BOUSSOLE Monthly Cruise Report

Cruise 79
September 15 - 17, 2008

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

Science Personnel: Jean De Vaguelas, David Luquet, Grigor Obolensky, Vincenzo Vellucci, and Luc.

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

Fig 1. HyperOCR at 9 m protected with copper tape for avoiding bio-fouling.

BOUSSOLE project

ESA/ESRIN contract N° 17286/03/I-OL

Deliverable from WP#400/200

September 18, 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 NB_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 three days, a PVM 0-1000 m profile and some plankton net profiles will be collected at the BOUSSOLE site. The ARGOS messaged from the buoy stopped since August 31, an intervention to understand and fix this problem is foreseen for this cruise. The buoy was seen in good conditions during the MOOSE cruise on September 11.

Cruise Summary

Only two of the three cruise days were used due to bad weather on the first day. The second day was spent for diving on the buoy, data retrieval and for completing the transect. The ARGOS problem was also solved. The third day was used for CTD and optical casts at the Boussole site, PVM and plankton net were also collected.

Monday 15 September 2008

This day strong NE wind (up to 29 kn) prevented departure from the nice port; H1/3 up to 1.9 m were recorded at the DYFAMED site.

Tuesday 16 September 2008

The second cruise day weather conditions were not optimal (H1/3 > 1.0 m, low wind and variable cloudy sky) but ameliorated in the afternoon. As soon as on site, a CISCO connection with the buoy was established and data since last cruise was downloaded. Then divers went at sea (strong surface currents) for inspection and cleaning of the buoy that was found in good conditions. At the same time ARGOS connection was cleaned, messages dispatch restarted. 1 CTD cast the Boussole site, and the transect to the Nice port were performed too.

Wednesday 17 September 2008

This day the sea state was good (H1/3 < 0.5 m) with low wind and blue sky in the morning, whereas wind blew in the afternoon with cirrus covering the sky. 2 CTD casts, 7 SPMR profiles, 2 Secchi Disk and 3 CIMEL were performed at BOUSSOLE; samples for TSM and CDOM were taken. 1 PVM and 2 plankton net were also collected.

Cruise Report

Monday 15 September 2008 (UTC)

Bad weather.

Tuesday 16 September 2008

People on board: Jean De Vaguelas, David Luquet, Grigor Obolensky, Vincenzo Vellucci and Luc.

0445 Departure from the Nice port.
0805 Arrival at the BOUSSOLE site: only the last 2m of the buoy are above surface.
0815 Attemped CISCO connection with the Buoy: successful, retrieved data.
0845 Divers at sea for buoy inspection and cleaning. ARGOS connector cleaned.
0940 CTD 01 , 400 m with water sampling at 200, 150, 80, 70, 60, 50, 30, 20, 10 and 5 m for HPLC, Ap.
1120 CTD 02, 400 m, station 01 (43°25'N 07°48'E).
1210 CTD 03, 400 m, station 02 (43°28'N 07°42'E).
1300 CTD 04, 400 m, station 03 (43°31'N 07°37'E).
1355 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).
1535 CTD 07, 450 m, station 06 (43°39'N 07°21'E).
1700 Arrival at the Nice port.

Wednesday 17 September 2008

People on board: Grigor Obolensky and Vincenzo Vellucci.

0440 Departure from the Nice port.
0755 Arrival at the BOUSSOLE site.
0800 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.
0805 CIMEL 01, 02, 03.
0840 Secchi Disk 01 (17 m).
0915 SPMR 01, 02, 03, 04.
1050 PVM 1000 m.
1200 2 x Plankton net 0-100 m.
1220 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.
1255 Secchi Disk 02 (12 m).
1300 SPMR 05, 06, 07.
1340 Departure to the Nice port
1700 Arrival at the Nice port

Calculated Swath paths for the MERIS Sensor (ESOV Software)

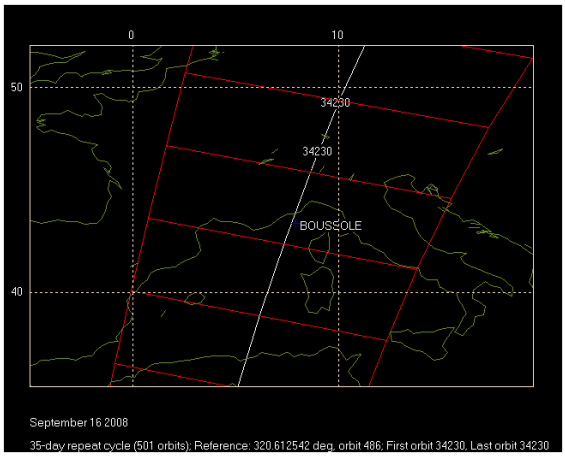


Figure 2. Calculated swath paths for MERIS (Esov software) above BOUSSOLE site for September 16 2008.

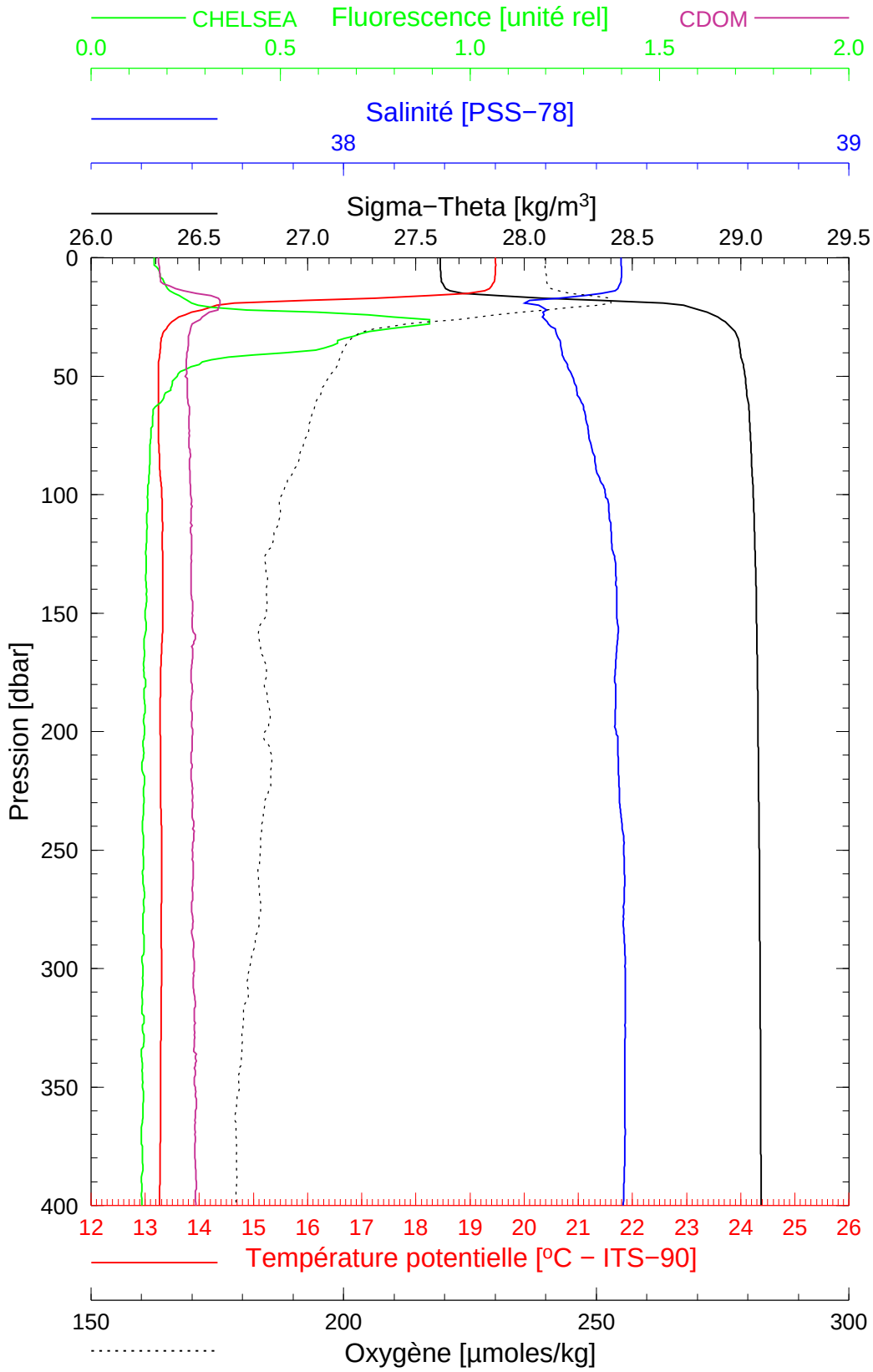
Appendix

Cruise Summary Table for Boussole 79

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
15/09/2008	bad weather																							
16/09/08			CTDBOUS001		09:40		400	43	22.025	7	53.533			6	12						19.4	slightly moved			
			CTDBOUS002		11:24		400	43	25.006	7	47.926			3	10	80	1012.4	56		19.8	20.1	slightly moved			
			CTDBOUS003		12:14		400	43	28.037	7	41.980			2	7	99	1012.5	51		22.5	21.1	slightly moved			
			CTDBOUS004		13:07	25:00	400	43	30.993	7	37.097			1	4	138	1012.8	51		20.9	22.4	slightly moved			
			CTDBOUS005		14:00		400	43	34.041	7	30.967			1	4	169	1012.5	55		20.4	22.5	calm			
			CTDBOUS006		14:54	19:00	400	43	37.039	7	24.960			1	5	177	1012.5	50		20.5	22.9	calm			
			CTDBOUS007		15:41	26:00	450	43	24.96	7	20.952			2	4	179	1012.6	48		20.8	23.6	calm			
17/09/08				CIMEL01	08:02	5:00		43	22	7	54													
			CTDBOUS008	wat. samp. CDOM	08:03	35:00	400	43	22.127	7	54.044													
				CIMEL02	08:08	3:00		43	22	7	54													
				CIMEL03	08:12	3:00		43	22	7	54													
				Secchi Disk 01	08:40	3:00	17																	
	Bou170908black1				09:16	3:00																		
		Bou170908AA			09:25	3:37	165	43	22.221	7	54.243	blue	Ci	2	5	195	1017.8	78	very good	20.1		calm	0.4		no
		Bou170908AB			09:35	3:30	140	43	22.232	7	54.409	blue	Ci	2	5	195	1017.8	78	very good	20.1		calm	0.4		no
		Bou170908AC			09:43	1:58	80	43	22.199	7	54.626	blue	Ci	2	5	195	1017.8	78	very good	20.1		calm	0.4		no
		Bou170908AD			09:48	3:39	150	43	22.180	7	54.761	blue	Ci	2	5	195	1017.8	78	very good	20.1		calm	0.4		no
	Bou170908black2				10:04	3:00																		
			CTDBOUS009		12:21	22:00	400	43	21.853	7	54.380		Ci	5	11	218	1017.4	81		19.9	19.8	slightly moved			
				Secchi Disk 02	12:55	3:00	12	43	22	7	54													
	Bou170908black3				13:03	3:00																		
		Bou170908AE			13:08	3:34	165	43	21.955	7	54.114	covered	Ci	6	13	204	1016.8	75	very good	19.9		slightly moved	0.6		few
		Bou170908AF			13:18	3:35	165	43	21.899	7	54.305	covered	Ci	6	13	204	1016.8	75	very good	19.9		slightly moved	0.6		few
		Bou170908AG			13:27	3:55	180	43	21.861	7	54.434	covered	Ci	6	13	204	1016.8	75	very good	19.9		slightly moved	0.6		few
	Bou170908black4				13:54	3:00																		

Boussole **16/09/2008** **BOUS080916_01**

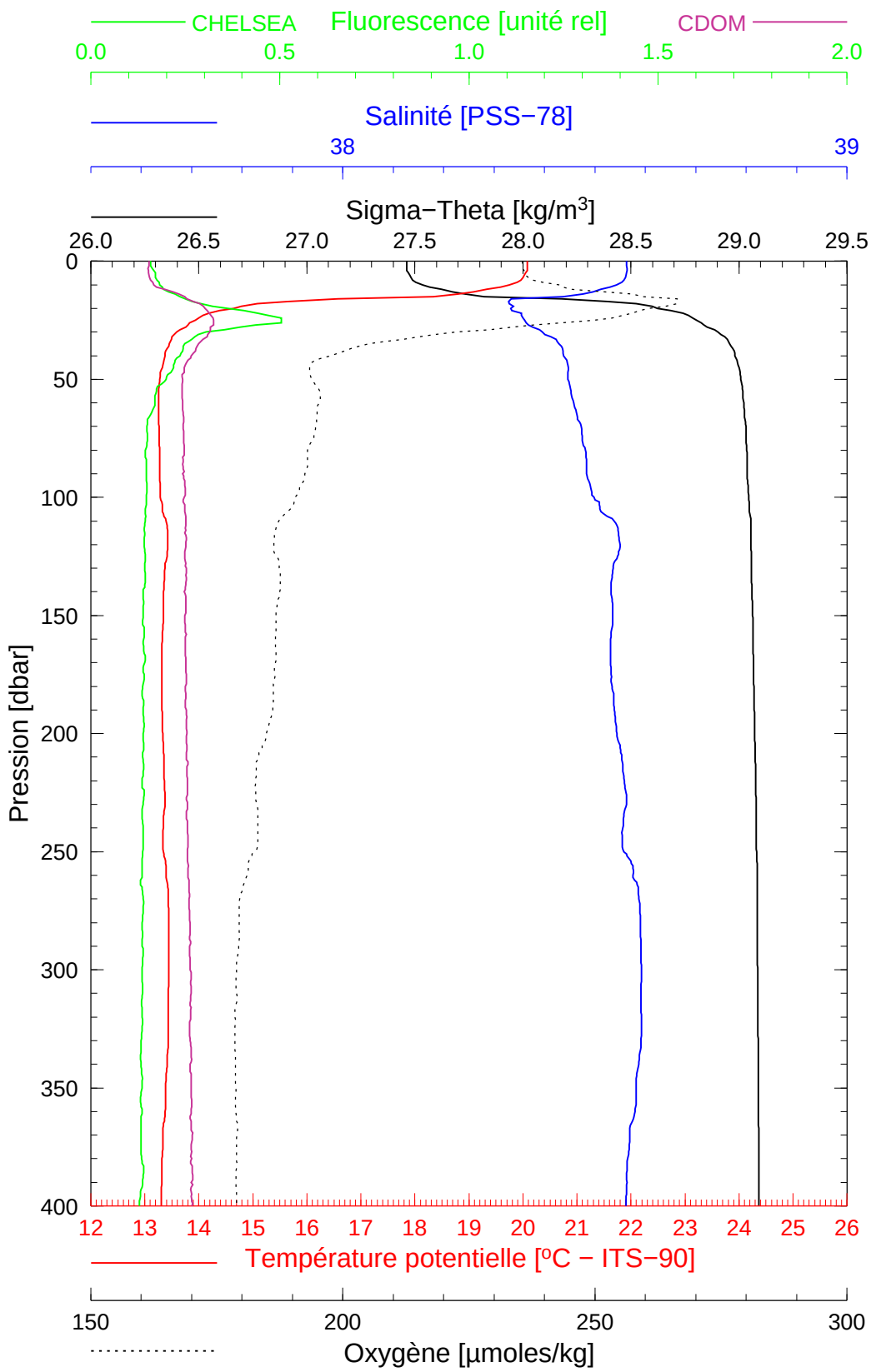
BOUS001



Date	*16/09/2008*	*Latitude*	*43º22.025*
Heure déb	*09h 47min [TU]*	*Longitude*	*07º53.533*

Boussole **16/09/2008** **BOUS080916_02**

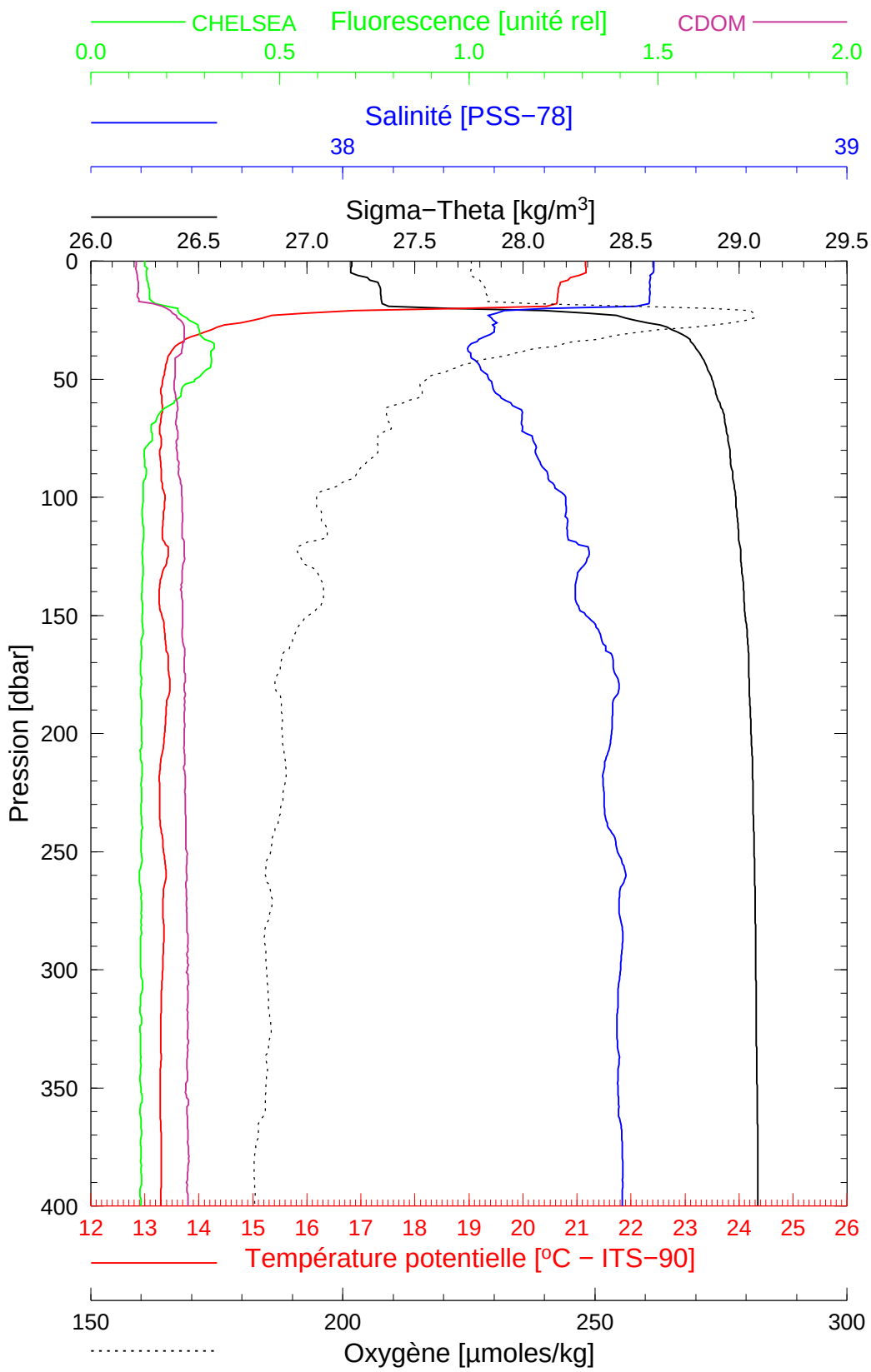
BOUS002



Date	*16/09/2008*	*Latitude*	*43º25.006*
Heure déb	*11h 24min [TU]*	*Longitude*	*07º47.926*

Boussole **16/09/2008** **BOUS080916_03**

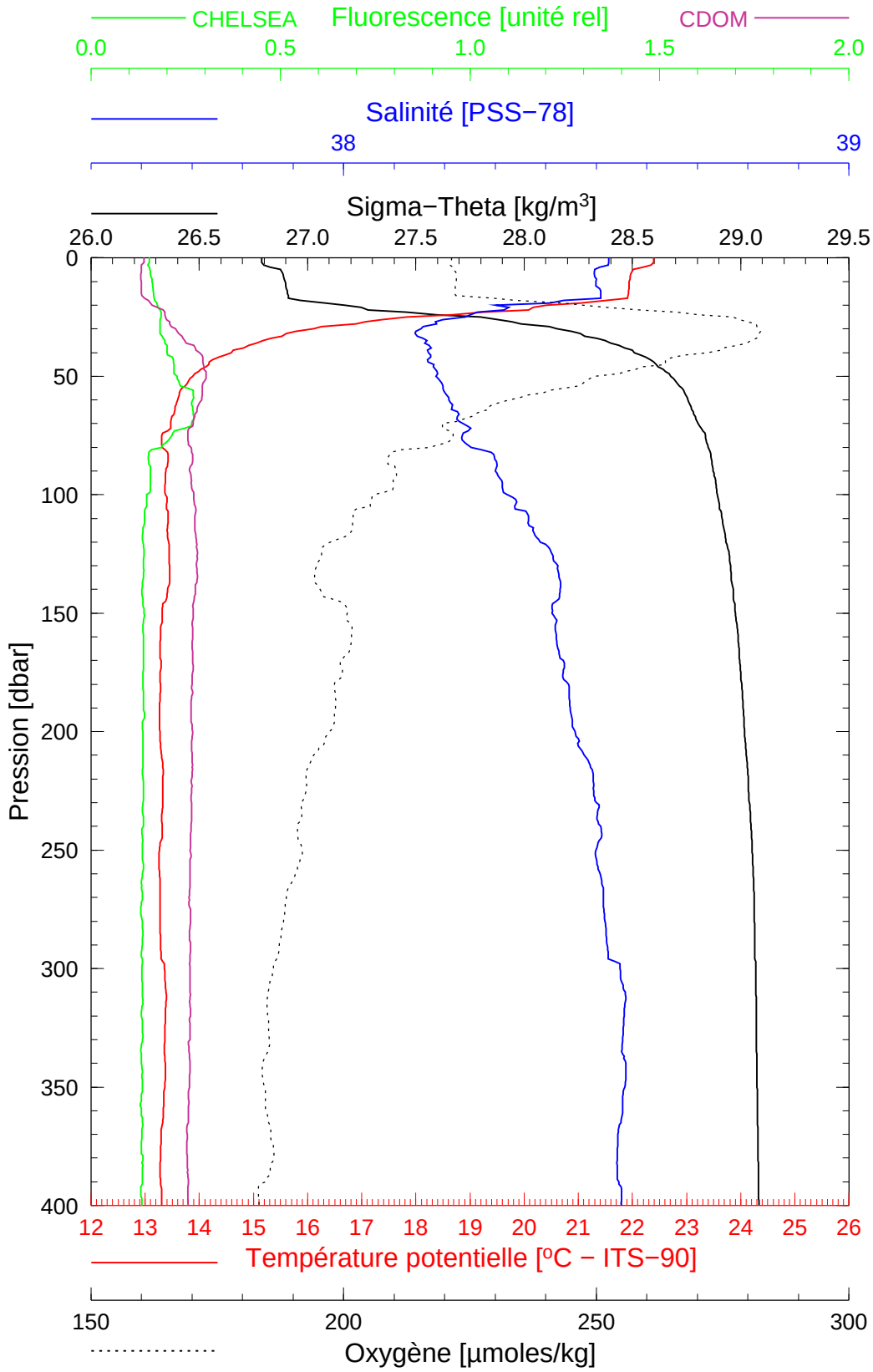
BOUS003



Date	*16/09/2008*	*Latitude*	*43º28.037*
Heure déb	*12h 14min [TU]*	*Longitude*	*07º41.980*

Boussole **16/09/2008** **BOUS080916_04**

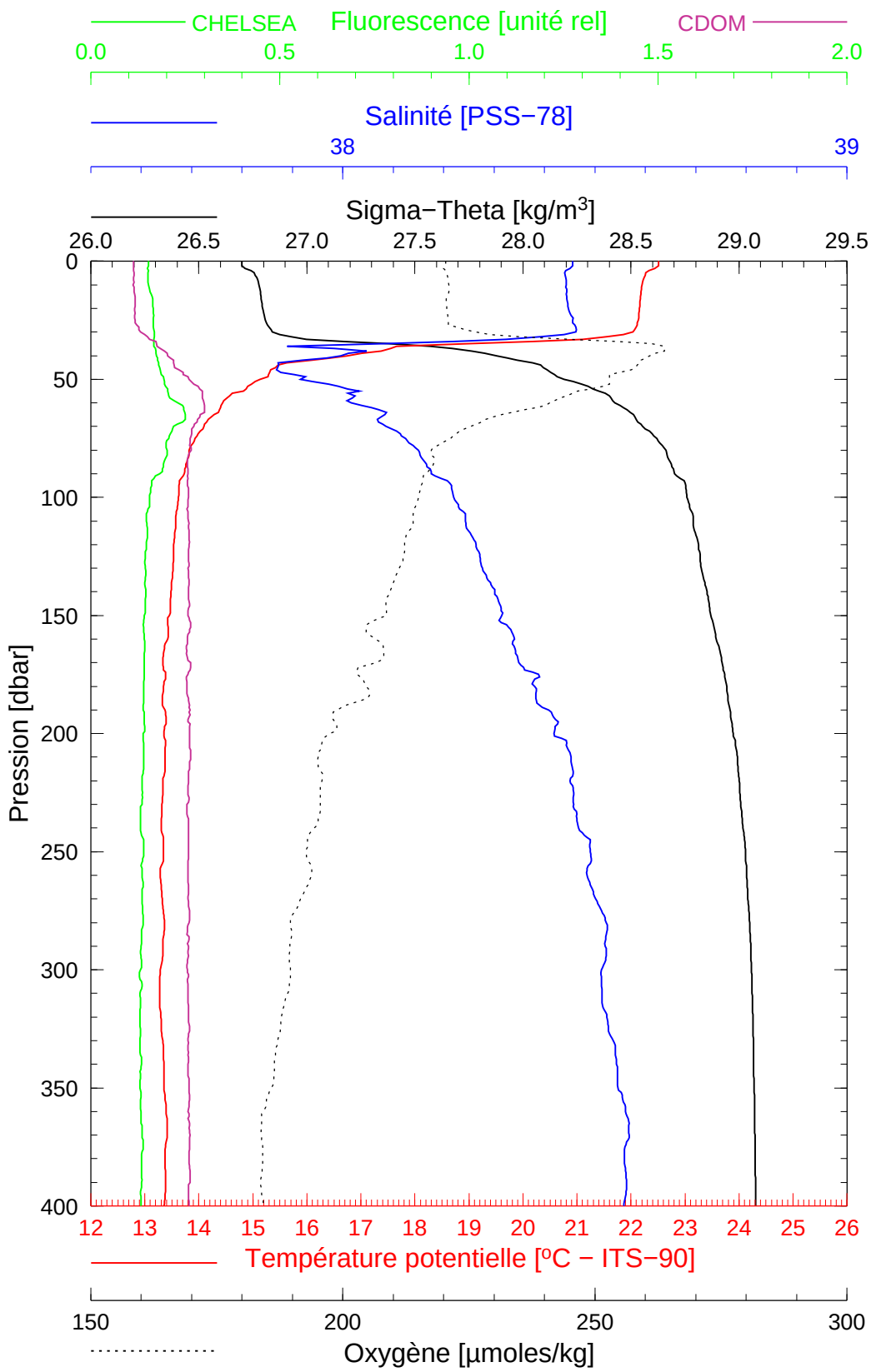
BOUS004



Date	*16/09/2008*	*Latitude*	*43º30.993*
Heure déb	*13h 07min [TU]*	*Longitude*	*07º37.097*

Boussole **16/09/2008** **BOUS080916_05**

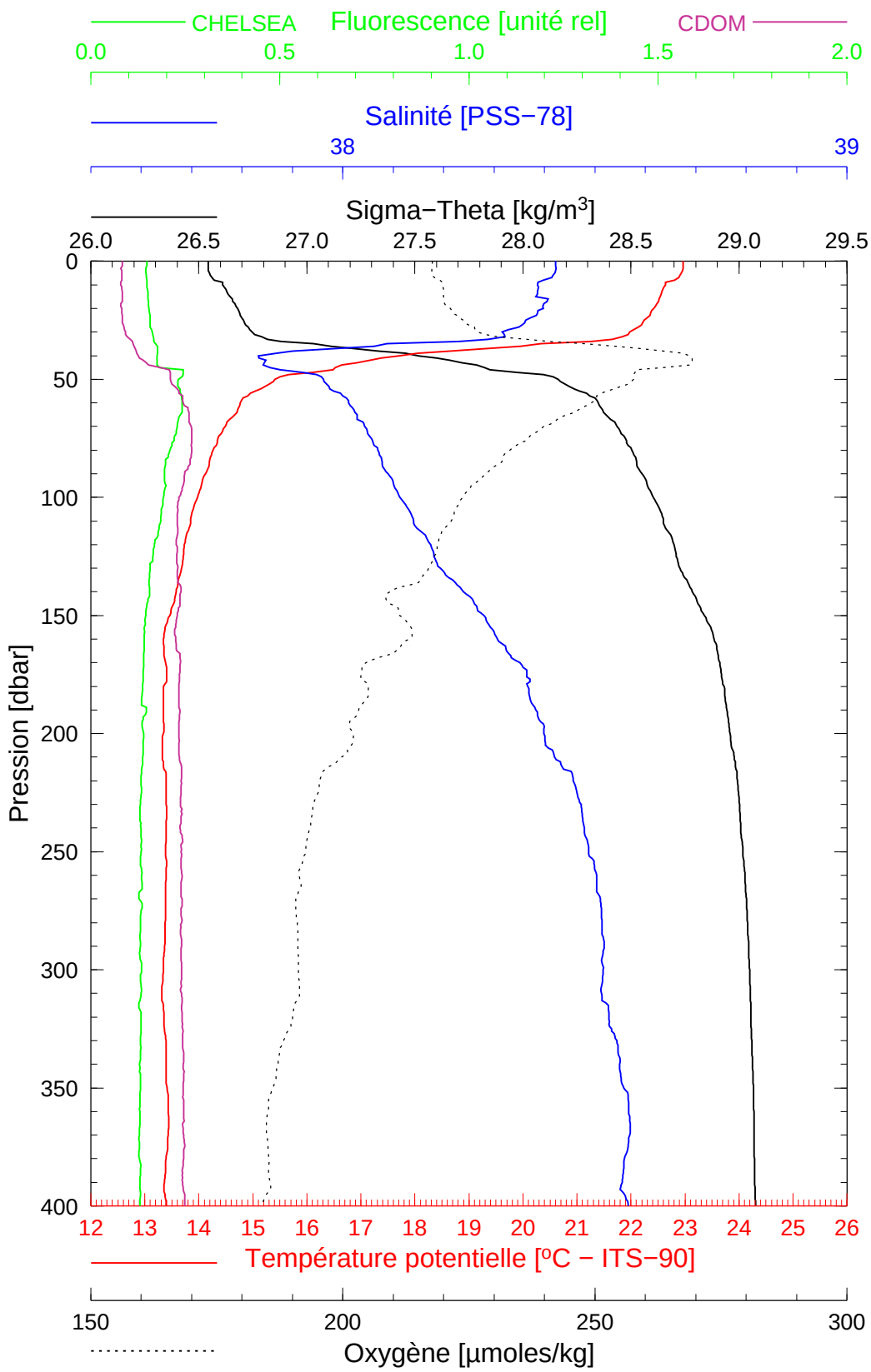
BOUS005



Date	*16/09/2008*	*Latitude*	*43º34.041*
Heure déb	*14h 06min [TU]*	*Longitude*	*07º30.967*

Boussole **16/09/2008** **BOUS080916_06**

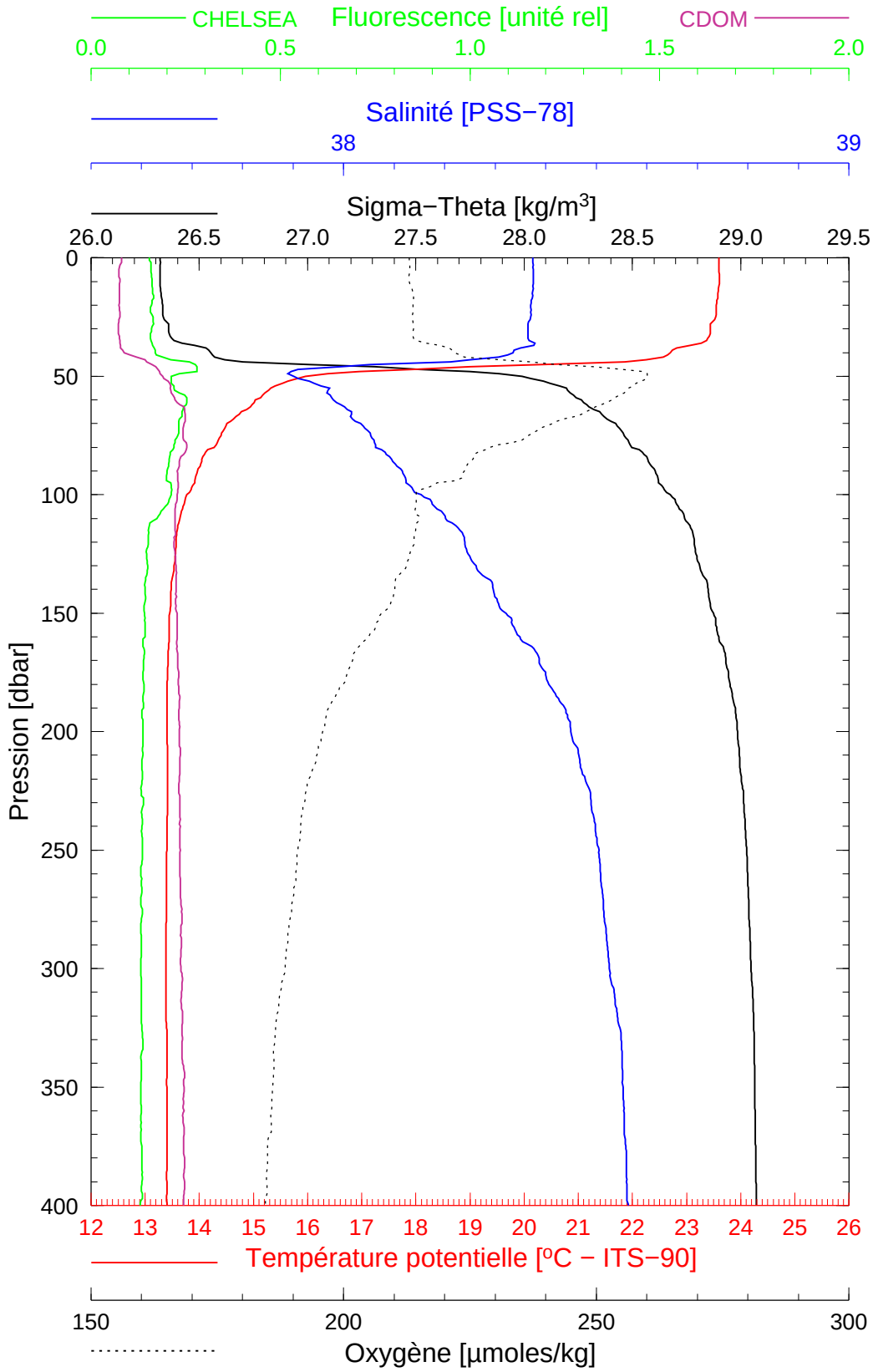
BOUS006



Date	*16/09/2008*	*Latitude*	*43º37.039*
Heure déb	*14h 54min [TU]*	*Longitude*	*07º24.960*

Boussole **16/09/2008** **BOUS080916_07**

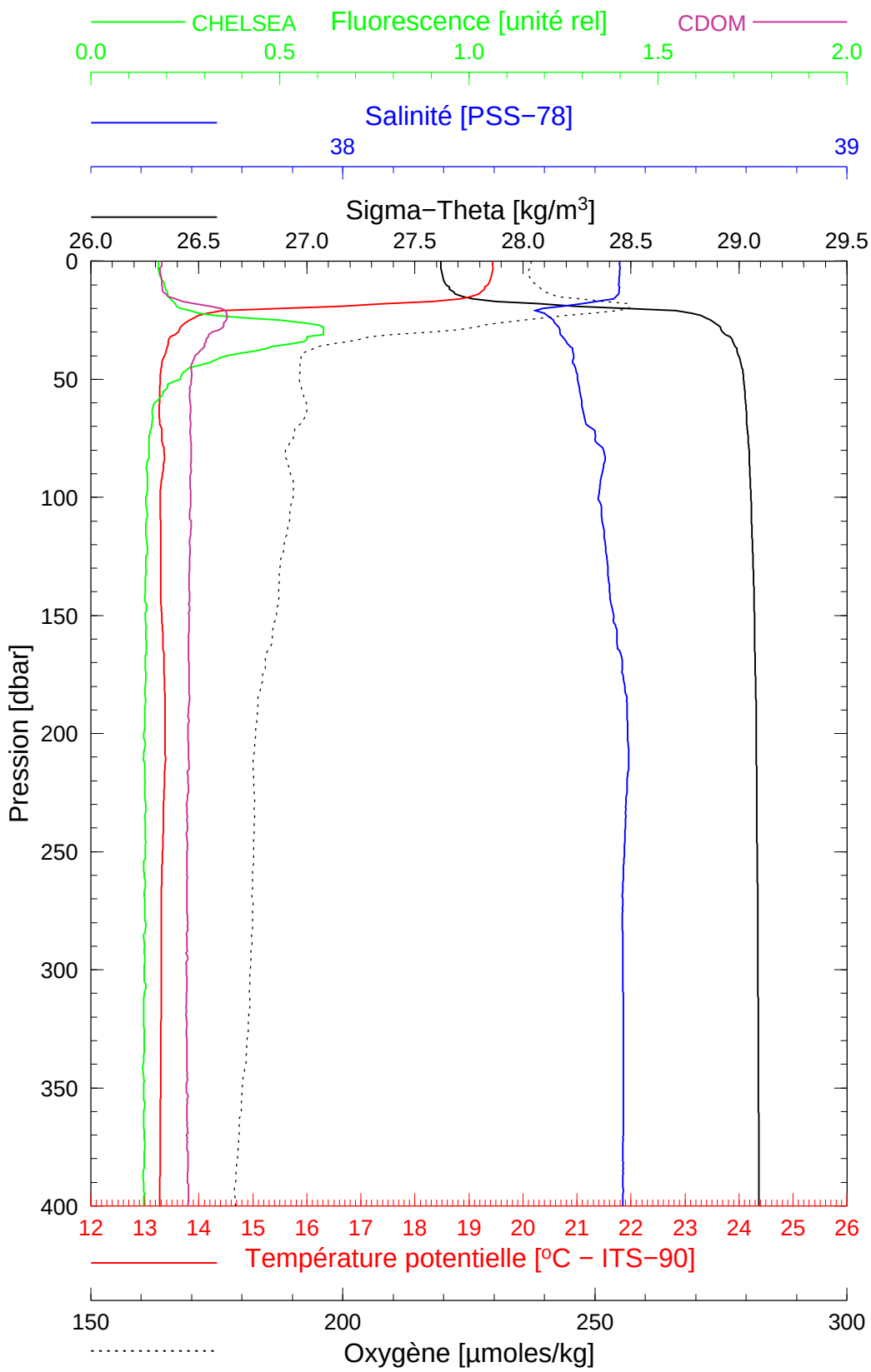
BOUS007



Date	*16/09/2008*	*Latitude*	*43º39.045*
Heure déb	*15h 41min [TU]*	*Longitude*	*07º20.952*

Boussole **17/09/2008** **BOUS080917_08**

BOUS008

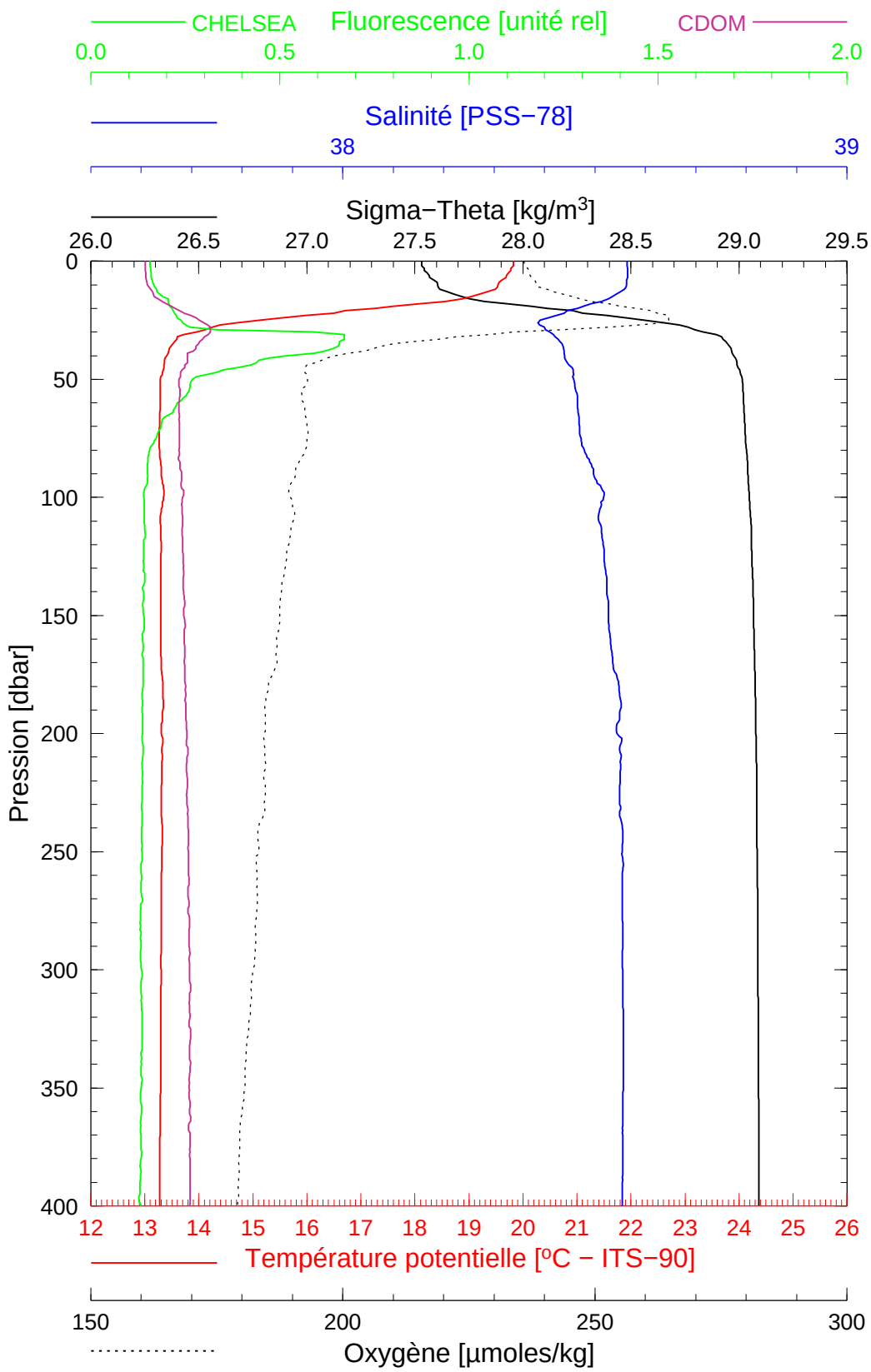


Date *17/09/2008* *Latitude* *43º22.127*

Heure déb *08h 03min [TU]* *Longitude* *07º54.044*

Boussole **17/09/2008** **BOUS080917_09**

BOUS009



Date	*17/09/2008*	*Latitude*	*43º21.853*
Heure déb	*12h 21min [TU]*	*Longitude*	*07º54.380*