BOUSSOLE Monthly Cruise Report

Cruise 127
September 22 & 24-25, 2012

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Vessel: R/V Europe
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The Sea-Bird Navis autonomous profiling float deployment in the vicinity of the BOUSSOLE buoy.

BOUSSOLE project

ESA/ESRIN contract N° 13226/10/I-NB

October 9, 2012

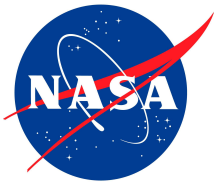
Foreword

This report is part of the technical report series that is being established by the BOUSSOLE project.

BOUSSOLE is funded and supported by the following Agencies and Institutions

European Space Agency

Centre National d'Etudes Spatiales, France



National Aeronautics and Space Administration, USA

Centre National de la Recherche Scientifique, France

Université Pierre & Marie Curie, France

Observatoire Océanologique de Villefranche/mer, France

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Cruise Objectives

Routine operations

Multiple Biospherical's C-OPS (Compact Optical Profiling System) radiometric profiles are performed at the BOUSSOLE site 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 C-OPS 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. CTD deployments are required at the start and the end of the C-OPS profiling day and around noon in the longer summer days or when there is a high possibility of a satellite matchup. The CTD package also includes a Wetlabs CDOM fluorometer and a Chl fluorometer, an absorption-attenuation meter (Wetlabs AC9; from July 2002), and a backscattering meter (Wetlabs Eco-BB3, from June 2003). Additional instrumentation for measurement of inherent optical properties has been added from December 2011. The new package includes a hyperspectral absorption meter (Hobilabs a-sphere), a multispectral backscattering meter (Hobilabs Hydroscat-6) and a multispectral beam transmissometer (Hobilabs Gamma-4). The CDOM fluorometer, AC9 and Eco-BB3 have been withdrawn from the CTD package from March 2013.
Seawater samples are to be collected, filtered and stored into liquid nitrogen for subsequent HPLC pigment and particle absorption spectrophotometric filter analysis in the lab. Three replicates samples are to be collected at surface for total suspended matter weighting in the lab.

Operations that have to be performed in each cruise include:
- Collection and filtration of seawater samples for colored dissolved organic matter (from June 2005) and particulate organic carbon (from October 2011) analyses in the lab. Small quantities of seawater are to be fixed with glutaraldehyde for cytometric analysis (from December 2011).

- One CTD transect is performed between the BOUSSOLE site and the Port of Nice. This transect consists of six fixed stations on-route from BOUSSOLE (see map in appendix). Whenever feasible, this transect should be performed at a similar time for each cruise, in order to minimise the influence of possible diurnal variability.

- Divers check the underwater state of the buoy structure and instrumentation, take pictures for archiving, clean the sensor optical surfaces, and then take again some pictures after cleaning. Divers also put a neoprene cap on the backscattering meter and on the transmissometers for acquiring dark measurements (started in April 2009).

Further details about these operations and the protocols are to be found in:
Antoine, D. M. Chami, H. Claustre, F. D'Ortenzio, A. Morel, G. Bécu, B. Gentili, F. Louis, J. Ras, E. Roussier, A.J. Scott, D. Tailliez, S. B. Hooker, P. Guevel, J.-F. Desté, C. Dempsey and D. Adams. 2006, BOUSSOLE: a joint CNRS-INSU, ESA, CNES and NASA Ocean Color Calibration And Validation Activity. NASA Technical memorandum N° 2006 - 214147, 61 pp.
(http://www.obs-vlfr.fr/Boussole/html/publications/pubs/BOUSSOLE_TM_214147.pdf)

Additional operations

The first day, an autonomous profiling float Navis Sea-Bird BGC (with BioGeoChemical sensors) was deployed at the BOUSSOLE site by staff members of Sea-Bird Electronics.

Cruise Summary

The first day was used for diving operations, for downloading data directly from the buoy, for a CTD cast with water sampling, for optical profiles, for Secchi disk and for the deployment of the Navis BGC profiling float at the BOUSSOLE site. The second day was used for a CTD cast with water sampling, for optical profiles, for a Secchi disk at the BOUSSOLE site and for the CTD transect.
The last day was cancelled because of the bad weather.

Saturday 22 September 2012

This day the sea state was smooth with a light breeze. The sky was blue and the visibility was good. When arrived at the BOUSSOLE site, divers went at sea to clean the buoy sensors and to perform dark measurements of the transmissometers and the backscattering meter. Data were downloaded directly from the buoy using the cable available on the top of the buoy. Surface sensors and solar panels were cleaned. Then, 3 C-OPS profiles, 1 CTD cast with water sampling were performed at the BOUSSOLE site. After, the Navis BGC profiling float was deployed at the BOUSSOLE site.

Monday 24 September 2012

The second day, the sea state was slight with a fresh breeze. The sky was blue and the visibility was good. 1 CTD cast with water sampling, 3 C-OPS profiles and 1 Secchi disk were performed at the BOUSSOLE site. Then the CTD transect was completed.

Tuesday 25 September 2012

The last day, bad weather prevented the departure from the Nice harbour.

Cruise Report

Saturday 22 September 2012 (UTC)

People on board: Emilie Diamond, Christoph Gerick, Yves Lamblard, David Luquet, Thomas Mitchell, Miguel Moll and Pascal Veaux.

0530 Departure from the Nice harbour.
0850 Arrival at the BOUSSOLE site.
0905 Diving operations: cleaning of buoy sensors, dark measurements of transmissometers and backscattering meter.
1135 C-OPS 01, 02, 03.
1230 Secchi disk 01, 23 m.
1320 CTD 01, 400 m with water sampling at 200, 150, 80, 70, 60, 50, 40, 30, 20, 10 and 5 m for HPLC and a_p and TSM.
1355 Deployment of the profiling float.
1415 Departure to the Nice harbour.
1815 Arrival at the Nice harbour.

Monday 24 September 2012 (UTC)

People on board: Emilie Diamond, Thomas Mitchell and Vincent Taillandier.

0430 Departure from the Nice harbour.
0800 Arrival at the BOUSSOLE site.
0815 CTD 02, 400 m with water sampling at 400, 150, 80, 70, 60, 50, 40, 30, 20, 10 and 5 m for HPLC, a_p CDOM, POC, Cytometry and TSM.
0905 C-OPS 04, 05, 06.
1000 Secchi 02, 19m.
1005 Departure to the first transect station.
1055 CTD 03, 400 m, station 01 (43°25'N 07°48'E).
1205 CTD 04, 400 m, station 02 (43°28'N 07°42'E).
1315 CTD 05, 400 m, station 03 (43°31'N 07°37'E).
1420 CTD 06, 400 m, station 04 (43°34'N 07°31'E).
1520 CTD 07, 400 m, station 05 (43°37'N 07°25'E).
1615 CTD 08, 400 m, station 06 (43°39'N 07°21'E).
1645 Departure to the Nice harbour.
1715 Arrival at the Nice harbour.

Tuesday 25 September 2012 (UTC)

Bad weather prevented departure from the Nice harbour.

Problems identified during the cruise

No problems.

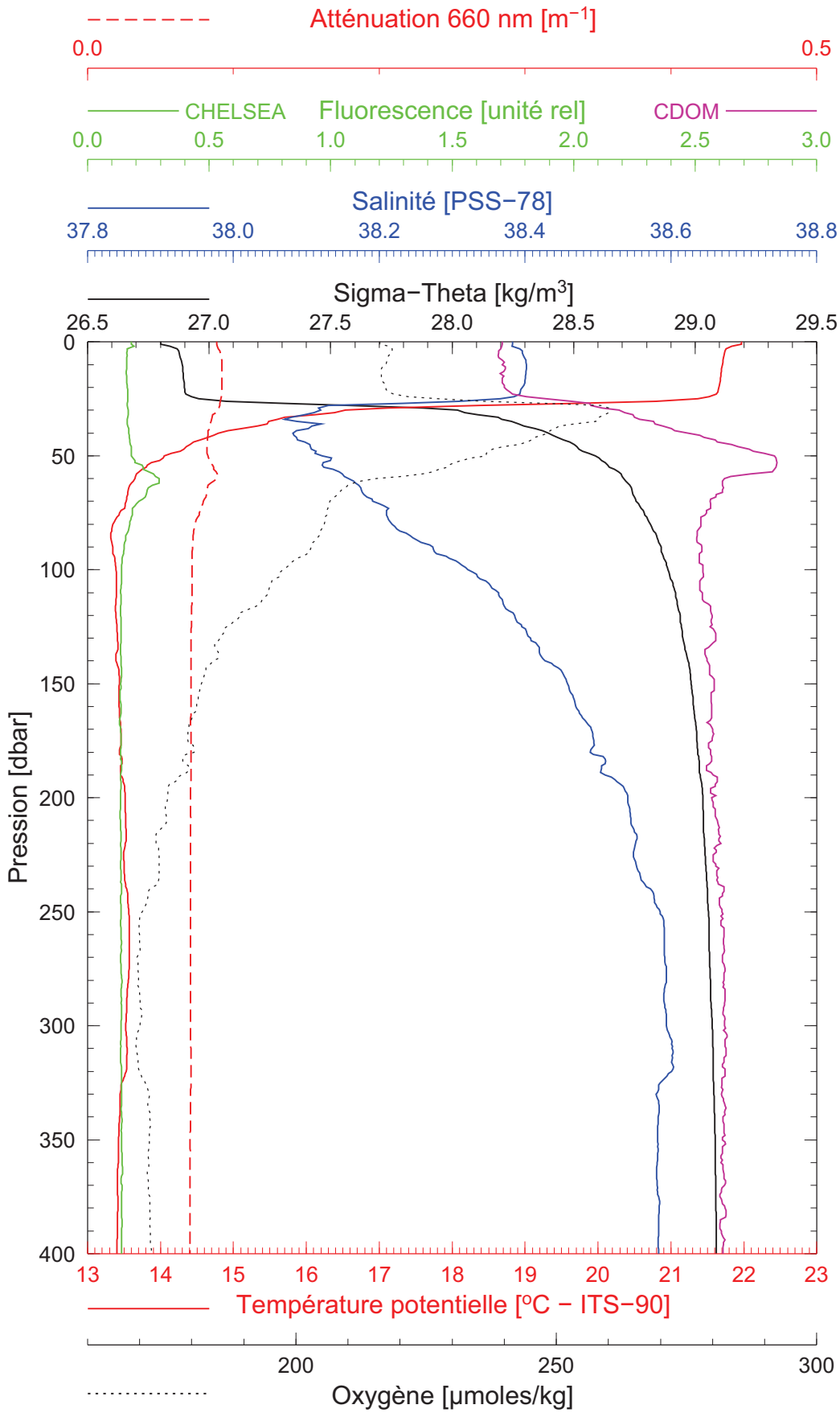
Appendices

Cruise Summary Table for Boussole 127

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
	bou_c-ops_120922_1134_001_data.csv				11:37	1:50																			
		bou_c-ops_120922_1134_002_data.csv			11:55	5:06	123	43	21.864	7	53.862	blue	Ci	1	4	80	1015.0	70	good	21.0		calm	0.5		no
		bou_c-ops_120922_1134_003_data.csv			12:09	3:27	83.1	43	21.834	7	53.892	blue	Ci	1	4	80	1015.0	70	good	21.0		calm	0.5		no
22/09/12		bou_c-ops_120922_1134_004_data.csv			12:21	4:13	101.1	43	21.839	7	53.935	blue	Ci	1	4	80	1015.0	70	good	21.0		calm	0.5		no
	bou_c-ops_120922_1134_005_data.csv				13:25	1:19																			
				Secchi01	12:30	4:00	23	43	22	7	54	blue		1					good			calm			
			CTDBOUS001	HPLC, Ap & TSM	13:20	35:00	400	43	21.847	7	53.463	blue		0	5	75	1015.5	69		21.4	22.1	calm			
			CTDBOUS002	HPLC, Ap & TSM	08:23	36:00	400	43	21.630	7	54.408	overcast		6	18	73	1007.9	85		21.6	21.0	calm			
	bou_c-ops_120924_0818_001_data.csv				08:20	1:21																			
		bou_c-ops_120924_0818_002_data.csv			09:16	3:31	85.8	43	21.747	7	54.459	blue	Cc&St	2-3	16	335	1006.9	85	good	21.9		calm	1.0		yes
		bou_c-ops_120924_0818_003_data.csv			09:26	3:54	94.7	43	21.570	7	54.352	blue	Cc&St	2-3	16	335	1006.9	85	good	21.9		calm	1.0		yes
		bou_c-ops_120924_0818_004_data.csv			09:40	3:29	81.6	43	21.249	7	54.234	blue	Cc&St	2-3	16	335	1006.9	85	good	21.9		calm	1.0		yes
	bou_c-ops_120924_0818_005_data.csv				13:51	1:25																			
24/09/12				Secchi02	10:00	4:00	19	43	22	7	54	overcast		8					good			calm			
			CTDBOUS003		10:58	26:00	400	43	24.833	7	48.063	overcast		8	14	258	1006.6	91		22.2	22.0	calm			
			CTDBOUS004		12:09	28:00	400	43	27.915	7	41.990	cloudy		4	4	27	1006.4	82		19.5	21.8	calm			
			CTDBOUS005		13:18	26:00	400	43	30.914	7	36.738	blue		2	13	353	1005.6	74		21.2	21.9	calm			
			CTDBOUS006		14:23	23:00	400	43	33.283	7	31.020	blue		1	14	270	1005.2	76		21.9	22.9	calm			
			CTDBOUS007		15:25	23:00	400	43	36.981	7	25.188	blue		0	16	7	1004.6	64		24.1	22.5	calm			
			CTDBOUS008		16:20	20:00	400	43	38.827	7	21.147	blue		0	29	42	1004.3	58		25.1	22.7	moved			
25/09/12	Bad weather																								

BOUSSOLE 127 **22/09/2012** **BOUS120922_01**

BOUS001

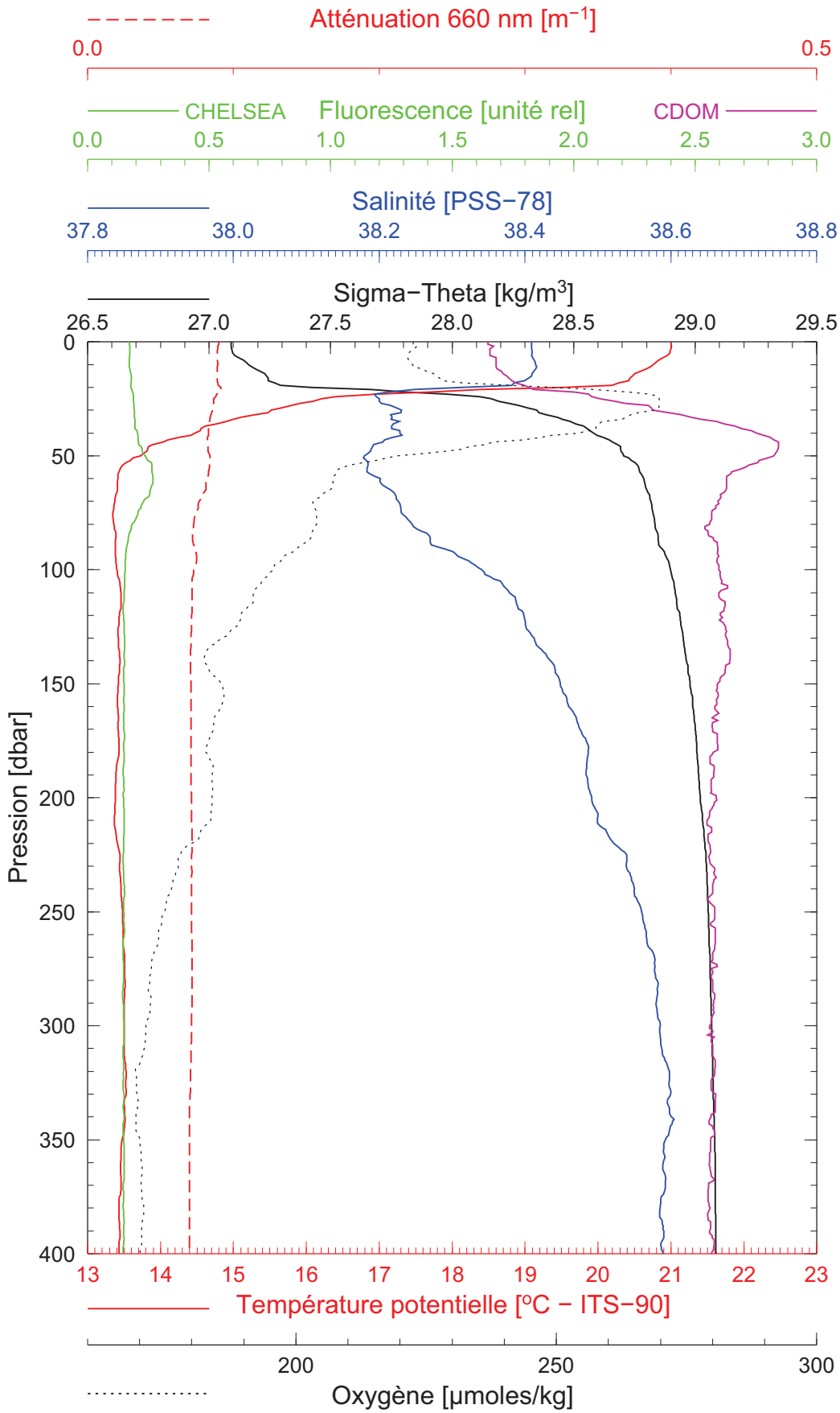


Date *22/09/2012* *Latitude* *43°21.847 N*

Heure déb *13h 20min [TU]* *Longitude* *07°53.463 E*

BOUSSOLE 127 **24/09/2012** **BOUS120924_01**

BOUS002

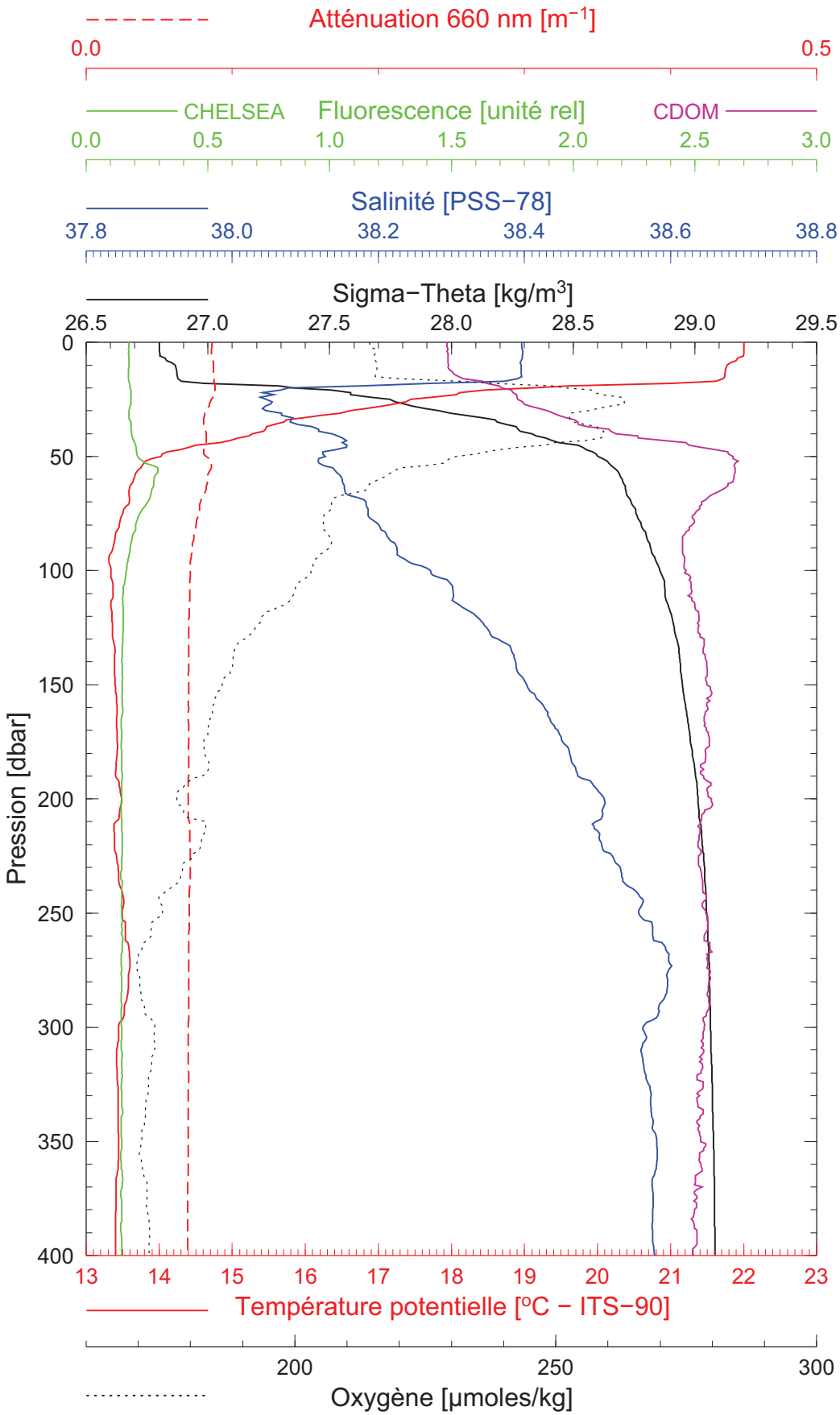


Date *24/09/2012* *Latitude* *43°21.630 N*

Heure déb *08h 23min [TU]* *Longitude* *07°54.408 E*

BOUSSOLE 127 **24/09/2012** **BOUS120924_02**

BOUS003

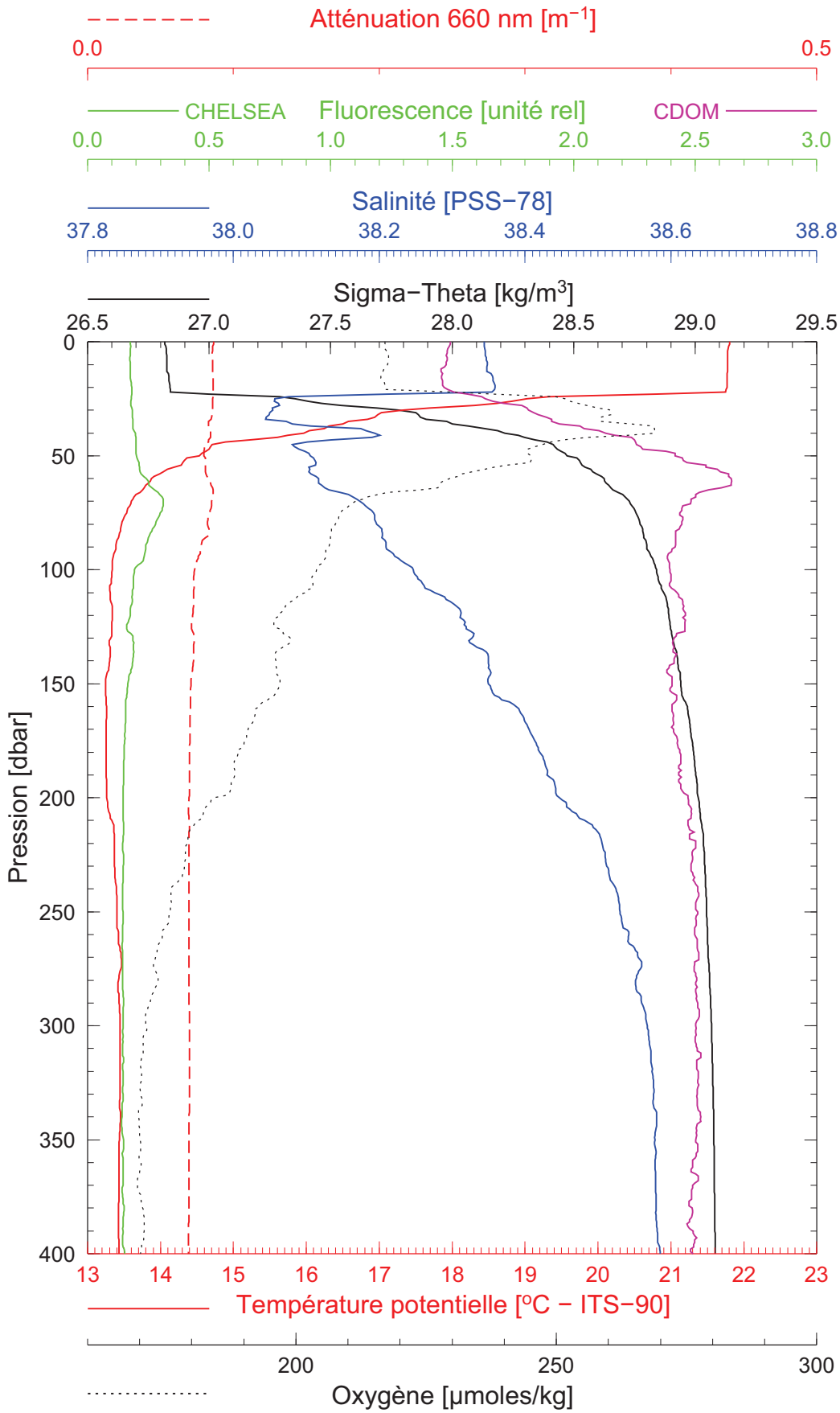


Date *24/09/2012* *Latitude* *43°24.833 N*

Heure déb *10h 58min [TU]* *Longitude* *07°48.063 E*

BOUSSOLE 127 **24/09/2012** **BOUS120924_03**

BOUS004

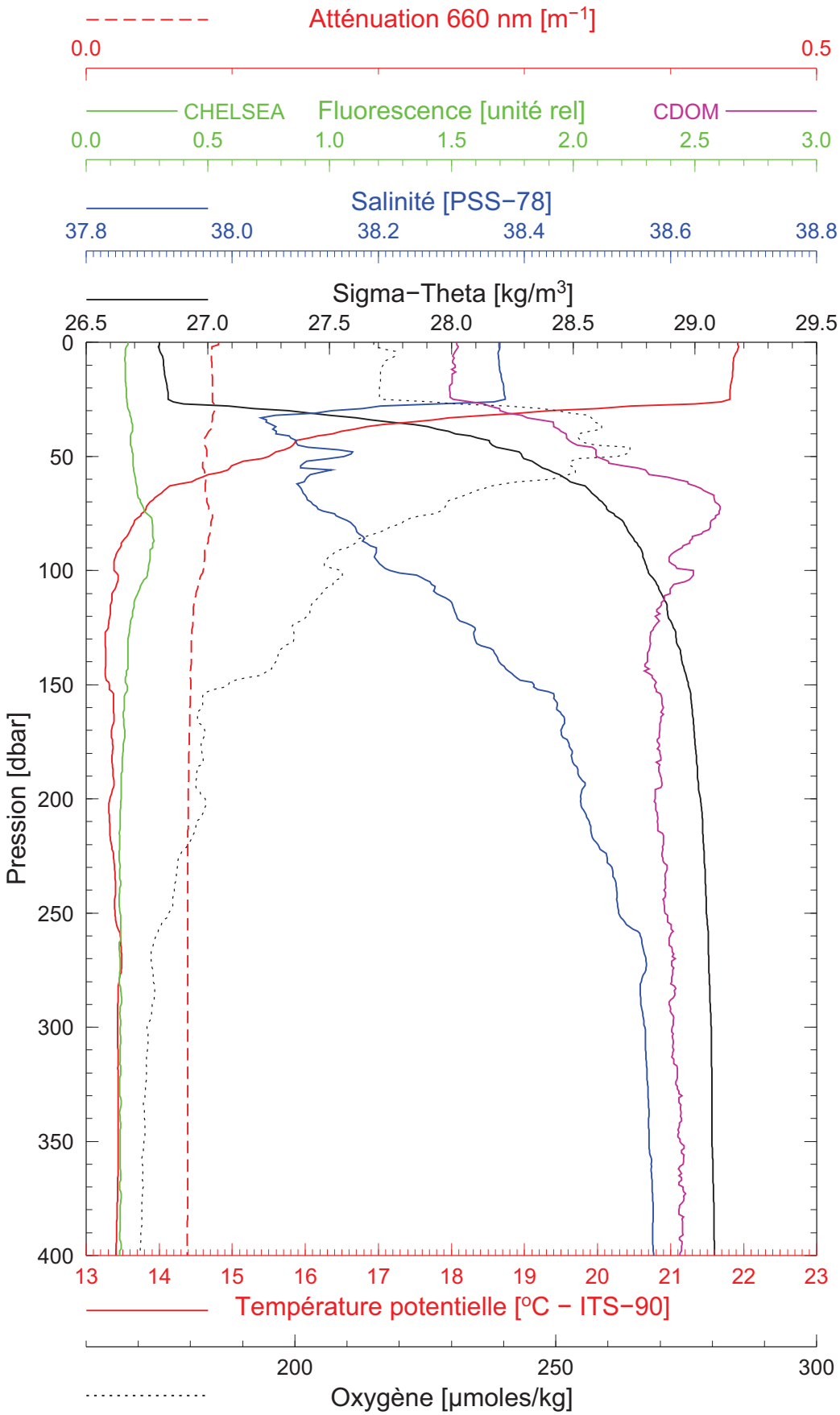


Date *24/09/2012* *Latitude* *43°27.915 N*

Heure déb *12h 09min [TU]* *Longitude* *07°41.990 E*

BOUSSOLE 127 **24/09/2012** **BOUS120924_04**

BOUS005

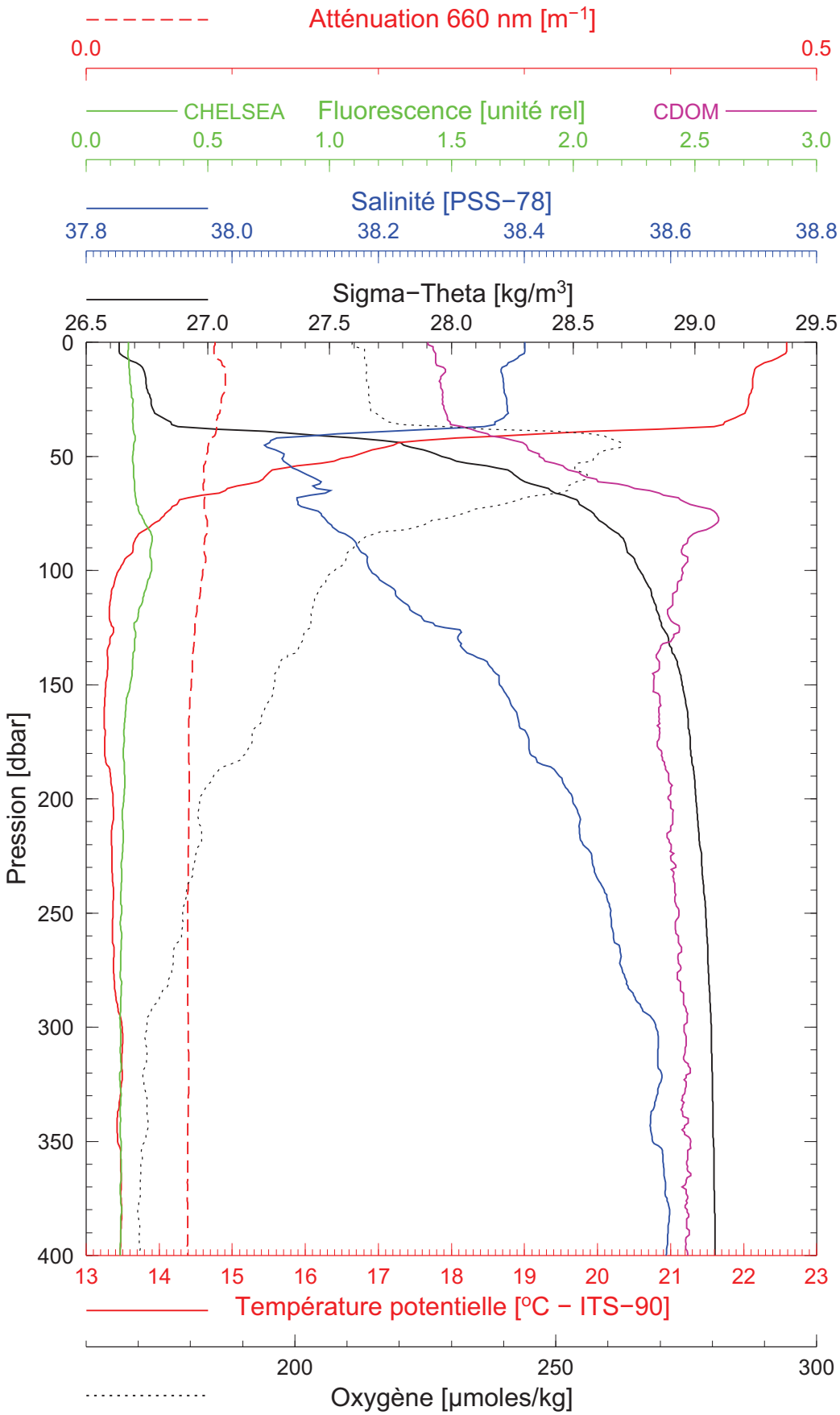


Date *24/09/2012* *Latitude* *43°30.914 N*

Heure déb *13h 18min [TU]* *Longitude* *07°36.738 E*

BOUSSOLE 127 **24/09/2012** **BOUS120924_05**

BOUS006

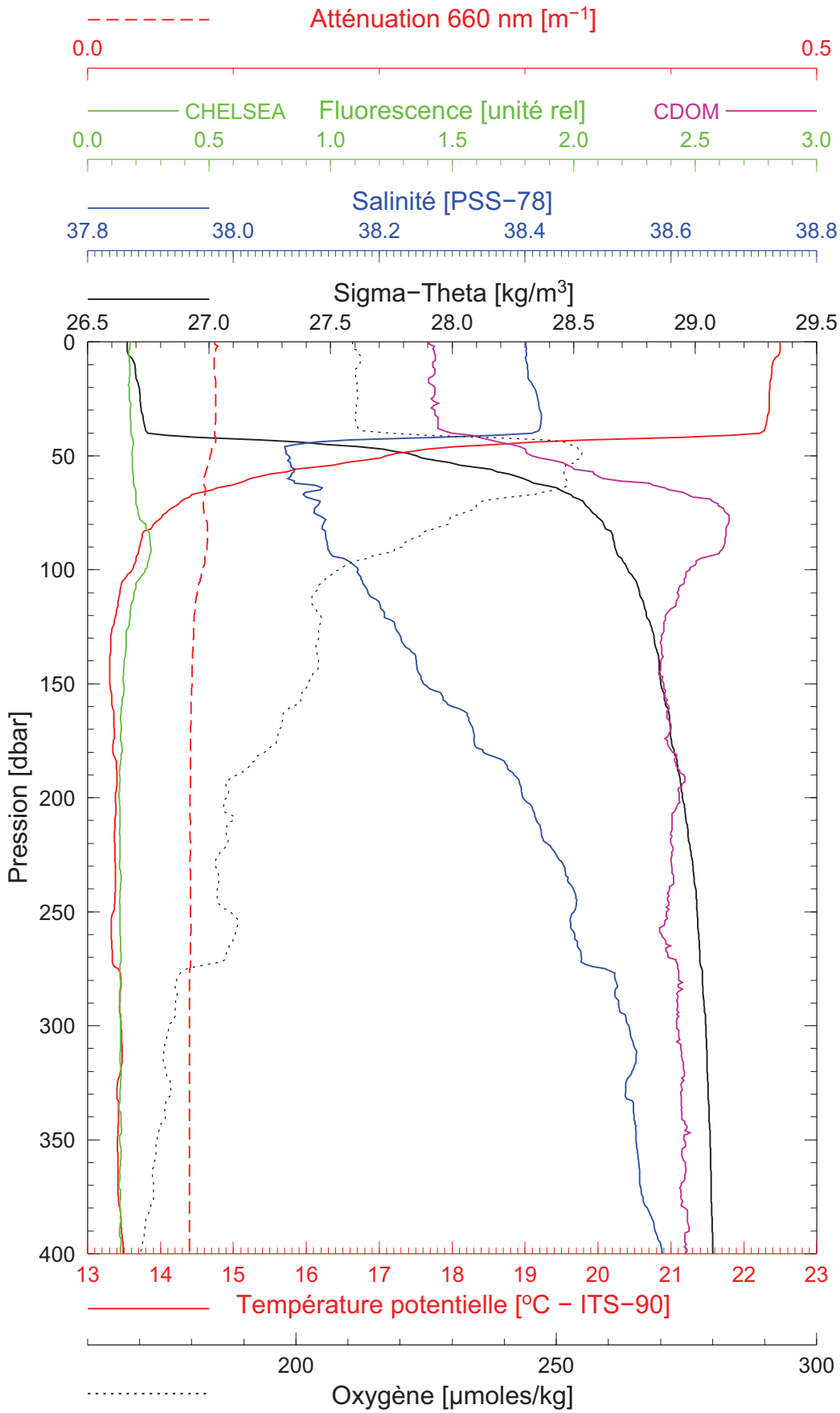


Date *24/09/2012* *Latitude* *43°33.283 N*

Heure déb *14h 23min [TU]* *Longitude* *07°31.020 E*

BOUSSOLE 127 **24/09/2012** **BOUS120924_06**

BOUS007

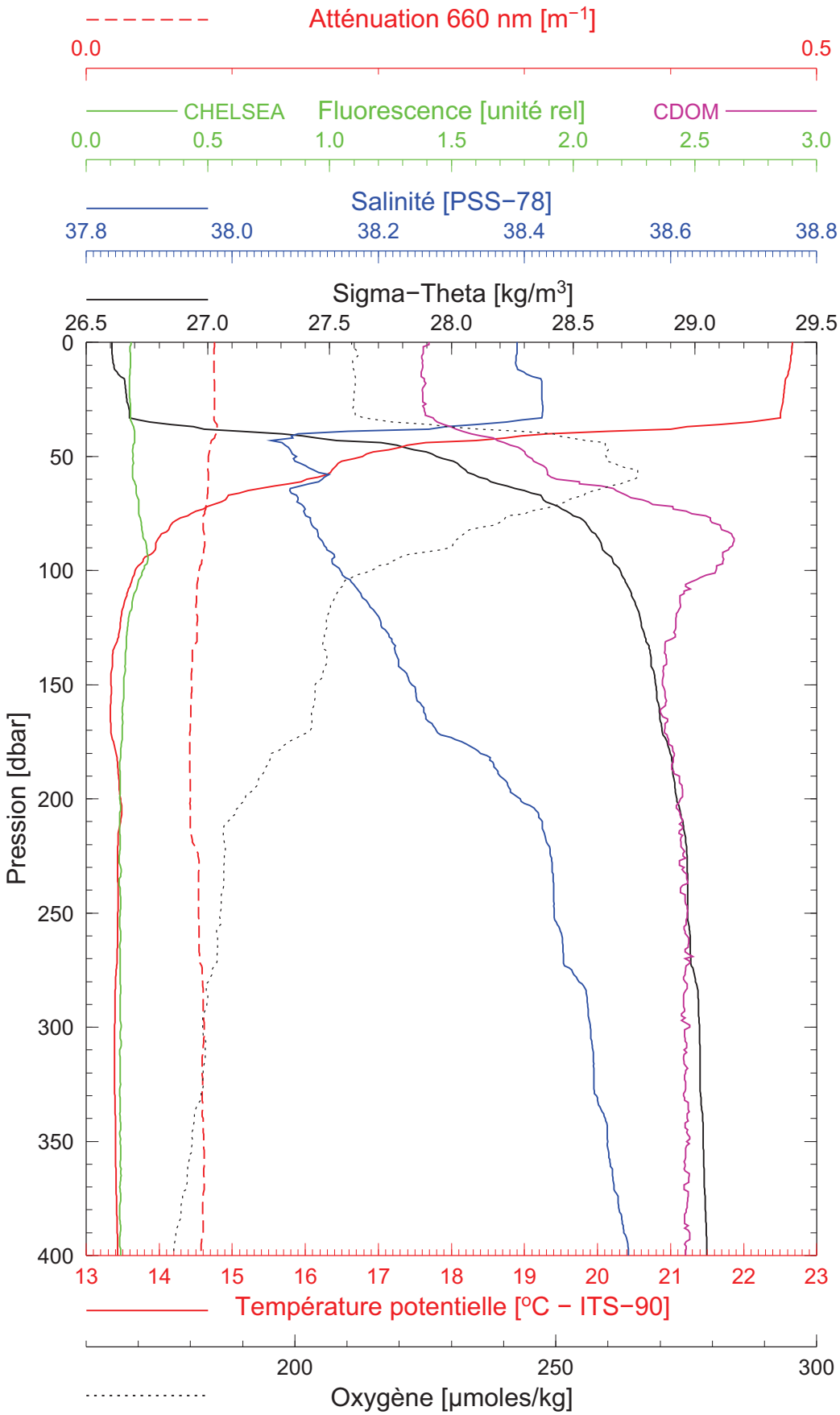


Date *24/09/2012* *Latitude* *43°36.981 N*

Heure déb *15h 25min [TU]* *Longitude* *07°25.188 E*

BOUSSOLE 127 **24/09/2012** **BOUS120924_07**

BOUS008



Date *24/09/2012* *Latitude* *43°38.827 N*

Heure déb *16h 20min [TU]* *Longitude* *07°21.147 E*