

BOUSSOLE Monthly Cruise Report

Cruise 139

September 10 – 12 – 13, 2013

Duty Chief: Melek Golbol (golbol@obs-vlfr.fr)

Vessel: R/V Téthys II

(Captains: Renaud Le Bourhis then Rémy Lafond)

Science Personnel: Melek Golbol, Yves Lamblard, Vincent Taillandier, Vincenzo Vellucci and 2 divers (from Le Fiquefleur).

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



Deployment of the Compact Optical Profiling System (C-OPS) at the BOUSSOLE site.

BOUSSOLE project

ESA/ESRIN contract N° 13226/10/I-NB

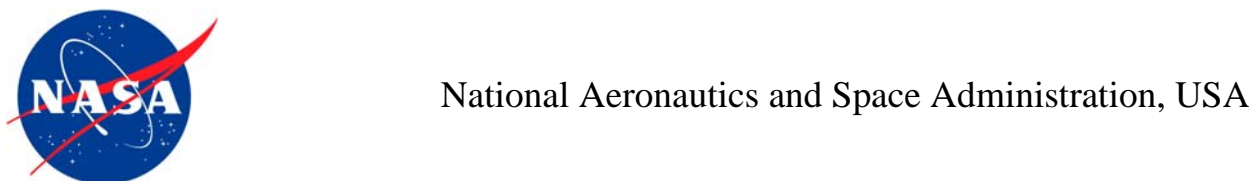
October 28, 2013



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



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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 Chl fluorometer. 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 Hydrosat-6) and a multispectral beam transmissometer (Hobilabs Gamma-4). 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 data collection and processing 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 first day, bad weather prevented working at the BOUSSOLE site. The second day was used for optical profiles, 1 CTD cast with water sampling at the BOUSSOLE site, 1 Secchi disk and the CTD transect. The last day was used for diving operations, optical profiles, 1 Secchi disk and 1 CTD cast with water sampling at the BOUSSOLE site.

Tuesday 10 September 2013

The first day, we arrived at the BOUSSOLE site but the weather conditions prevented working at the station.

Thursday 12 September 2013

The second day, the sea state was slight with a gentle breeze. The sky was blue and the visibility was good. Optical profiles and 1 CTD cast with water sampling were performed at the BOUSSOLE site. Then the CTD transect was performed.

Friday 13 September 2013

The last day, the sea state was smooth with a gentle breeze. The sky was blue and the visibility was good. When arrived at the BOUSSOLE site, divers went at sea to clean the underwater sensors and perform dark measurements. Then optical profiles, 1 Secchi disk and 1 CTD cast with water sampling were performed at the BOUSSOLE site.

Cruise Report

Tuesday 10 September 2013 (UTC)

People on board: Melek Golbol and Vincent Taillandier.

0425 Departure from the Nice harbour.
0730 Arrival next to the BOUSSOLE site: bad weather not allowed the work at the BOUSSOLE site.
0740 Departure to the Nice harbour.
1035 Arrival at the Nice harbour.

Thursday 12 September 2013 (UTC)

People on board: Melek Golbol and Vincent Taillandier.

0600 Mechanical problem in the boat not allowed the departure.
0730 Departure from the Nice harbour.
1050 Arrival at the BOUSSOLE site.
1100 C-OPS 01, 02, 03, 04.
1205 CTD 01, 400 m with water sampling at 400, 200, 150, 80, 70, 60, 50, 40, 30, 20, 10 and 5 m for HPLC, a_p , TSM, POC and Cytometry.
1240 Secchi disk 01 (21 m).
1245 Departure to the first transect station.
1345 CTD 02, 400 m, station 01 (43°25'N 07°48'E).
1440 CTD 03, 400 m, station 02 (43°28'N 07°42'E).
1530 CTD 04, 400 m, station 03 (43°31'N 07°37'E).
1625 CTD 05, 400 m, station 04 (43°34'N 07°31'E).
1725 CTD 06, 400 m, station 05 (43°37'N 07°25'E).
1815 CTD 07, 400 m, station 06 (43°39'N 07°21'E), dark HS6
1840 Departure to the Nice harbour.
1530 Arrival at the Nice harbour.

Friday 13 September (UTC)

People on board: Melek Golbol, Vincenzo Vellucci and 3 divers.

0515 Departure from the Nice harbour.
0840 Arrival at the BOUSSOLE site.
0850 Diving on the buoy for cleaning instruments and dark measurements.
0900 Direct connection with the buoy and data retrieval.
0900 Secchi disk 02 (20m).
1020 C-OPS 05, 06, 07.
1115 CTD 08, 400 m, with water sampling at 200, 150, 80, 70, 60, 50, 40, 30, 20, 10 and 5 m for HPLC, a_p , TSM.
1210 C-OPS test.
1230 Departure to the Nice harbour.
1540 Arrival at the Nice harbour.

Problems identified during the cruise

- The second day, a technical problem on the Téthys II delayed the departure from the Nice harbour.

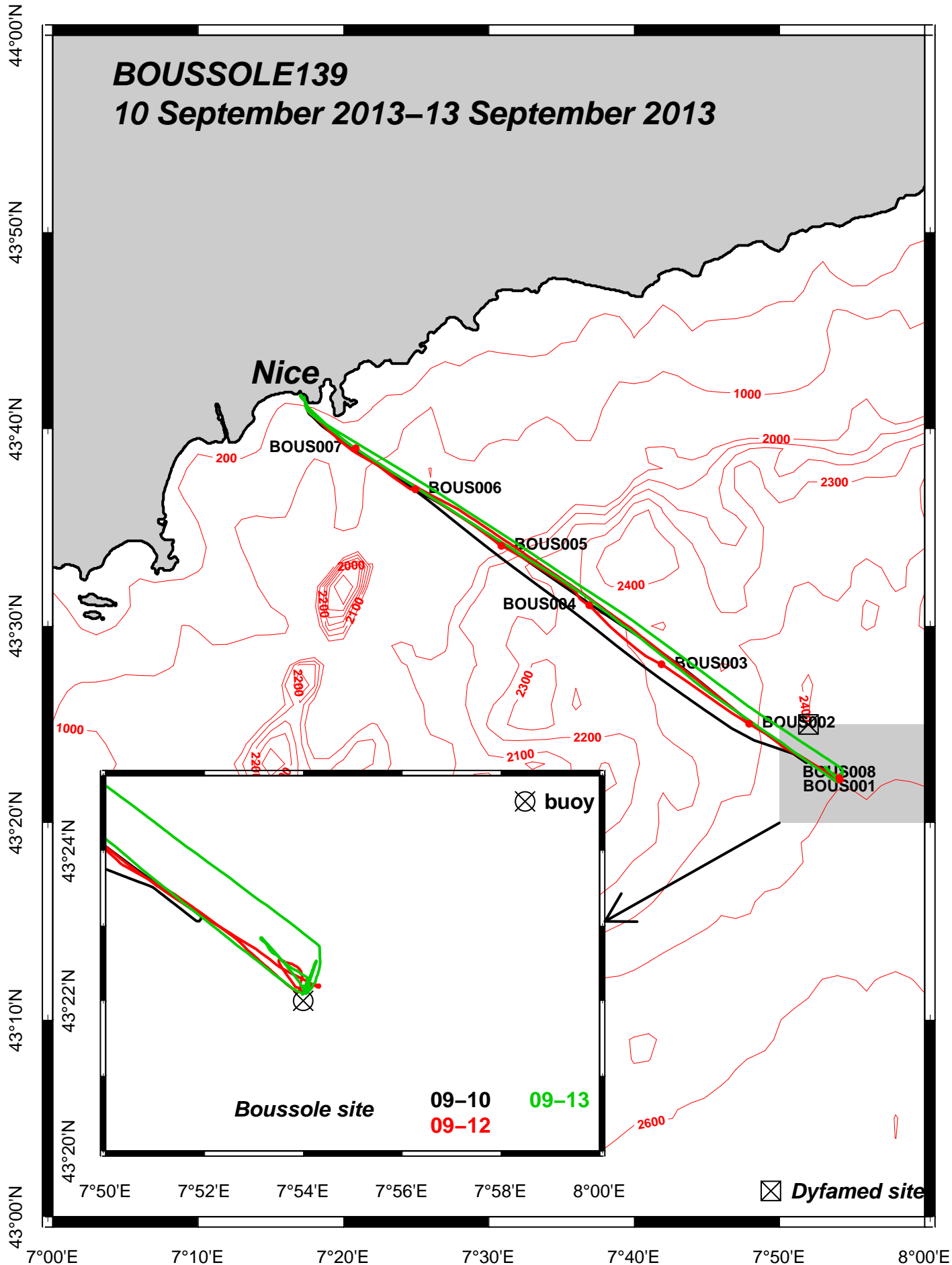
Appendices

Cruise Summary Table for Boussolle 139

Date	Black names (file ext: ".raw")	Profile names (file extension: ".raw")	CTD notées / satellite overpass	Other sensors	Start Time GMT (hour.min)	Duration (min.sec)	Depth max (meter)	Latitude (N) (Degree) (Minute)	longitude (Degree) (Minute)	Sky	Clouds	Quantity (#/8)	Weather Wind sp. (kn)	Wind dir.	Atm. Pressure (hPa)	Humidity (%)	Visibility	T air	T water	Sea	Sea Swell H (m)	Swell dir.	Whitecaps	
10/09/13																								
	Bad weather																							
12/09/13	bou_c-ops_130912_0940_001_data.csv				09:44	1:21																		
		bou_c-ops_130912_0940_002_data.csv			11:00	3:55	93.4	43	22.245	7	53.949	blue	Ci	1	7	114	1015.0	56	good	22.5		calm	0.8	no
		bou_c-ops_130912_0940_003_data.csv			11:12	3:38	88.7	43	22.354	7	53.972	blue	Ci	1	7	114	1015.0	56	good	22.5		calm	0.8	no
		bou_c-ops_130912_0940_004_data.csv			11:25	3:37	87.8	43	22.469	7	53.826	blue	Ci	1	7	114	1015.0	56	good	22.5		calm	0.8	no
		bou_c-ops_130912_0940_005_data.csv			11:37	3:14	79.2	43	22.510	7	53.646	blue	Ci	1	7	114	1015.0	56	good	22.5		calm	0.8	no
		bou_c-ops_130912_0940_006_data.csv			12:17	1:20																		
			CTDBOUS001	HPLC, Ap, TSM, CDOM, POC & cyto	12:07	29:00	400	43	22.198	7	54.154	blue		3	8	111	1015.0	64		21.2	21.7	calm		
			CTDBOUS002	Secchi01	12:40	4:00	21	43	22	7	54	blue		3				good					calm	
			CTDBOUS003		13:48	17:00	400	43	25.035	7	47.919	blue		3	7	100	1014.0	60		21.8	22.9	calm		moved
			CTDBOUS004		14:42	18:00	400	43	26.056	7	41.888	cloudy		4	7	135	1014.0	61		21.6	23.3	calm		
		CTDBOUS005		15:31	23:00	400	43	31.056	7	36.921	blue		1	9.2	243	1014.0	59		21.8	23.5	calm			
		CTDBOUS006		16:27	23:00	400	43	34.069	7	30.873	blue		1	10	250	1013.0	58		22.0	23.9	calm			
		CTDBOUS007		17:25	24:00	400	43	36.940	7	24.956	blue		1	8.7	109	1014.0	65		21.8	24.0	calm			
				18:15	22:00	400	43	39.025	7	20.850	night		8	3.8	276	1014.0	58		22.5	23.8	calm			
13/09/13				Secchi02	09:00	4:00	20	43	22	7	54	blue					good					calm		
	bou_c-ops_130913_1003_001_data.csv				10:08	1:22																		
		bou_c-ops_130913_1003_002_data.csv			10:19	3:24	81.6	43	22.372	7	53.929	blue	Ci	1	8.4	293	1019.0	68	good	20.9		calm	0.6	no
		bou_c-ops_130913_1003_003_data.csv			10:31	2:30	59.7	43	22.494	7	53.656	blue	Ci	1	8.4	293	1019.0	68	good	20.9		calm	0.6	no
		bou_c-ops_130913_1003_004_data.csv			10:38	3:11	76.6	43	22.583	7	53.584	blue	Ci	1	8.4	293	1019.0	68	good	20.9		calm	0.6	no
	bou_c-ops_130913_1003_005_data.csv			10:56	1:21																			
		CTDBOUS008	HPLC, Ap & TSM	11:16	26:00	400	43	22.281	7	54.121	blue		2	7	108	1013.0	67		21.1	21.6	calm			

BOUSSOLE139

10 September 2013–13 September 2013

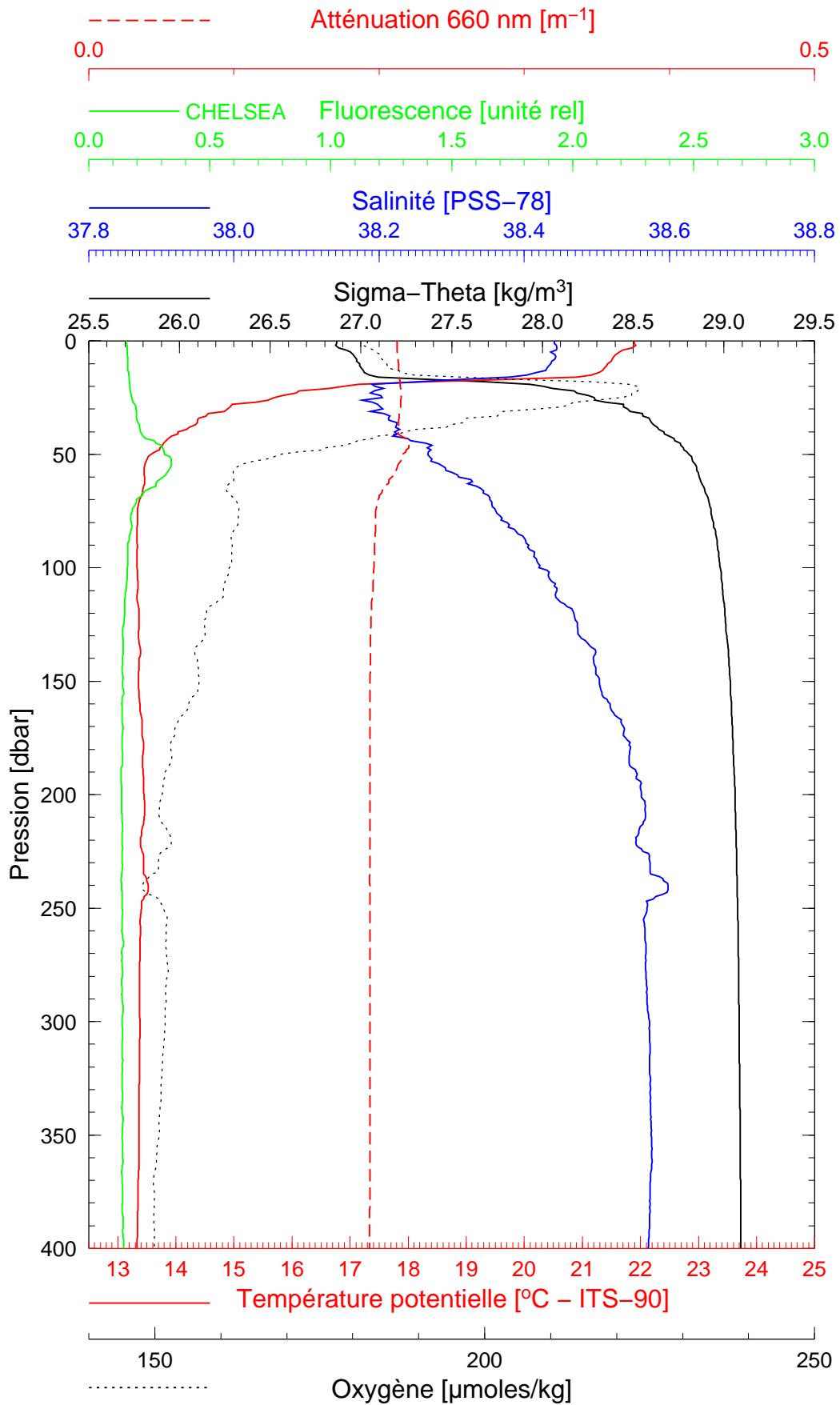


BOUSSOLE 139

12/09/2013

BOUS130912_01

BOUS001



Date 12/09/2013

Latitude 43°22.198 N

Heure déb 12h 08min [TU]

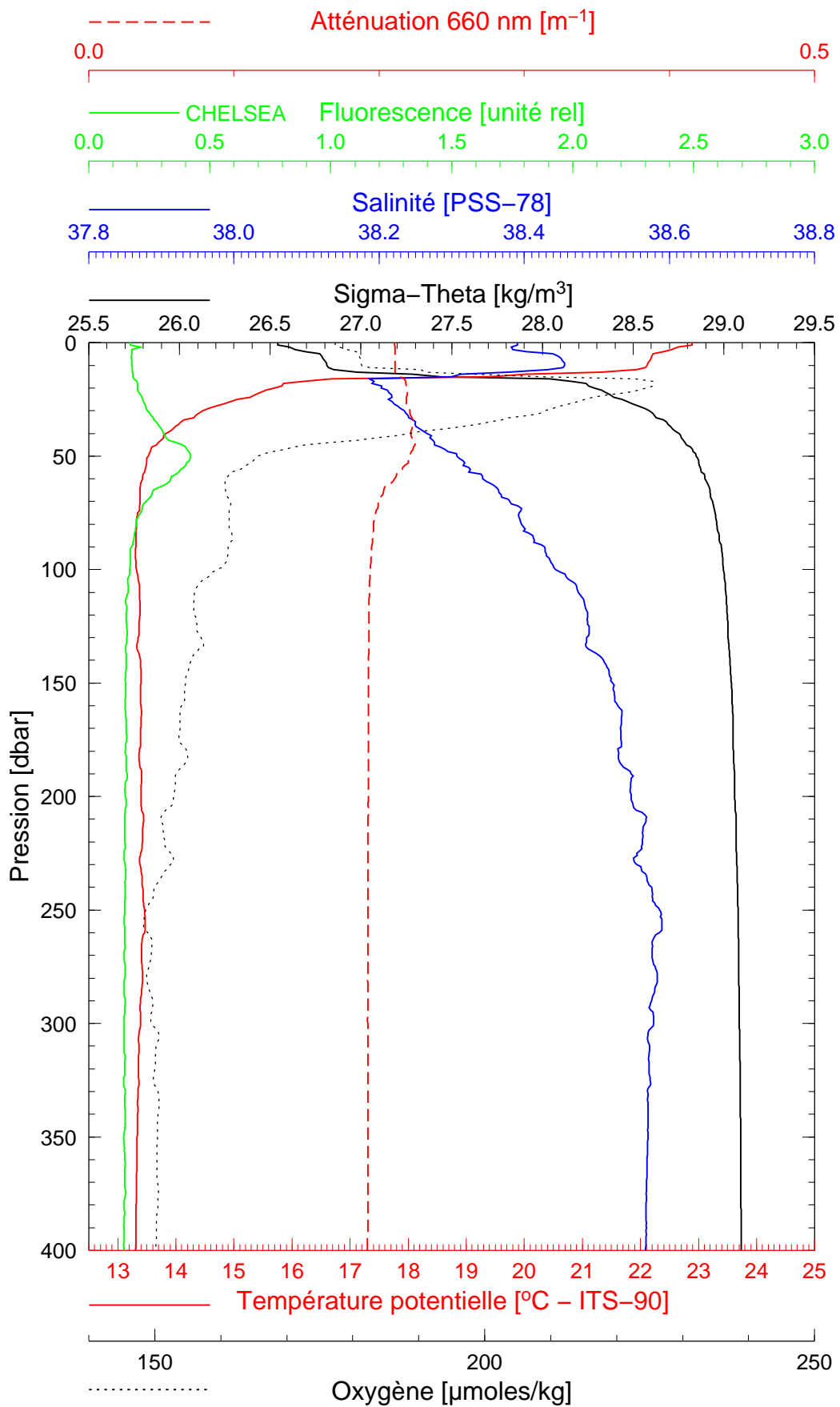
Longitude 07°54.154 E

BOUSSOLE 139

12/09/2013

BOUS130912_02

BOUS002



Date 12/09/2013
Heure déb 13h 48min [TU]

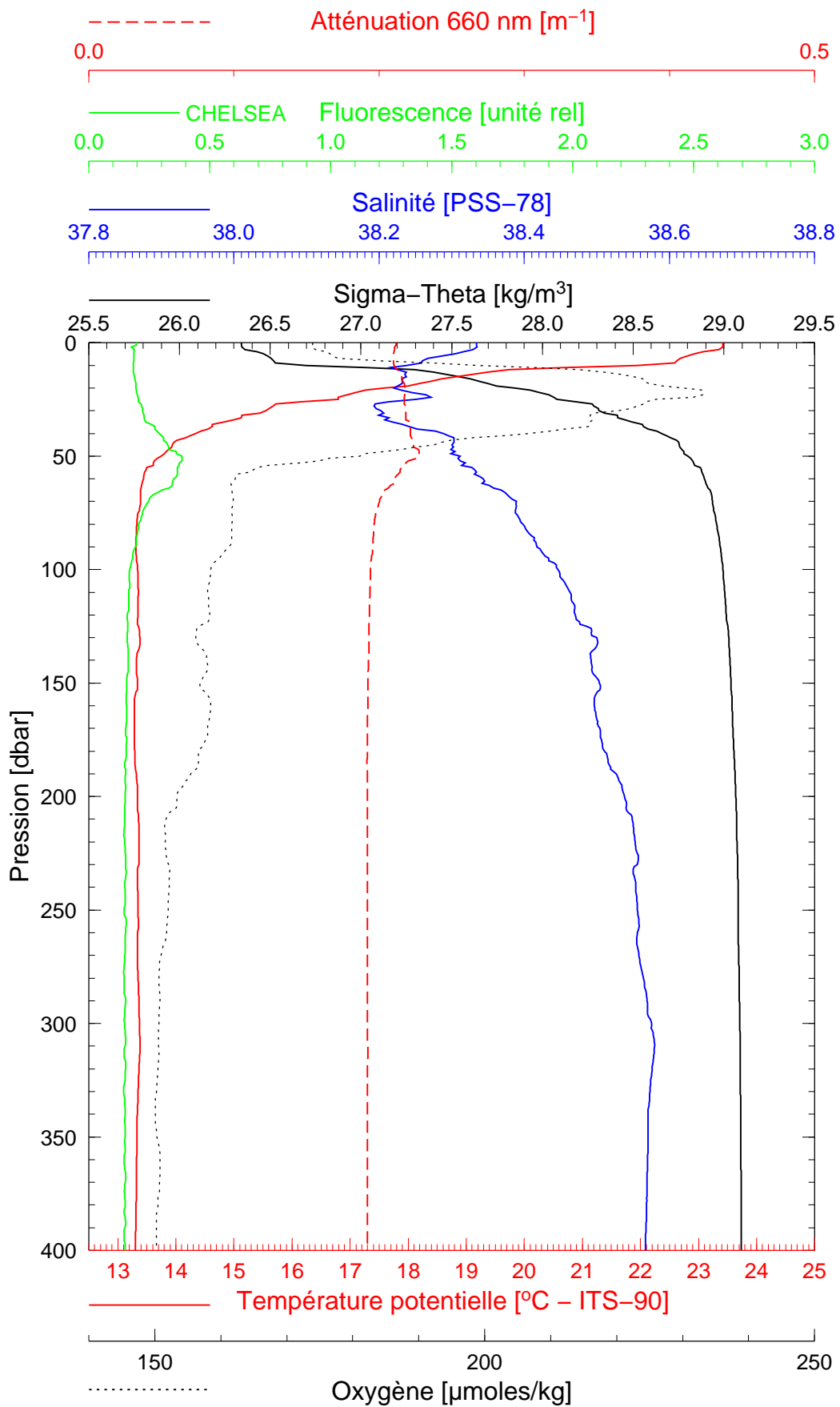
Latitude 43°25.035 N
Longitude 07°47.919 E

BOUSSOLE 139

12/09/2013

BOUS130912_03

BOUS003



Date 12/09/2013
Heure déb 14h 42min [TU]

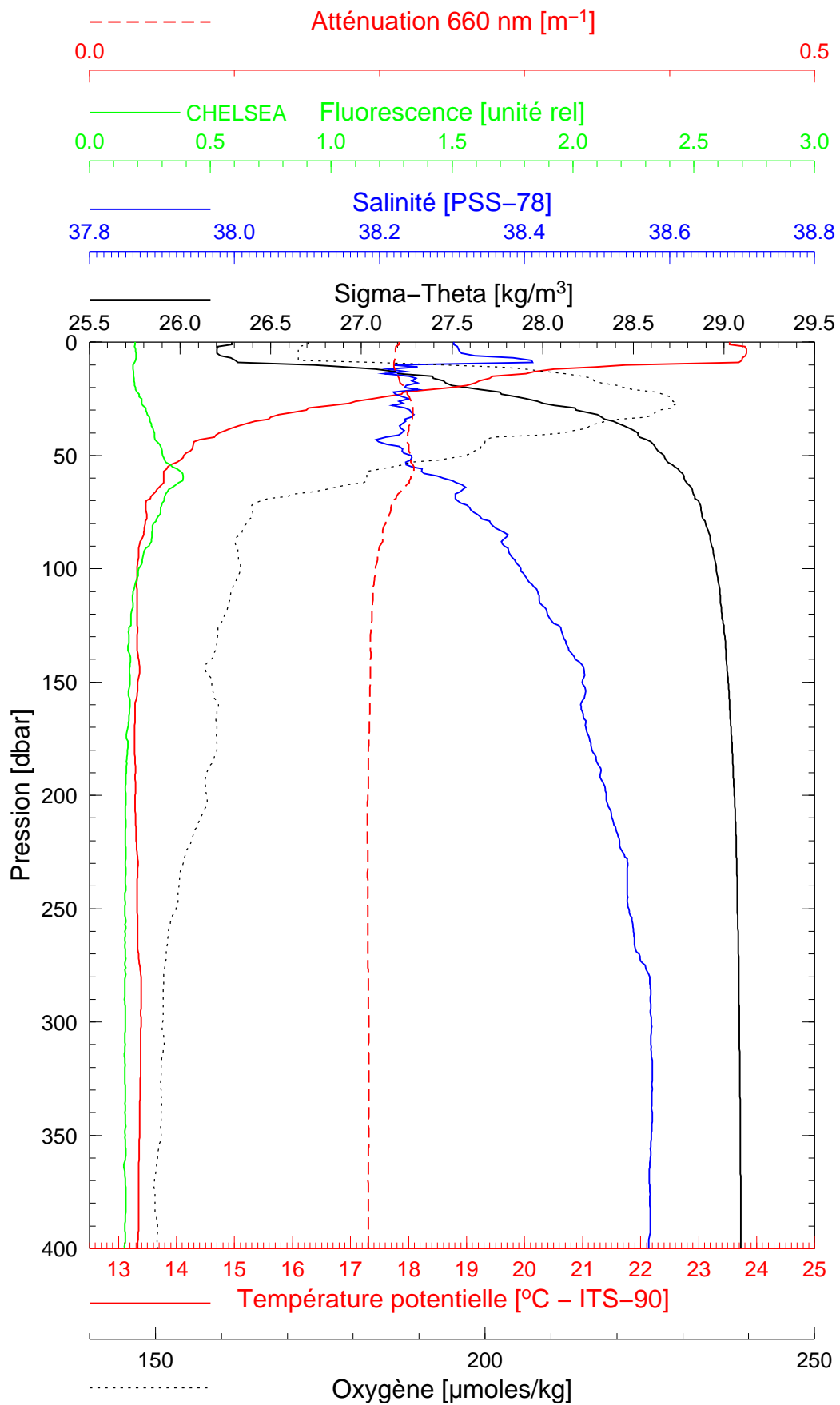
Latitude 43°28.056 N
Longitude 07°41.888 E

BOUSSOLE 139

12/09/2013

BOUS130912_04

BOUS004



Date 12/09/2013
Heure déb 15h 31min [TU]

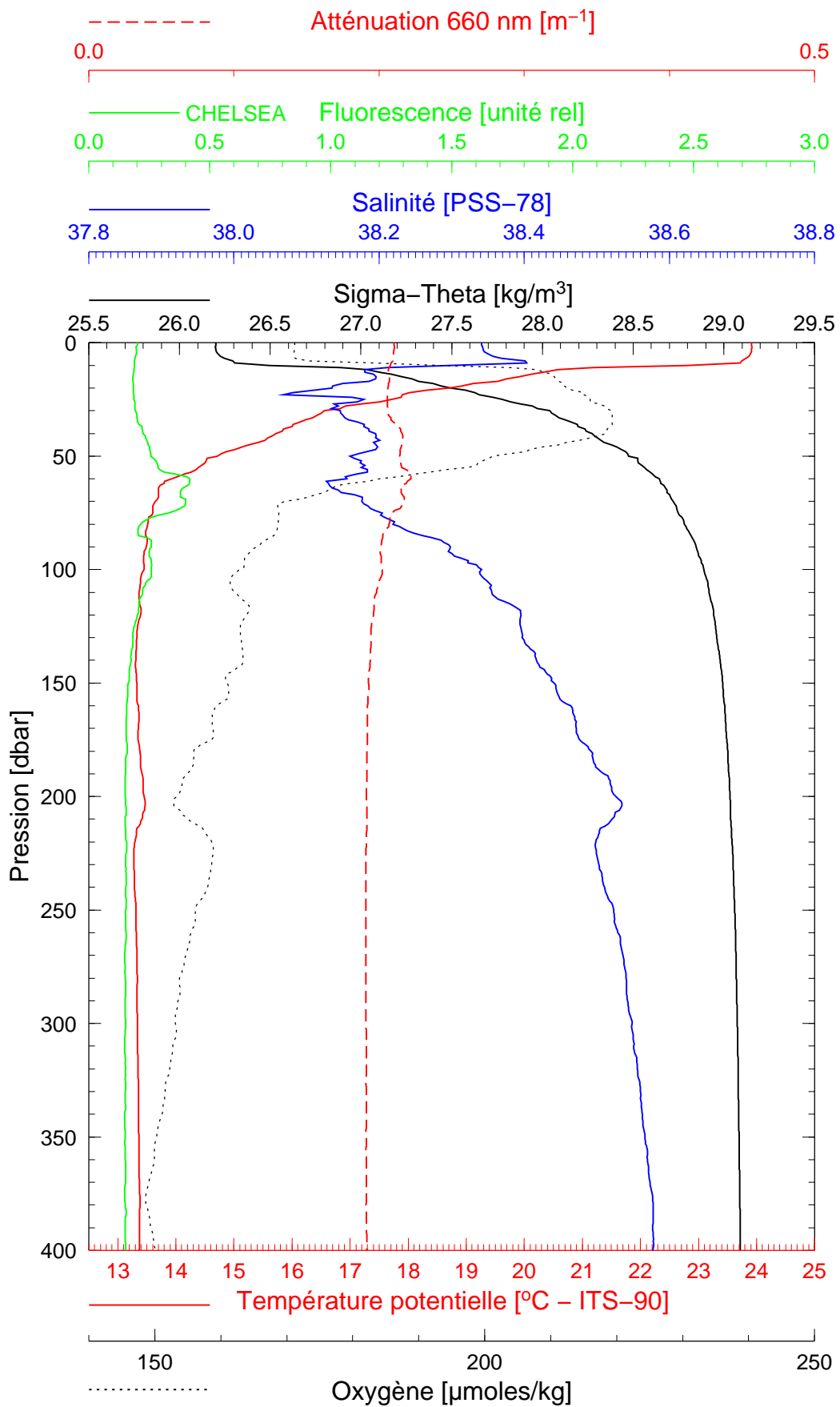
Latitude 43°31.056 N
Longitude 07°36.921 E

BOUSSOLE 139

12/09/2013

BOUS130912_05

BOUS005



Date 12/09/2013
Heure déb 16h 27min [TU]

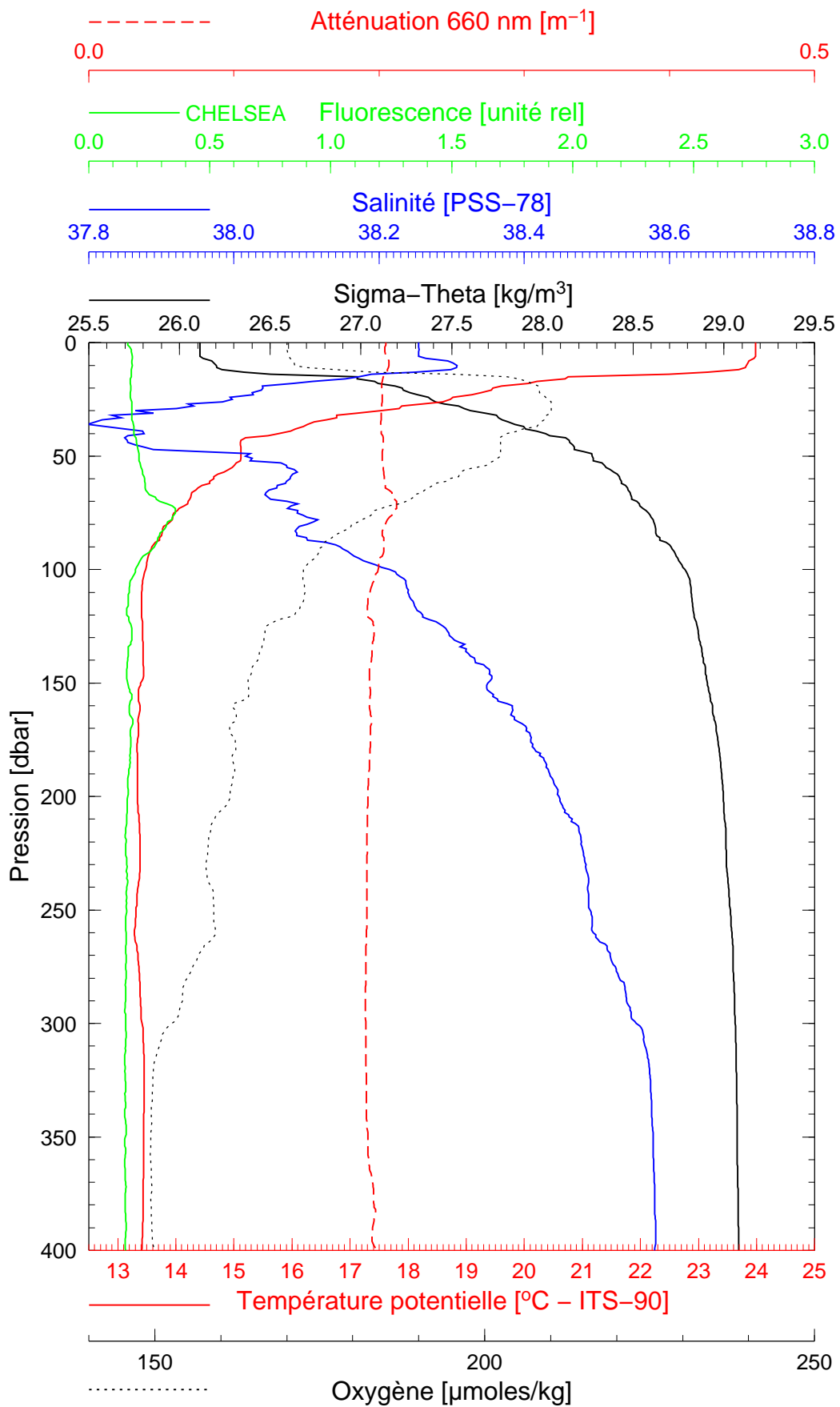
Latitude 43°34.069 N
Longitude 07°30.873 E

BOUSSOLE 139

12/09/2013

BOUS130912_06

BOUS006



Date 12/09/2013

Latitude 43°36.940 N

Heure déb 17h 25min [TU]

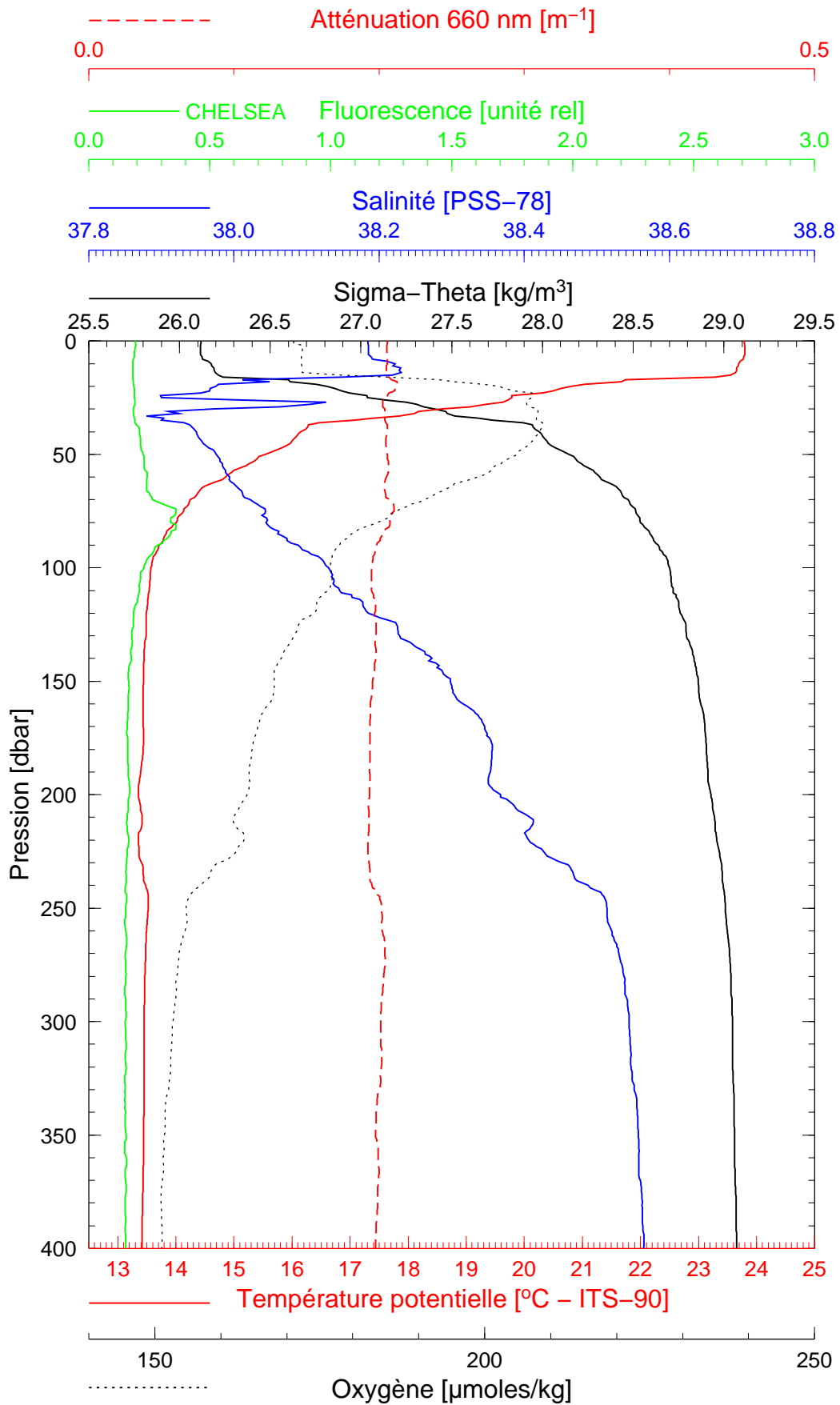
Longitude 07°24.956 E

BOUSSOLE 139

12/09/2013

BOUS130912_07

BOUS007



Date 12/09/2013

Latitude 43°39.025 N

Heure déb 18h 15min [TU]

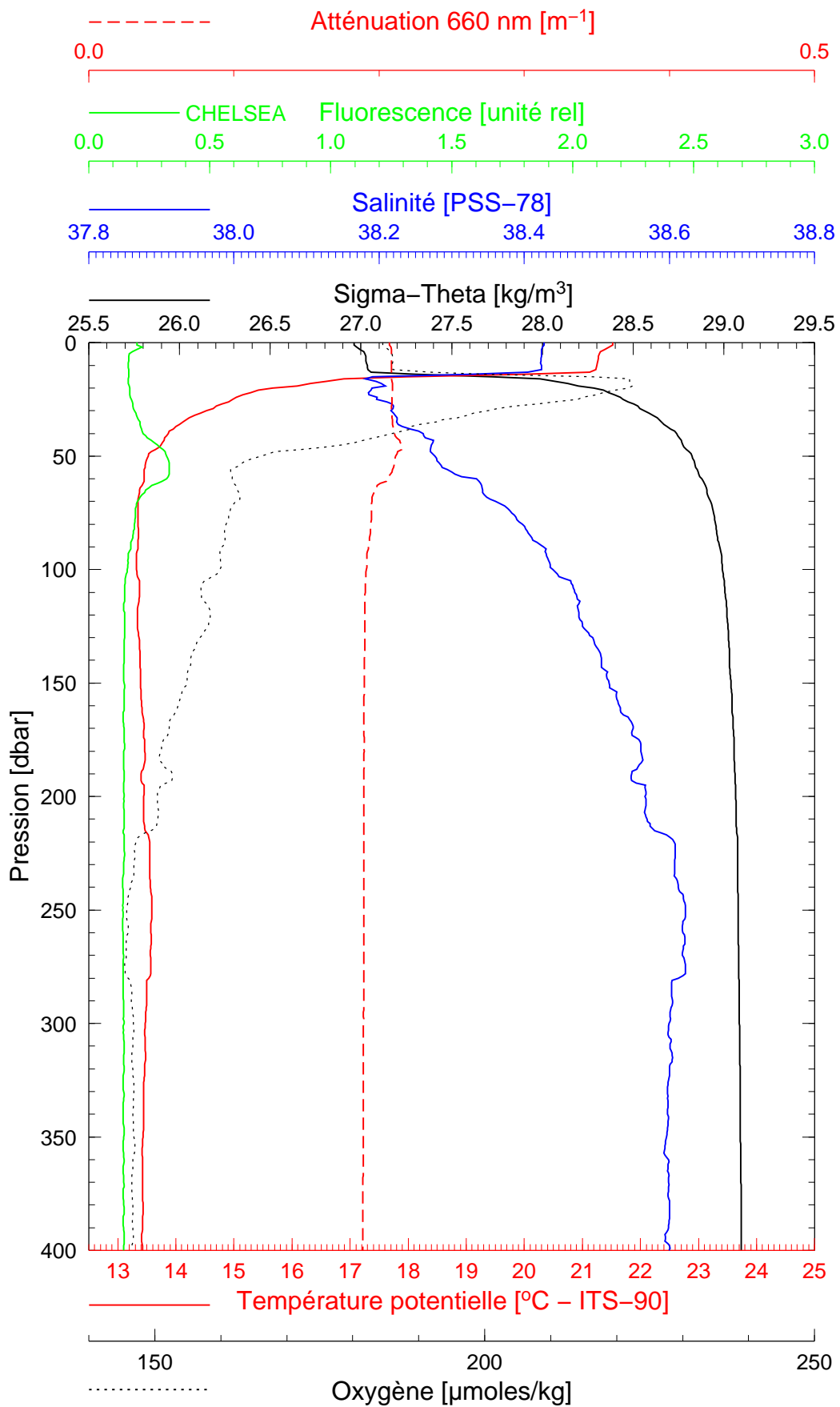
Longitude 07°20.850 E

BOUSSOLE 139

13/09/2013

BOUS130913_01

BOUS008



Date 13/09/2013

Heure déb 11h 16min [TU]

Latitude 43°22.281 N

Longitude 07°54.121 E