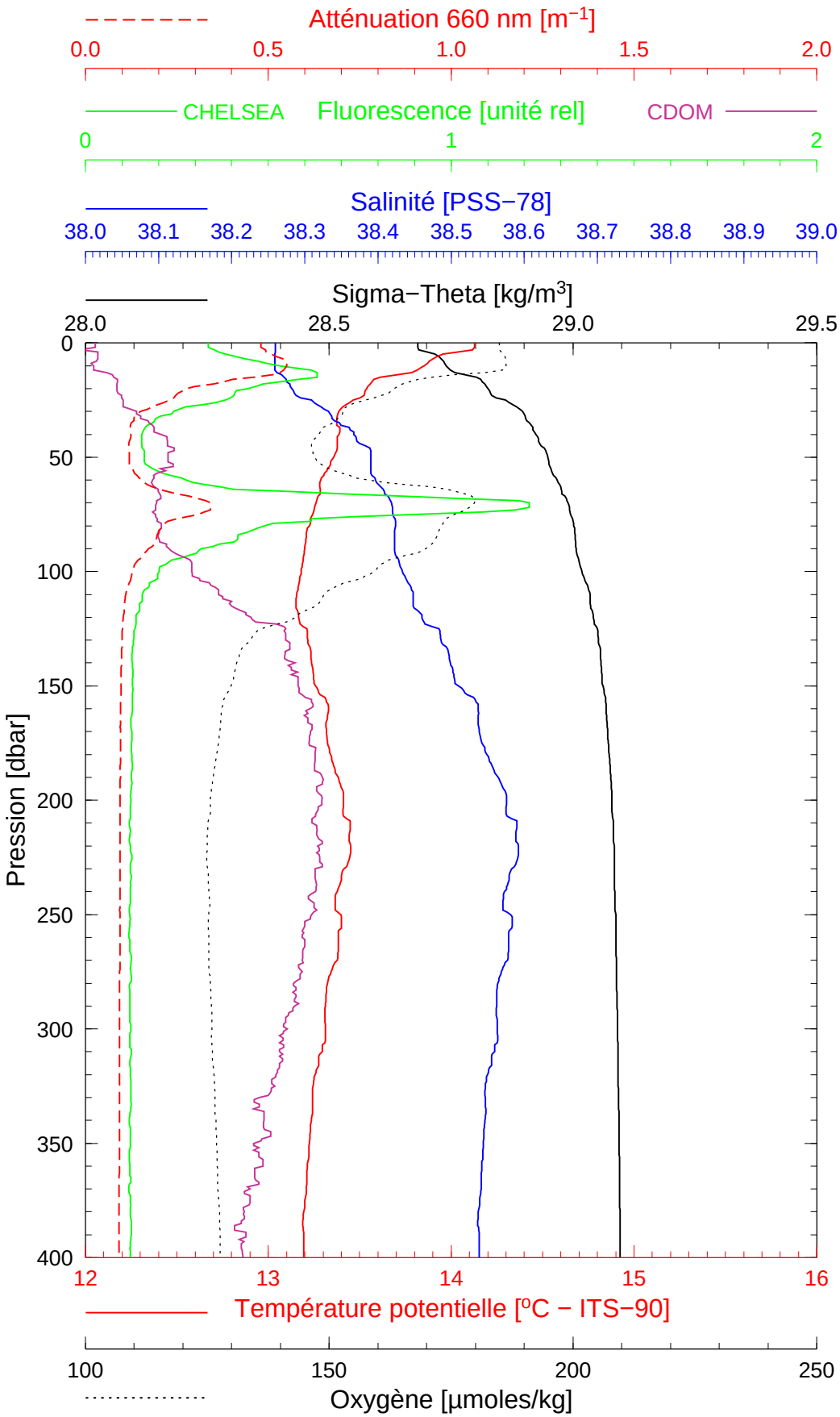


Date *16/03/2007* *Latitude* *43°22.132 N*

Heure déb *15h 16min [TU]* *Longitude* *07°53.660 E*

Boussole 62 **17/03/2007** **BOUS070317_01**

BOUS003

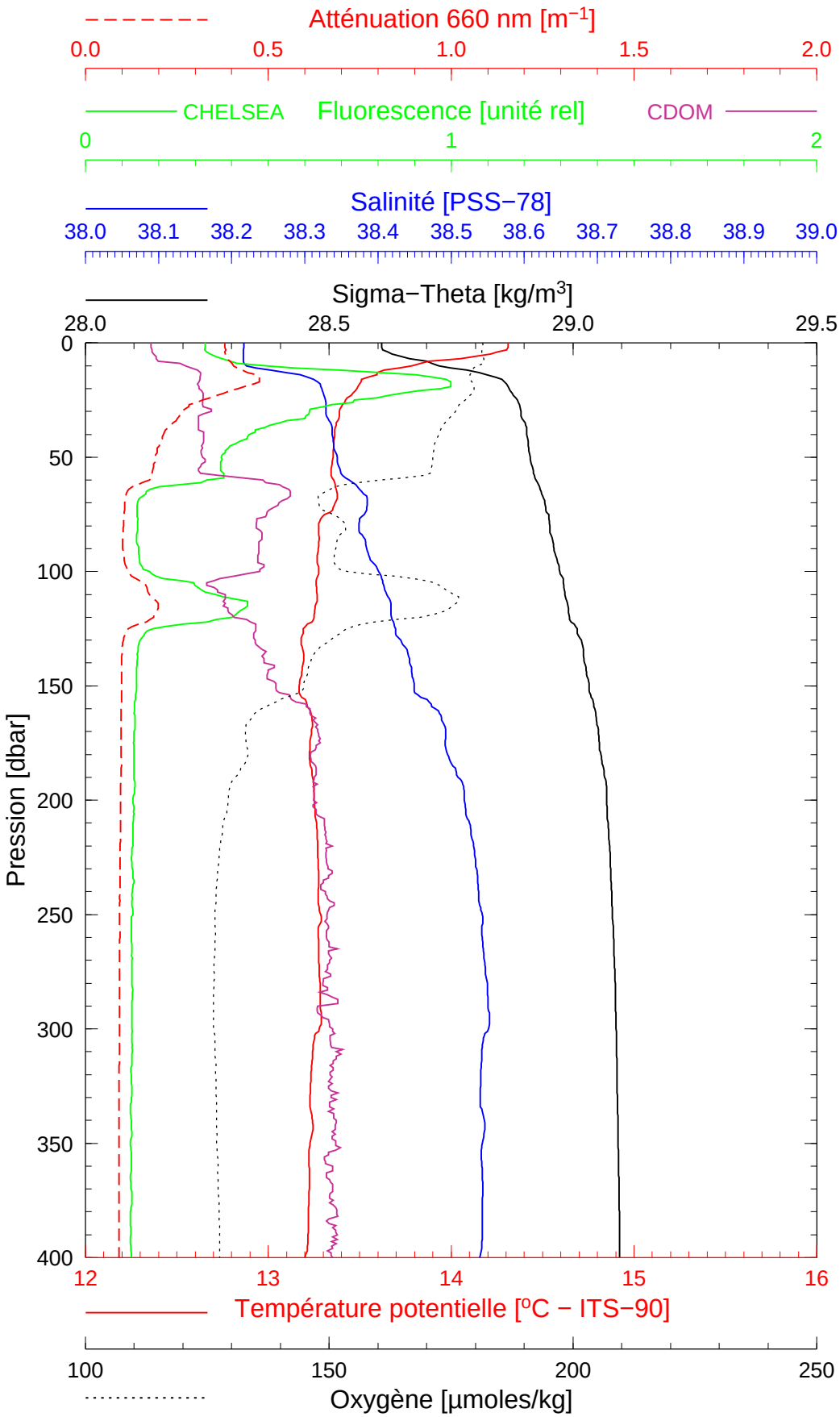


Date *17/03/2007* *Latitude* *43°22.040 N*

Heure déb *10h 35min [TU]* *Longitude* *07°53.834 E*

Boussole 62 **17/03/2007** **BOUS070317_02**

BOUS004

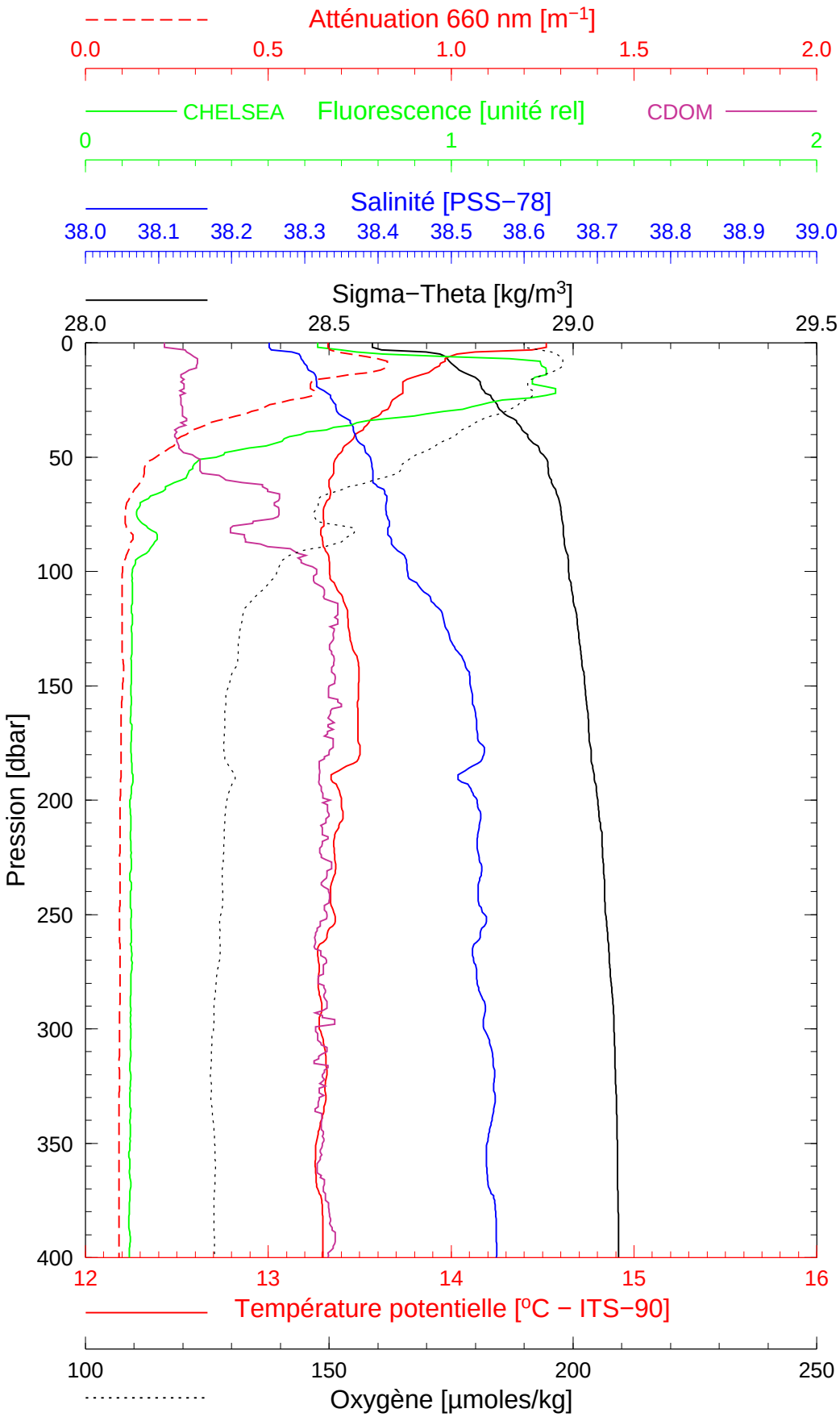


Date *17/03/2007* *Latitude* *43°25.116 N*

Heure déb *14h 12min [TU]* *Longitude* *07°48.080 E*

Boussole 62 **17/03/2007** **BOUS070317_03**

BOUS005

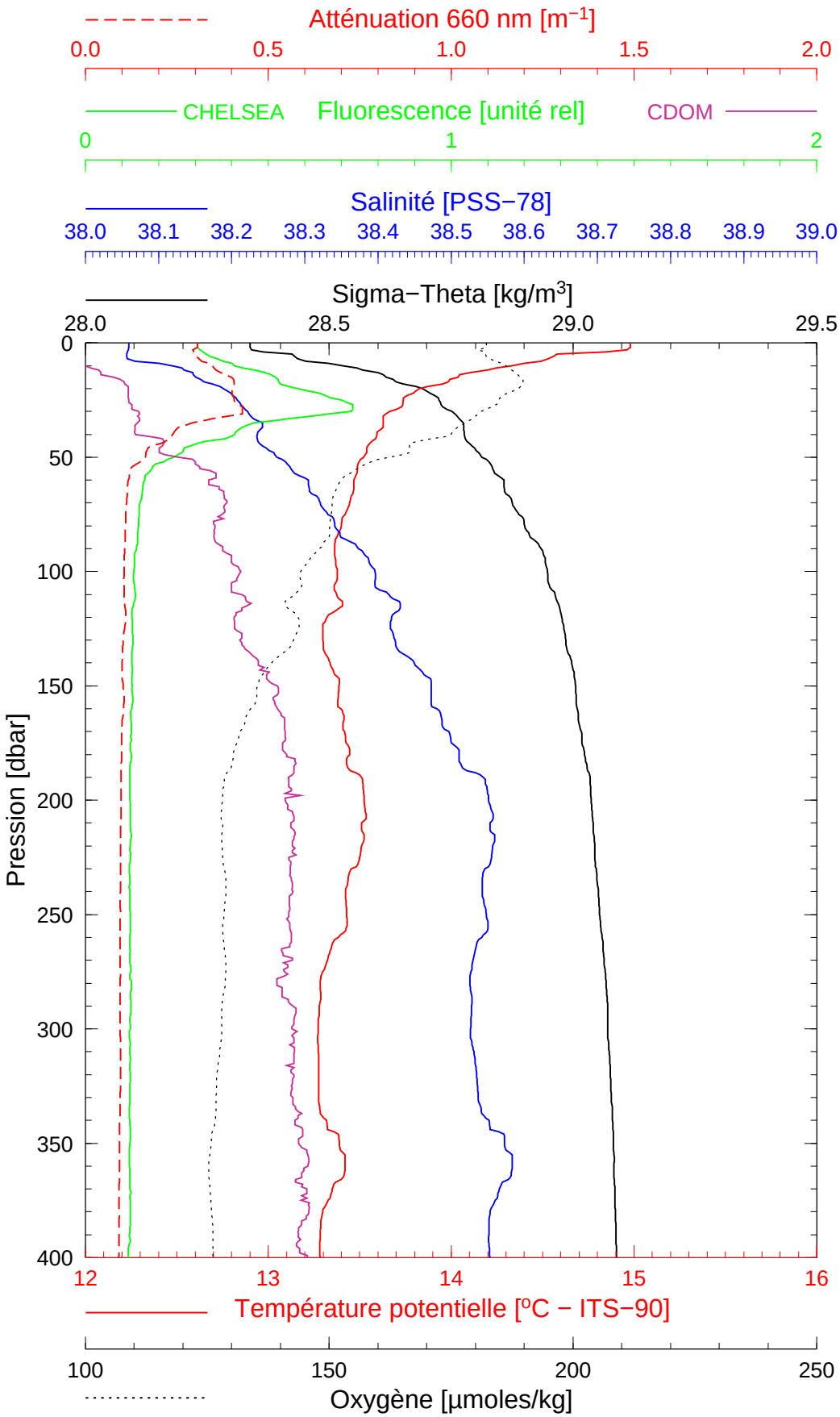


Date *17/03/2007* *Latitude* *43°27.884 N*

Heure déb *15h 12min [TU]* *Longitude* *07°42.316 E*

Boussole 62 **17/03/2007** **BOUS070317_04**

BOUS006

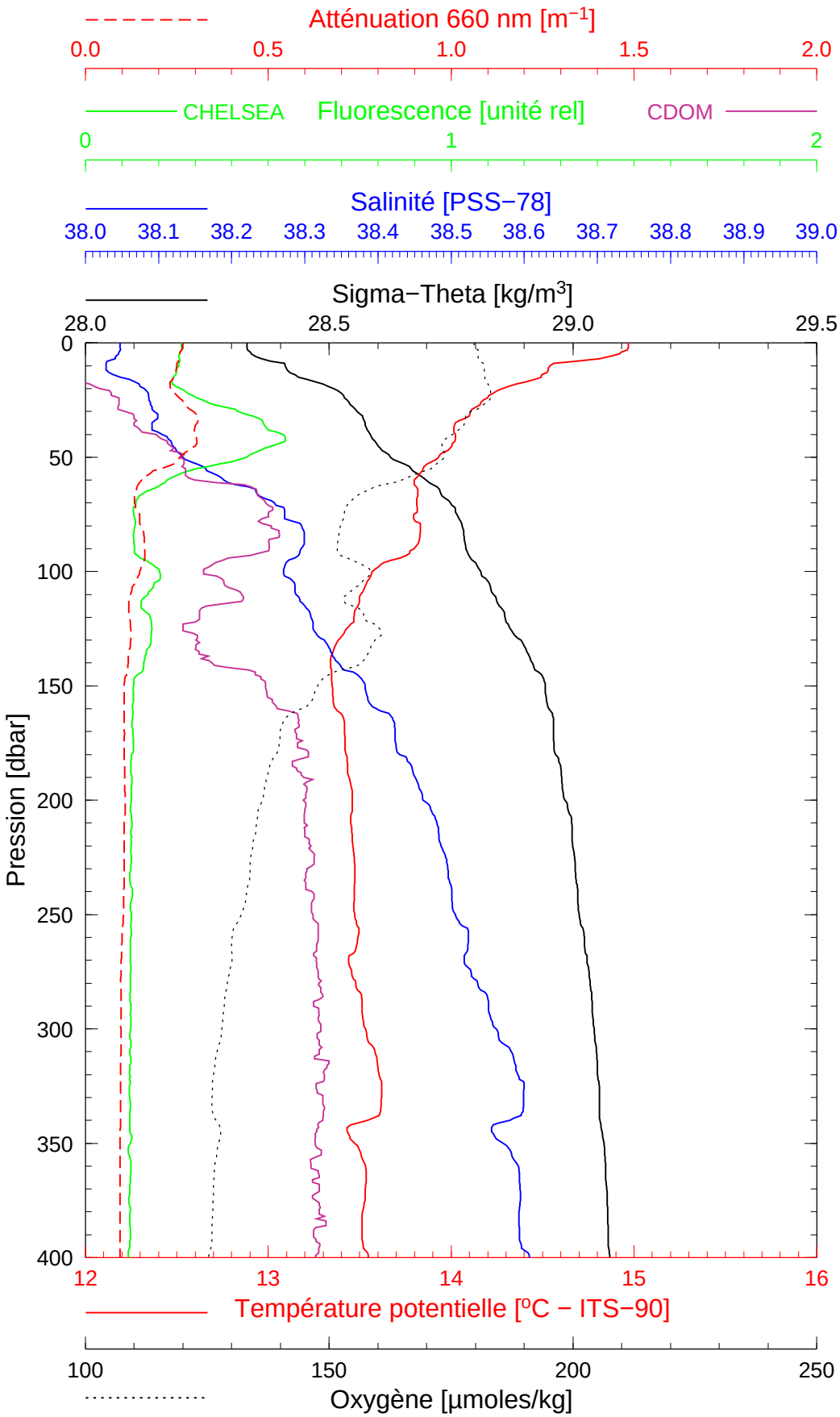


Date *17/03/2007* *Latitude* *43°30.903 N*

Heure déb *16h 12min [TU]* *Longitude* *07°36.895 E*

Boussole 62 **17/03/2007** **BOUS070317_05**

BOUS007

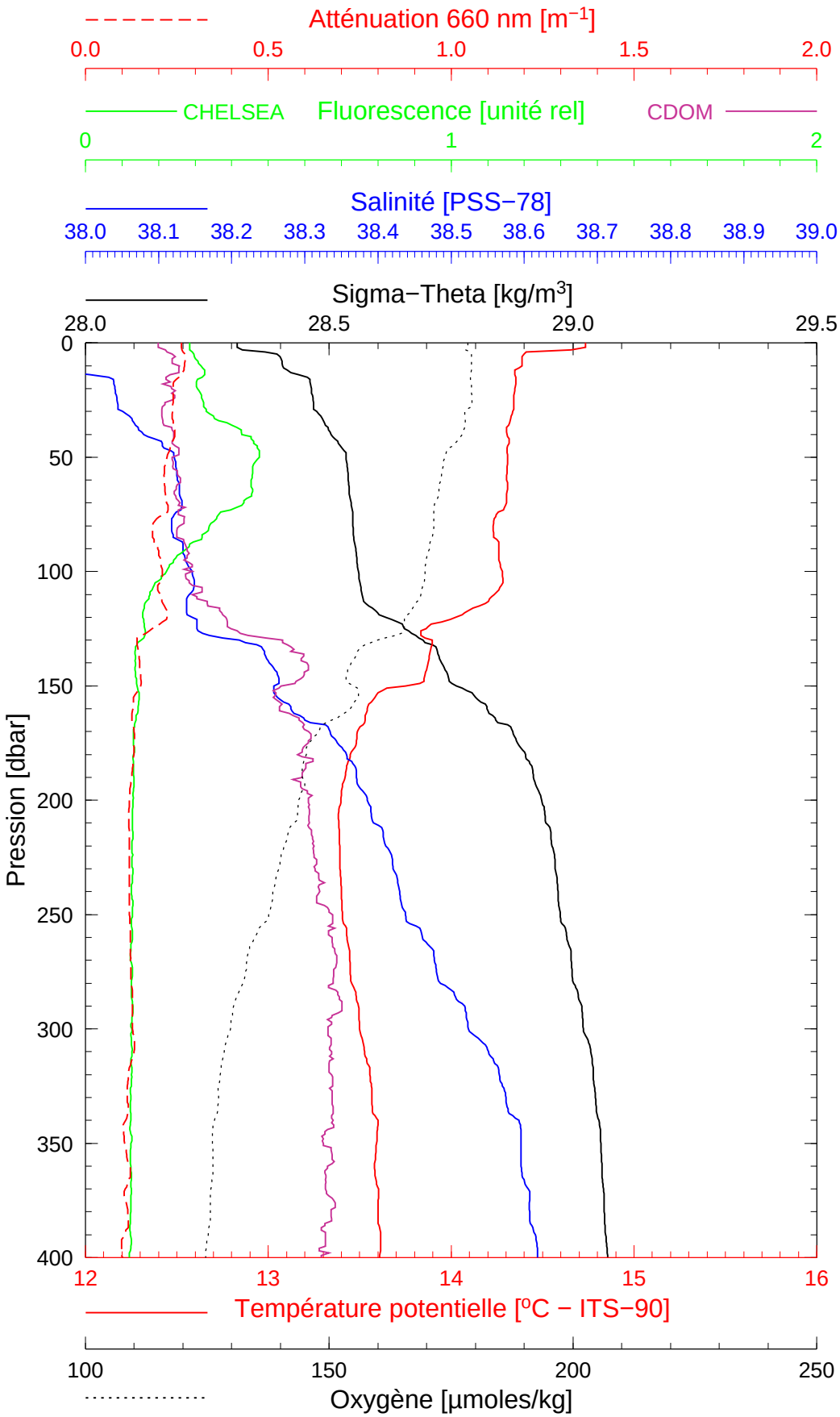


Date *17/03/2007* *Latitude* *43°33.888 N*

Heure déb *17h 15min [TU]* *Longitude* *07°30.880 E*

Boussole 62 **17/03/2007** **BOUS070317_06**

BOUS008

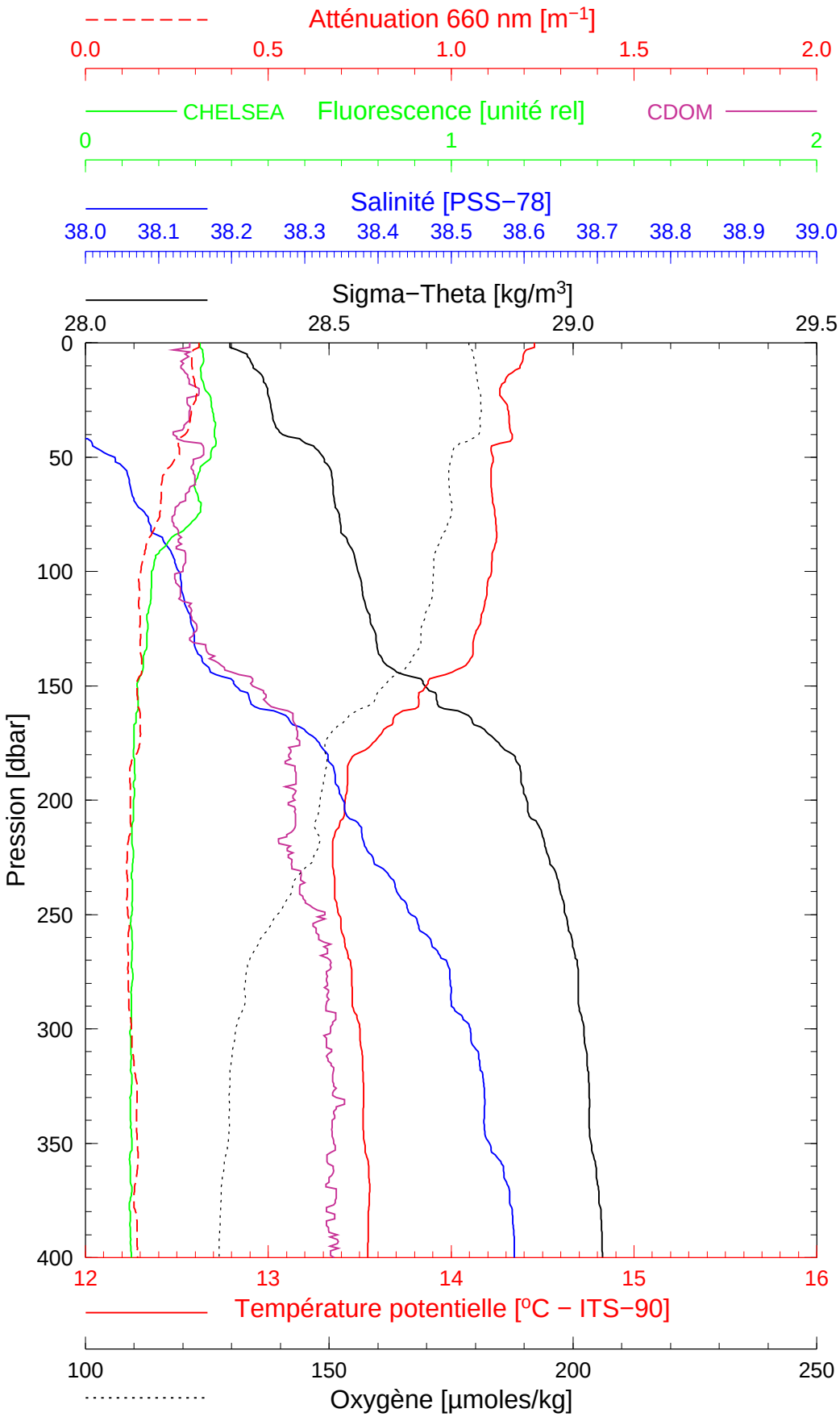


Date *17/03/2007* *Latitude* *43°37.448 N*

Heure déb *18h 16min [TU]* *Longitude* *07°24.800 E*

Boussole 62 **17/03/2007** **BOUS070317_07**

BOUS009

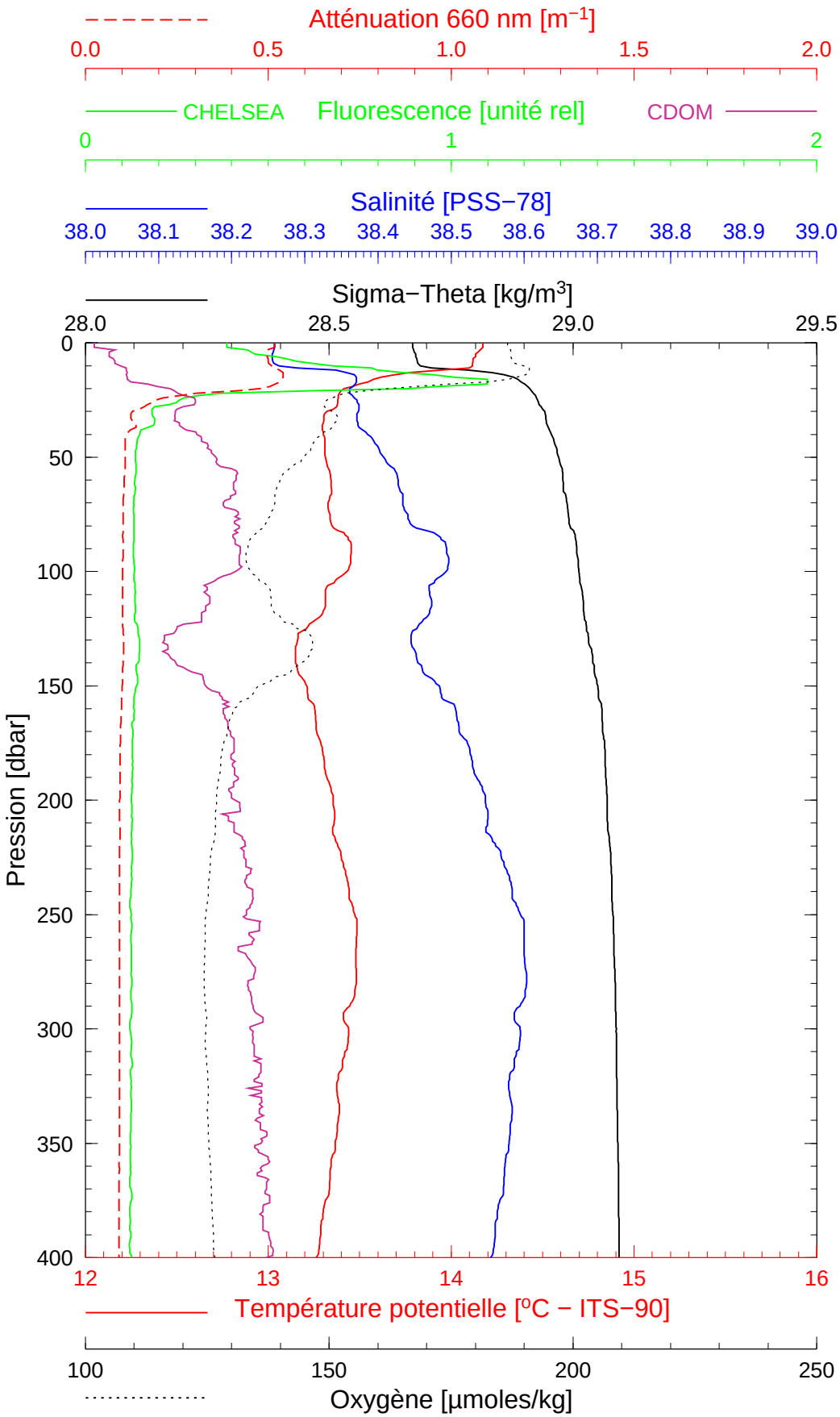


Date *17/03/2007* *Latitude* *43°38.856 N*

Heure déb *19h 05min [TU]* *Longitude* *07°20.634 E*

Boussole 62 **18/03/2007** **BOUS070318_01**

BOUS010



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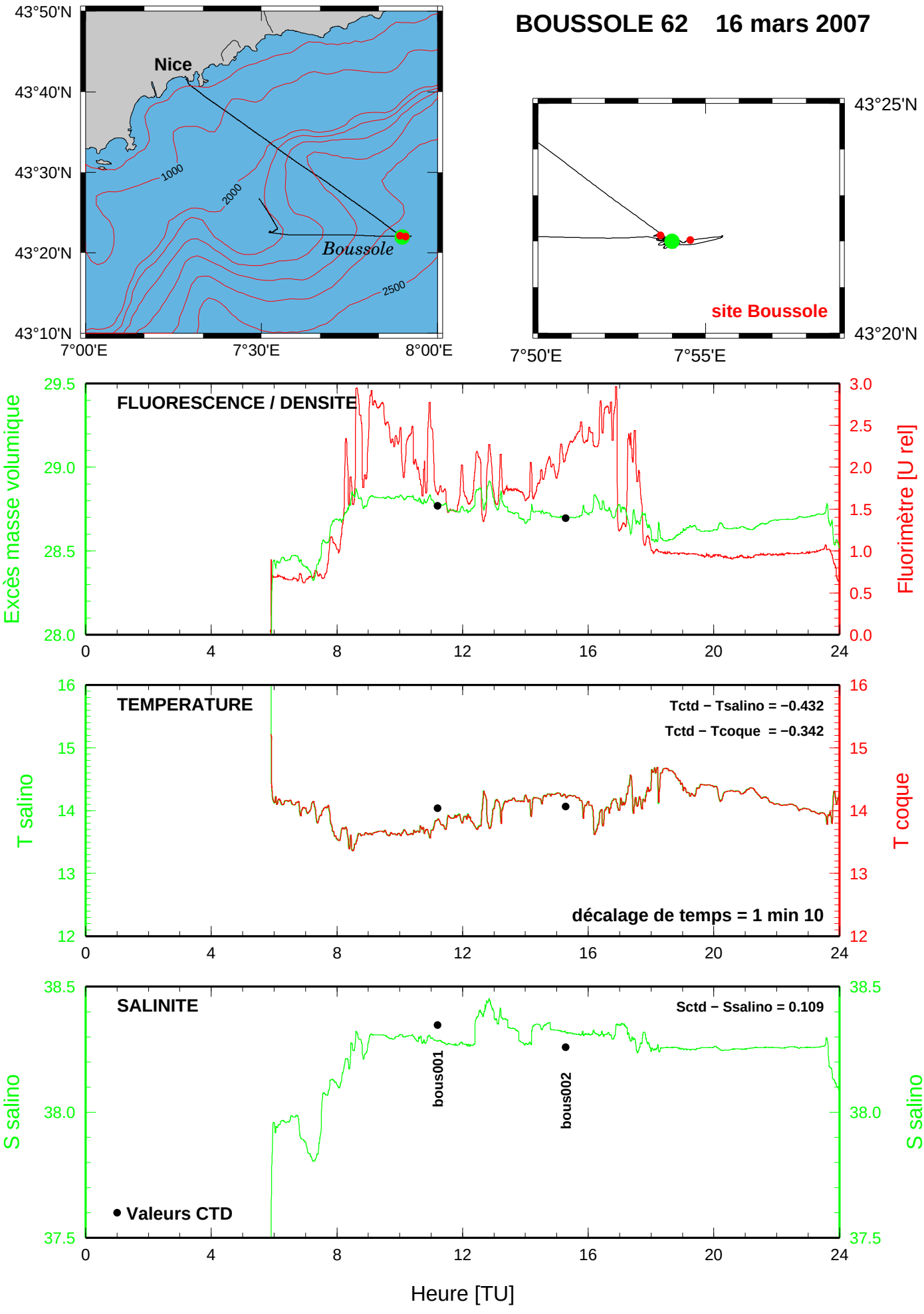
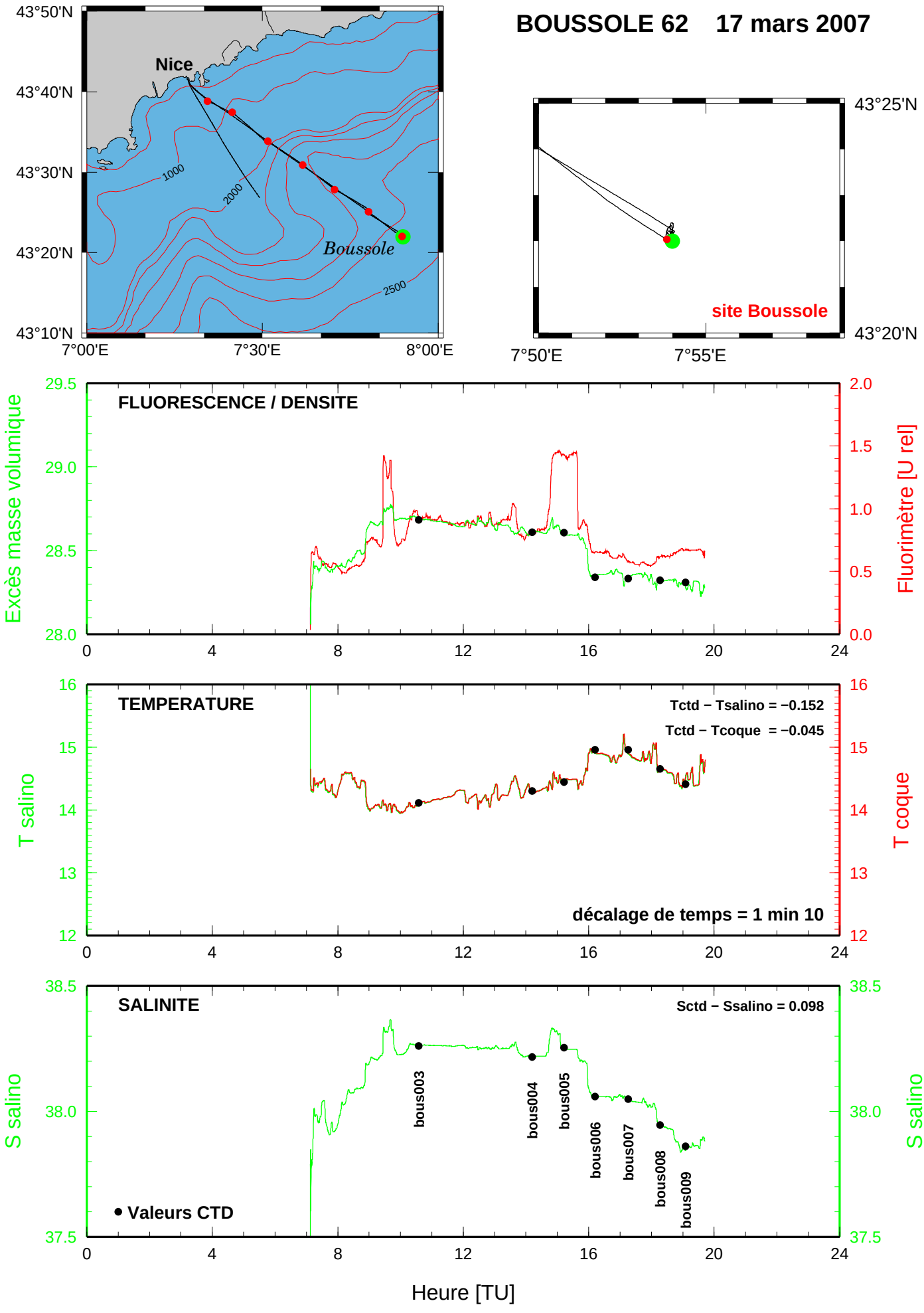
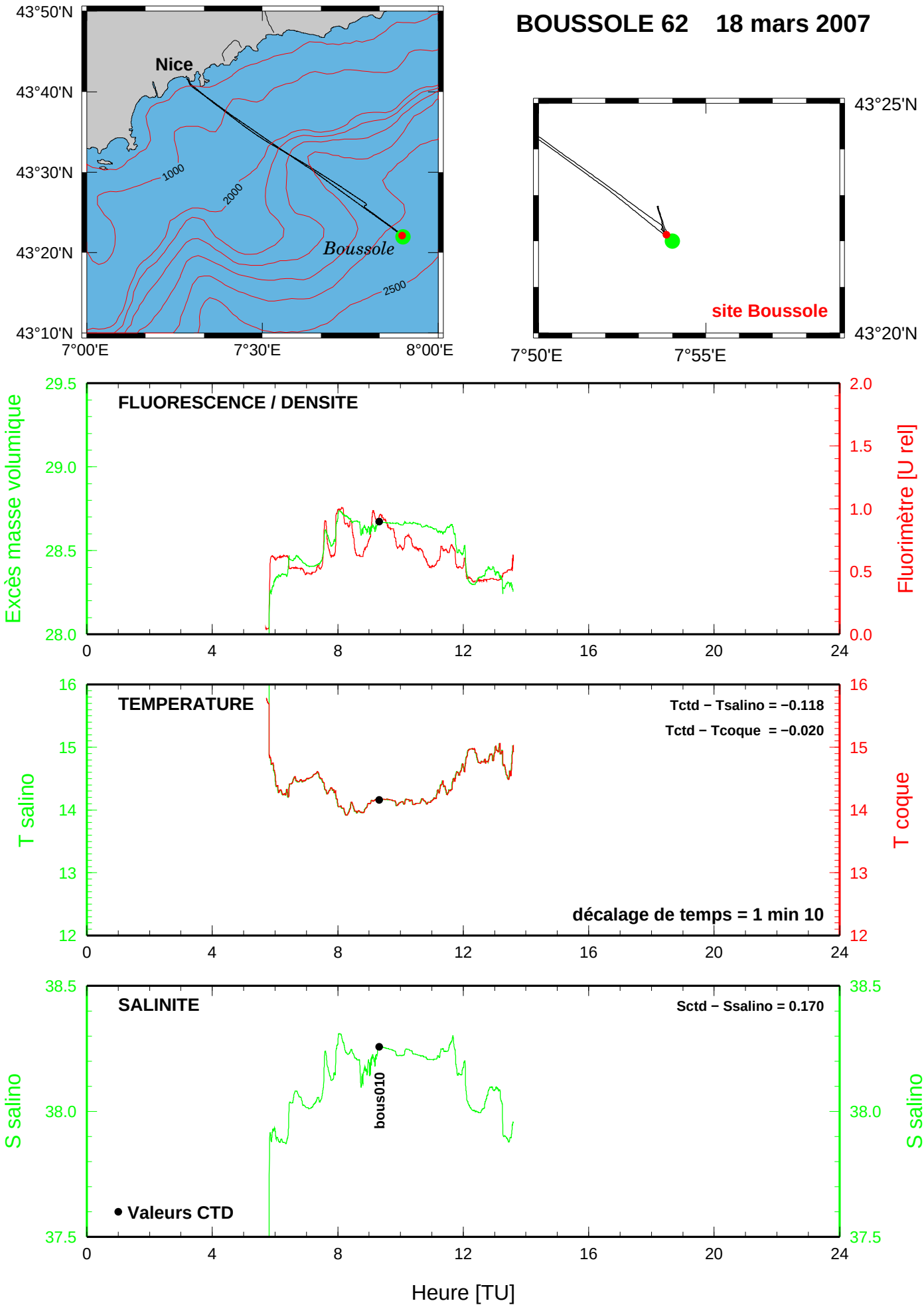
Heure déb *09h 19min [TU]* *Longitude* *07°53.820 E*


BOUSSOLE 62 16 mars 2007
Nice
Boussole
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
FLUORESCENCE / DENSITE
Excès masse volumique
Fluorimètre [U rel]
TEMPERATURE
Tctd − Tsalino = −0.432
Tctd − Tcoque = −0.342
T salino
T coque
décalage de temps = 1 min 10
SALINITE
Sctd − Ssalino = 0.109
bous001
bous002
S salino
• Valeurs CTD
Heure [TU]


BOUSSOLE 62 17 mars 2007
Nice
Boussole
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
FLUORESCENCE / DENSITE
Excès masse volumique
Fluorimètre [U rel]
TEMPERATURE
Tctd − Tsalino = −0.152
Tctd − Tcoque = −0.045
T salino
T coque
décalage de temps = 1 min 10
SALINITE
Sctd − Ssalino = 0.098
S salino
bous003
bous004
bous005
bous006
bous007
bous008
bous009
• Valeurs CTD
Heure [TU]


BOUSSOLE 62 18 mars 2007
Nice
Boussole
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
FLUORESCENCE / DENSITE
Excès masse volumique
Fluorimètre [U rel]
TEMPERATURE
Tctd − Tsalino = −0.118
Tctd − Tcoque = −0.020
T salino
T coque
décalage de temps = 1 min 10
SALINITE
Sctd − Ssalino = 0.170
bous010
S salino
• Valeurs CTD
Heure [TU]