BOUSSOLE Monthly Cruise Report

Cruise 72
February 12 - 15, 2008

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

Science Personnel: Laurent Coppola, Tristan Kerdraon, Grigor Obolensky, Vincenzo Vellucci.

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

Fig 1. SPMR cable cut during recovery.

BOUSSOLE project

ESA/ESRIN contract N° 17286/03/I-OL

Deliverable from WP#400/200

February 25, 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 particule 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 days, a 1000 m PVM profile and 100 m plankton net profiles will be sampled. The last day a 2000 m CTD cast at DYFAMED site will be done for the MOOSE project.

Cruise Summary

The ship time for this cruise was spent exclusively for sampling activities, since there is still not the upper part of the buoy at the BOUSSOLE site. The first two days the weather conditions were not optimal but allowed sampling. The last two days, instead, weather conditions were excellent. The first day was used to perform a CTD cast with water sampling at the BOUSSOLE and to complete the transect on the route to the port of Nice. The three following days were spent to perform SPMR, CTD, Secchi Disk and CIMEL measurements at the BOUSSOLE site. The last day a CTD cast at DYFAMD site was made too.

Tuesday 12 February 2008

This day the sky was cloudy, with 15 knots of wind and H1/3 1.4 m in the early morning that decreased during the day. The winch-CTD cable was not working and Grigor Obolensky repaired it on the route to the BOUSSOLE site, where a CTD cast and a CIMEL measurement were made before performing the transect on the way back to the port of Nice.

Wednesday 13 February 2008

This day the sky was again cloudy with constant wind of about 15 knots and H1/3 of about 1.0 m. The pulley-CTD connection cable was again damaged and repaired. 50 m of the of the pulley cable were also cut. After this, 1 CTD cast, 3 SPMR profiles and 1 Secchi Disk were performed at the BOUSSOLE site.

Thursday 14 February 2008

This day the sea state was excellent and the sky was blue. 2 CTD cast, 1 SPMR profile, 1 Secchi Disk and some CIMEL measurements were made. The SPMR measurements were stopped after the first profile, since a cut along the cable was present. Probably the cable touched against a protrusion of the pulley, used for deployment, during recovery on the day before.

Friday 15 February 2008

This day weather conditions were again very good. A CTD cast, 3 SPMR profiles and some CIMEL measurements were performed at the BOUSSOLE site. For the SPMR data collection the old cable was used. A PVM profile on site was made too. Before going back to Nice, a deep CTD cast at DYFAMED station was made for the MOOSE project since bad weather conditions were forecast for their assigned ship time.

Cruise Report

Tuesday 12 February 2008 (UTC)

0910 Depart from the Nice port.
1225 Arrival at the BOUSSOLE site.
1250 CTD 01, 400m, with water sampling at 200, 150, 80, 70, 60, 50, 30, 20, 10 and 5 m for HPLC and Ap.
1317 CIMEL01
1348 CTD 02, 400 m, station 01 (43°25'N 07°48'E).
1452 CTD 03, 400 m, station 02 (43°28'N 07°42'E).
1546 CTD 04, 400 m, station 03 (43°31'N 07°37'E).
1641 CTD 05, 400 m, station 04 (43°34'N 07°31'E).
1735 CTD 06, 400 m, station 05 (43°37'N 07°25'E).
1827 CTD 07, 400 m, station 06 (43°39'N 07°21'E).
1920 Arrival at the Nice port.

Wednesday 13 February 2008

0710 Depart from the Nice port.
1025 Arrival at the BOUSSOLE site, problems with the CTD cable. Repair of the winch-CTD connection cable.
1242 CTD 08, 400 m, with water sampling at 200, 150, 80, 70, 60, 50, 30, 20, 10 and 5 m for HPLC, Ap, and CDOM. Samples for TSM were also taken at 5 m.
1310 SPMR 01, 02, and 03.
1420 Secchi Disk 01 (15 m).
1435 Departure from the BOUSSOLE site.
1745 Arrival at the Nice port.

Thursday 14 February 2008

0800 Departure from the Nice port.
1100 Arrival at the BOUSSOLE site.
1105 SPMR 04.
1130 Secchi Disk 02 (18 m).
1135 CIMEL02
1135 CTD 09, 400 m, with water sampling at 200, 150, 80, 70, 60, 50, 40, 30, 20, 10 and 5 m for HPLC, and Ap. Samples for TSM were also taken at 5 m.
1150 CIMEL 03
1205 CIMEL 04
1232 CTD 10, 400 m.
1300 Departure from the BOUSSOLE site.
1610 Arrival at the Nice port.

Friday 15 February 2008

0510 Departure from the Nice port.
0820 Arrival at the BOUSSOLE site.
0830 PVM profile 1000m.

0905 CTD 11, 400 m, with water sampling at 200, 150, 80, 70, 60, 50, 40, 30, 20, 10 and 5 m for HPLC, and Ap. Samples for TSM were also taken at 5 m.
0925 CIMEL05
0933 SPMR 05, 06, 07.
1030 2 x Plankton net 0-100 m. Departure to DYFAMED station.
1140 CTD MOOSE, 2200m.
1145 Secchi Disk 03 (18m).
1150 CIMEL 06.
1254 CIMEL 07.
1300 Departure from DYFAMED site.
1545 Arrival at the Nice port.

Calculated Swath paths for the MERIS Sensor (ESOV Software)

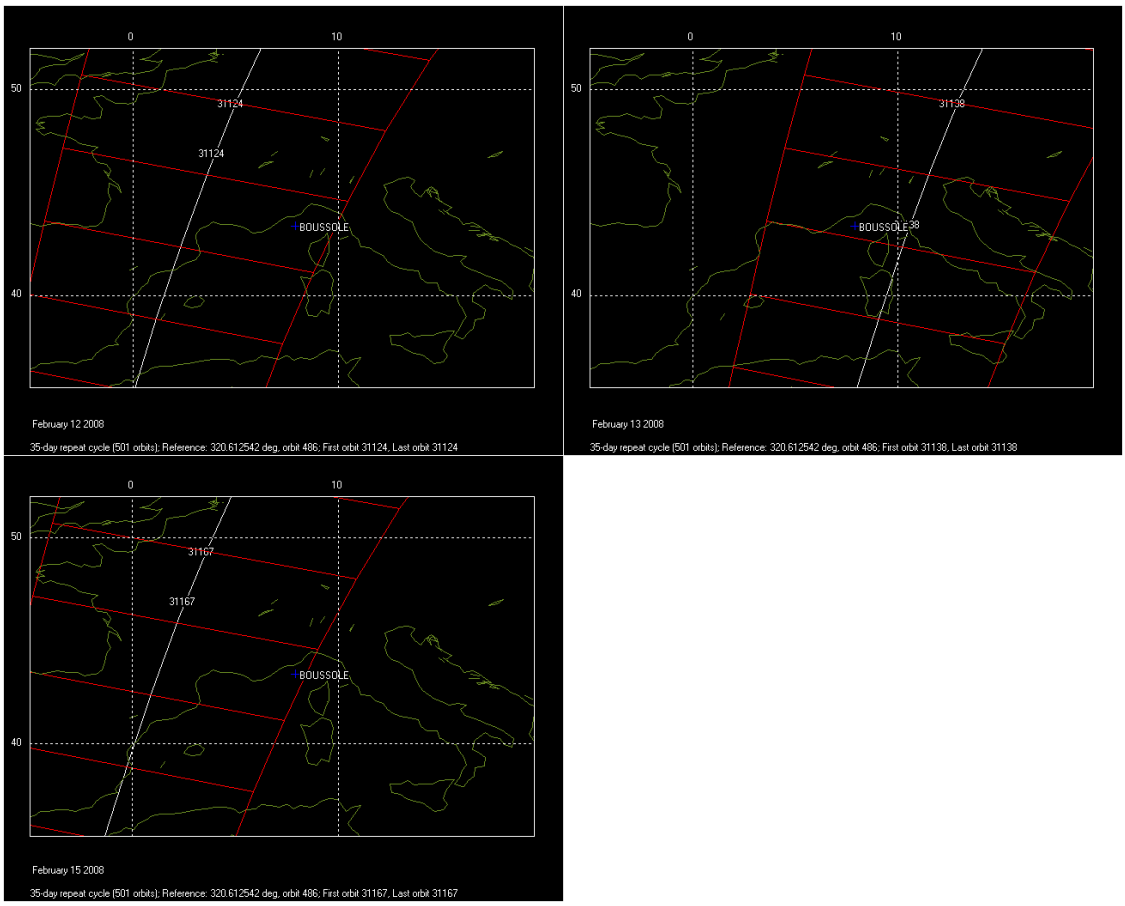


Figure 2. Calculated swath paths for MERIS (Esov software) above BOUSSOLE site for February 12, 13 and 15 2008.

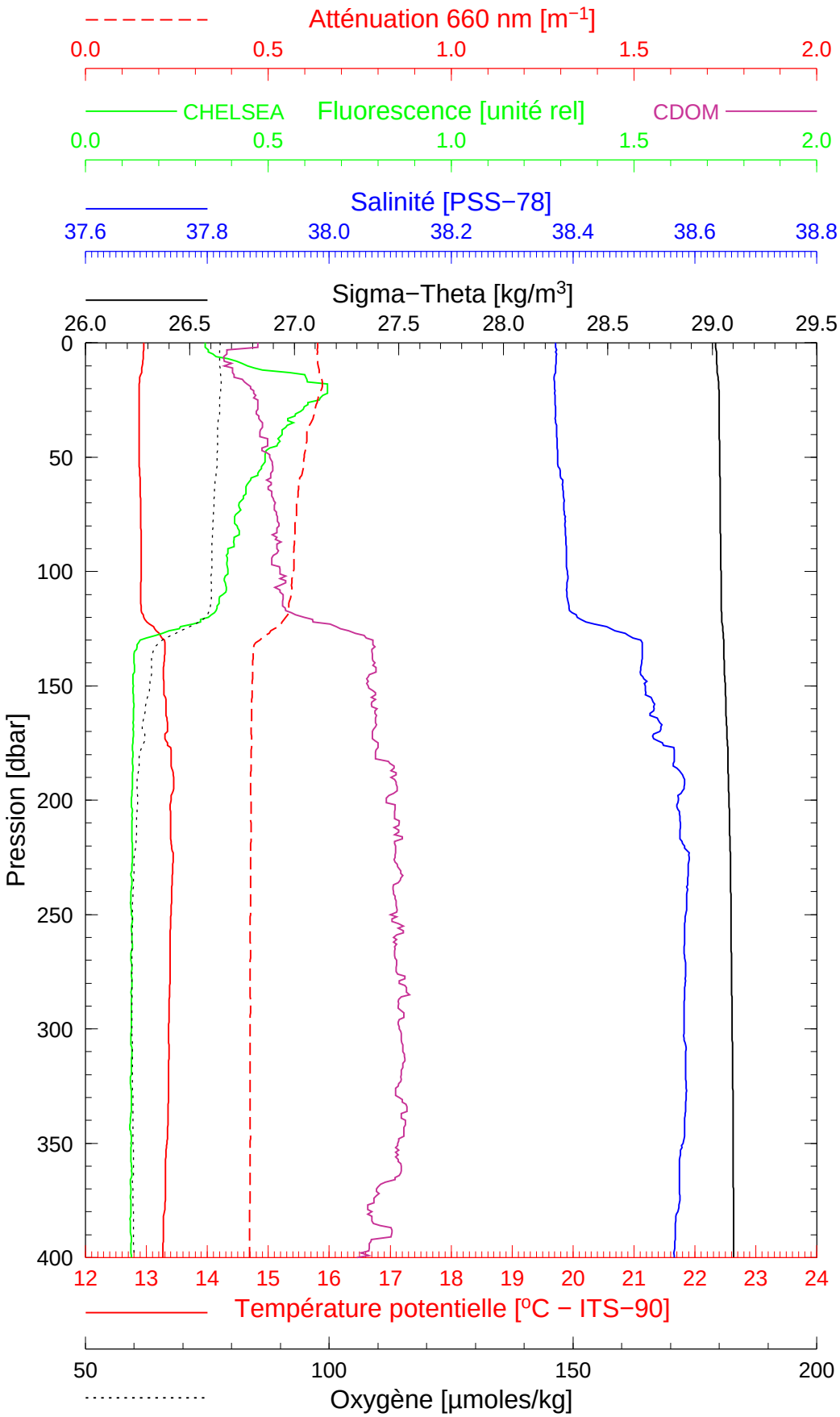
Appendix

Cruise Summary Table for Boussole 72

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
			CTDBOUS001		12:50	27:00	400	43	23.108	7	53.043			1	6	125		61		11.1	12.9	slight			
				CIMEL01	13:17	7:00		43	23.14	7	52.82														
			CTDBOUS002		13:48	29:00	400	43	25.017	7	48.054			1	3	190		63		10.7	13.0	slight			
12/02/08			CTDBOUS003		14:52	25:00	400	43	27.977	7	41.875			1	2	175		63		10.6	13.6	calm			
			CTDBOUS004		15:46	24:00	400	43	30.987	7	36.950			1	5	68		63		11.5	13.7	calm			
			CTDBOUS005		16:41	24:00	400	43	34.006	7	30.964			9	3	208		63		10.9	13.8	calm			
			CTDBOUS006		17:35	23:00	400	43	37.023	7	25.028			9	0	0		62		11.0	13.6	calm			
			CTDBOUS007		18:26	24:00	400	43	39.018	7	21.053			9	0	0		62			13.7	calm			
			CTDBOUS008	wat. samp. TSM & CDOM	12:42	28:00	400	43	22.418	7	53.235			1	14	213		65		10.9	12.9	frizzy			
	Bou130208black1					03:00																			
		Bou130208AA				03:00	-	43	22.447	7	52.616	blu		0	15	195		58	good	11.1		frizzy	1.0		some
13/02/08		Bou130208AB				05:18	200	43	22.423	7	52.458	blu		0	15	195		58	good	11.1		frizzy	1.0		some
		Bou130208AC				07:32	200	43	22.400	7	52.190	blu		0	15	195		58	good	11.1		frizzy	1.0		some
	Bou130208black2					03:00																			
				Secchi disk 01	14:20	04:00	15	43	22.5	7	52.5	blu		0											
	Bou140208black1				11:06	03:00																			
		Bou140208AA			11:12	05:48	200	43	22.549	7	53.268	blu	Cu	1	1	181		68	discrete	11.6		calm	0.1		no
	Bou140208black2				11:28	03:00																			
				Secchi disk 02	11:30	04:00	18	43	22.5	7	53.5	blu	Cu	1											
14/02/08				CIMEL02	11:35	05:00		43	25.534	7	53.278														
			CTDBOUS009	wat. samp. TSM	11:38	27:00	400	43	22.546	7	53.269	blu		1	0	0		60		14.5	13.0	calm			
				CIMEL03	11:50	05:00		43	22.516	7	53.293														
				CIMEL04	12:05	06:00		43	22.501	7	53.323														
			CTDBOUS010		12:32	22:00	400	43	22.499	7	53.438			1	0	0		60		14.4	13.1	calm			
				PVM	08:30	30:00	1000	43	22.5	7	52.5														
			CTDBOUS011	wat. samp. TSM	09:09	24:00	400	43	22.726	7	52.857			2	4	10		65		11.5	13.0	calm			
				CIMEL05	09:24	04:00		43	22.734	7	52.638														
	Bou150208black1				09:33	03:00																			
		Bou130208AB			09:47	06:12	200	43	22.714	7	52.127	blu	Cu	1				65		11.9		calm	0.3		no
		Bou130208AC			10:03	04:31	200	43	22.634	7	51.875	blu	Cu	1				65		11.9		calm	0.3		no
15/02/08		Bou130208AE			10:14	04:34	207	43	22.575	7	51.809	blu	Cu	1				65		11.9		calm	0.3		no
	Bou150208black2				10:28	03:00																			
				2 x plankton net	10:30			43	22.5	7	52.5														
			MOOSE001		11:40		2200																		
				Secchi disk 03	11:45	04:00	18	43	25.079	7	51.766	blu	Cu	1								calm	0.3		no
				CIMEL06	11:49	04:00		43	25.086	7	51.689														
				CIMEL07	12:54	04:00		43	25.248	7	51.410														

Boussole 72 **12/02/2008** **BOUS080212_01**

BOUS001

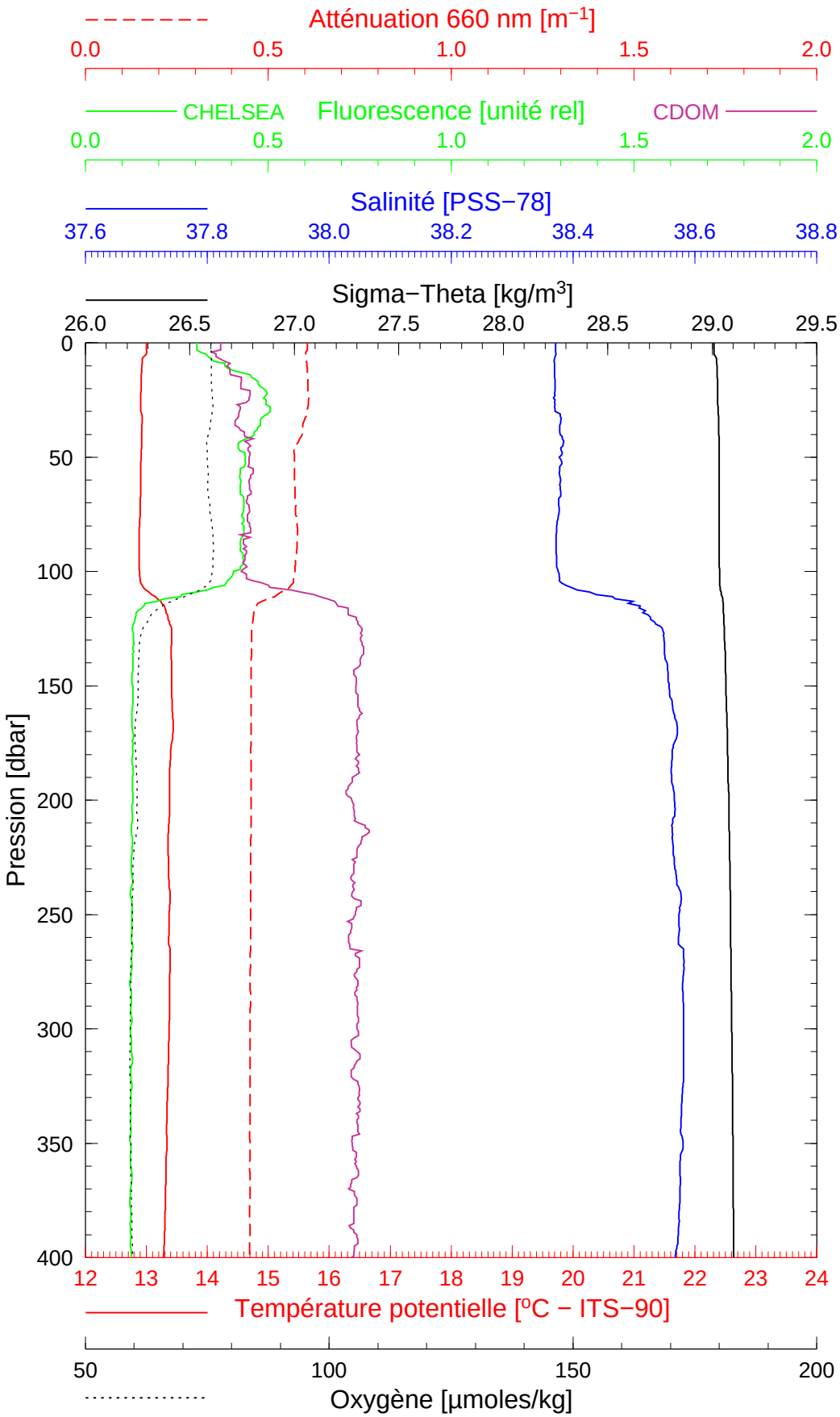


Date *12/02/2008* *Latitude* *43°23.108 N*

Heure déb *12h 48min [TU]* *Longitude* *07°53.043 E*

Boussole 72 **12/02/2008** **BOUS080212_02**

BOUS002

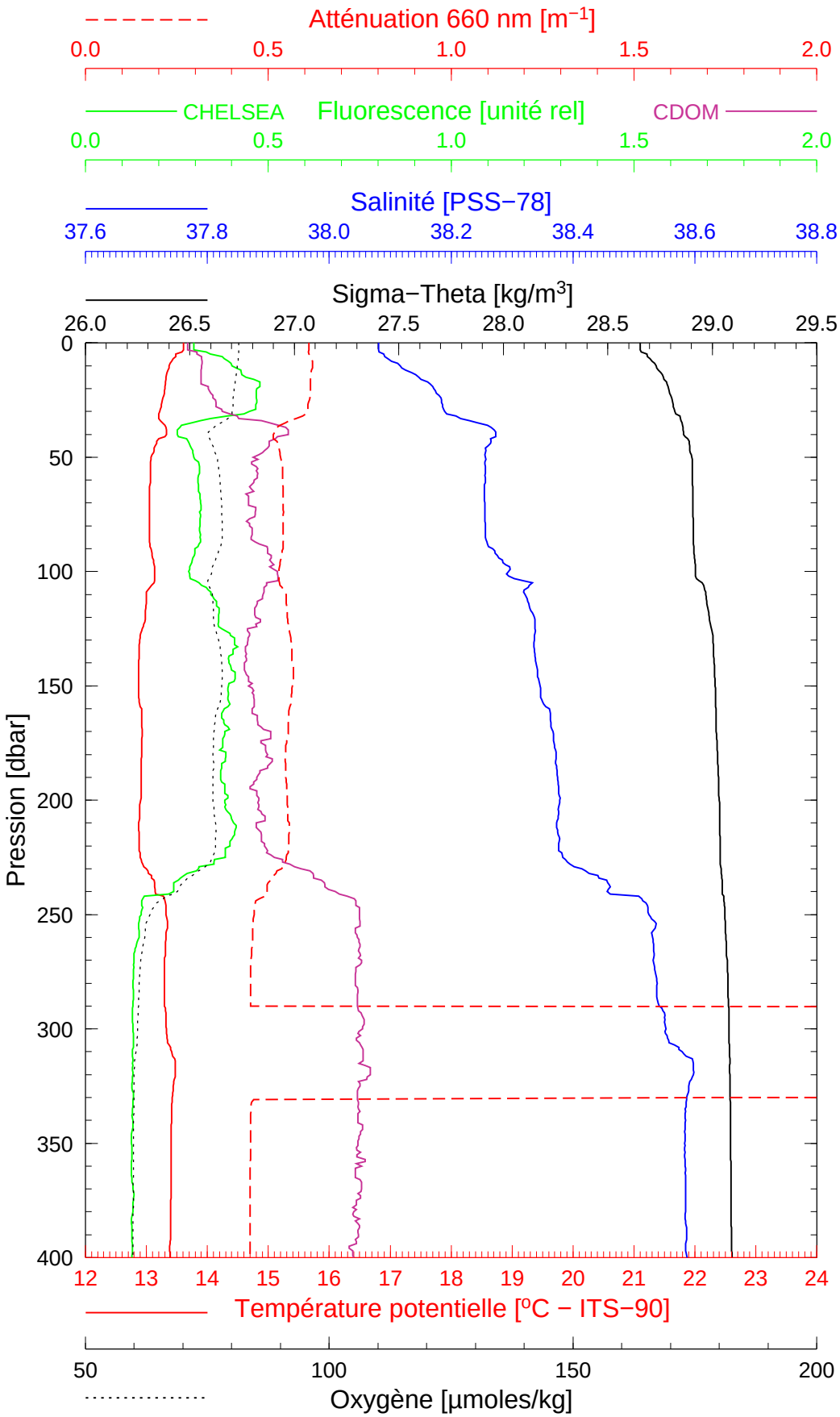


Date *12/02/2008* *Latitude* *43°25.017 N*

Heure déb *13h 48min [TU]* *Longitude* *07°48.054 E*

Boussole 72 **12/02/2008** **BOUS080212_03**

BOUS003

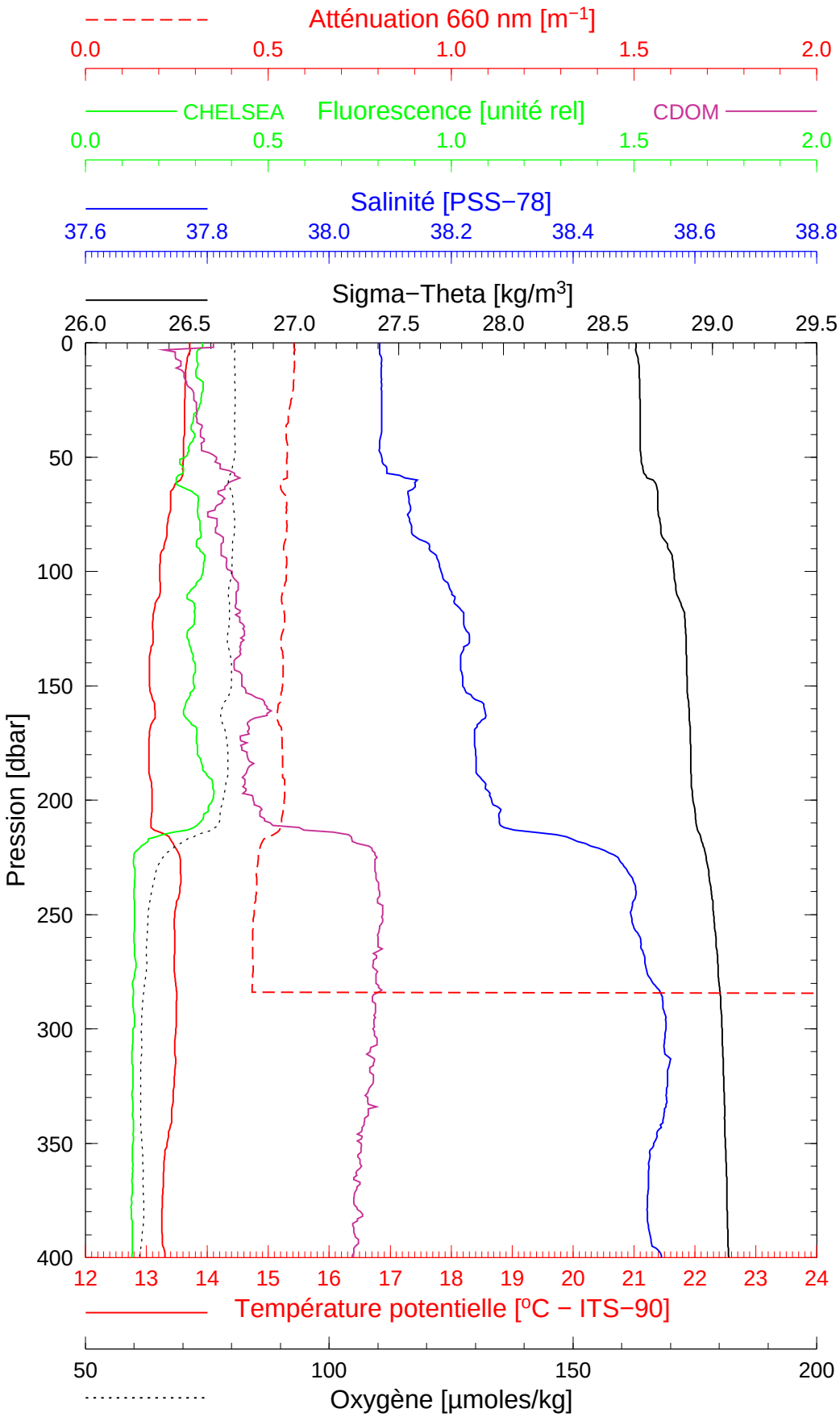


Date *12/02/2008* *Latitude* *43°27.977 N*

Heure déb *14h 51min [TU]* *Longitude* *07°41.875 E*

Boussole 72 **12/02/2008** **BOUS080212_04**

BOUS004

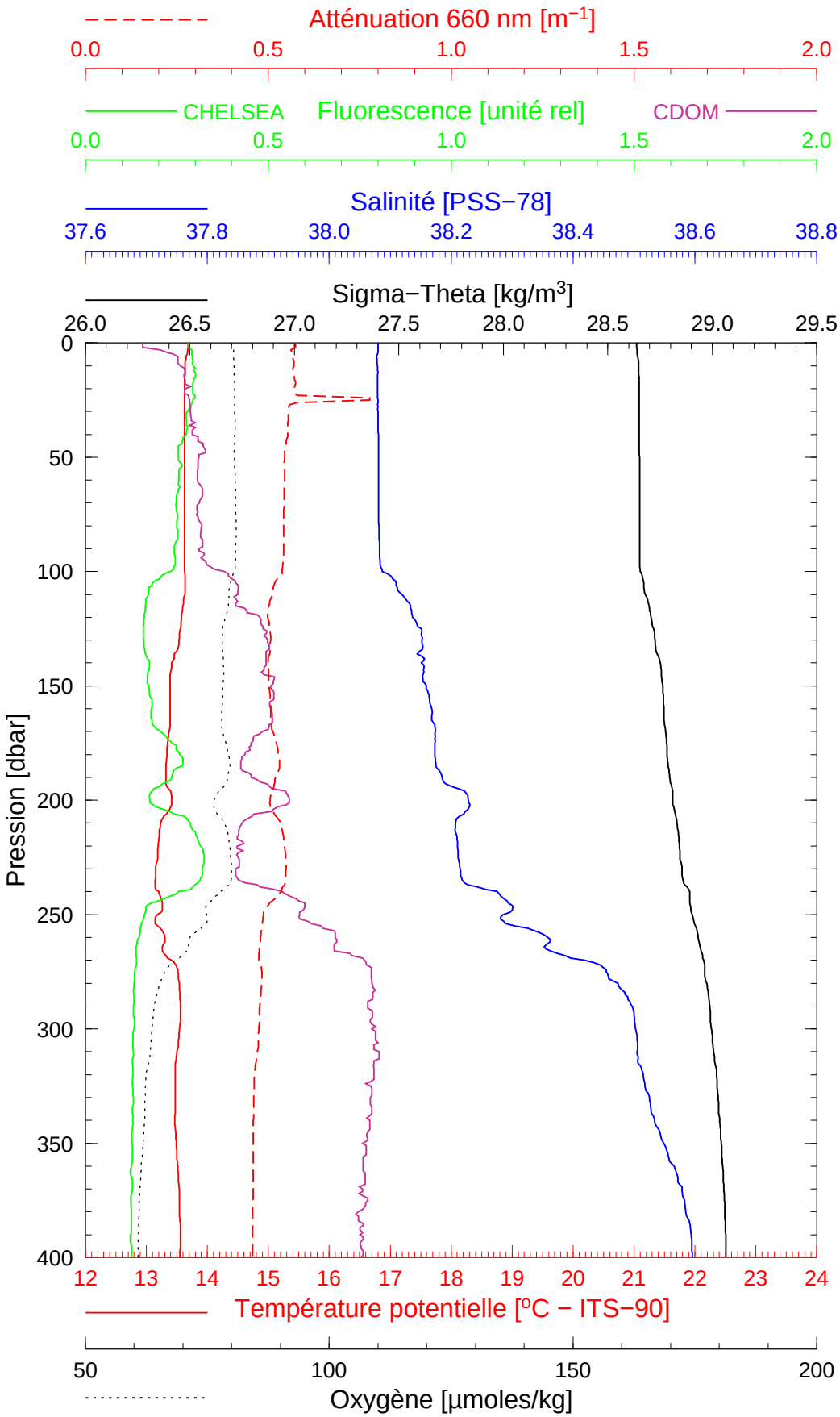


Date *12/02/2008* *Latitude* *43°30.987 N*

Heure déb *15h 46min [TU]* *Longitude* *07°36.950 E*

Boussole 72 **12/02/2008** **BOUS080212_05**

BOUS005

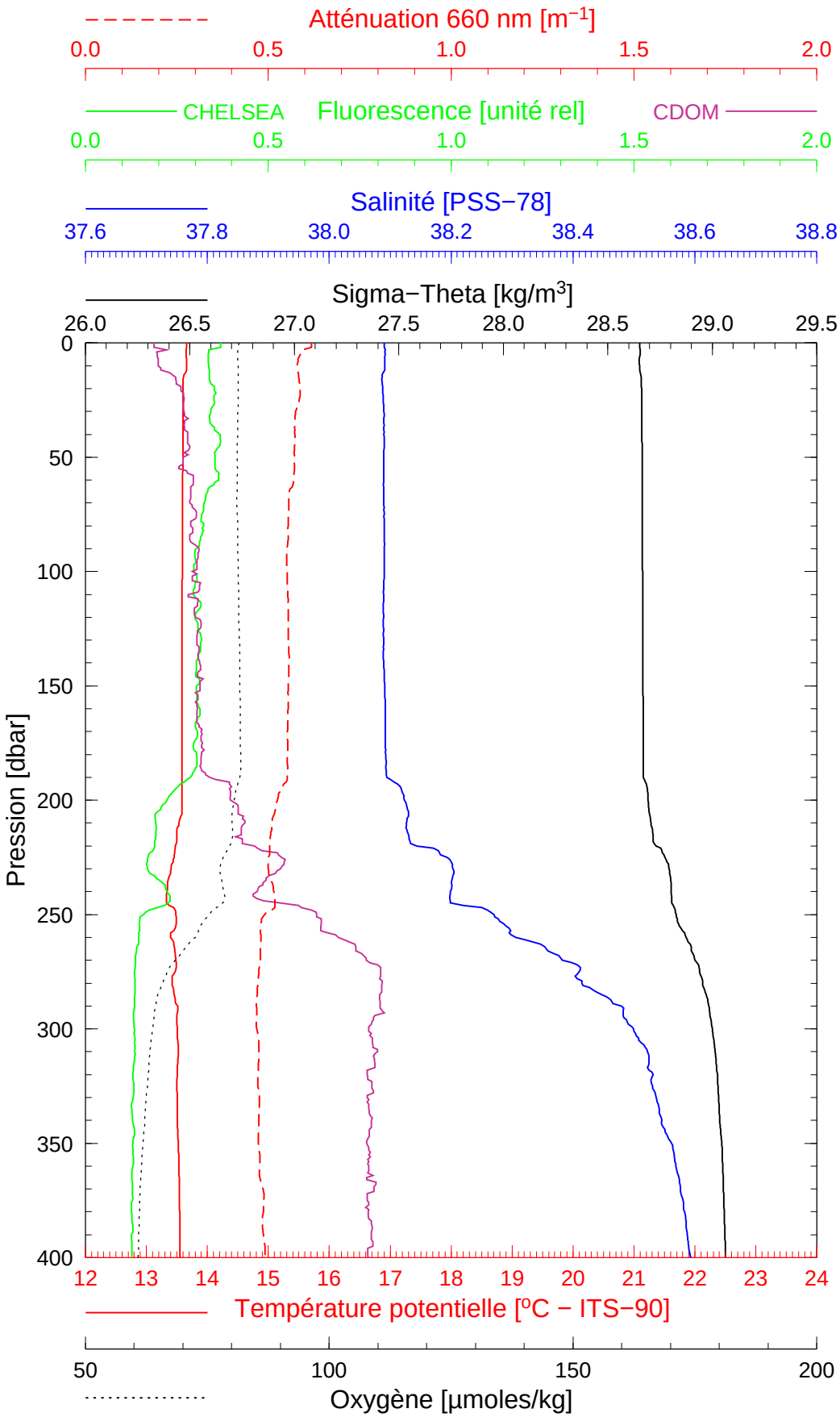


Date *12/02/2008* *Latitude* *43°34.006 N*

Heure déb *16h 41min [TU]* *Longitude* *07°30.964 E*

Boussole 72 **12/02/2008** **BOUS080212_06**

BOUS006

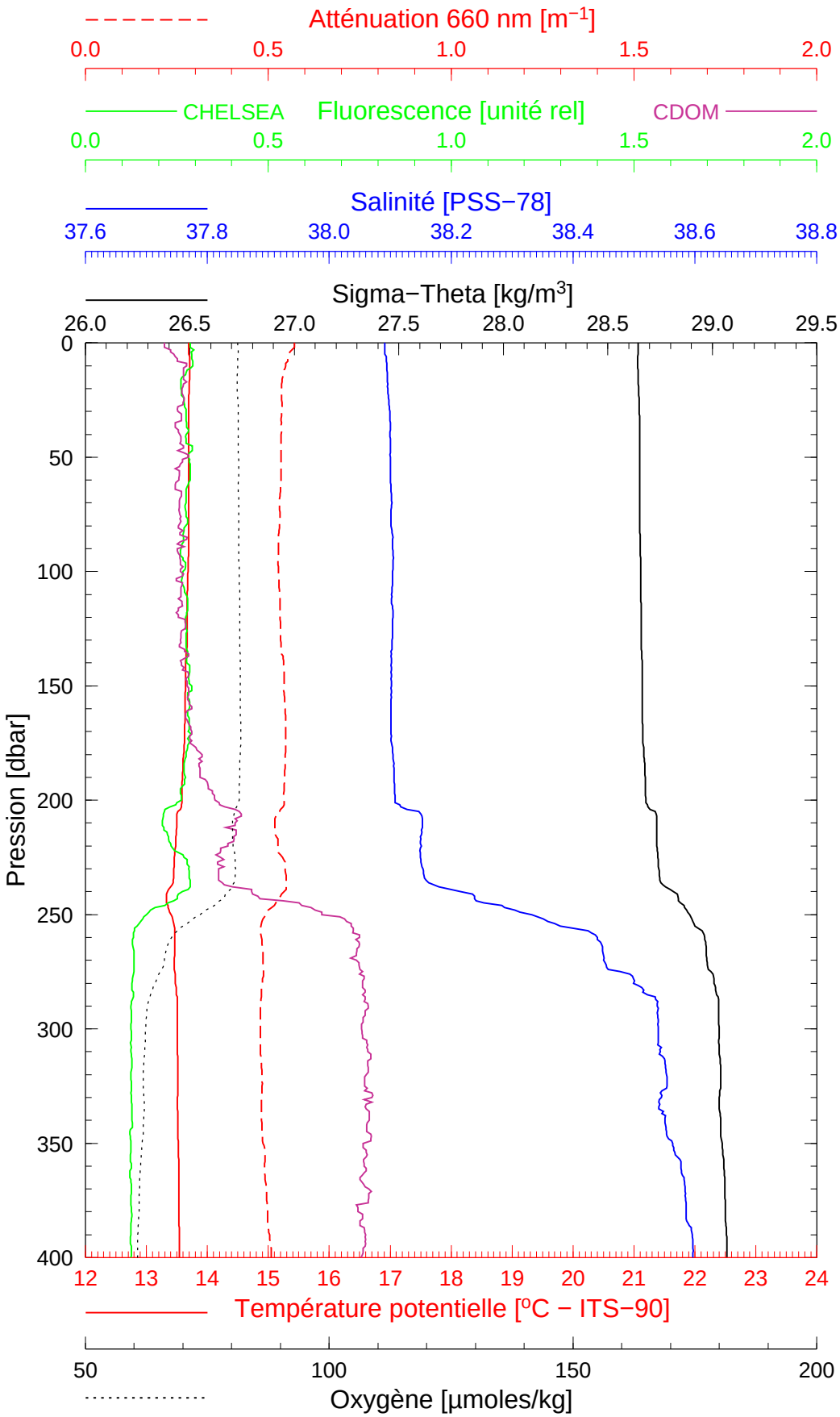


Date *12/02/2008* *Latitude* *43°37.023 N*

Heure déb *17h 35min [TU]* *Longitude* *07°25.028 E*

Boussole 72 **12/02/2008** **BOUS080212_07**

BOUS007

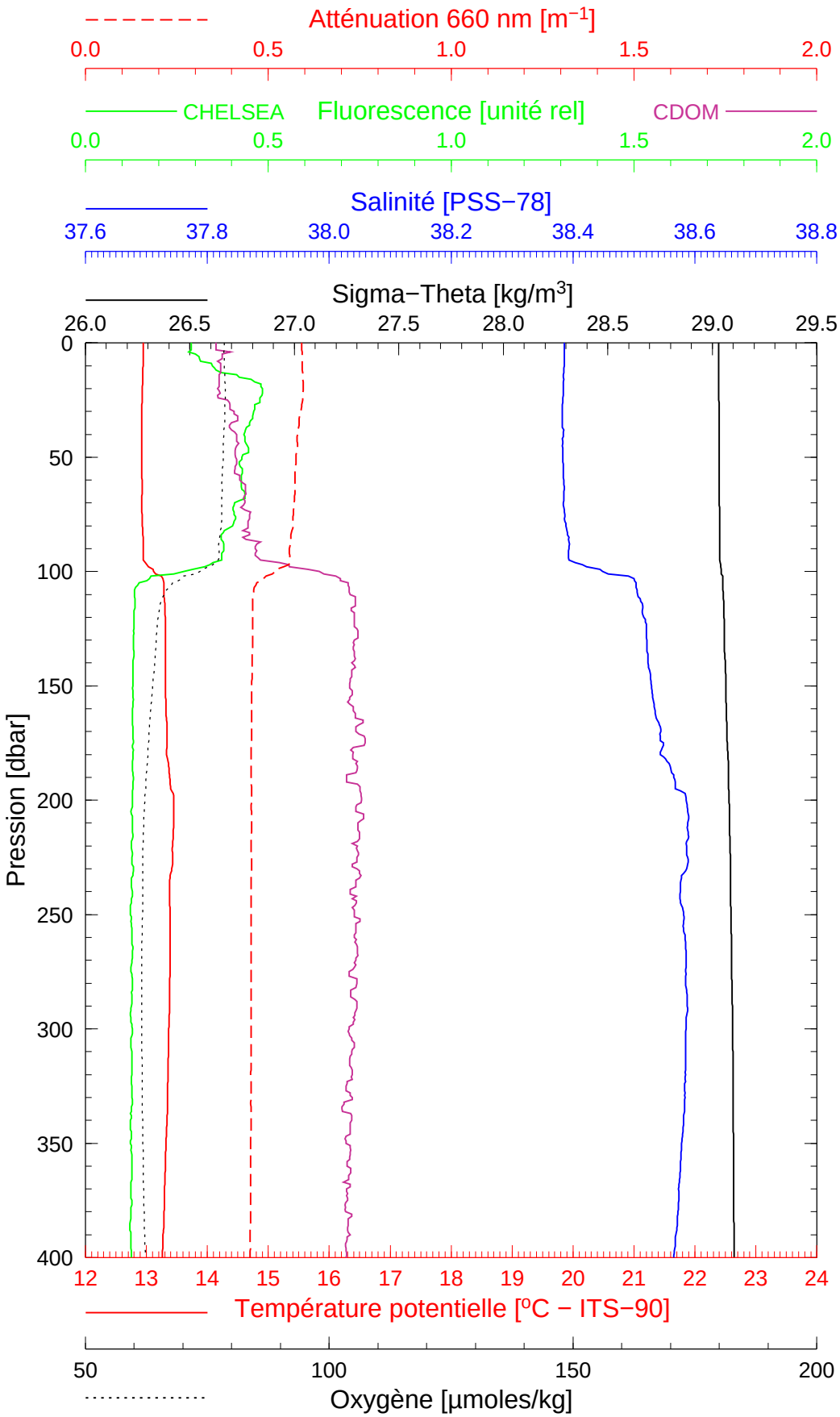


Date *12/02/2008* *Latitude* *43°39.018 N*

Heure déb *18h 22min [TU]* *Longitude* *07°21.053 E*

Boussole 72 **13/02/2008** **BOUS080213_08**

BOUS008

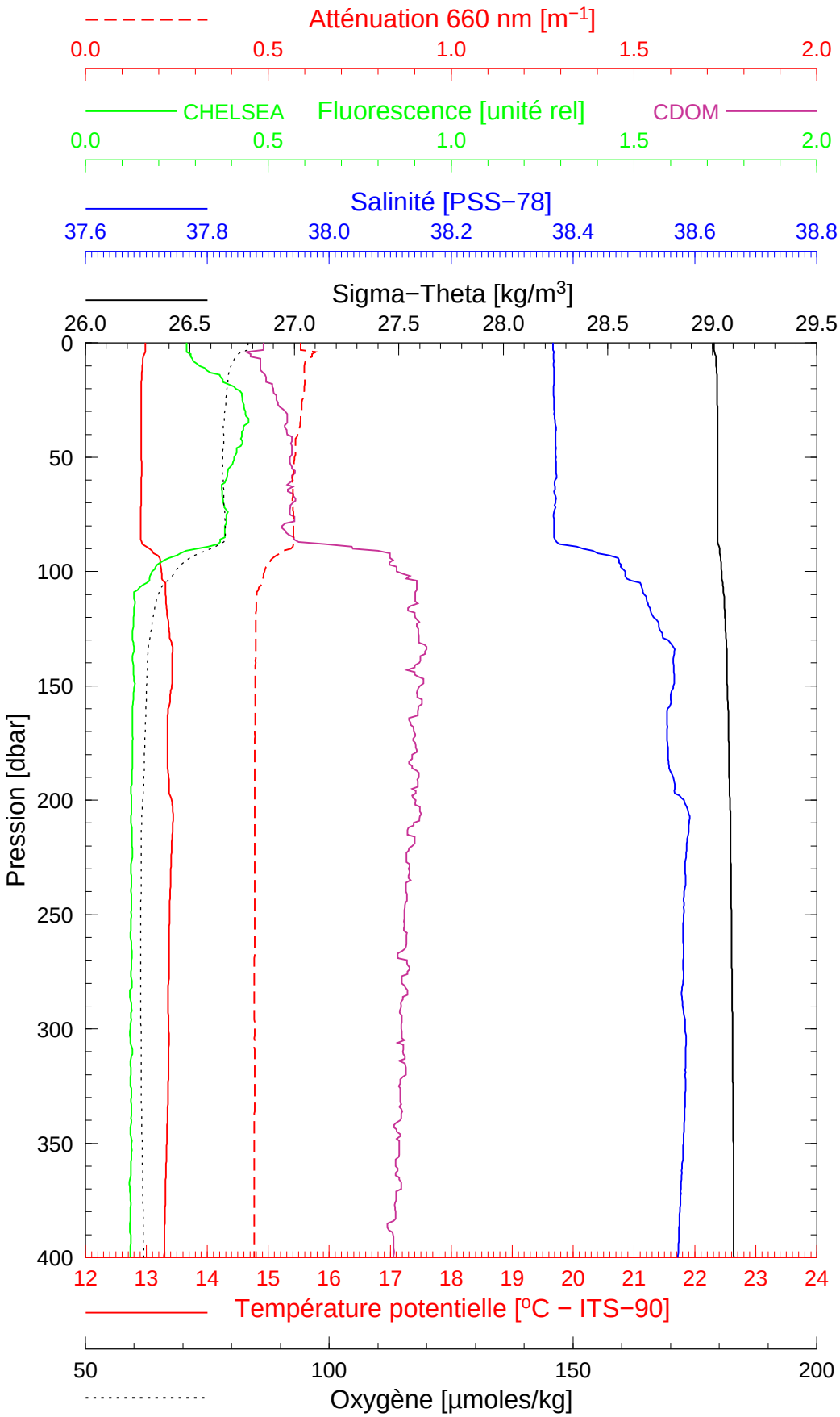


Date *13/02/2008* *Latitude* *43°22.418 N*

Heure déb *12h 42min [TU]* *Longitude* *07°53.235 E*

Boussole 72 **14/02/2008** **BOUS080214_09**

BOUS009

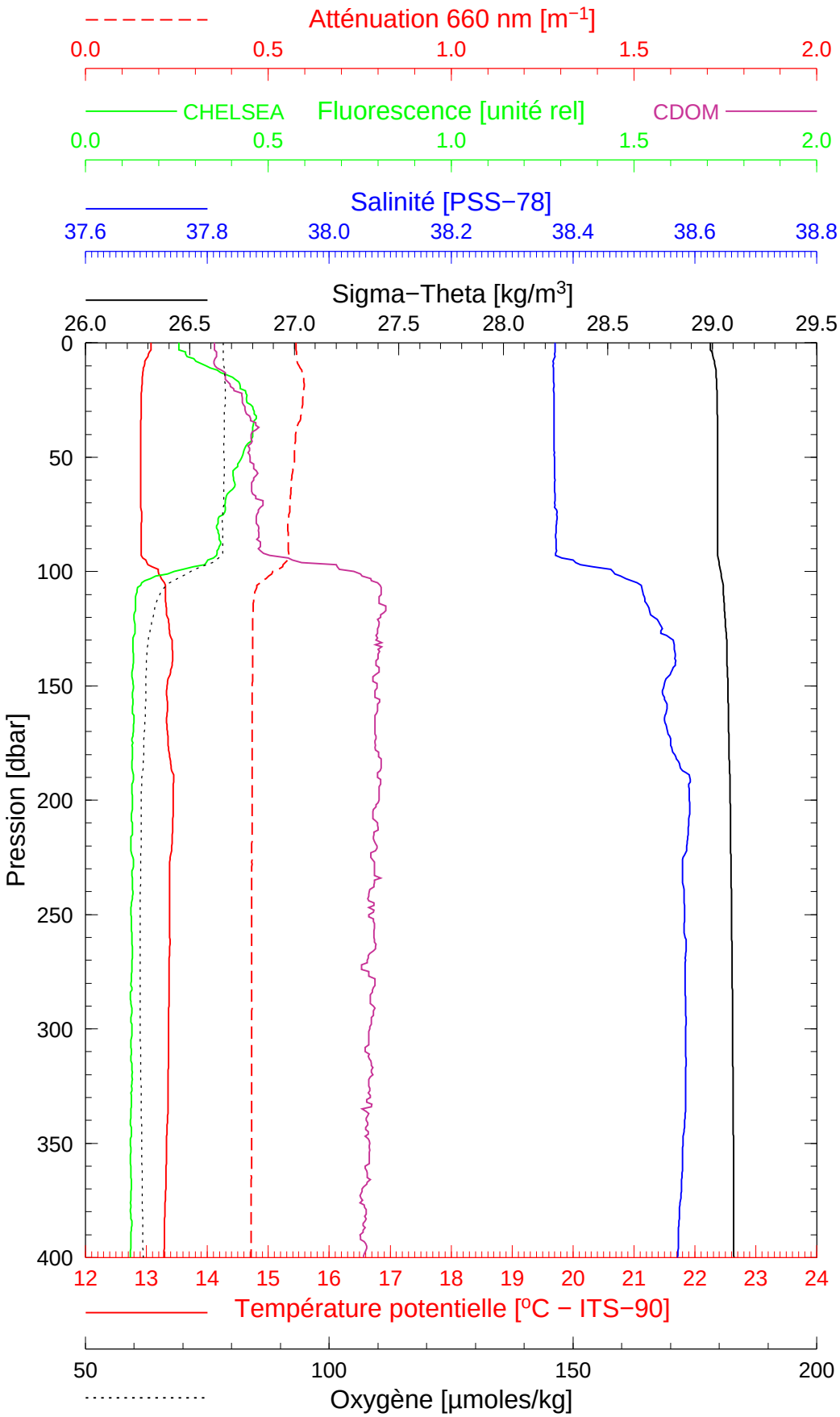


Date *14/02/2008* *Latitude* *43°22.546 N*

Heure déb *11h 38min [TU]* *Longitude* *07°53.269 E*

Boussole 72 **14/02/2008** **BOUS080214_10**

BOUS010

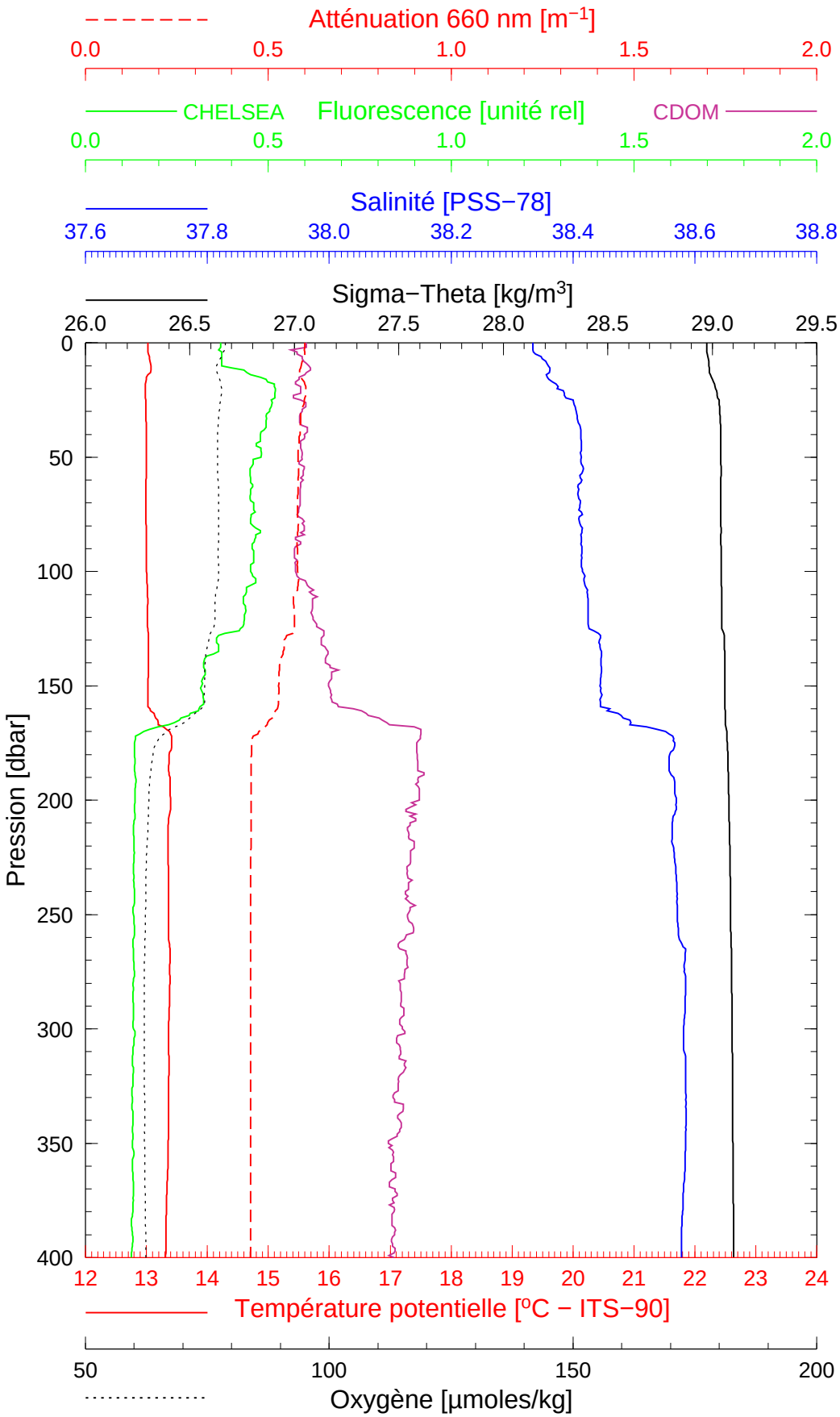


Date *14/02/2008* *Latitude* *43°22.499 N*

Heure déb *12h 32min [TU]* *Longitude* *07°53.438 E*

Boussole 72 **14/02/2008** **BOUS080215_11**

BOUS011



Date *14/02/2008* *Latitude* *43°22.726 N*

Heure déb *09h 08min [TU]* *Longitude* *07°52.857 E*