BOUSSOLE Monthly Cruise Report

Cruise 71
January 21 - 24, 2008

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Vessel: R/V Téthys II
(Captain: Remy Lafond)

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Fig 1. The BOUSSOLE buoy showing signs of an impact during a helicopter survey preceding the cruise (17th January 2008).

BOUSSOLE project

ESA/ESRIN contract N° 17286/03/I-OL

Deliverable from WP#400/200

January 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 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. One of the days two PROVOR buoys will be deployed, one at the Boussole site, and one on the route to the port of Nice within the ligurian current (1000m isobath).

Cruise Summary

A helicopter survey at the Boussole site on January 17th revealed a serious damage to the buoy structure. The upper part of the buoy was then recovered on January 20th. So the ship time for this cruise was spent exclusively for sampling activities. The weather conditions for this cruise were not optimal but allowed to work at the Boussole site for two of the three available days, whereas the last day a strike of the sailors did not allow the use of the ship. The first day was used to perform SPMR and CTD. This day, the transect from the Boussole site to the port of Nice was also completed. The second day, bad sea state did not allow sampling. The third day was used to perform SPMR and CTD, Secchi Disk and some CIMEL measurements. During this day a PVM and 2 plankton net profiles were performed and two PROVOR buoys deployed too.

Monday 21 January 2008

This day the sky was overcast with moderate wind and swell. 1 CTD cast and 3 SPMR profiles were realized before leaving the Boussole site and performing CTD casts along the transect to Nice harbour. The ac9 had communication problem with the CTD and no data were collected.

Tuesday 22 January 2008

This day the sky was blue but strong wind (20 knots in the morning) and high waves (H1/3 2.0 m at 10 AM) did not allow going to the Boussole site for sampling. The communication problem of the ac9 was solved.

Wednesday 23 January 2008

This day the sky was clear and the sea state, though not optimal, allowed sampling at the Boussole site starting from the late morning. 1 CTD cast, 3 SPMR profile, 1 Secchi Disk and 1 CIMEL were performed on site. The CTD stopped working during the upwelling cast at 30 m. When recovered on board, it showed signs of short circuit on the power supply cable. 1 PVM and 2 plankton net profiles were also collected. A first buoy PROVOR was deployed at the Boussole site, whereas a second one was deployed on the return rout within the ligurian current. 2 CIMEL measurements were also made on the route from Nice to the Boussole site.

Thursday 24 January 2008

Sailors' Strike.

Cruise Report

Monday 21 January 2008 (UTC)

0540 Depart from the port of Nice.
0850 Arrival at the Boussole site. The ac9 does not communicate with the CTD.
0950 SPMR 01, 02 and 03.
1220 CTD 01, 400m, with water sampling at 200, 150, 80, 70, 60, 50, 40, 30, 20, 10 and 5 m for HPLC, Ap and CDOM. TSM was sampled at 5 m too.
1410 CTD 02, 400 m, station 01 (43°25'N 07°48'E), with water sampling at 400 and 5 m for radiance camera.
1520 CTD 03, 400 m, station 02 (43°28'N 07°42'E).
1620 CTD 04, 400 m, station 03 (43°31'N 07°37'E).
1720 CTD 05, 400 m, station 04 (43°34'N 07°31'E).
1825 CTD 06, 400 m, station 05 (43°37'N 07°25'E).
19:20 CTD 07, 400 m, station 06 (43°39'N 07°21'E).
2020 Arrival at the port of Nice.

Tuesday 22 January 2008

Bad weather conditions prevented the departure from the port of Nice.

Wednesday 23 January 2008

0730 Departure from the port of Nice.
0750 CIMEL 01 (43°39.41'N 07°20.45'E).
0821 CIMEL 01 (43°36.79'N 07°25.89'E).
1100 Arrival at the Boussole site.
1110 CTD 08, 400 m, with water sampling at 200, 150, 80, 70, 60, 50, and 40 m for HPLC, and Ap. The upwelling cast was stopped at 30 m for problems with alimentation of CTD.
1238 Deployment of buoy PROVOR 01.
1251 SPMR 04, 05, and 06.
1345 Secchi Disk (17 m).
1350 CIMEL 03.
1400 PVM 1000 m profile.
1600 Plankton net 0-100 m 01 and 02.
1628 Departure from the BOUSSOLE site.
1815 Deployment of buoy PROVOR 02.
1930 Arrival at the port of Nice.

Thursday 24 January 2008

A strike of the sailors prevented the departure from the port of Nice.

Calculated Swath paths for the MERIS Sensor (ESOV Software)

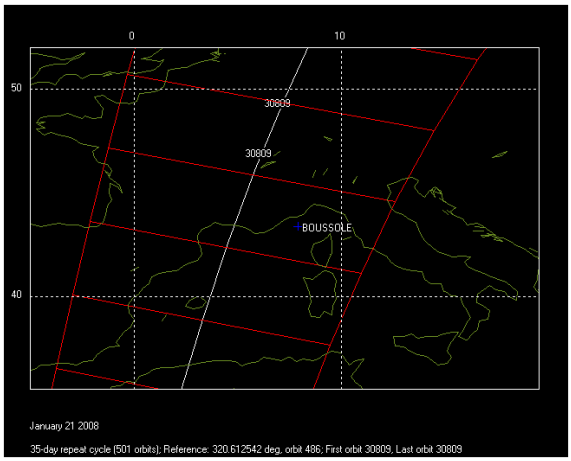


Figure 2. Calculated swath paths for MERIS (Esov software) above BOUSSOLE site for January 21 2008.

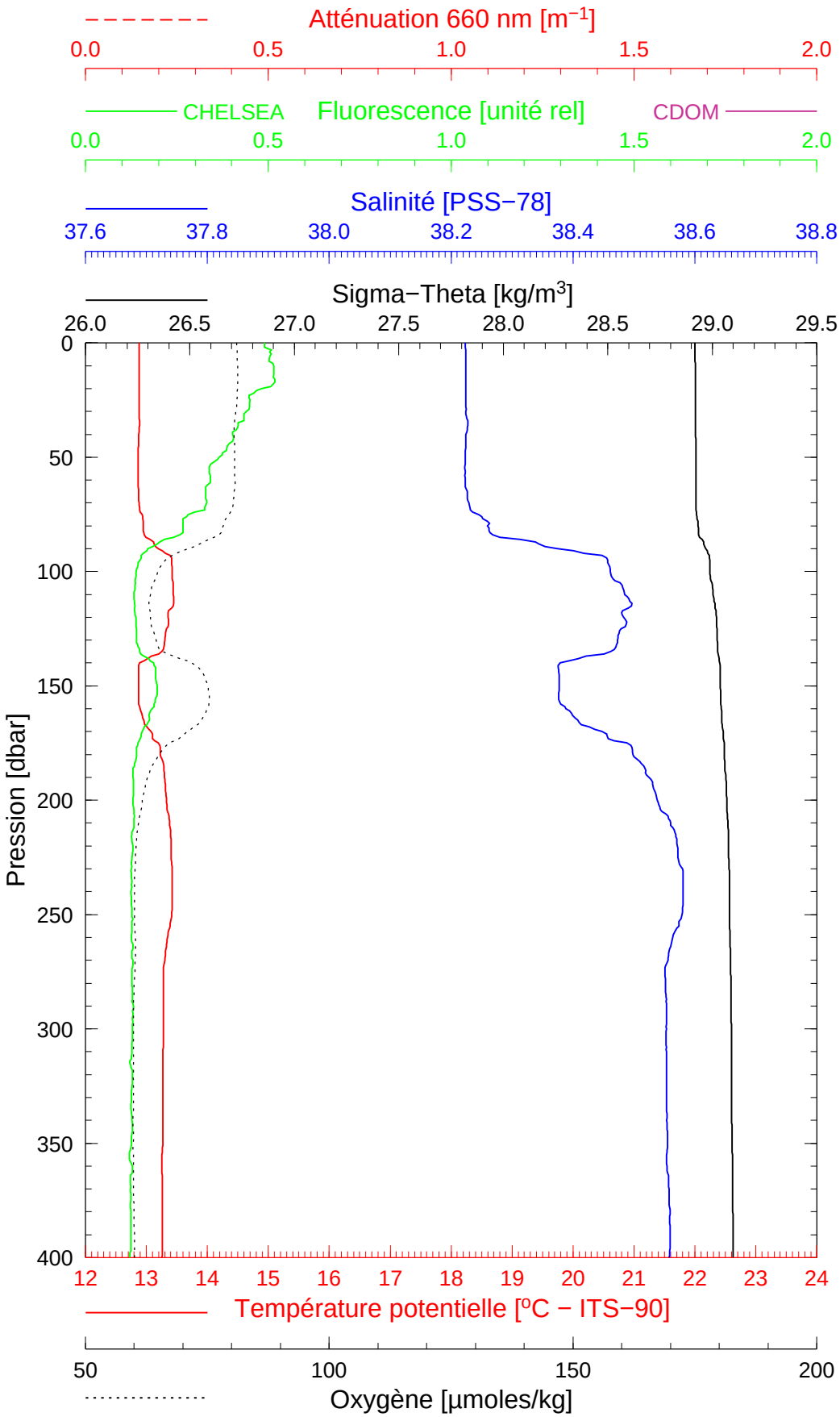
Appendix

Cruise Summary Table for Boussole 71

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
	Bou210108black1			9:56	03:00																					
		Bou2101008AA		10:06	05:44	201	43	22.451	7	54.013				Overcast	Stratus	8	7 kn	-	1015.8	78	Good	11.7		calm	0.5 m		Very Few
		Bou2101008AD		10:17	04:54	200	43	22.453	7	54.109				Overcast	Stratus	8	7 kn	-	1015.8	78	Good	11.7		calm	0.5 m		Very Few
		Bou2101008AE		10:28	04:59	200	43	22.471	7	54.180				Overcast	Stratus	8	7 kn	-	1015.8	78	Good	11.7		calm	0.5 m		Very Few
	Bou210108black2			10:46	03:00																					
1/21/2008			CTDBOUS001	12:38	27:00	400	43	22.560	7	54.380	w.s. TSM			Overcast	Stratus	8	7kn	123	1022.9	-	very good	11.1	12.9	choppy	0,8 m		some
			CTDBOUS002	14:17	27:00	400	43	25.013	7	47.967	w.s. Rad. Cam.			Overcast	Stratus	8	7 kn	244	1023.0	-	very good	11.1	13.1	choppy			
			CTDBOUS003	15:22	25:00	400	43	28.022	7	41.966				Overcast	Stratus	8	15kn	54	1024.5	-	very good	12.5	13.7	choppy			
			CTDBOUS004	16:23	25:00	400	43	30.985	7	36.927				Overcast	Stratus	8	16kn	203	1025.7	-	very good	12.5	13.9	choppy			
			CTDBOUS005	17:27	25:00	400	43	34.027	7	30.990				Night	Stratus	9	8kn	68	1026.0	-		13.1	13.8	choppy			
			CTDBOUS006	18:31	24:00	400	43	37.015	7	24.959				Night	Stratus	9	8kn	137	1024.0	-		12.6	13.4	choppy			
			CTDBOUS007	19:22	26:00	400	43	38.983	7	20.951				Night	Stratus	9	8kn	215	1025.5	-		14.2	13.6	choppy			
1/22/2007																										
				7:51	05:00		43	39.41	7	20.45	CIMEL01			Blue	Ci	0											
				8:21	06:00		43	36.79	7	25.89	CIMEL02			Blue	Ci	0											
			CTDBOUS008	11:12	27:00	400	43	22.424	7	53.349				Blue	Ci	1	-	-	-	-	Excellent	-	-	choppy	1.5 m		Few
				12:38	10:00						PROVOR01															
	Bou230108black1			12:51	03:00																					
		Bou2301008AA		13:02	06:13	200	43	22.989	7	53.244				Blue		0	-	-	-	-	Excellent	-	-	choppy	1.5 m		Few
		Bou2301008AB		13:14	05:02	200	43	23.005	7	52.977				Blue		0	-	-	-	-	Excellent	-	-	choppy	1.5 m		Few
01/23/07		Bou2301008AD		13:26	05:05	200	43	23.057	7	52.836				Blue		0	-	-	-	-	Excellent	-	-	choppy	1.5 m		Few
	Bou230108black2			13:42	03:00																					
				13:45	05:00	17	43	23.000	7	53.000	Secchi disk 01			Blue		0											
				13:55	08:00						CIMEL03			Blue		0											
				14:00	120:00	1000	43	23.000	7	53.000	PVM																
				13:45	2x10:00	2x100					plankton net (2x)																
				13:45	10:00						PROVOR02																

Boussole 71 **21/01/2008** **BOUS080121_01**

BOUS001

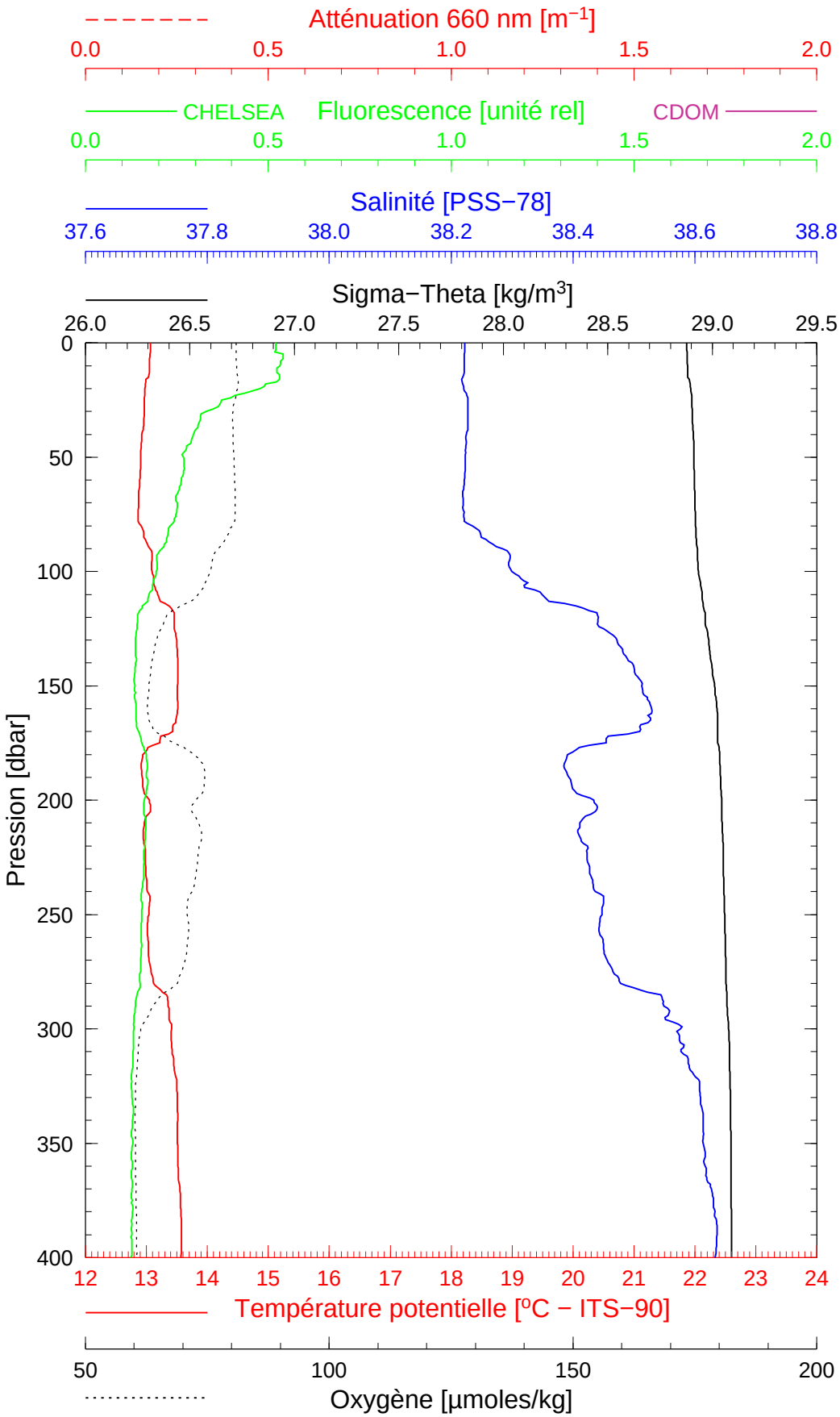


Date *21/01/2008* *Latitude* *43°22.560 N*

Heure déb *12h 38min [TU]* *Longitude* *07°54.380 E*

Boussole 71 **21/01/2008** **BOUS080121_02**

BOUS002

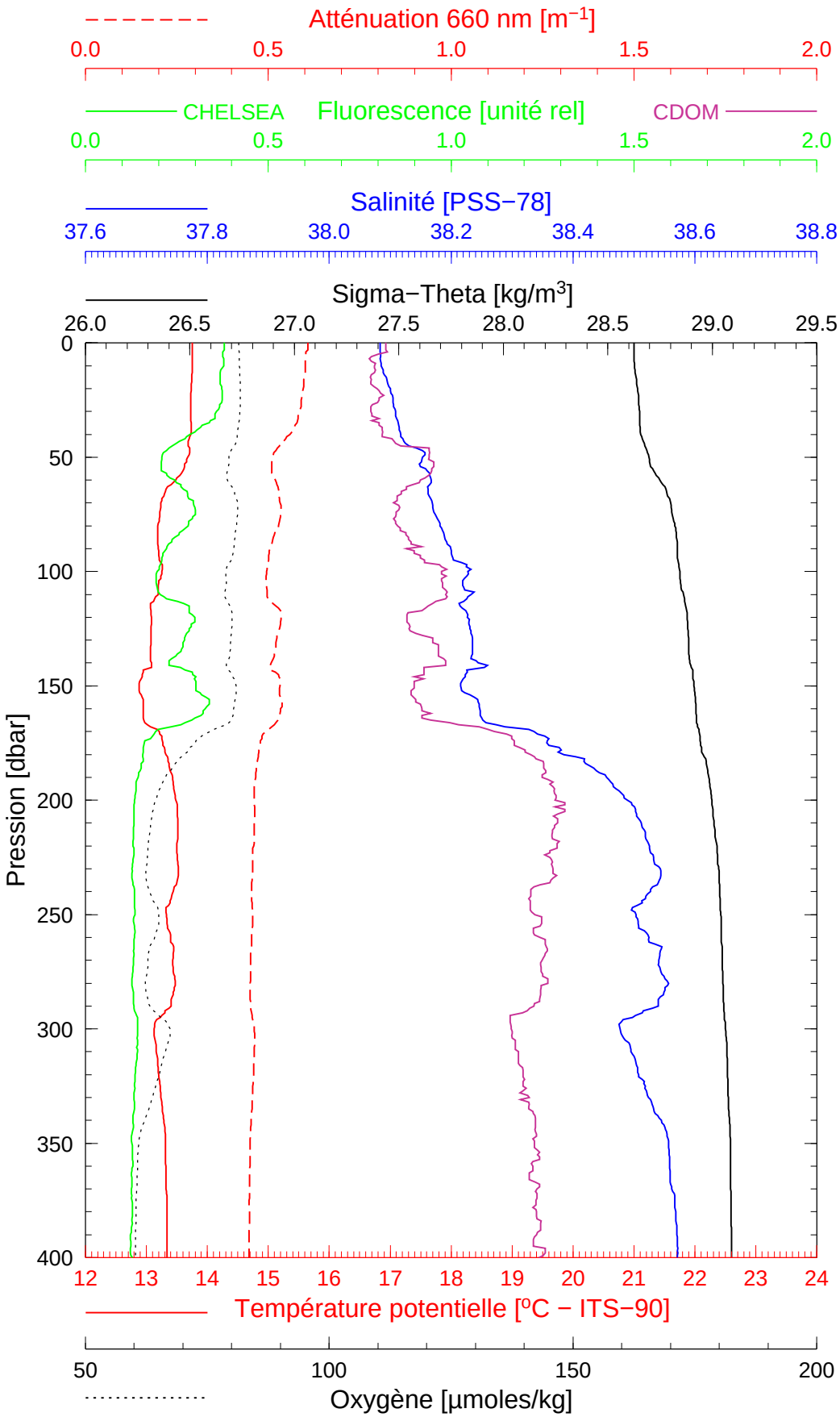


Date *21/01/2008* *Latitude* *43°25.013 N*

Heure déb *14h 17min [TU]* *Longitude* *07°47.967 E*

Boussole 71 **21/01/2008** **BOUS080121_03**

BOUS003

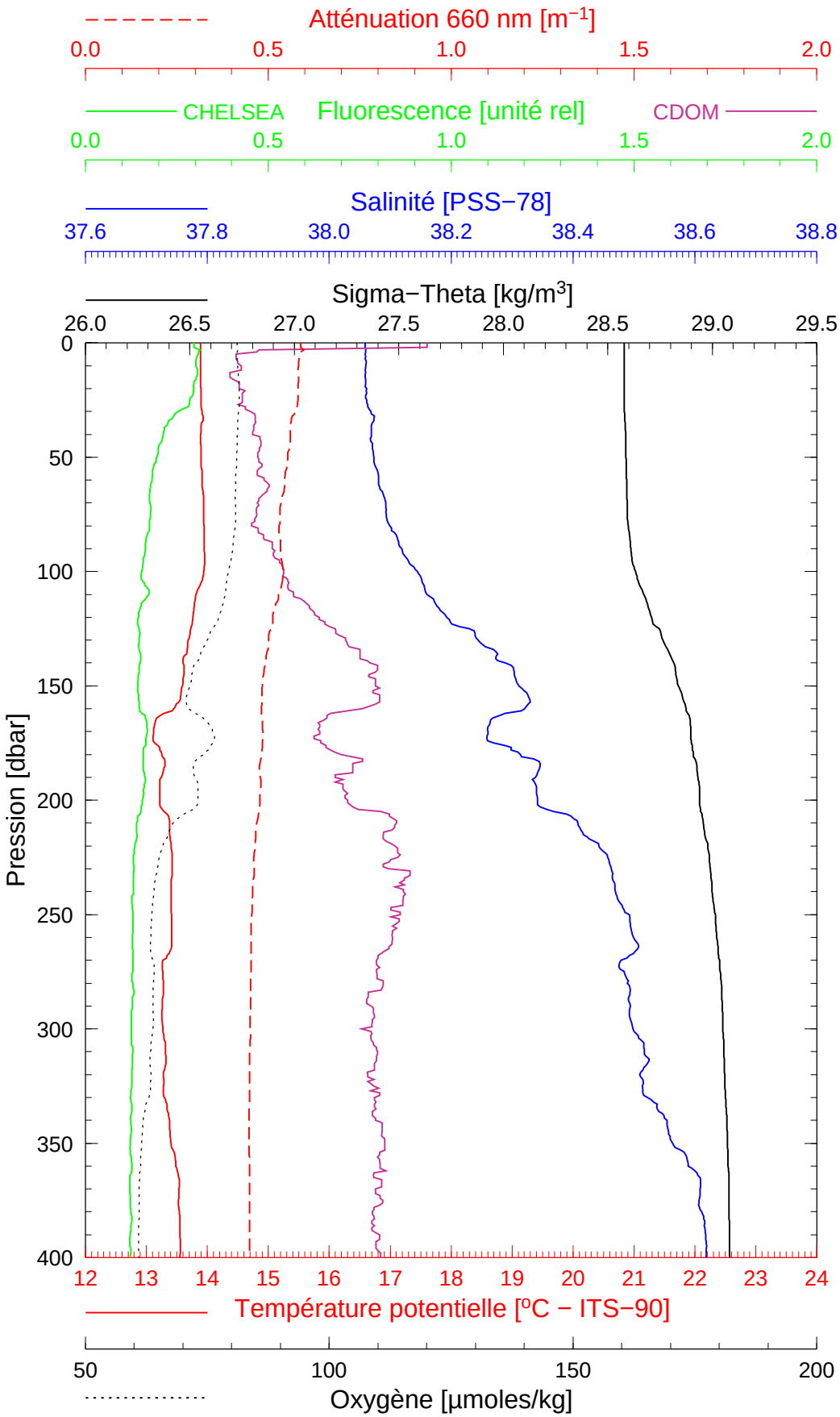


Date *21/01/2008* *Latitude* *43°28.022 N*

Heure déb *15h 22min [TU]* *Longitude* *07°41.966 E*

Boussole 71 **21/01/2008** **BOUS080121_04**

BOUS004

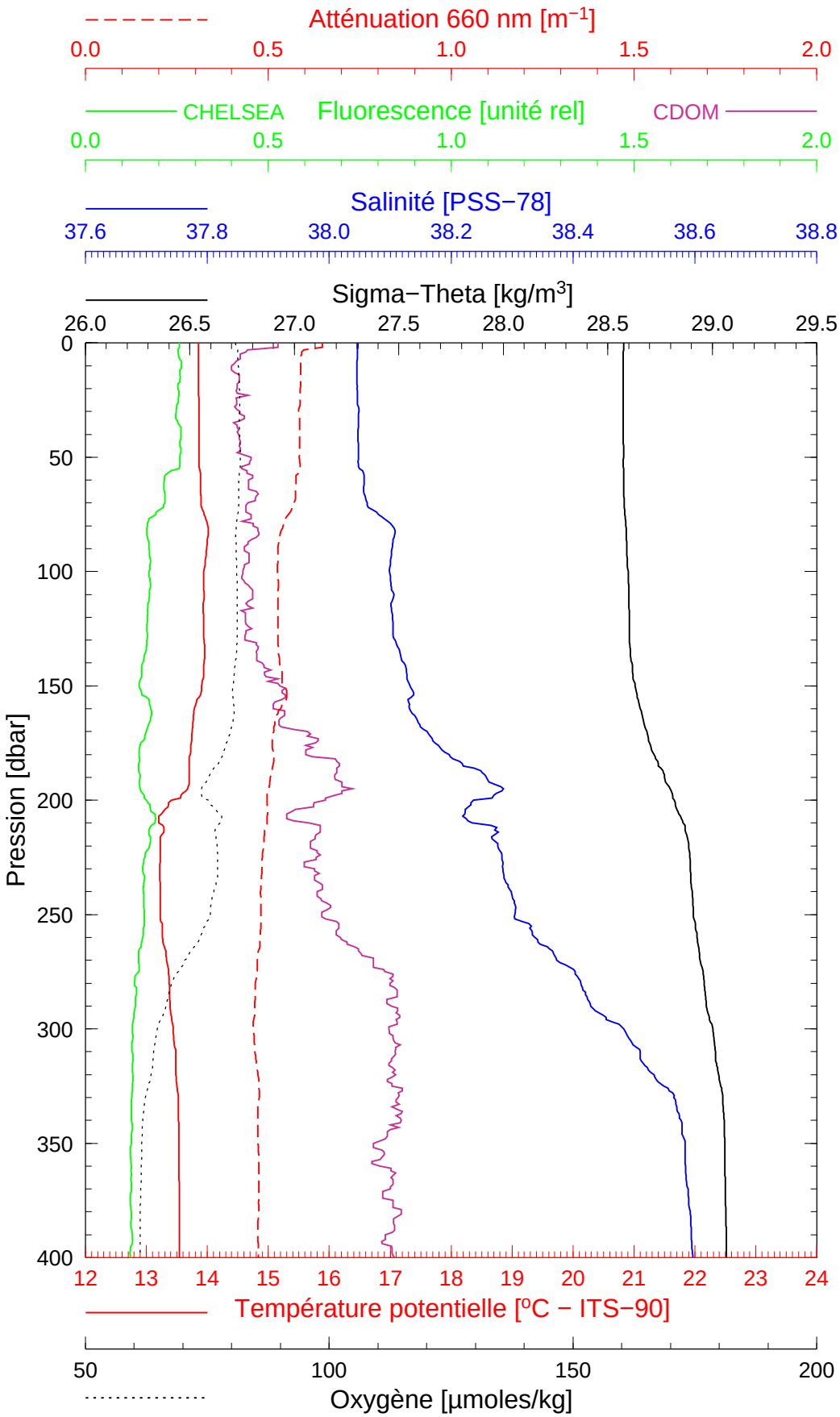


Date *21/01/2008* *Latitude* *43°30.985 N*

Heure déb *16h 23min [TU]* *Longitude* *07°36.927 E*

Boussole 71 **21/01/2008** **BOUS080121_05**

BOUS005

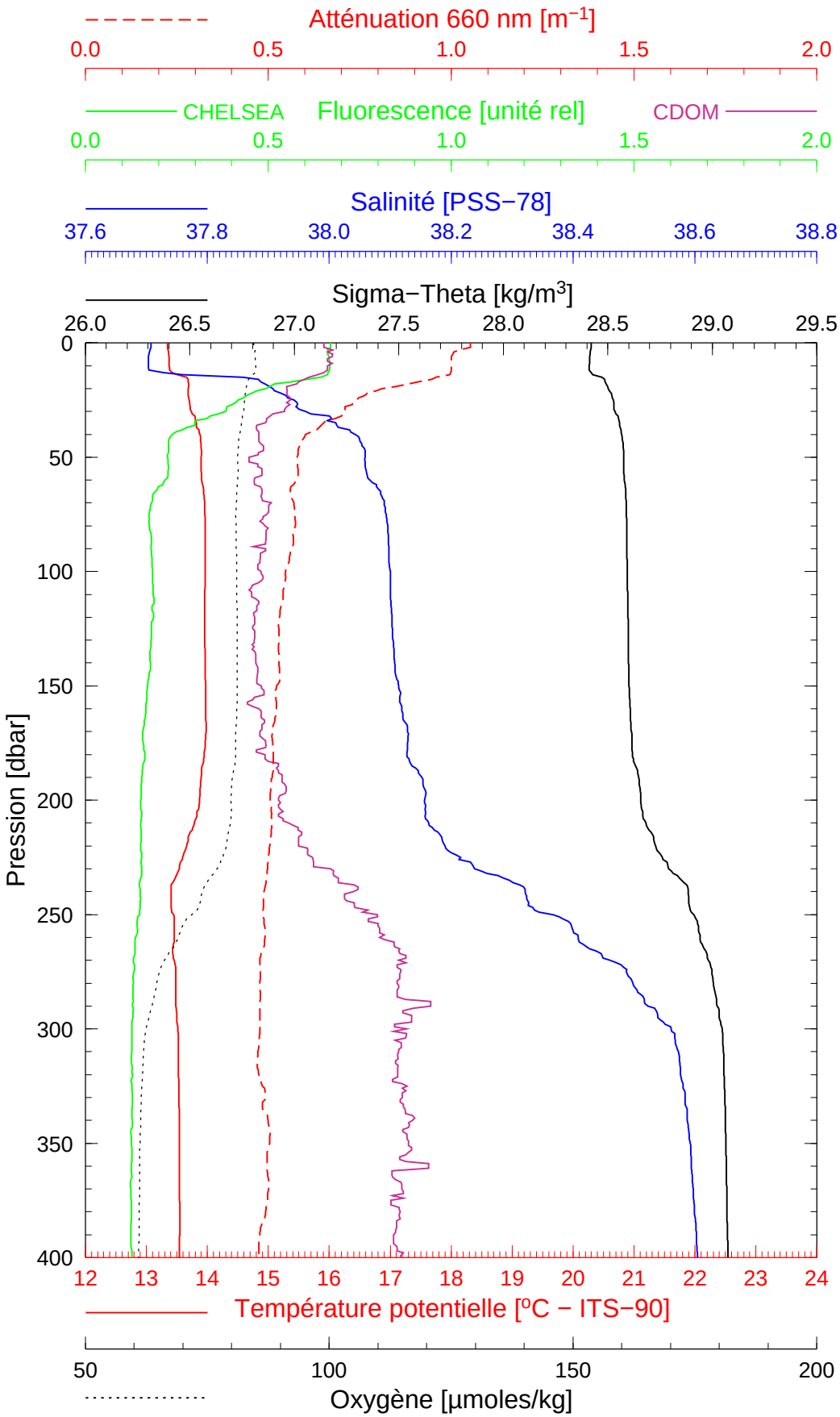


Date *21/01/2008* *Latitude* *43°34.027 N*

Heure déb *17h 27min [TU]* *Longitude* *07°30.990 E*

Boussole 71 **21/01/2008** **BOUS080121_06**

BOUS006

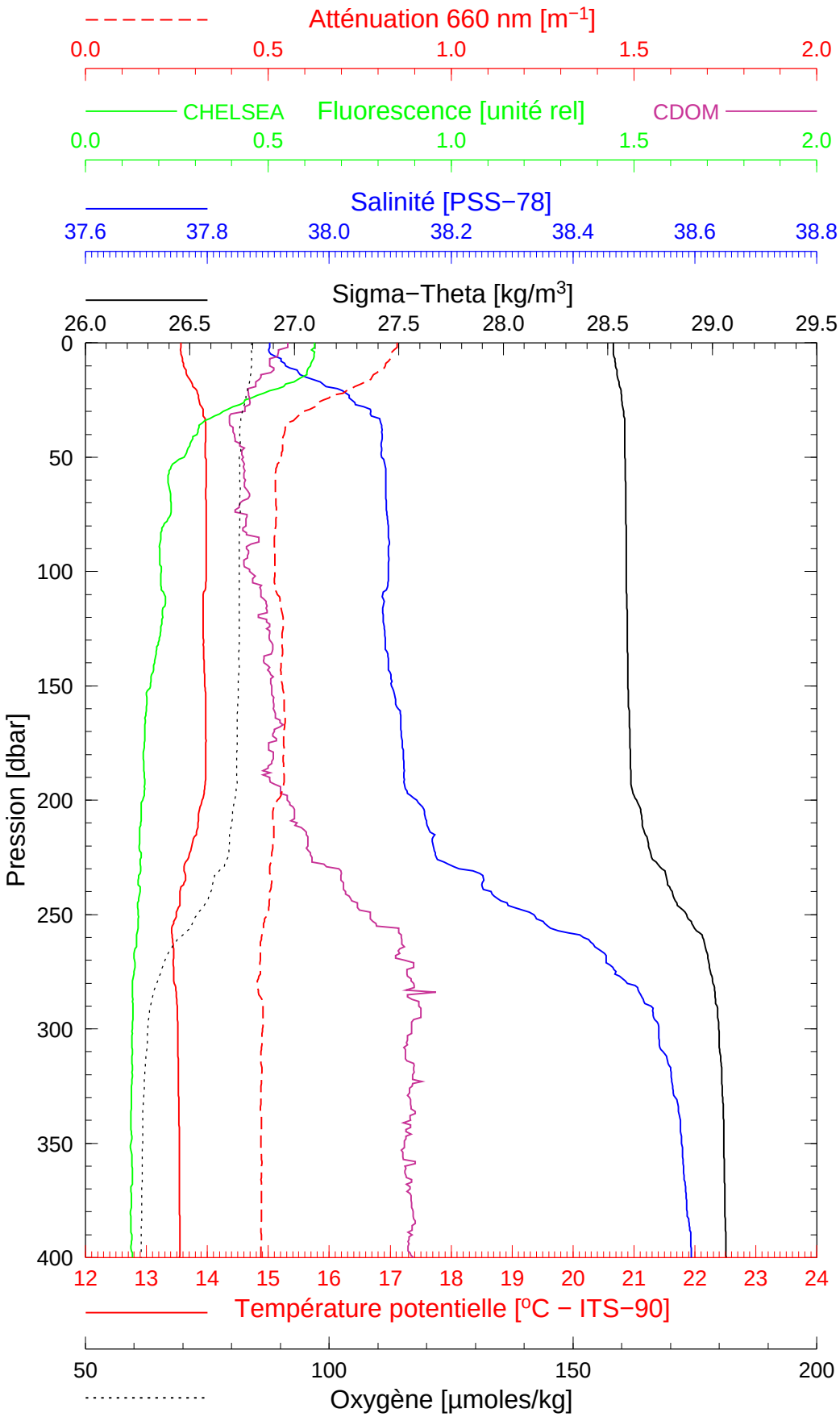


Date *21/01/2008* *Latitude* *43°37.015 N*

Heure déb *18h 31min [TU]* *Longitude* *07°24.959 E*

Boussole 71 **21/01/2008** **BOUS080121_07**

BOUS007

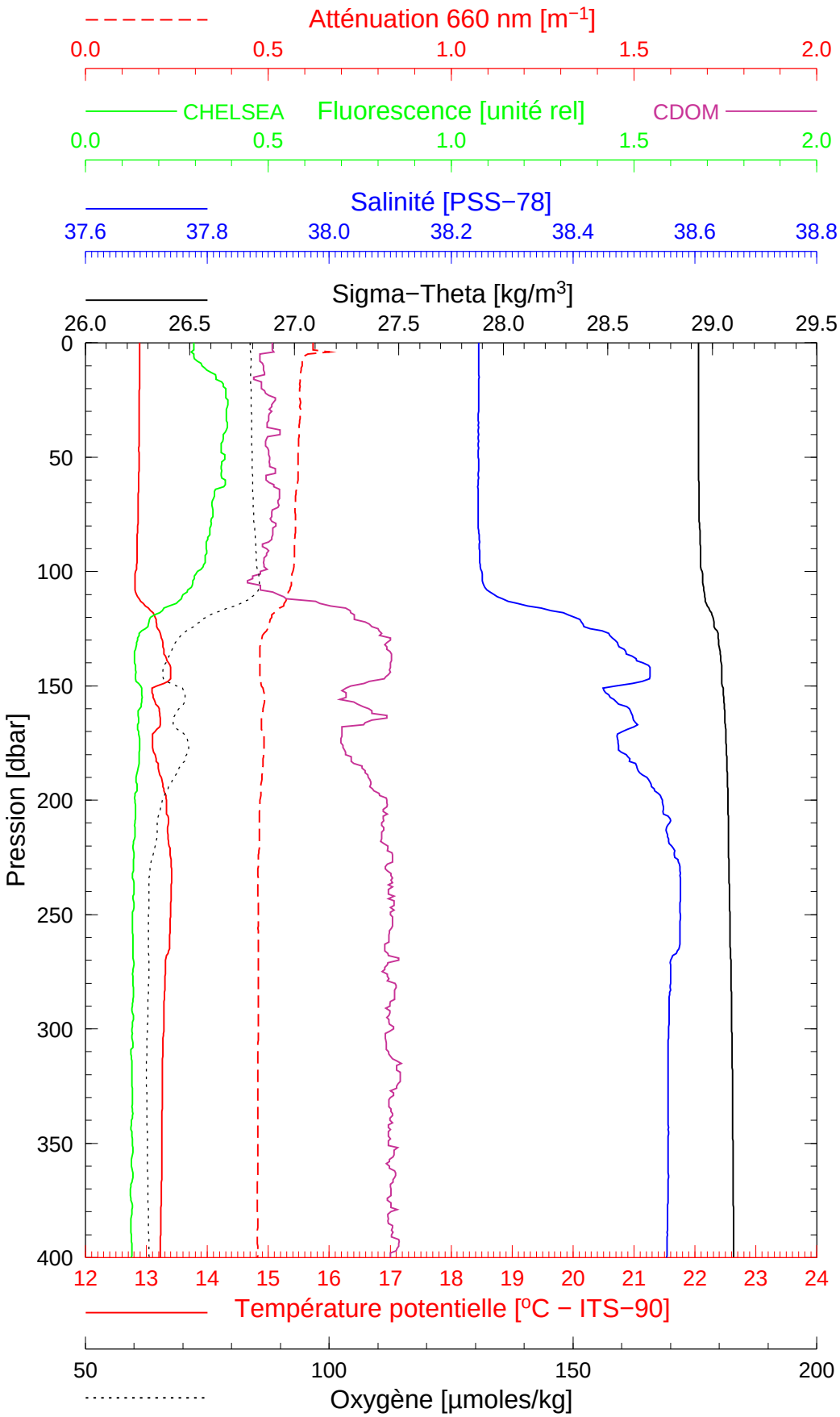


Date *21/01/2008* *Latitude* *43°38.983 N*

Heure déb *19h 22min [TU]* *Longitude* *07°20.951 E*

Boussole 71 **23/01/2008** **BOUS080123_08**

BOUS008



Date *23/01/2008* *Latitude* *43°22.424 N*

Heure déb *11h 12min [TU]* *Longitude* *07°53.349 E*