BOUSSOLE Monthly Cruise Report

Cruise 81
Novembre 16 - 19, 2008

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

Science Personnel: Céline Bachelier, Lars-Eric Heimbuerger, Grigor Obolensky, Paola Rondinella and Vincenzo Vellucci.

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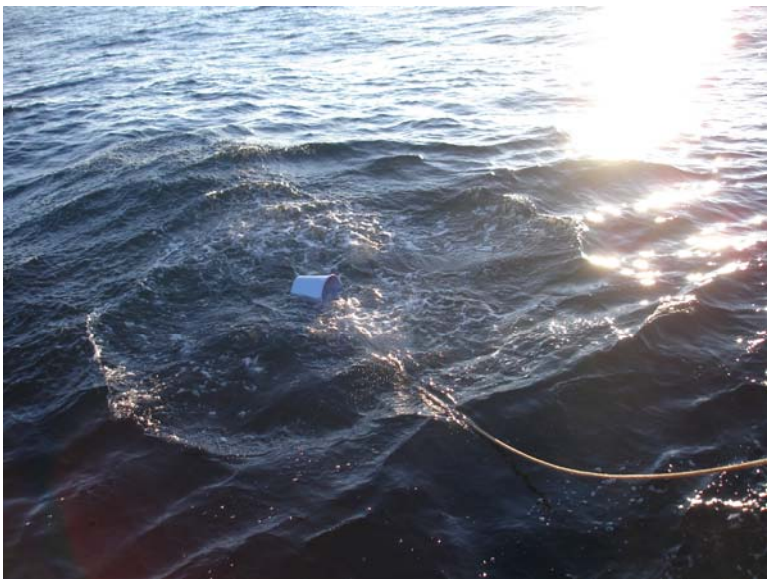

Fig 1. Surface bucket sampling, as far as possible from the ship, when CTD was out of order.

BOUSSOLE project

ESA/ESRIN contract N° 17286/03/I-OL

Deliverable from WP#400/200

Novembre 24, 2008

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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 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

Since bad weather prevented MOOSE and DYCOMED programs on 14 and 15 November, these samplings will be hosted during one day of the BOUSSOLE cruise.

Cruise Summary

Three of the four cruise days were used; the second day being used for coping with CTD problems. The first day was mainly used for optical and CTD casts at the BOUSSOLE site and mounting on the buoy. The third day was used for sampling near the buoy and completing the transect. The last day was spent to mount again on the buoy and for sampling at the BOUSSOLE and DYFAMED sites.

Sunday 16 November 2008

This day departure from Nice port was delayed for letting the cue of the bad weather to pass. When on site, weather conditions allowed sampling, though not being optimal (H1/3 1.3 m wind speed 16 kn, blue sky, excellent visibility). 3 SPMR profiles, 1 Secchi disk, 1 CTD cast and 3 CIMEL measurements were performed. The CTD stopped working during the up cast at about 300 m. While Grigor was attempting to re-establish the communication with the CTD, we moved to DYFAMED station to verify, through sonar, whether the sediment trap was still moored there. Found the trap and verified the impossibility to repair the CTD on site, we went back to BOUSSOLE for sampling at surface with a bucket for HPLC, Ap and TSM measurements. Then a CISCO connection with the buoy was attempted unsuccessfully and the Zodiac was put at sea for climbing on the buoy head for CISCO and ARGOS connectors cleaning; too late for attempting a connection. Note: the light on the buoy head was seen to work correctly.

Monday 17 November 2008

This day was not used for going at sea. Grigor and Celine worked all day long to change the configuration of MOOSE/DYCOMED CTD for allowing optical sensors hosting.

Tuesday 18 November 2008

This day sea state and wind were similar to the first day but sky was overcast. At departure, the board communicated us the interdiction to work in the 23 and 26 zones for the 17, 18 and 19 (though the fax of the prefecture was dated 14). When possible, the ship-owner was contacted to solicit the port authorities for allowing sampling. 3 SPMR profiles and 1 CTD cast, with water sampling for HPLC, Ap and CDOM were collected in the BOUSSOLE area before obtaining the authorization and so we can complete the transect. Two CISCO connections were also attempted unsuccessfully.

Wednesday 19 November 2008

The last cruise day sea state was better (H1/3 < 1 m, wind speed ~10/15 kn) and sky was again cloud free. 3 SPMR, 1 CTD and 1 Secchi disk were performed, and samples for HPLC, Ap and TSM analysis collected. A direct connection from the top of the buoy was attempted unsuccessfully. Then we moved to DYFAMED station for completing the MOOSE and DYCOMED program (1 deep CTD) before ending the November 2008 mission.

Cruise Report

Sunday 16 November 2008 (UTC)

People on board: Céline Bachelier, Lars-Eric Heimburger, Grigor Obolensky and Vincenzo Vellucci.

0830 Departure from the Nice port.
1155 Arrival at the BOUSSOLE site.
1200 SPMR 01, 02, 03.
1255 Secchi Disk 01.
1300 CTD 01, 400 m. The CTD stopped at 300 m during up cast: no bottles firing.
1315 CIMEL 01, 02, 03.
1340 Looking for sediment trap mooring at DYFAMED while trying to fix the CTD problem.
1510 Not possible to repair the CTD. Surface sampling with a bucket for HPLC, Ap and TSM.
1515 Attemped CISCO connection with the Buoy: not successful.
1530 Starting operation for deploying the Zodiac at sea. Delay due to engine problems.
1620 Top of the buoy: cleaned ARGOS and CISCO connectors.
1640 Departure from Boussole site.
2000 Arrival at the Nice port.

Monday 17 November 2008

This day was used for preparing the MOOSE/DYCOMED CTD to host optical sensors.

Tuesday 18 November 2008

People on board: Céline Bachelier, Grigor Obolensky, Paola Rondinella and Vincenzo Vellucci.

0510 Departure from the Nice port. The board communicates the interdiction to sample in the zones 23 and 26 for the 17, 18 and 19 November.
0840 Arrival at the BOUSSOLE site. The ship-owner is contacted for soliciting the authorization to sample.
0915 Attemped CISCO connection with the Buoy: not successful.
0925 CTD 02, 400 m with water sampling at 200, 150, 80, 70, 60, 50, 30, 20, 10 and 5 m for HPLC, Ap and CDOM.
1015 Attemped CISCO connection with the Buoy: not successful.
1020 SPMR 04, 05, 06.
1115 The port authorities authorize sampling in the zones 23 and 26 for this day.
1210 CTD 03, 400 m, station 01 (43°25'N 07°48'E).
1314 CTD 04, 400 m, station 02 (43°28'N 07°42'E).
1414 CTD 05, 400 m, station 03 (43°31'N 07°37'E).
1517 CTD 06, 400 m, station 04 (43°34'N 07°31'E).
1615 CTD 07, 400 m, station 05 (43°37'N 07°25'E).
1705 CTD 08, 450 m, station 06 (43°39'N 07°21'E).

1800 Arrival at the Nice port.

Wednesday 19 Novembre 2008

People on board: Céline Bachelier and Vincenzo Vellucci.

0600 Departure from the Nice port.
0930 Arrival at the BOUSSOLE site.
0940 CTD 09, 400 m with water sampling at 200, 150, 80, 70, 60, 50, 30, 20, 10 and 5 m for HPLC, Ap and TSM.
1010 SPMR 07, 08, 09.
1115 Top of the buoy: attempted direct connection: unsuccessful.
1140 Secchi Disk 02. Departure to DYFAMED.
1210 CTD MOOSE/DYCOMED, 2200 m
1440 Departure to the Nice port.
1740 Arrival at the Nice port.
1815 End of sampling.

Calculated Swath paths for the MERIS Sensor (ESOV Software)

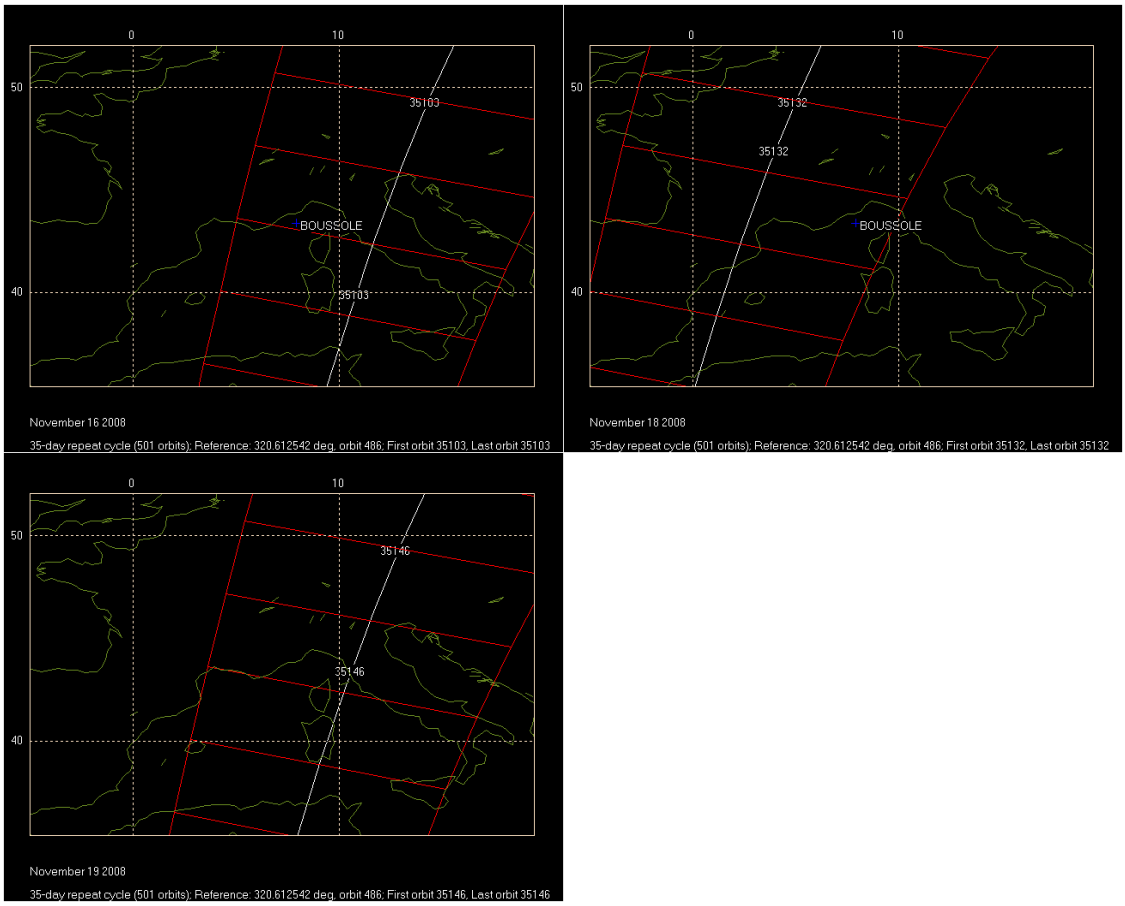


Figure 2. Calculated swath paths for MERIS (Esov software) above BOUSSOLE site for November 16, 18 and 19 2008.

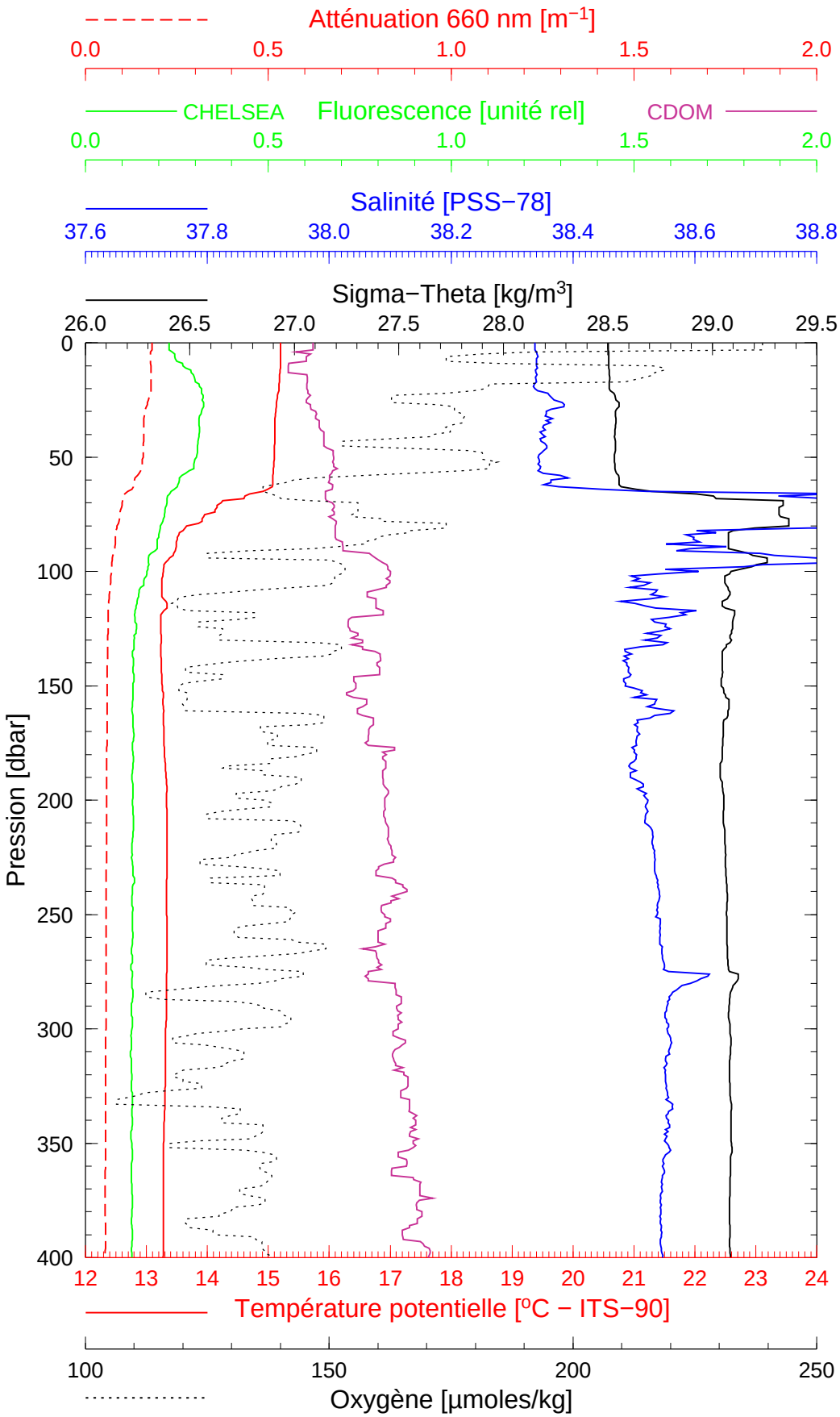
Appendix

Cruise Summary Table for Boussole 81

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
	Bou161108black1				12:03	3:00																			
		Bou161108AA			12:13	3:20	160	43	21.993	7	53.602	blu		0	16	65	1021.2	71	excellent	16.8		moved	1.3		some
		Bou161108AB			12:22	3:23	160	43	21.973	7	53.466	blu		0	16	65	1021.2	71	excellent	16.8		moved	1.3		some
		Bou161108AD			12:34	3:33	160	43	21.972	7	53.213	blu		0	16	65	1021.2	71	excellent	16.8		moved	1.3		some
	Bou161108black2				12:42	3:00																			
16/11/08				Secchi01	12:55	3:00	17	43	22	7	54	blu		0	16	65	1021.2	71	excellent	16.8		moved	1.3		some
			CTDBOUS001		13:10		400	43	21.876	7	53.614			0							15.2	moved			
				CIMEL01	13:11	4:00		43		7															
				CIMEL02	13:16	3:00		43		7															
				CIMEL03	13:19	5:00		43		7															
				Bucket-HPLC & TSM	15:10	2:00	0	43	22	7	54														
17/11/08	day not used for CTD problems																								
			CTDBOUS002	HPLC & CDOM	09:26		400	43	21.940	7	53.237			8							15.24	moved			
	Bou181108black1				10:22	3:00																			
		Bou181108AA			10:30	3:31	160	43	22	7	54	overcast	Ni	8	15?				good			moved	1.4		some
		Bou181108AB			10:38	3:31	161	43	22	7	54	overcast	Ni	8	15?				good			moved	1.4		some
		Bou181108AC			10:48	3:24	162	43	22	7	54	overcast	Ni	8	15?				good			moved	1.4		some
18/10/08	Bou181108black2				11:54	3:00																			
			CTDBOUS003		12:10	30:00	400	43	24.721	7	47.617			8							16.1	moved			
			CTDBOUS004		13:14	30:00	400	43	27.818	7	41.229			8							17.5	moved			
			CTDBOUS005		14:14	30:00	400	43	30.869	7	36.201			8							18.6	moved			
			CTDBOUS006		15:17	26:00	400	43	34.005	7	30.321			8							18.4	moved			
			CTDBOUS007		16:15	26:00	400	43	36.882	7	24.340			9							18.5	moved			
			CTDBOUS008		17:05	26:00	400	43	39.051	7	20.801			9							18.6	moved			
			CTDBOUS009	HPLC & TSM	10:42		400	43	21.985	7	53.497	blu		0	12-15	60	1015				15.3	moved			
	Bou191108black1				10:12	3:00		43																	
		Bou191108AB			10:19	3:04	150	43	22	7	54	blu		0	10-15?							slightly moved	1.0		few
19/10/08		Bou191108AC			10:28	3:18	131	43	22	7	54	blu		0	10-15?							slightly moved	1.0		few
		Bou191108AD			10:37	3:15	141	43	22	7	54	blu		0	10-15?							slightly moved	1.0		few
	Bou191108black2				10:49	3:00																			
				Secchi02	11:40	5:00	16	43	22	7	54														

Boussole 81 **16/11/2008** **BOUS081116_01**

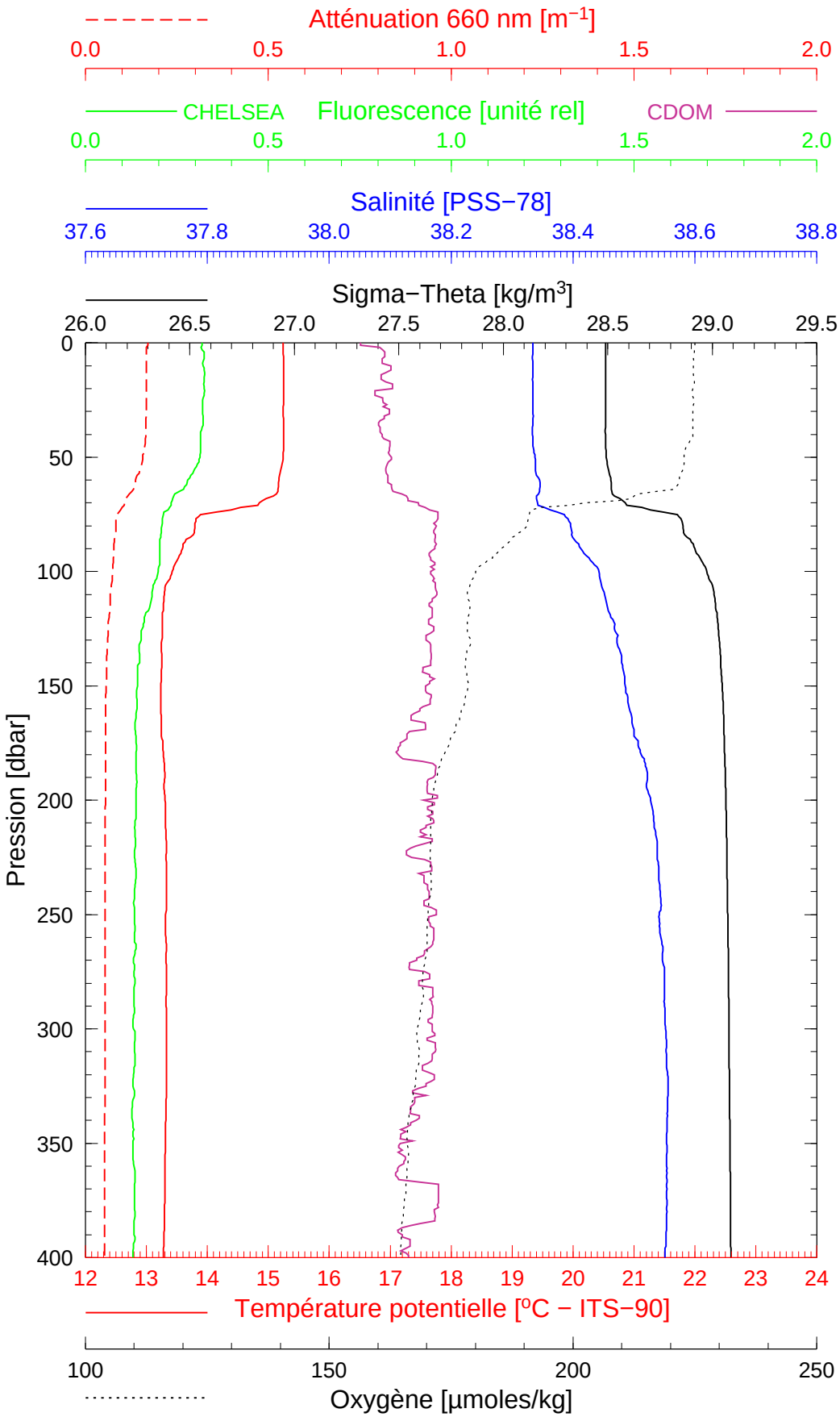
BOUS001



Date	*16/11/2008*	*Latitude*	*43°21.876*
Heure déb	*14h 25min [TU]*	*Longitude*	*07°53.614*

Boussole 81 **18/11/2008** **BOUS081118_01**

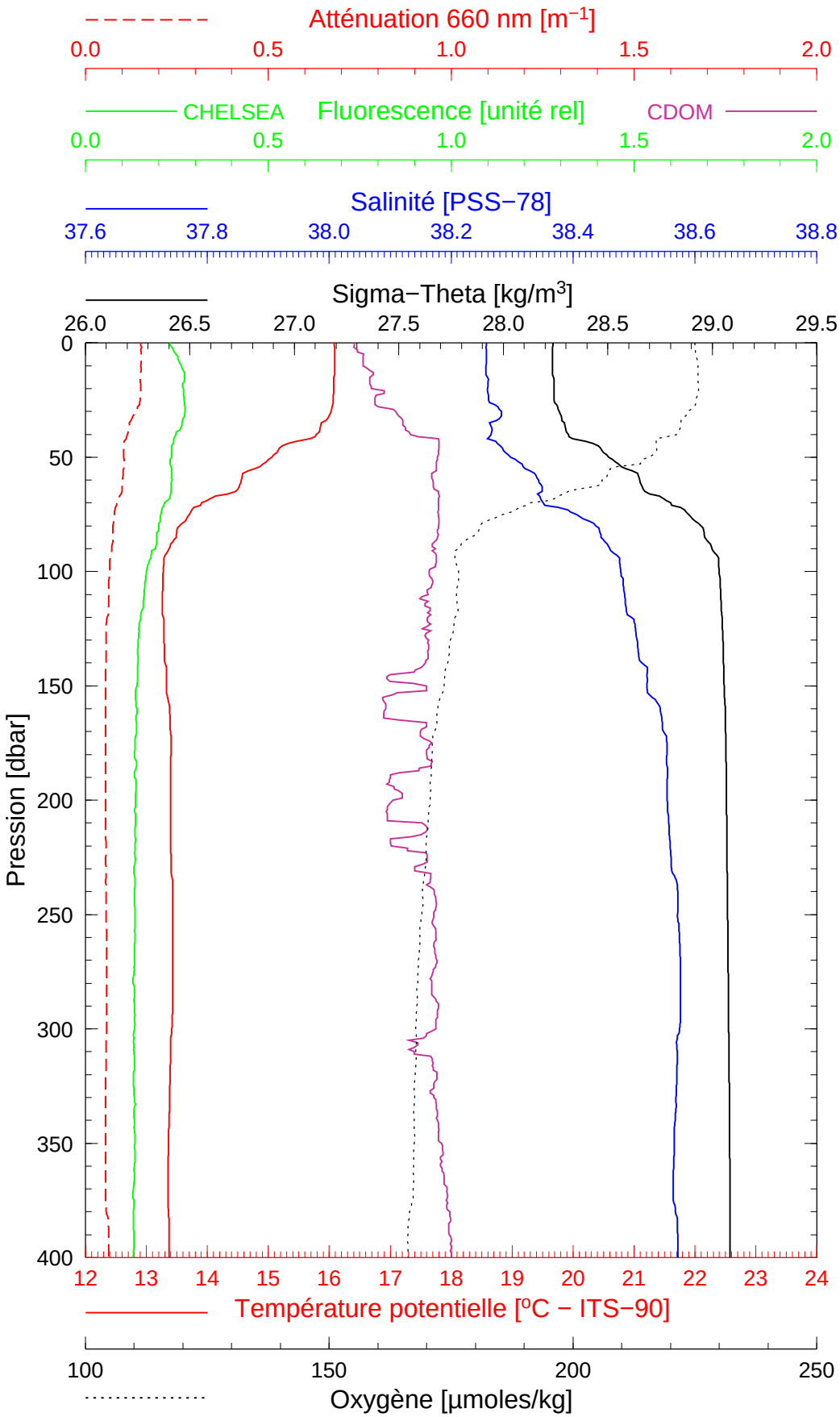
BOUS002



Date	*18/11/2008*	*Latitude*	*43°21.940*
Heure déb	*10h 26min [TU]*	*Longitude*	*07°53.237*

Boussole 81 **18/11/2008** **BOUS081118_02**

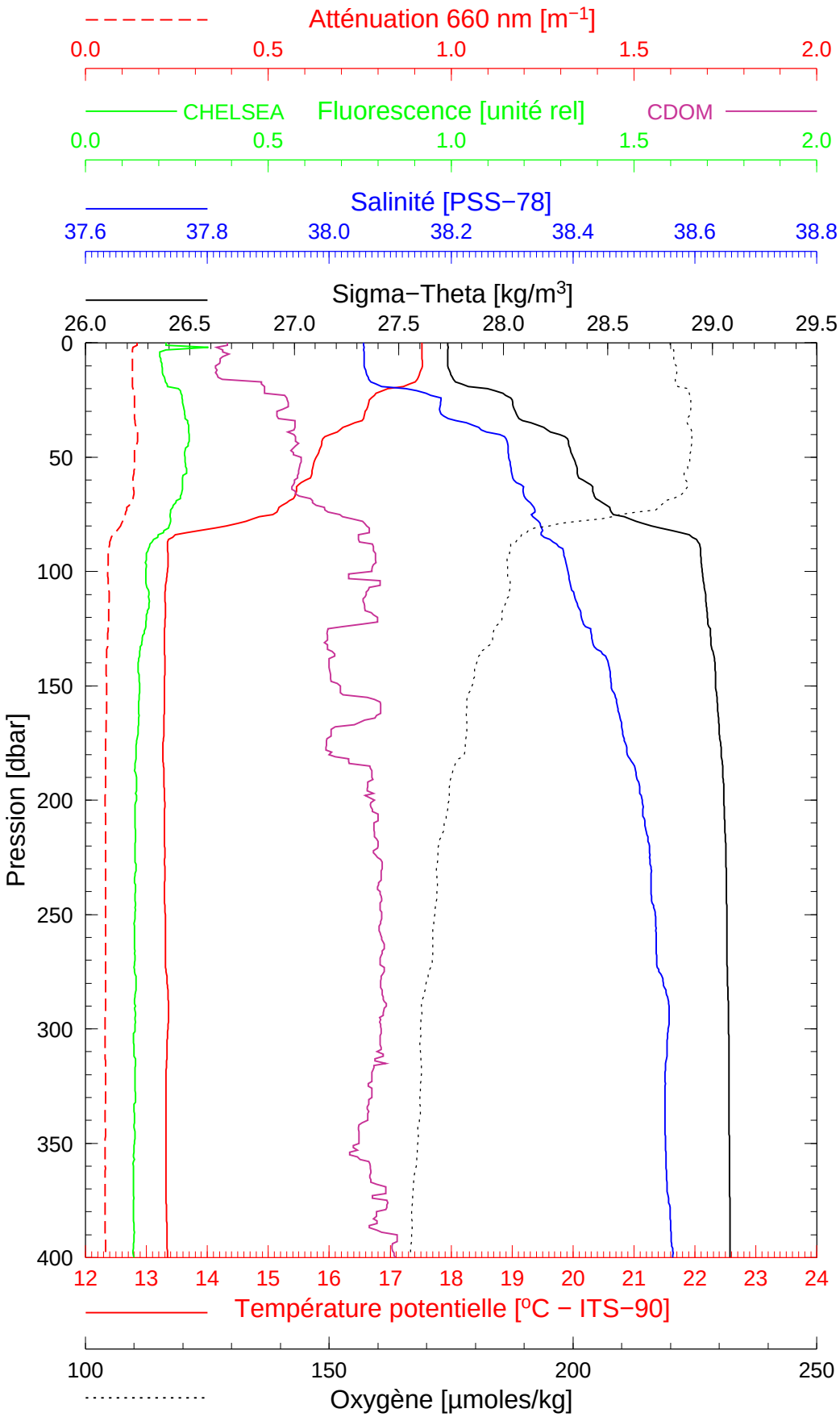
BOUS003



Date	*18/11/2008*	*Latitude*	*43°24.721*
Heure déb	*13h 10min [TU]*	*Longitude*	*07°47.617*

BOUSSOLE 81 **18/11/2008** **BOUS081118_03**

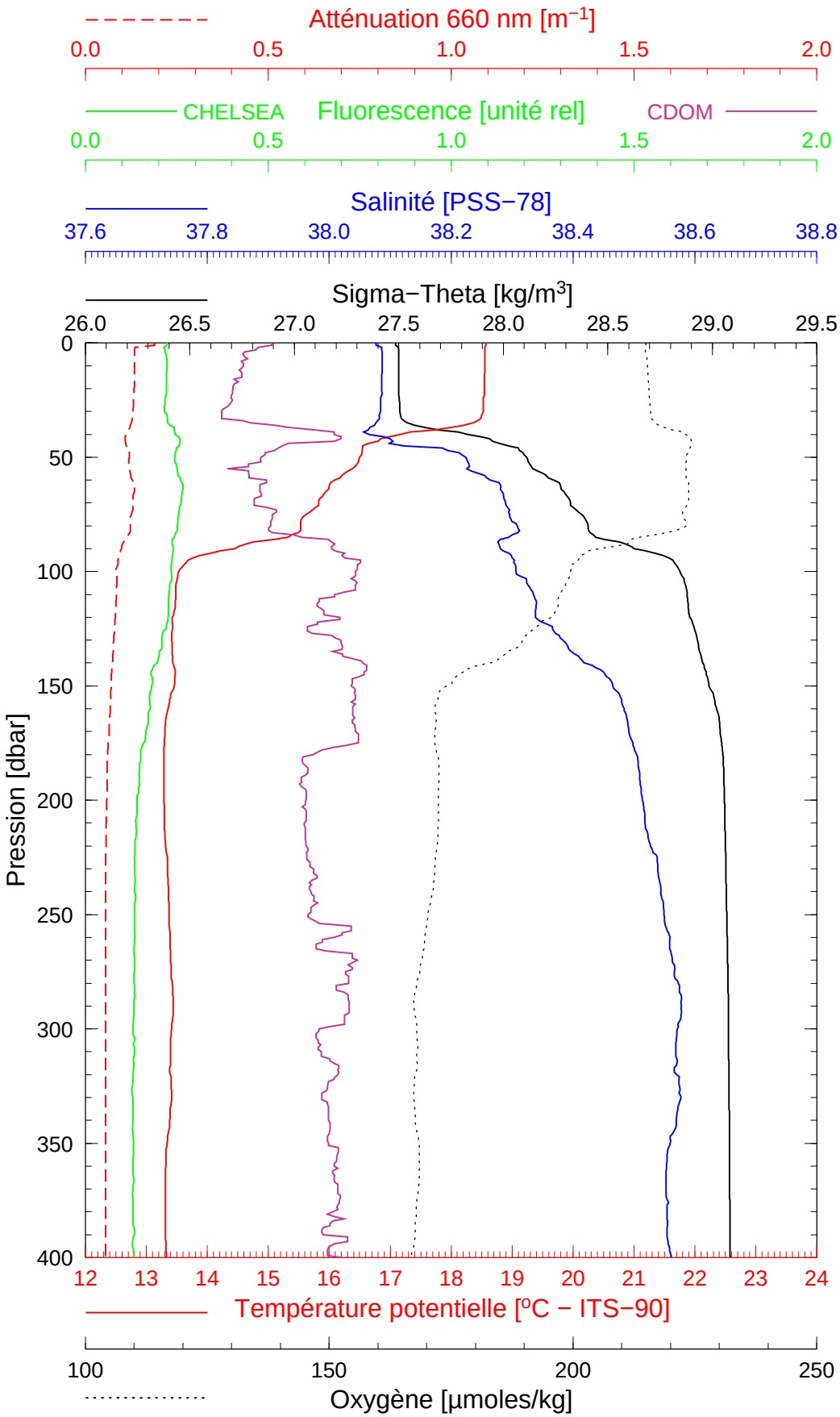
BOUS004



Date	*18/11/2008*	*Latitude*	*43°27.818*
Heure déb	*14h 14min [TU]*	*Longitude*	*07°41.229*

BOUSSOLE 81 **18/11/2008** **BOUS081118_04**

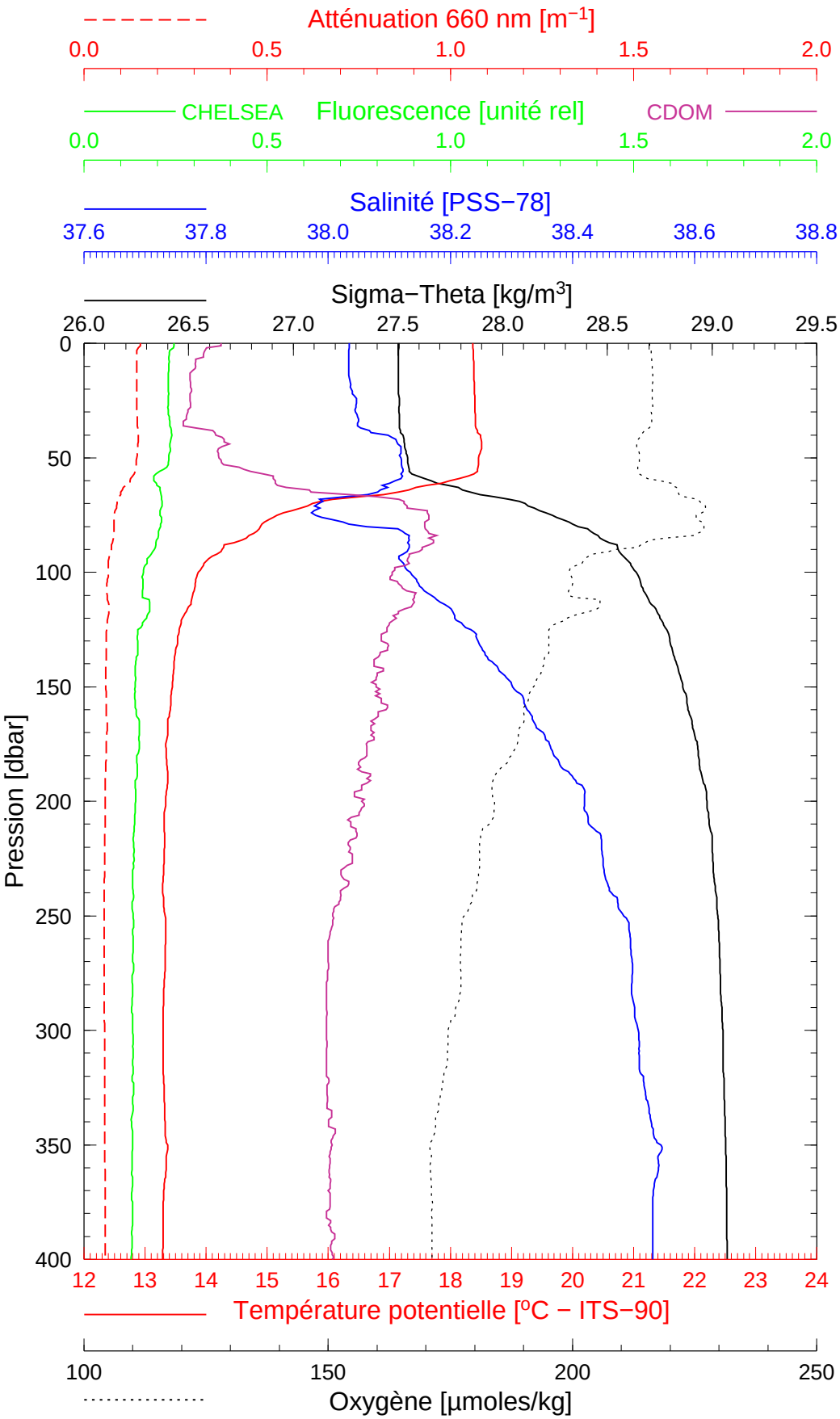
BOUS005



Date	*18/11/2008*	*Latitude*	*43°30.869*
Heure déb	*15h 14min [TU]*	*Longitude*	*07°36.201*

BOUSSOLE 81 **18/11/2008** **BOUS081118_05**

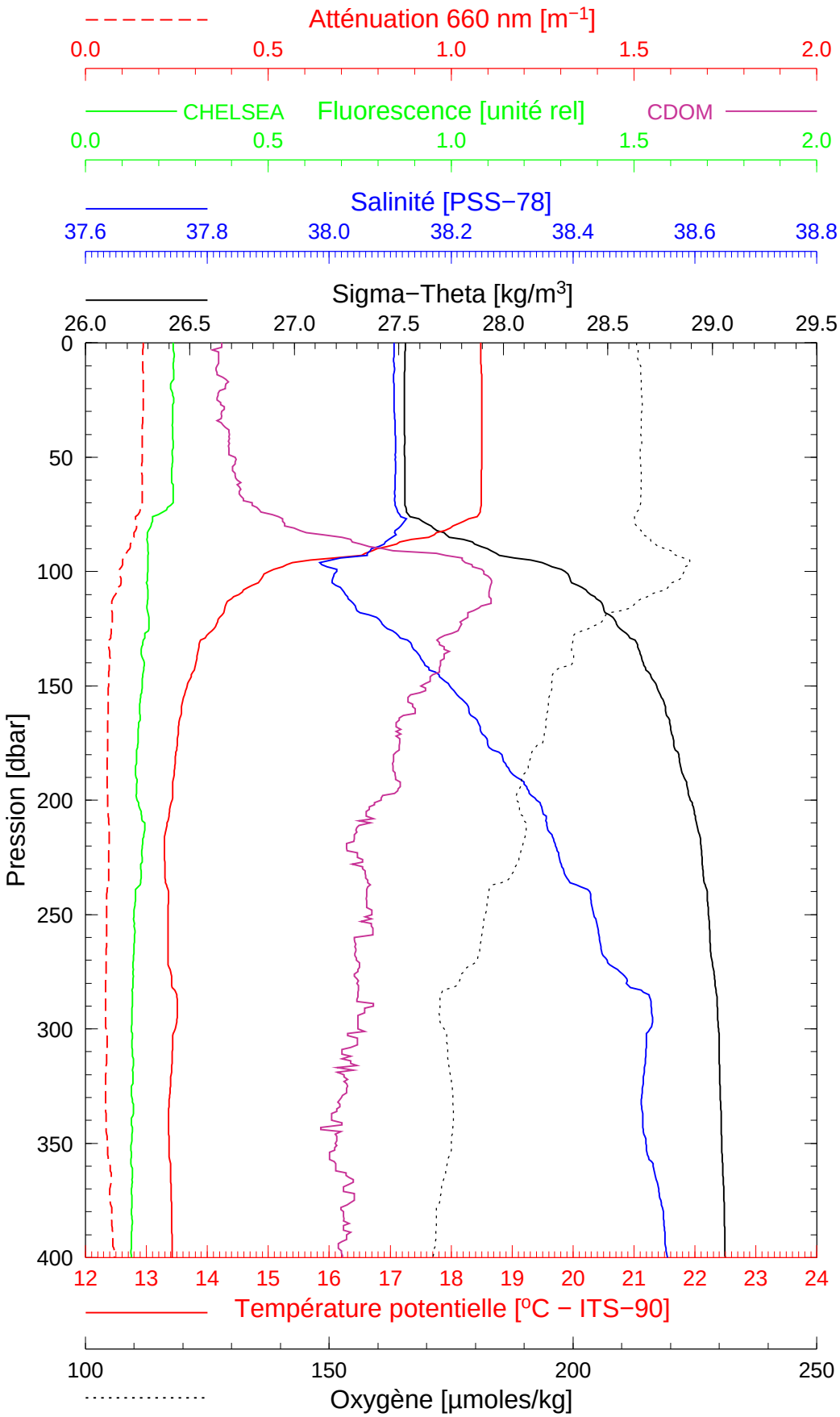
BOUS006



Date	*18/11/2008*	*Latitude*	*43°34.005*
Heure déb	*16h 17min [TU]*	*Longitude*	*07°30.321*

BOUSSOLE 81 **18/11/2008** **BOUS081118_06**

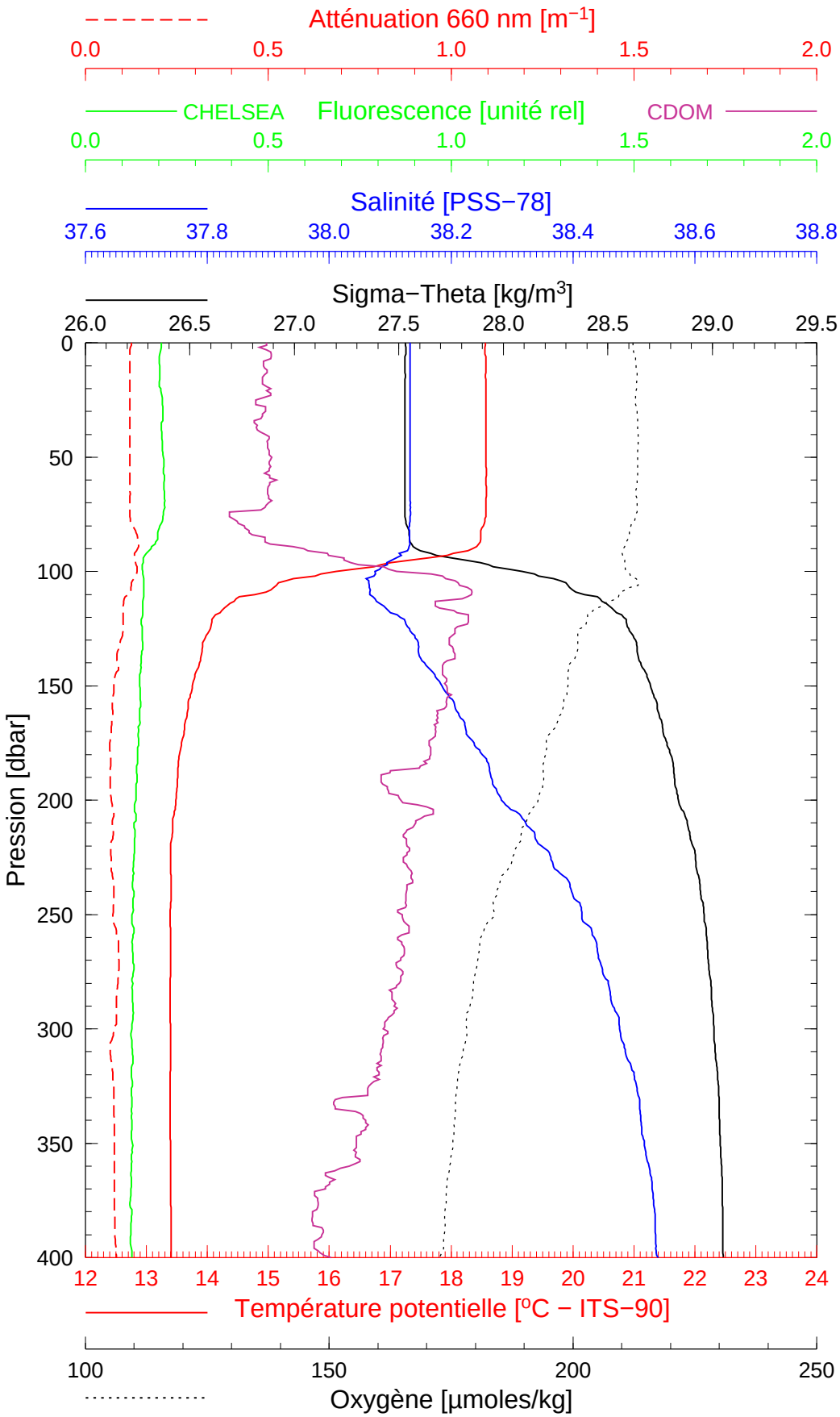
BOUS007



Date	*18/11/2008*	*Latitude*	*43°36.882*
Heure déb	*17h 15min [TU]*	*Longitude*	*07°24.340*

BOUSSOLE 81 **18/11/2008** **BOUS081118_07**

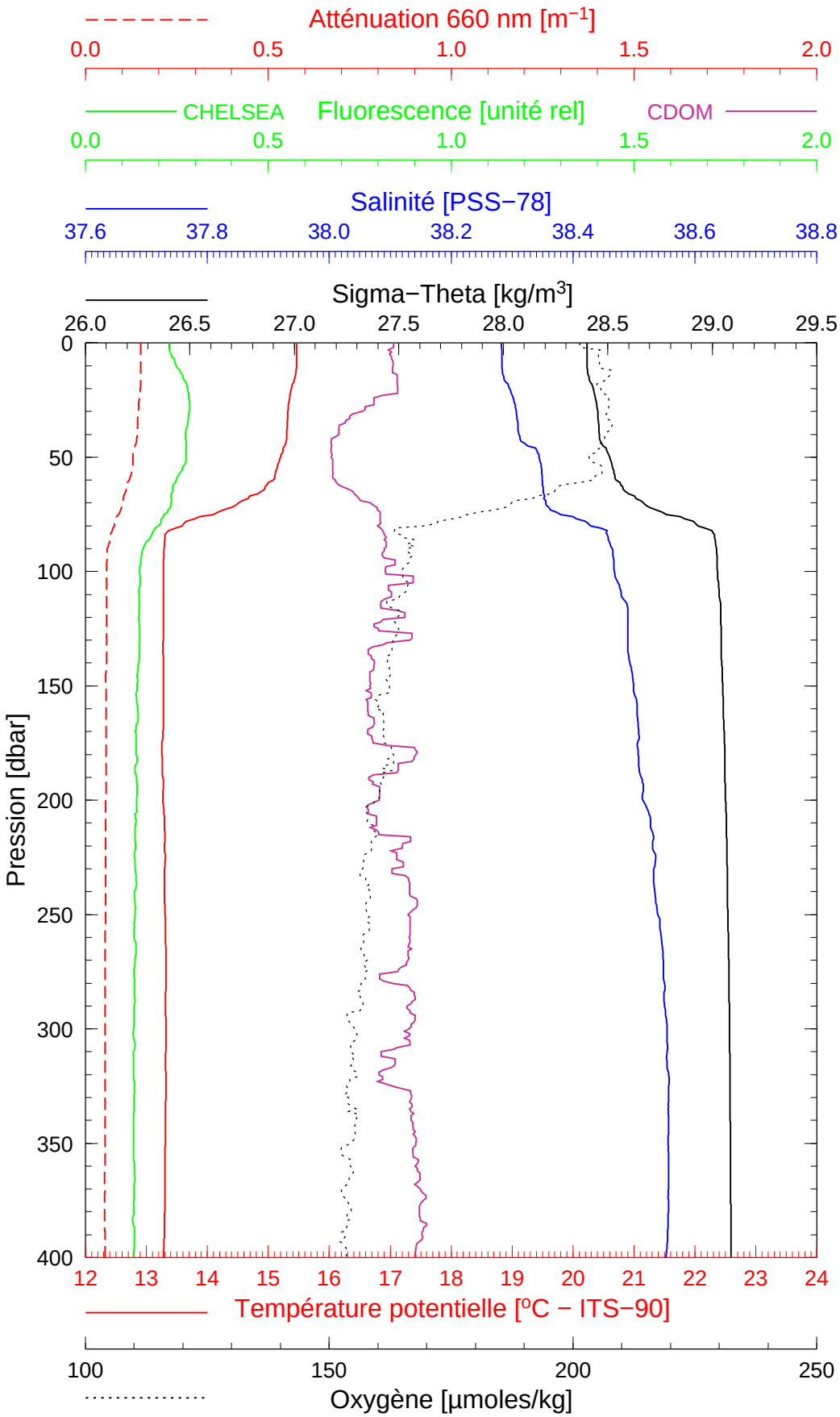
BOUS008



Date	*18/11/2008*	*Latitude*	*43°39.051*
Heure déb	*18h 05min [TU]*	*Longitude*	*07°20.801*

BOUSSOLE 81 **19/11/2008** **BOUS081119_01**

BOUS009



Date	*19/11/2008*	*Latitude*	*43°21.985*
Heure déb	*10h 42min [TU]*	*Longitude*	*07°53.497*