BOUSSOLE Monthly Cruise Report

Cruise 74
April 13 - 16, 2008

Duty Chiefs: Vincenzo Vellucci (enzo@obs-vlfr.fr)
Vessel: R/V Téthys II
(Captain: Remy Lafond)

Science Personnel: François Bourrin, David Doxaran, Aurelie Dufour, Tristan Kerdraon, Grigor Obolensky, Vincenzo Vellucci.

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Fig 1. Dominique Taillez repairing the CTD cable, this report is dedicated to his memory. Dominique, who died on 26 March 2008, participated to all BOUSSOLE cruises and his experience brought an invaluable contribution to the project.
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BOUSSOLE project

ESA/ESRIN contract N° 17286/03/I-OL

Deliverable from WP#400/200

April 28, 2008

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 particle absorption spectrophotometric filter analysis in the lab. Three replicates samples are to be collected at surface for total suspended matter (TSM) weighting 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 six fixed locations on-route from Boussole. The time of day of this transect should be similar for each cruise, if possible to minimise influence of diurnal variability.

For one day of each cruise, three divers will check the underwater state of the buoy structure and instrumentation, take some pictures for archiving, clean the sensor optical surface, and then take again some pictures after cleaning.

For one day of each cruise, 250 ml of sea water will be sampled at 200, 150, 80, 70, 6, 50, 40, 30, 20, 10 and 5 meters depth. For each sample, 125 ml will be filtered through a 0.2 µm GF/F filter and both total and filtered water samples will be analysed with the UltraPath for CDOM absorption determination.

Additional operations

One of the four days, Aurelie Dufour and Tristan Kardreon will be on board to complete the MOOSE and DYCOMED programs, whose cruises were canceled due to bad weather conditions in the days just before the BOUSSOLE cruises. A PROVOR-BIO buoy, recently deployed at the BOUSSOLE site, showed technical problems; then François Bourrin will be on board on the last cruise days for its recovering.

Cruise Summary

The ship time for this cruise was spent for sampling at the BOUSSOLE and DYFAMED sites, and to recover a PROVOR-BIO buoy. The first day was used for sampling at the BOUSSOLE site and to complete the transect. The second day, the mission was cancelled due to bad weather conditions. The third day was used for sampling at DYFAMED site. The last day was used for sampling at the BOUSSOLE site and for recovering a PROVOR-BIO buoy.

Sunday 13 April 2008

This day the sea state was moved (H1/3 >1m) but with low wind; the sky was partially covered. 1 CTD cast, 2 SPMR profiles 1 Secchi Disk and 3 CIMEL were performed at the BOUSSOLE site. CDOM and TSM samples were taken after the CTD cast. The SPMR set of profiles was interrupted due to intervened unstable lighting conditions. The transect on the route to the port of Nice was completed too.

Monday 14 April 2008

Bad weather conditions prevented departure from the port of Nice.

Tuesday 15 April 2008

This day weather conditions were non optimal for optical casts and ship time was utilized to complete DYCOMED and MOOSE programs, previously cancelled for bad weather conditions.

Wednesday 16 April 2008

This day sea state was still moved (H1/3 ~ 0.8 m) with some wind (~15 kn). 1 CTD cast, 2 SPMR, 1 Secchi Disk and 2 CIMEL measurements were performed at the BOUSSOLE site. A plankton net profile was collected too. The SPMR showed again connection problems and after two profiles it was not possible to establish a new communication and the set of measurements was interrupted. After that, the ship moved to the last coordinates received the previous day from PROVOR-BIO buoy, waiting for a new communication to locate it. After two attempts the buoy was found and taken on board with the ZODIAC.

Cruise Report

Sunday 13 April 2008 (UTC)

0430 Departure from the Nice port.
0750 Arrival at the BOUSSOLE site.
0800 CTD 01, 400 m, with water sampling at 200, 150, 80, 70, 60, 50, 30, 20, 10 and 5 m for HPLC, Ap, CDOM and TSM.
0850 SPMR 01 and 02.
0945 Secchi Disk 01 (9 m).
1030 CIMEL 01, 02, 03.
1150 CTD 02, 400 m, station 01 (43°25'N 07°48'E).
1250 CTD 03, 400 m, station 02 (43°28'N 07°42'E).
1250 CTD 04, 400 m, station 03 (43°31'N 07°37'E).
1350 CTD 05, 400 m, station 04 (43°34'N 07°31'E).
1450 CTD 06, 400 m, station 05 (43°37'N 07°25'E).
1550 CTD 07, 400 m, station 06 (43°39'N 07°21'E).
1730 Arrival at the Nice port.

Monday 14 April 2008

Bad weather prevented departure from the port of Nice.

Tuesday 15 April 2008

0830 Departure from the Nice port.
0840 Arrival at the DYFAMED site.
1830 Arrival at the Nice port.

Wednesday 16 April 2008

0450 Departure from the Nice port.
0810 Arrival at the BOUSSOLE site.
0820 CTD 08, 400 m, with water sampling at 200, 150, 80, 70, 60, 50, 30, 20, 10 and 5 m for HPLC, Ap, and TSM. CIMEL 04, 05.
0850 SPMR 03 and 04.
0935 Secchi Disk (7m).
0940 Plankton net profile 100 m. Departure to the last PROVOR-BIO position.
1045 Arrival on site and research of the buoy.
1210 Communication of the new coordinates.
1230 Localization of the buoy and recovery.
1240 Departure to the Nice port
1426 Arrival at the Nice port

Calculated Swath paths for the MERIS Sensor (ESOV Software)

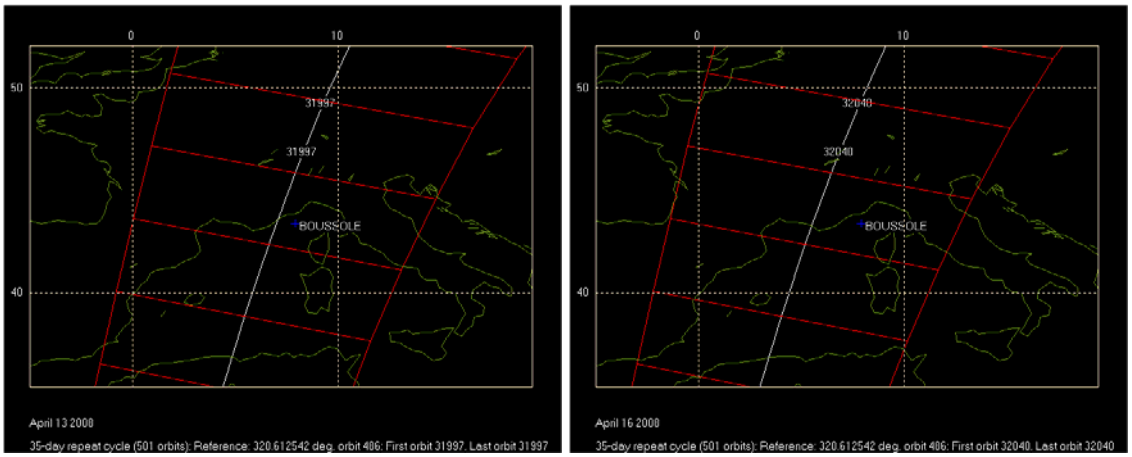


Figure 2. Calculated swath paths for MERIS (Esov software) above BOUSSOLE site for April 13 and 16 2008.

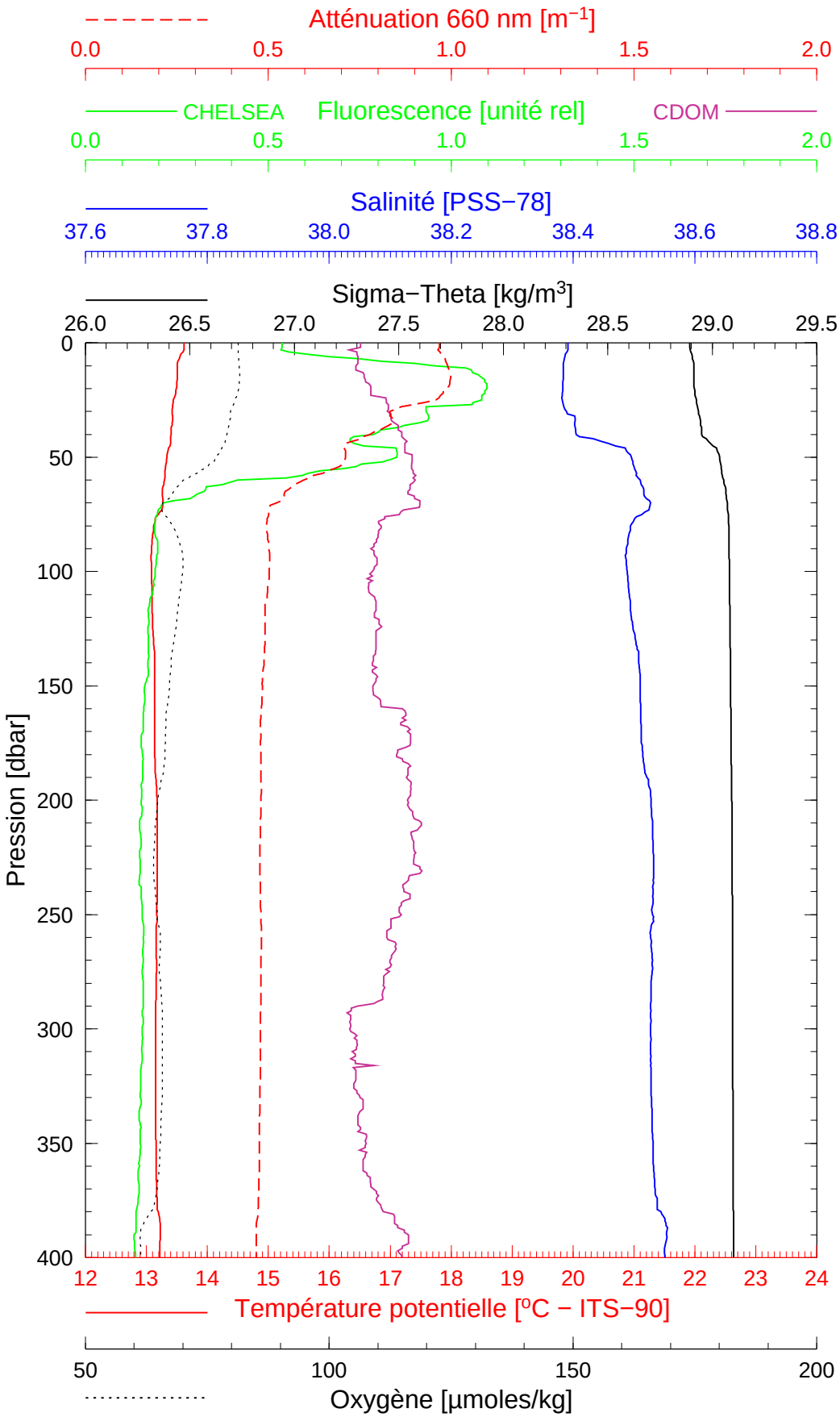
Appendix

Cruise Summary Table for Boussole 74

Date	Black names	Profile names	CTD notées /	Other sensors	Start Time	Duration	Depth max	Latitude (N)		longitude					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 sp. (kn)	Wind dir.	Atm. Pressure (hPa)	Humidity (%)	Visibility	T air	T water	Sea	Swell H (m)	Swell dir.	Whitecaps
13/04/08			CTDBOUS001	wat. samp. CDOM & TSM	08:02	28:00	400	43	22.647	7	54.354			6	0						13.61	moved			
	Bou130408black1				08:50	3:00																		
		Bou130408AA			09:17	4:15	200	43	22.208	7	54.212	blu	Cu	4					good			moved	1.2		no
		Bou130408AB			09:28	4:21	200	43	22.336	7	54.311	blu	Cu	4					good			moved	1.2		no
	Bou130408black2				09:49	3:00																		
				Secchi Disk 01	09:45	2:00	9	43	22.45	7	54.47	blu	Cu	4					good			moved	1.2		no
				CIMEL01	10:31	4:00		43	22.84	7	54.87													
				CIMEL02	10:36	3:00		43	22.84	7	54.87													
				CIMEL03	10:40	5:00		43	22.84	7	54.87													
			CTDBOUS002		11:52	24:00	400	43	25.015	7	47.768			6							13.7	slightly moved			
			CTDBOUS003		12:53	24:00	400	43	27.841	7	41.970			5							14.3	slightly moved			
			CTDBOUS004		13:51	25:00	400	43	30.943	7	36.939			3							14.3	slightly moved			
			CTDBOUS005		14:50	26:00	400	43	34.013	7	30.953			4							14.3	slightly moved			
			CTDBOUS006		15:50	24:00	400	43	37.004	7	24.995			3							13.9	slightly moved			
			CTDBOUS007		16:37	24:00	400	43	38.957	7	24.995			3							14.6	slightly moved			
14/04/08	Bad Weather Conditions																							
15/04/08	DYCOMED-MOOSE Cruise																							
16/04/08			CTDBOUS008	wat. samp. TSM	08:21	29:00	400	43	22.696	7	54.350		Ci	3	15						13.8	slightly moved			
				CIMEL04	08:21	4:00		43	22.806	7	54.402													
				CIMEL05	08:25	4:00		43	22.806	7	54.402													
	Bou160408black1				08:50	3:00																		
		Bou160408AA			08:59	4:26	200	43	22.499	7	54.392		Ci	4					very good			slightly moved	0.8		some
		Bou160408AC			09:11	5:01	200	43	22.809	7	54.744		Ci	4					very good			slightly moved	0.8		some
	Bou160408black2				09:50	3:00																		
				Secchi Disk 02	09:35	2:00	7	43	22	7	54													

Boussole 74 **13/04/2008** **BOUS080413_01**

BOUS001

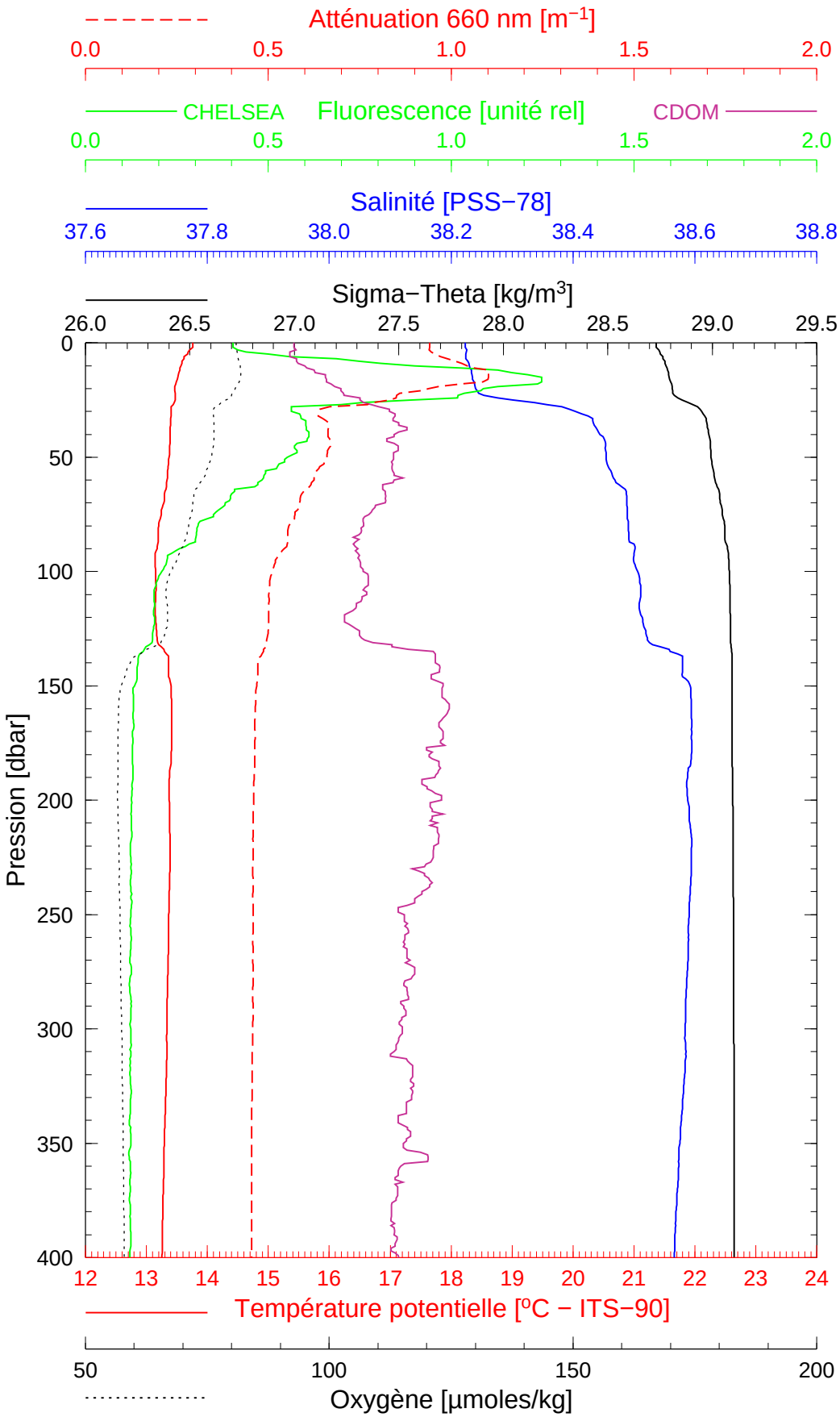


Date *13/04/2008* *Latitude* *43°22.647 N*

Heure déb *08h 02min [TU]* *Longitude* *07°54.354 E*

Boussole 74 **13/04/2008** **BOUS080413_02**

BOUS002

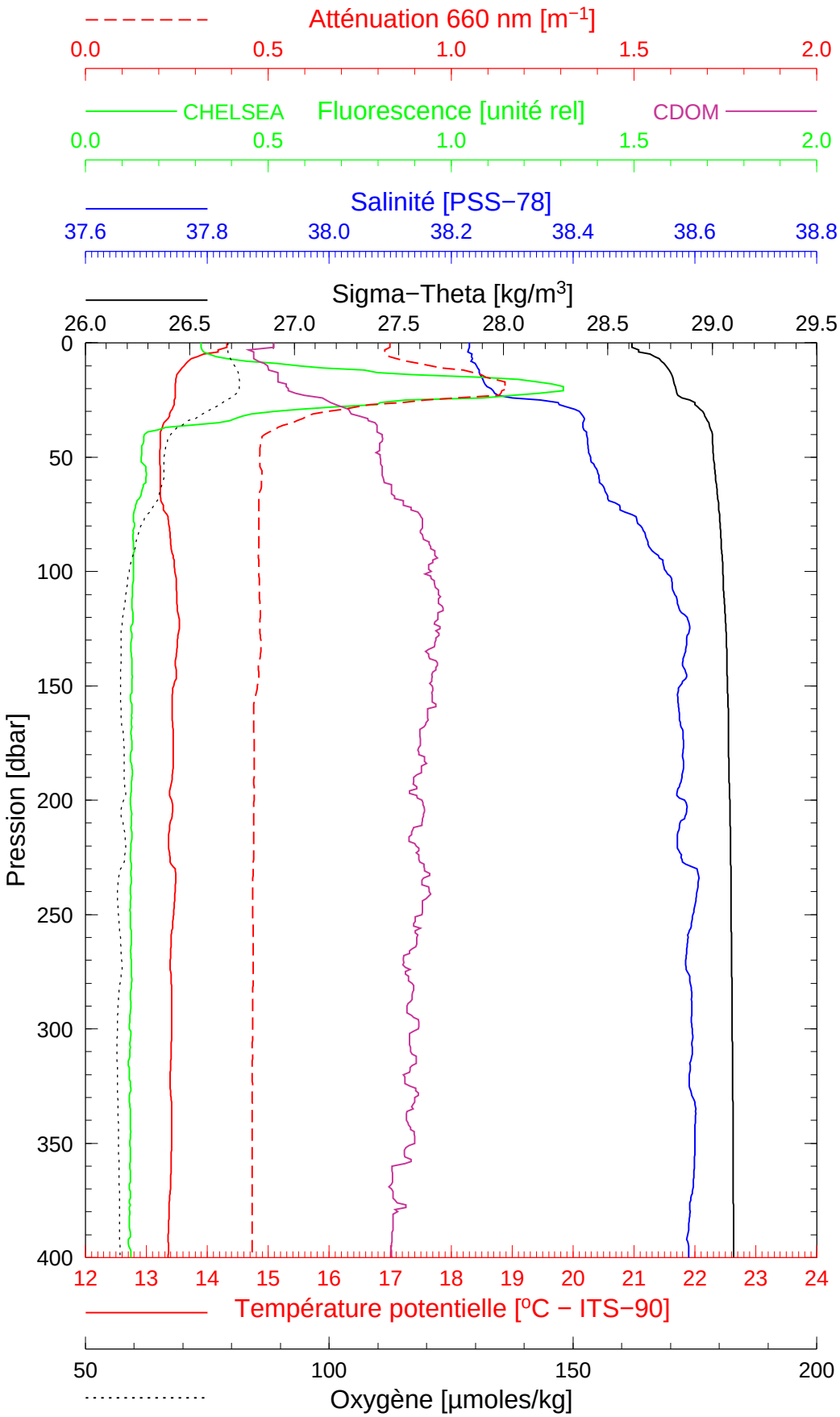


Date *13/04/2008* *Latitude* *43°25.015 N*

Heure déb *11h 52min [TU]* *Longitude* *07°47.768 E*

Boussole 74 **13/04/2008** **BOUS080413_03**

BOUS003

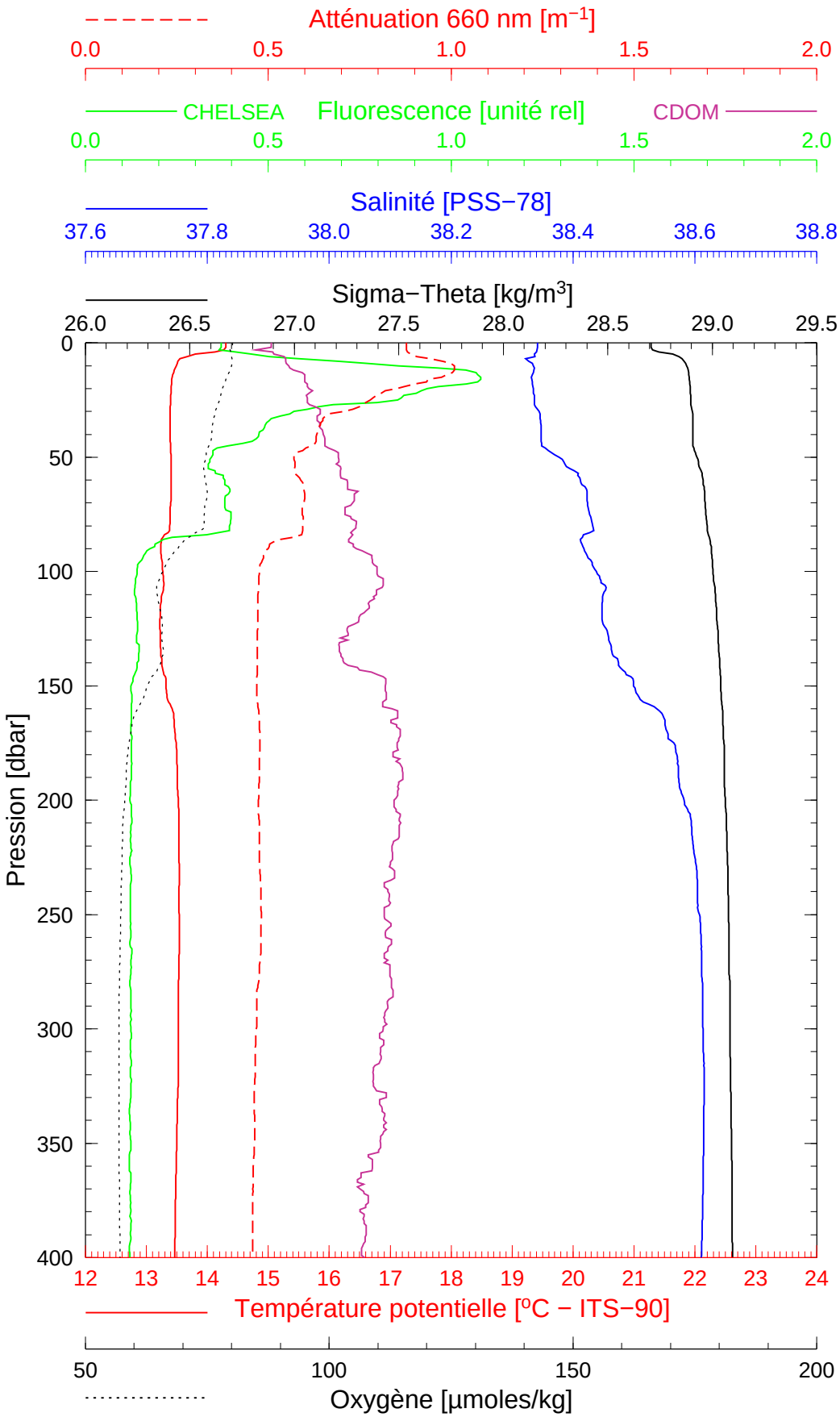


Date *13/04/2008* *Latitude* *43°27.841 N*

Heure déb *12h 53min [TU]* *Longitude* *07°41.970 E*

Boussole 74 **13/04/2008** **BOUS080413_04**

BOUS004

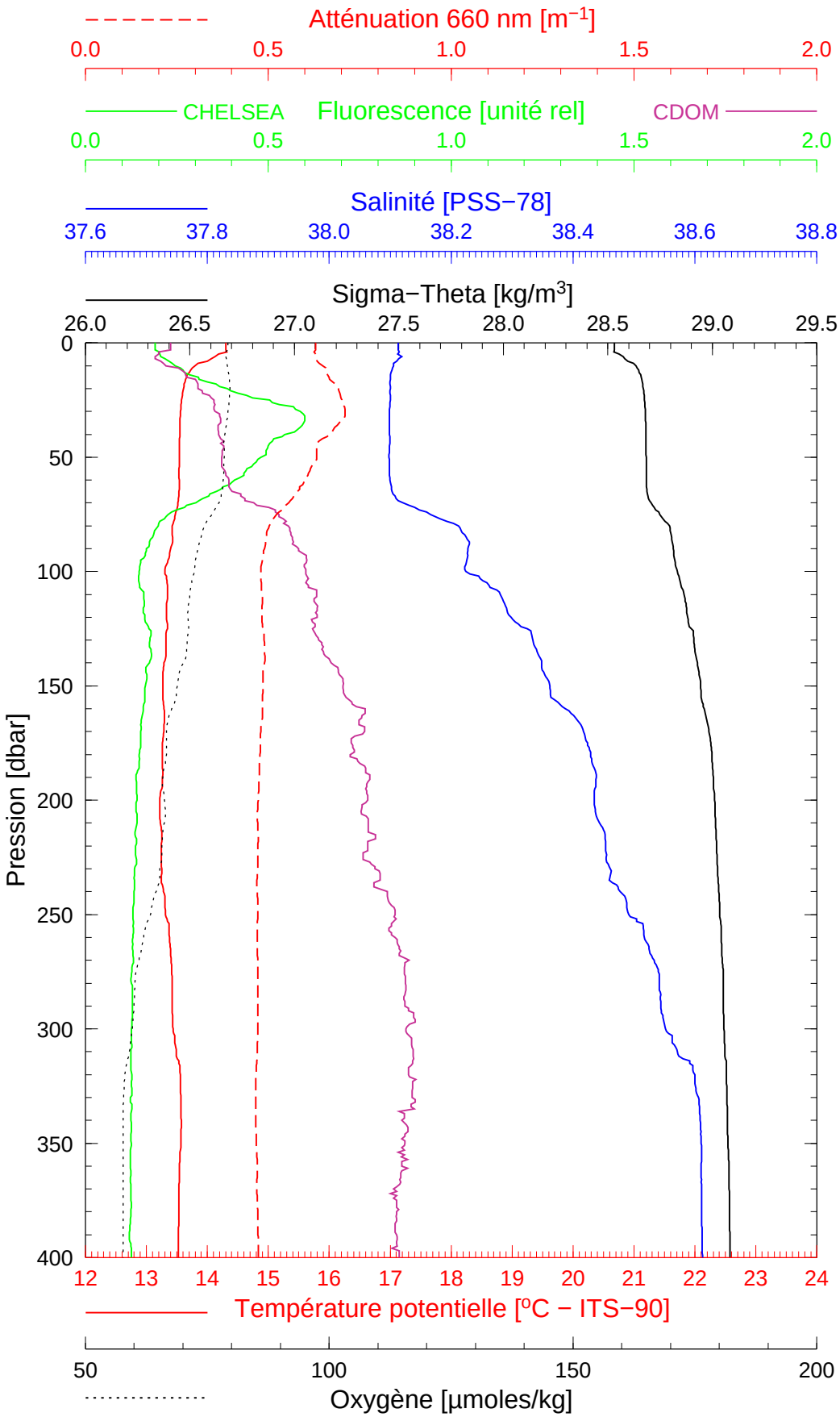


Date *13/04/2008* *Latitude* *43°30.943 N*

Heure déb *13h 51min [TU]* *Longitude* *07°36.939 E*

Boussole 74 **13/04/2008** **BOUS080413_05**

BOUS005

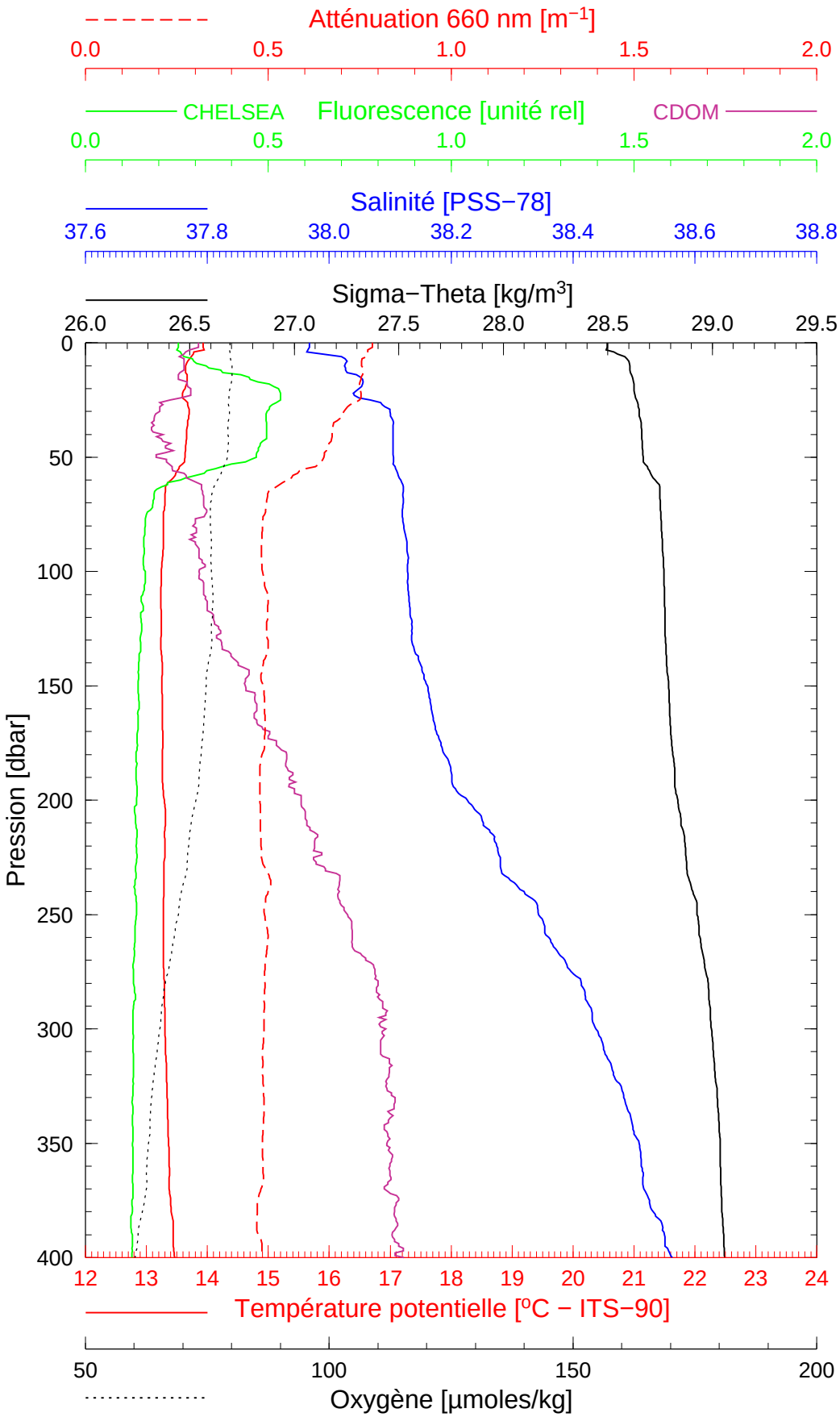


Date *13/04/2008* *Latitude* *43°34.013 N*

Heure déb *14h 50min [TU]* *Longitude* *07°30.953 E*

Boussole 74 **13/04/2008** **BOUS080413_06**

BOUS006

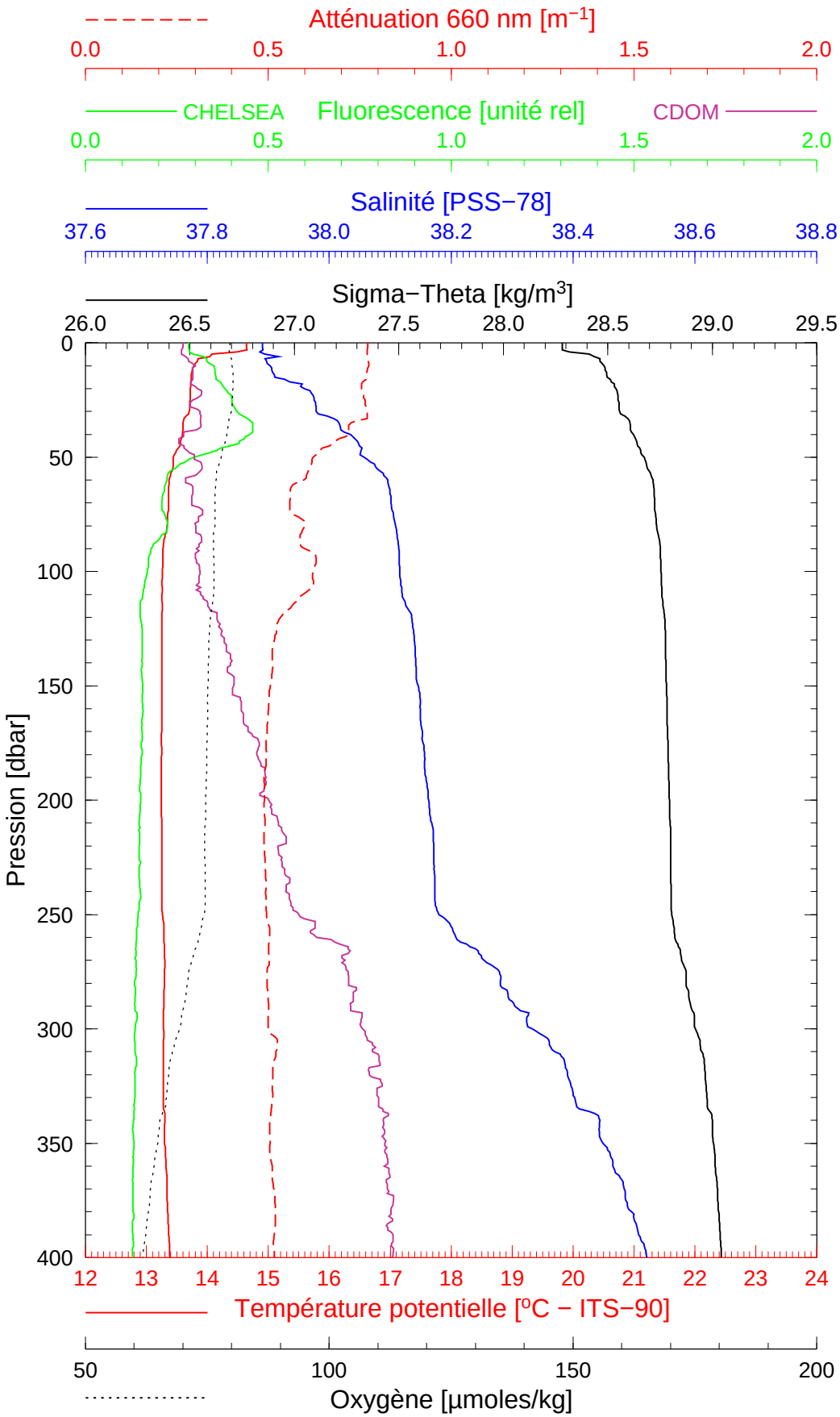


Date *13/04/2008* *Latitude* *43°37.004 N*

Heure déb *15h 50min [TU]* *Longitude* *07°24.995 E*

Boussole 74 **13/04/2008** **BOUS080413_07**

BOUS007

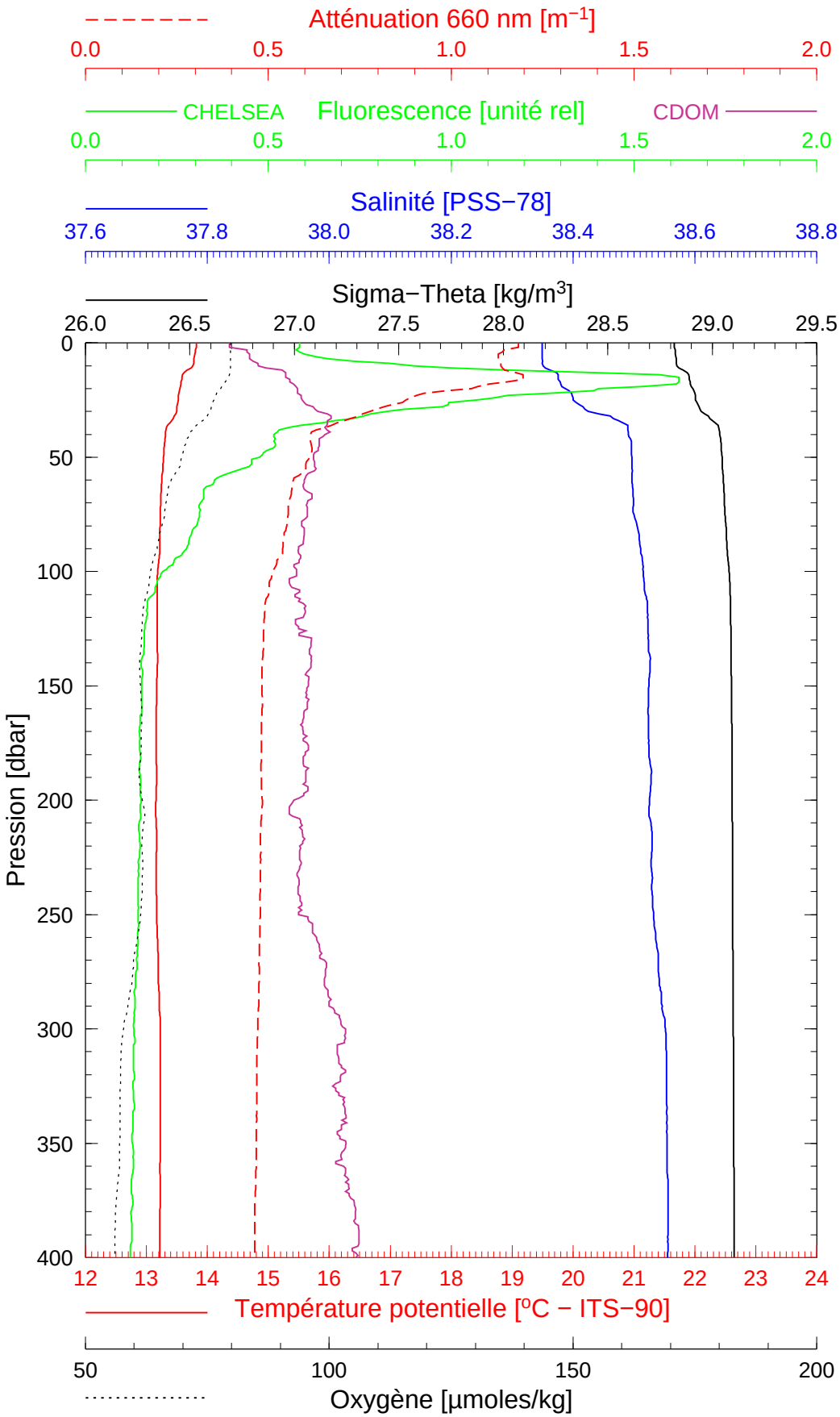


Date *13/04/2008* *Latitude* *43°38.957 N*

Heure déb *16h 37min [TU]* *Longitude* *07°21.054 E*

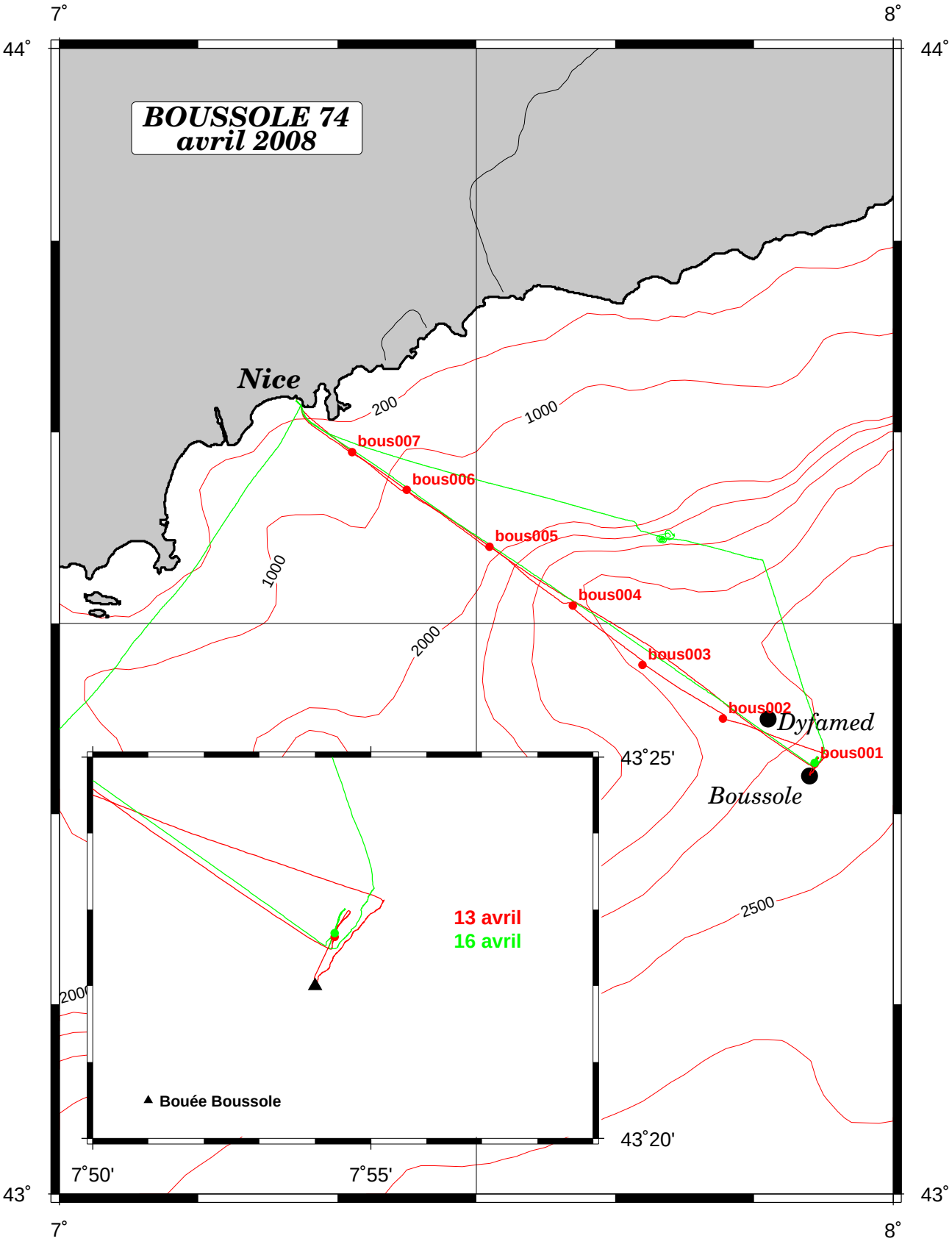
Boussole 74 **16/04/2008** **BOUS080416_08**

BOUS008



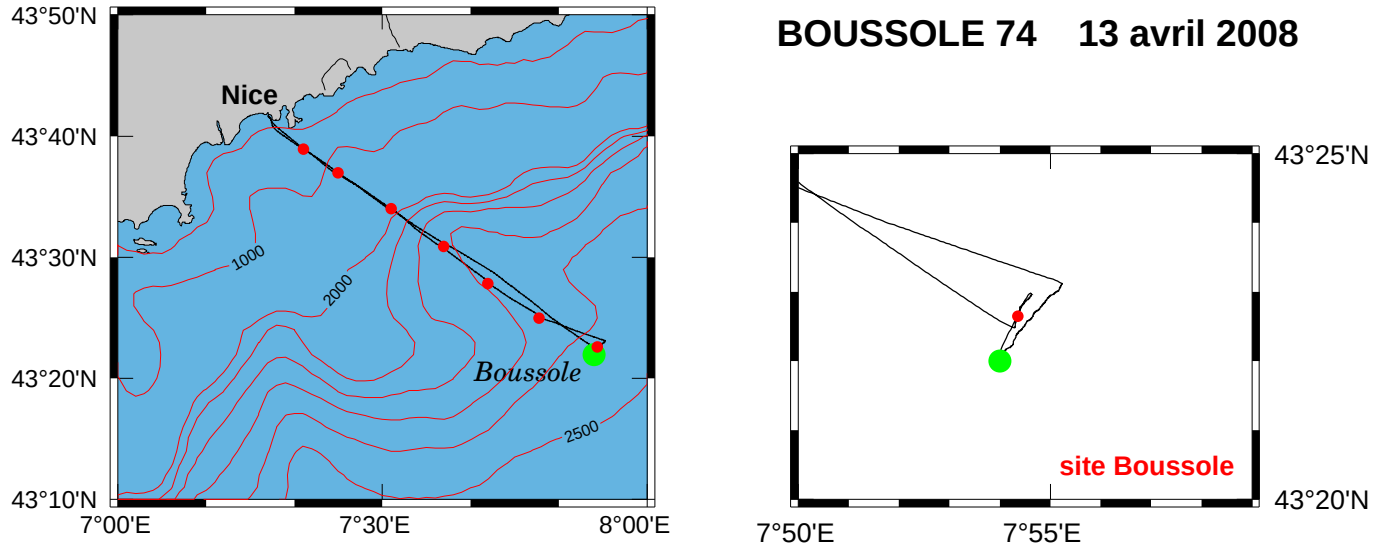
Date *16/04/2008* *Latitude* *43°22.696 N*

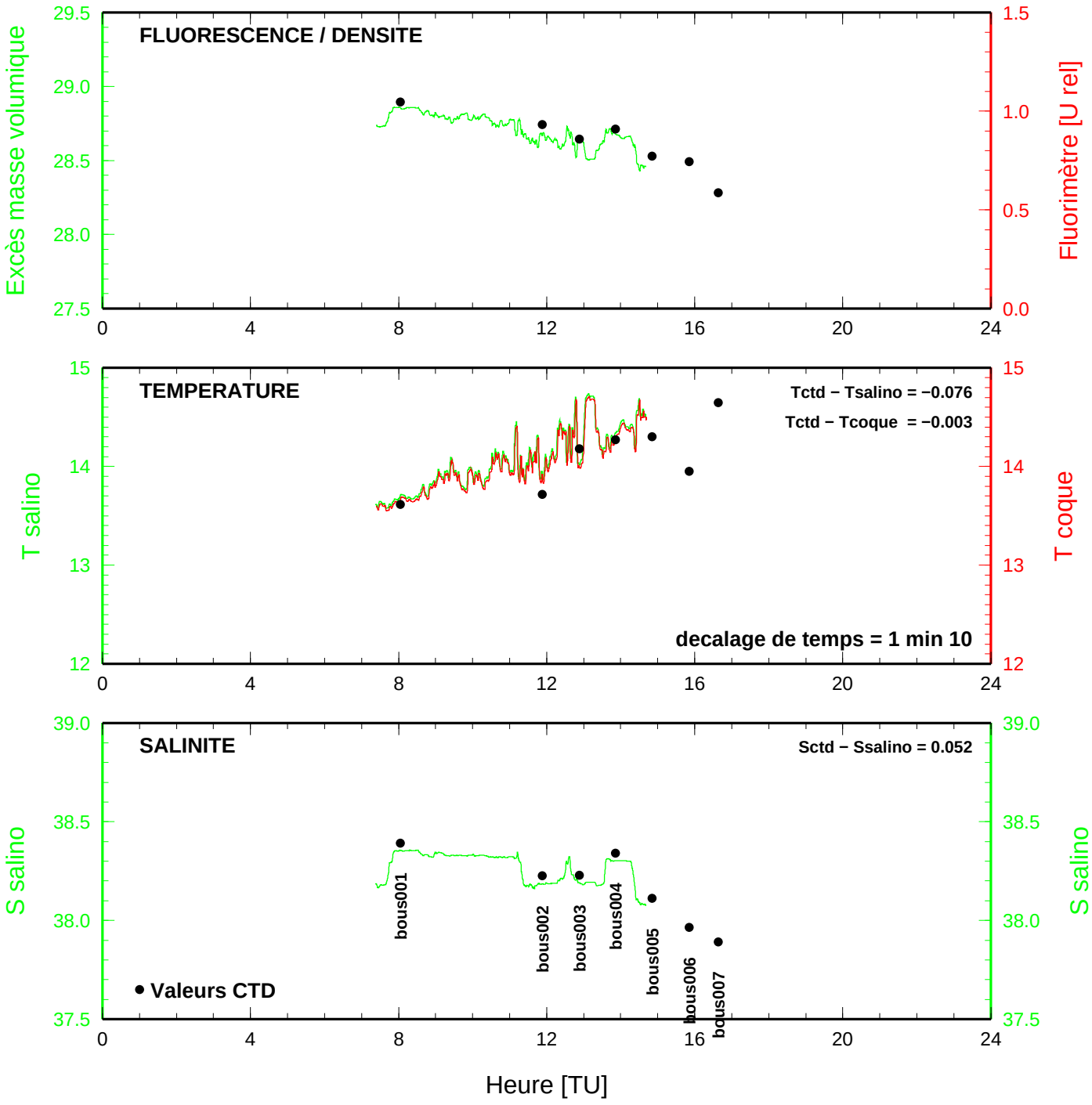
Heure déb *08h 21min [TU]* *Longitude* *07°54.350 E*

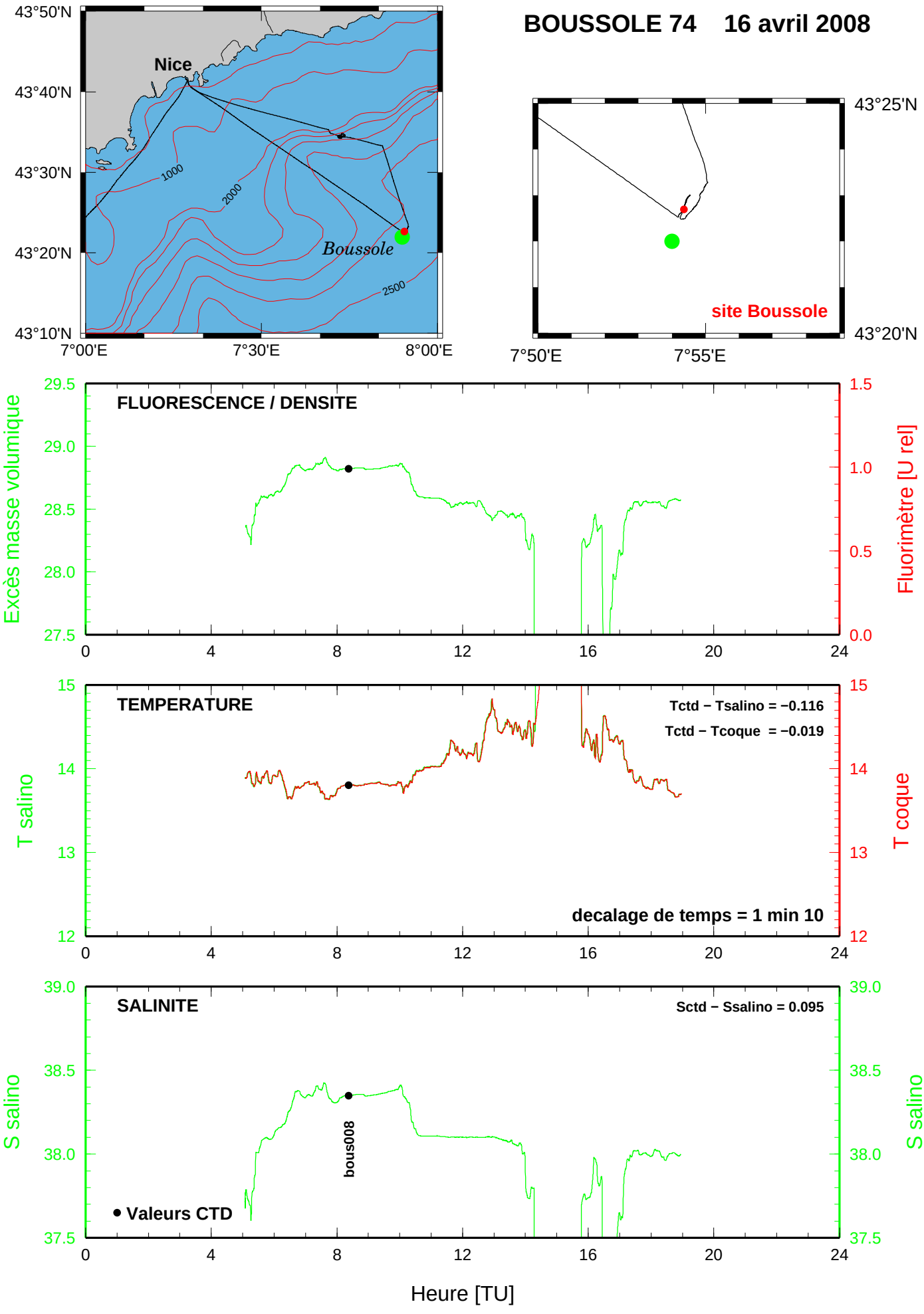


GMT 2008 Oct 30 11:27:20

BOUSSOLE 74 13 avril 2008






BOUSSOLE 74 16 avril 2008
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 = −0.116
Tctd − Tcoque = −0.019
T salino
T coque
decalage de temps = 1 min 10
SALINITE
Sctd − Ssalino = 0.095
S salino
bous008
• Valeurs CTD
Heure [TU]