BOUSSOLE Monthly Cruise Report

Cruise 124
June 17 - 18, 2012

Duty Chief: Emilie Diamond (diamond@obs-vlfr.fr)
Vessel: R/V Téthys II
(Captain: Renaud Lebourhis)

Science Personnel: Emilie Diamond, Romain Fauconnier, Yves Lamblard, Didier Robin, Vincent Taillandier and Stéphane Jamme.

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

The BOUSSOLE buoy as seen from underwater.

BOUSSOLE project

ESA/ESRIN contract N° 13226/10/I-NB

July 2, 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

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Centre National de la Recherche Scientifique, 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 The CDOM fluorometer, AC9 and Eco-BB3 have been withdrawn from the CTD package from March 2013.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

No additional operations.

Cruise Summary

The R/V *Téthys II* was available only two days during this month for the BOUSSOLE cruise. These two days were used for optical profiles and CTD casts with water sampling at the BOUSSOLE site. The first day was also used for performing a part of the CTD transect and the second day for the buoy maintenance and diving operations.

Sunday 17 June 2012

The first day, the sea state was very calm and the sky was blue with a good visibility. When arrived at the BOUSSOLE site, 1 CTD casts with water sampling and 4 C-OPS profiles were performed. An attempt of CISCO

connection with the buoy failed. Then the CTD transect was partly performed because of problems with the CTD connection.

Monday 18 June 2012

The second and last day, the sea state was calm with a light breeze and the sky was overcast. When arrived at the BOUSSOLE site, divers went at sea to clean buoy instruments. They also put neoprene caps on the backscattering meter and on the transmissometers for acquiring dark measurements. In parallel to diving operations, solar panels, sensors and ARGOS and CISCO connectors on the top of the buoy were cleaned and a direct connection with the buoy was established for data retrieval. Then, an attempt of CTD cast was performed after the cleaning of each connectors but the fuse of its deck-unit still burnt. So 3 C-OPS profiles, 1 Secchi disk and 1 IOP package cast were performed. Before leaving the BOUSSOLE site, water samples were collected by closing a Niskin bottle with a messenger on the hydrologic cable.

Cruise Report

Sunday 17 June 2012 (UTC)

People on board: Emilie Diamond, Romain Fauconnier and Vincent Taillandier.

0535 Departure from the Nice harbour.
0855 Arrival at the BOUSSOLE site.
0900 CTD 01, 400 m with water sampling at 200, 150, 80, 70, 60, 50, 40, 30, 20, 10 and 5 m for HPLC, a_p and TSM.
1000 Attempt of CISCO connection with the buoy: unsuccessful.
1005 C-OPS 01, 02, 03, 04.
1100 CISCO connection with the buoy and data retrieval: buoy OK.
1120 Departure to the first transect station.
1155 CTD 02, 400 m, station 01 (43°25'N 07°48'E).
1255 CTD at the station 02 does not work: deck-unit fuse burnt.
1305 CTD 03, 400 m, station 02 (43°28'N 07°42'E).
1400 CTD 04, 400 m, station 03 (43°31'N 07°37'E).
1500 CTD 05, 400 m, station 04 (43°34'N 07°31'E).
1600 CTD (with or without the AC9) at the station 05 does not work: deck-unit fuse burnt.
1745 Departure to the Nice harbour.
1830 Arrival at the Nice harbour.

Monday 18 June 2012 (UTC)

People on board: Emilie Diamond, Stéphane Jamme, Yves Lamblard, Didier Robin and Vincent Taillandier.

0435 Departure from the Nice harbour.
0750 Arrival at the BOUSSOLE site.
0810 Diving on the buoy for cleaning instruments. Dark HS4 and transmissometers measurements at 08:30, 08:45 and 09:00.
0900 Direct connection with the buoy and data retrieval.
0910 Cleaning of solar panels, sensors and ARGOS and CISCO connectors on the head of the buoy.
0945 CTD test after connectors cleaning: unsuccessful.
1000 C-OPS 05, 06, 07.
1050 Secchi disk 01 (24 m).
1150 Niskin bottle for water sampling at 20, 10 and 5 m for HPLC, a_p, TSM, POC and cytometry.
1200 Departure to the Nice harbour.
1710 Arrival at the Nice harbour.

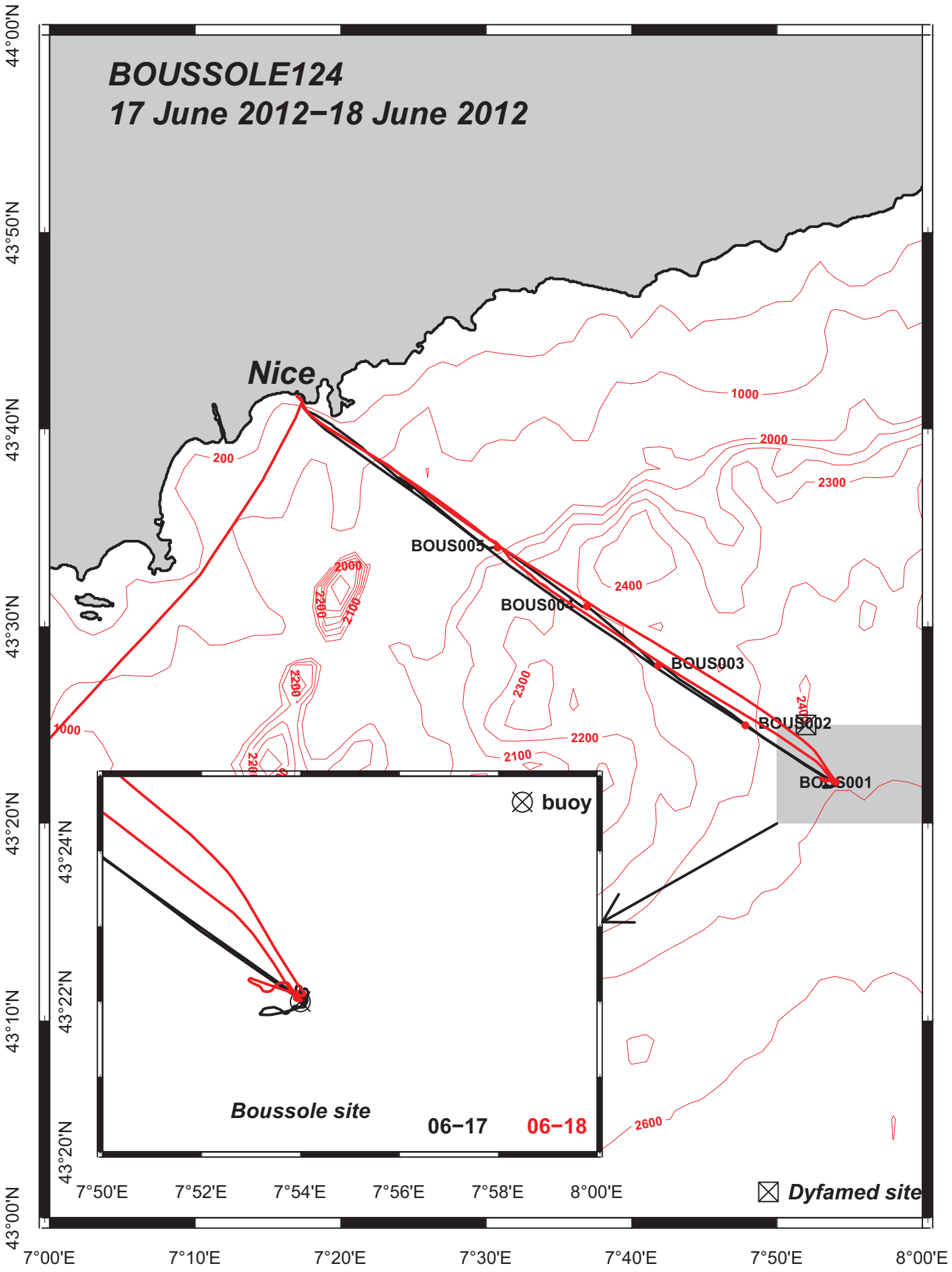
Problems identified during the cruise

- The CTD connector was not well connected at the beginning of the cruise so there were some problems of communication with the instrument during the CTD transect. After several cleanings of each CTD connectors, the problem persisted because of smut trace still there on the sea cable connector of the CTD. It was then cleaned in the lab.

Appendices

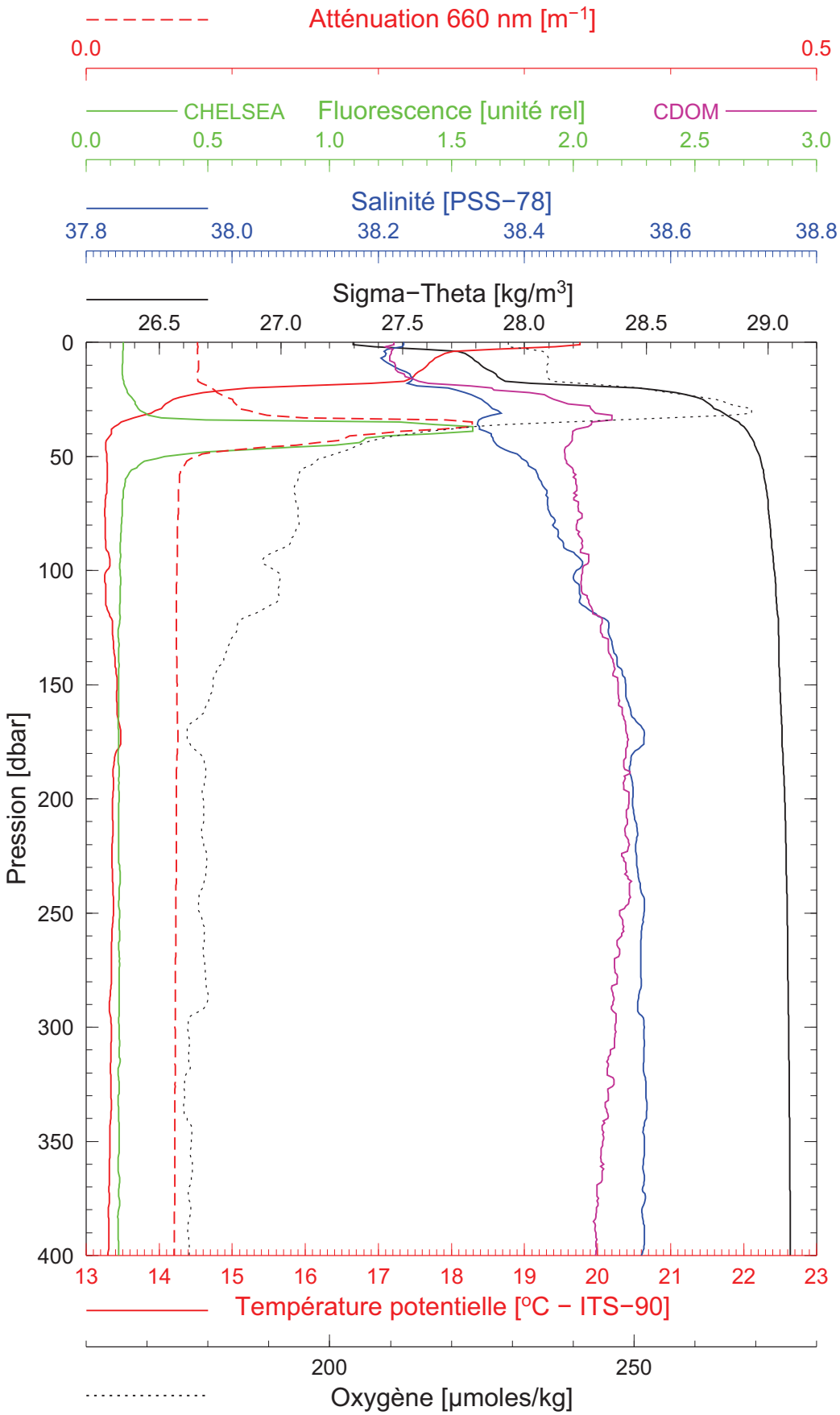
Cruise Summary Table for Boussole 124

Date	Black names	Profile names	CTD names	Other sensors	Start Time	Duration	Depth max	Latitude (N)		Longitude (E)		Sky			Weather							Sea		
					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	HPLC, Ap & TSM	09:03	28:00	400	43	22.109	7	54.065	blue		0	1	21	1019	85		22.2	19.7	calm			no
	bou_c-ops_120617_0913_001_data.csv				09:14	1:14																		
		bou_c-ops_120617_0913_004_data.csv			10:13	3:09	70.7	43	21.918	7	53.847	blue	None	0	1	318	1020	75	good	23.0		calm	0.2		no
		bou_c-ops_120617_0913_005_data.csv			10:23	3:34	84.6	43	21.841	7	53.685	blue	None	0	1	318	1020	75	good	23.0		calm	0.2		no
		bou_c-ops_120617_0913_006_data.csv			10:33	3:56	94.8	43	21.919	7	53.492	blue	None	0	1	318	1020	75	good	23.0		calm	0.2		no
17/06/12		bou_c-ops_120617_0913_007_data.csv			10:42	2:52	68.7	43	21.885	7	53.236	blue	None	0	1	318	1020	75	good	23.0		calm	0.2		no
	bou_c-ops_120617_0913_008_data.csv				13:02	4:08																		
			CTDBOUS002		11:58	23:00	400	43	24.986	7	47.829	blue		0	6	88	1019	71		23.0	21.1	calm			no
			CTDBOUS003		13:09	23:00	400	43	28.022	7	41.835	blue		0	4	315	1019	78		23.0	19.9	calm			no
			CTDBOUS004		14:05	26:00	400	43	31.019	7	36.954	blue		0	3	230	1019	74		23.4	21.3	calm			no
			CTDBOUS005		15:04	25:00	400	43	34.003	7	30.795	blue		0	4	34	1018	71		23.8	22.3	calm			no
				IOP cast111	09:50	6:00	100	43	22.127	7	53.911	overcast		7	7	260	1018	83		22.6	21.6	calm			no
	bou_c-ops_120618_1005_001_data.csv				10:08	1:14																		
		bou_c-ops_120618_1005_003_data.csv			10:22	3:47	89.3	43	22.250	7	53.736	overcast	As&Cs	7	4	150	1018	85	good	22.7		calm	0.2		no
		bou_c-ops_120618_1005_004_data.csv			10:34	1:59	47.1	43	22.216	7	53.496	overcast	As&Cs	7	4	150	1018	85	good	22.7		calm	0.2		no
18/06/12		bou_c-ops_120618_1005_005_data.csv			10:42	3:06	72.7	43	22.138	7	53.263	overcast	As&Cs	7	4	150	1018	85	good	22.7		calm	0.2		no
	bou_c-ops_120618_1005_006_data.csv				12:10	2:14																		
				Secchi02	10:50	4:00	24	43	22	7	54	overcast		5					good			calm			no
				IOP cast112	11:16	11:00	190	43	22.113	7	54.089	overcast		5	7	305	1018	78		23.1	21.6	calm			no
				Niskin: HPLC Ap TSM POC cyto	11:30	20:00	5 to 20	43	22.135	7	54.069	overcast		4	6	260	1018	78		23.1		calm			no


BOUSSOLE124
17 June 2012−18 June 2012
Nice
BOUS005
BOUS004
BOUS003
BOUS002
BOUS001
200
1000
2000
2300
2400
2200
2100
2600
buoy
Boussole site
06−17
06−18
Dyfamed site
44°00'N
43°50'N
43°40'N
43°30'N
43°20'N
43°10'N
43°00'N
7°00'E
7°10'E
7°20'E
7°30'E
7°40'E
7°50'E
8°00'E
43°24'N
43°22'N
43°20'N
7°50'E
7°52'E
7°54'E
7°56'E
7°58'E
8°00'E

BOUSSOLE 124 **17/06/2012** **BOUS120617_01**

BOUS001

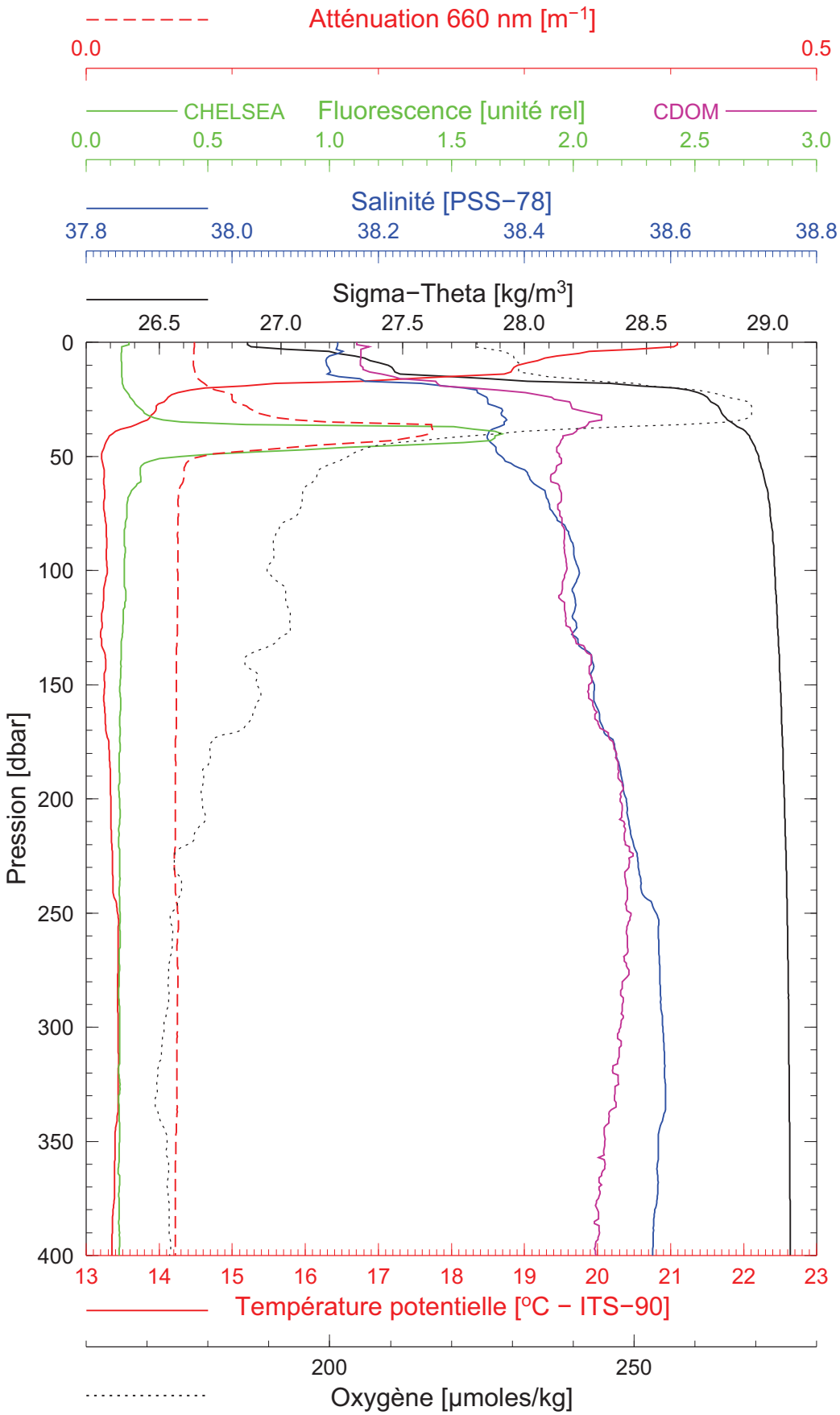


Date *17/06/2012* *Latitude* *43°22.109 N*

Heure déb *09h 03min [TU]* *Longitude* *07°54.065 E*

BOUSSOLE 124 **17/06/2012** **BOUS120617_02**

BOUS002

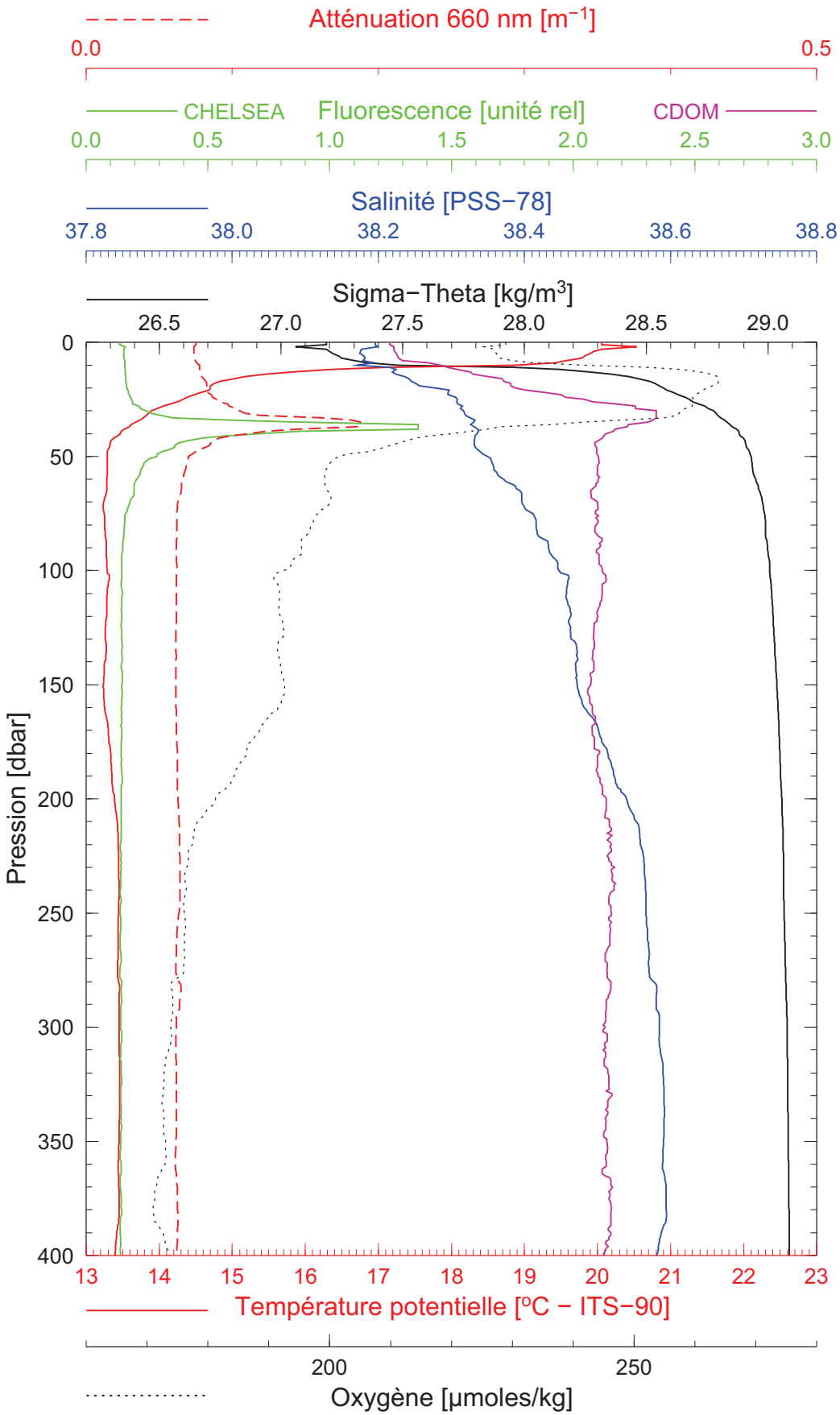


Date *17/06/2012* *Latitude* *43°24.986 N*

Heure déb *11h 58min [TU]* *Longitude* *07°47.829 E*

BOUSSOLE 124 **17/06/2012** **BOUS120617_03**

BOUS003

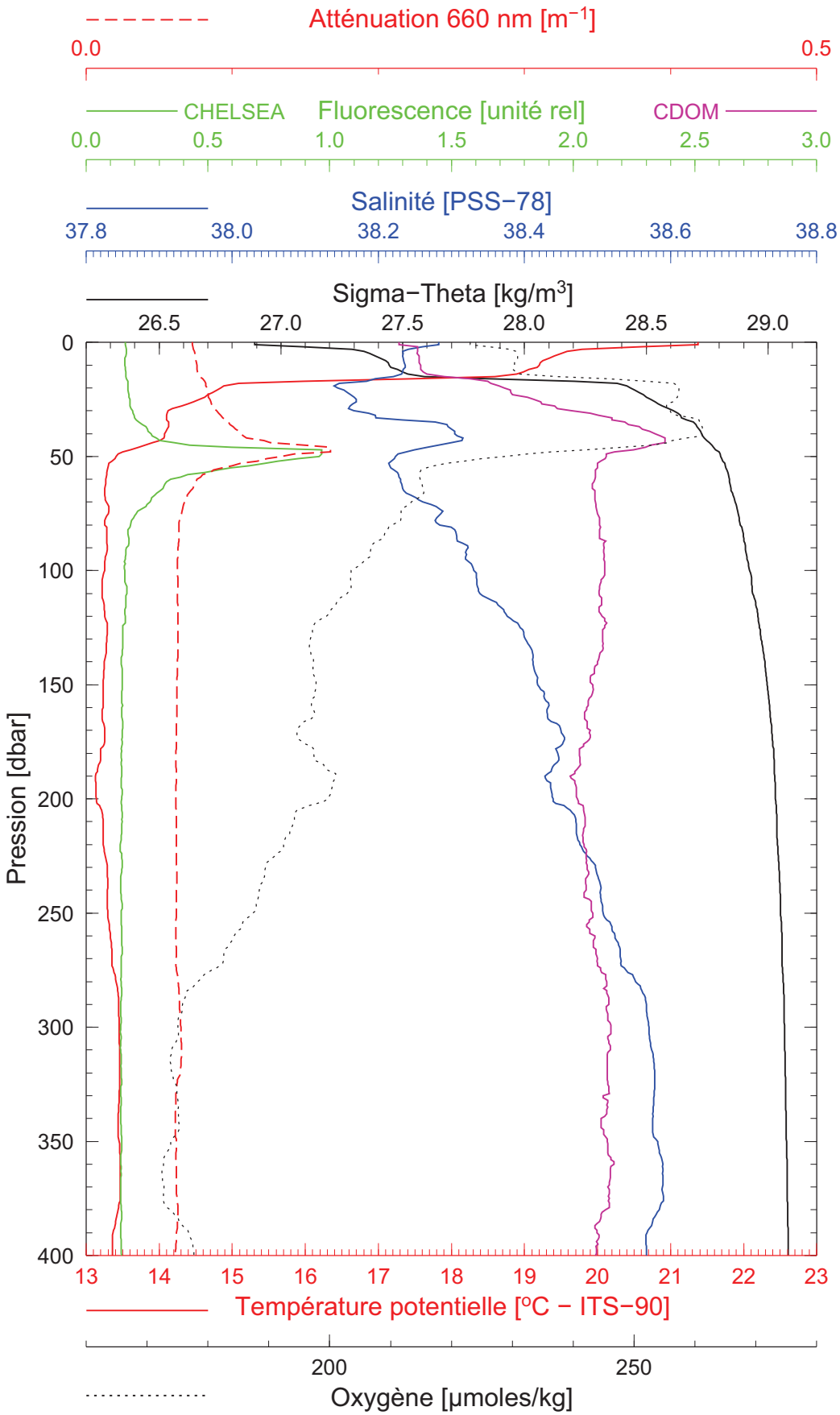


Date *17/06/2012* *Latitude* *43°28.022 N*

Heure déb *13h 09min [TU]* *Longitude* *07°41.835 E*

BOUSSOLE 124 **17/06/2012** **BOUS120617_04**

BOUS004

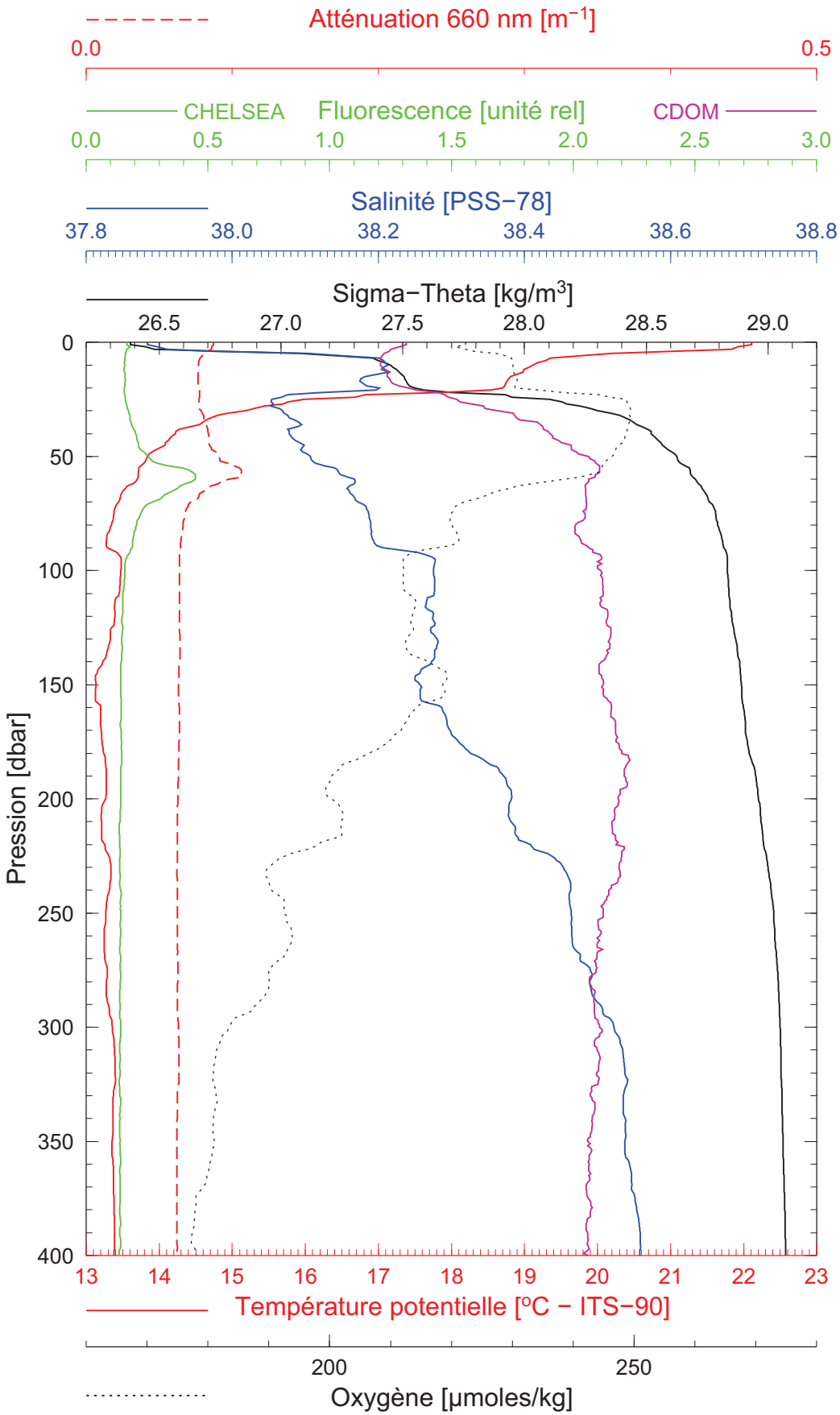


Date *17/06/2012* *Latitude* *43°31.019 N*

Heure déb *14h 05min [TU]* *Longitude* *07°36.954 E*

BOUSSOLE 124 **17/06/2012** **BOUS120617_05**

BOUS005



Date *17/06/2012* *Latitude* *43°34.003 N*

Heure déb *15h 04min [TU]* *Longitude* *07°30.795 E*