BOUSSOLE Monthly Cruise Report

Cruise 116
October 18 - 21, 2011

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

Science Personnel: Florent Besson, Emilie Diamond, David Luquet, Pascal Lapébie, Grigor Obolensky, Vincenzo Vellucci and Grégory (diver).

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

The first POC filters sampled for the BIOCAREX (BIOoptics and CARbon EXperiment) project.

BOUSSOLE project

ESA/ESRIN contract N° 13226/10/I-NB

November 05, 2011

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

Contents

Cruise Objectives

Routine operations

Multiple Biospherical's C-OPS (Compact Optical Profiling System) radiometric profiles are to occur on 0-150 m at the BOUSSOLE site within about 3 hours of satellite overhead passes (of MERIS in particular) 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 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. In addition to the depth profile from the CTD, CDOM fluorometer, Chl fluorometer, AC9 (from July 2002) and Eco-BB3 (from June 2003), seawater samples are to be collected, filtered and stored in liquid nitrogen for particulate organic carbon (POC from October 2011), 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. Seawater samples are to be collected and filtered one time during the cruise for colored dissolved organic matter (CDOM) analysis in the lab.

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 (see map in appendix). 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. Divers will also put a neoprene cap on the HS4 and on the transmissometers for acquiring three dark measurements (started in 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, water samples were also filtered for POC measurement for the setting-up of the BIOCAREX project. Florent Besson was on board the last day to test, on the BOUSSOLE rosette, the waterproofness of a camera system for jellyfish detection during a CTD cast. This day, one of the LOV gliders, "Tintin", was recovered in the front of the Villefranche Bay.

Cruise Summary

Only the first cruise day was used to work at the BOUSSOLE site during this cruise because of the bad weather the other days. The first day was used for diving operations, buoy data retrieval, optical profiles, a CTD cast with water sampling at the BOUSSOLE site and for performing the CTD transect. The second day was used for completing the transect and the last day for recovering a glider and testing a camera system on the rosette near the coast. The third day, the bad weather prevented departure from the Nice harbour.

Tuesday 18 October 2011

The first day, the sea was slightly roughened with a moderate breeze the morning and was moderate with a strong breeze during the afternoon. The sky was blue to overcast. When arrived at the BOUSSOLE site, divers went at sea to clean buoy instruments. They also put neoprene caps on the HS4 and on the transmissometers for acquiring dark measurements. A CISCO connection was attempted but failed so a direct connection with the buoy was attempted and established for data retrieval after a reboot of the system through the AK connector. In parallel to diving operations, solar panels, sensors and ARGOS and CISCO connectors on the top of the buoy

were cleaned. Then, 3 C-OPS profiles, 1 CTD cast with water sampling and 1 Secchi disk were performed and the CTD transect was performed except at the Station 05 because of the swell.

Wednesday 19 October 2011

The second day, the bad weather prevented work at the BOUSSOLE site. A CTD cast was performed at the Station 05 for completing the transect.

Thursday 20 October 2011

Bad weather prevented departure from the Nice harbour.

Friday 21 October 2011

The last day, the bad weather still prevented work at the BOUSSOLE site. This day was used for recovering one of the LOV gliders, “Tintin”, in the front of the Villefranche Bay. Two CTD casts were also performed near the coast for testing the waterproofness of a camera system for jellyfish detection.

Cruise Report

Tuesday 18 October 2011 (UTC)

People on board: Emilie Diamond, Grigor Obolensky, Vincenzo Vellucci and 3 divers.

0530 Departure from the Nice harbour.
0840 Arrival at the BOUSSOLE site.
0850 Diving on the buoy for cleaning instruments. Dark HS4 and transmissometers measurements at 09:00, 09:15, 09:30 and 09:45.
0900 Attempt of CISCO connection with the buoy: unsuccessful.
0910 Direct CISCO connection with buoy and data retrieval after a reboot of the system through the AK connector. Solar panels, instruments, CISCO and ARGOS connections cleaned on the top of the buoy.
1045 C-OPS 01, 02, 03.
1120 CTD 01, 400 m with water sampling at 400, 150, 80, 70, 60, 50, 40, 30, 20, 10 and 5 m for HPLC, a_p, CDOM and POC.
1205 Bucket at surface for TSM.
1210 Secchi disk 01 (15 m).
1215 Departure to the first transect station.
1250 CTD 02, 400 m, station 01 (43°25’N 07°48’E).
1355 CTD 03, 400 m, station 02 (43°28’N 07°42’E).
1455 CTD 04, 400 m, station 03 (43°31’N 07°37’E).
1600 CTD 05, 400 m, station 04 (43°34’N 07°31’E).
1700 Sea state too bad at the station 05.
1740 CTD 06, 400 m, station 06 (43°39’N 07°21’E).
1815 Departure to the Nice harbour.
1850 Arrival at the Nice harbour.

Wednesday 19 October 2011 (UTC)

People on board: Emilie Diamond, Grigor Obolensky.

1100 Departure from the Nice harbour.
1155 Arrival at the station 05.
1200 CTD 07, 400 m, station 05 (43°37’N 07°25’E).
1235 Departure to the Nice harbour.
1330 Arrival at the Nice harbour.

Thursday 20 October 2011

Bad weather prevented departure from the Nice harbour.

Friday 21 October 2011 (UTC)

People on board: Florent Besson, Emilie Diamond and Grigor Obolensky.

0530 Departure from the Nice harbour.
0600 Looking for the glider.
0620 Recovery of the glider.
0730 CTD 100, 400 m (43°40'N 07°18.5'E).
0840 CTD 101, 1000 m (43°37'N 07°19'E).
0930 Departure to the Villefranche Bay.
1000 Dinghy unloading in the Villefranche Bay.
1130 Arrival at the Nice harbour.

Problems identified during the cruise

- Bad weather prevented work at the BOUSSOLE site for three days.

Calculated Swath paths for the MERIS Sensor (Esov NG Software)

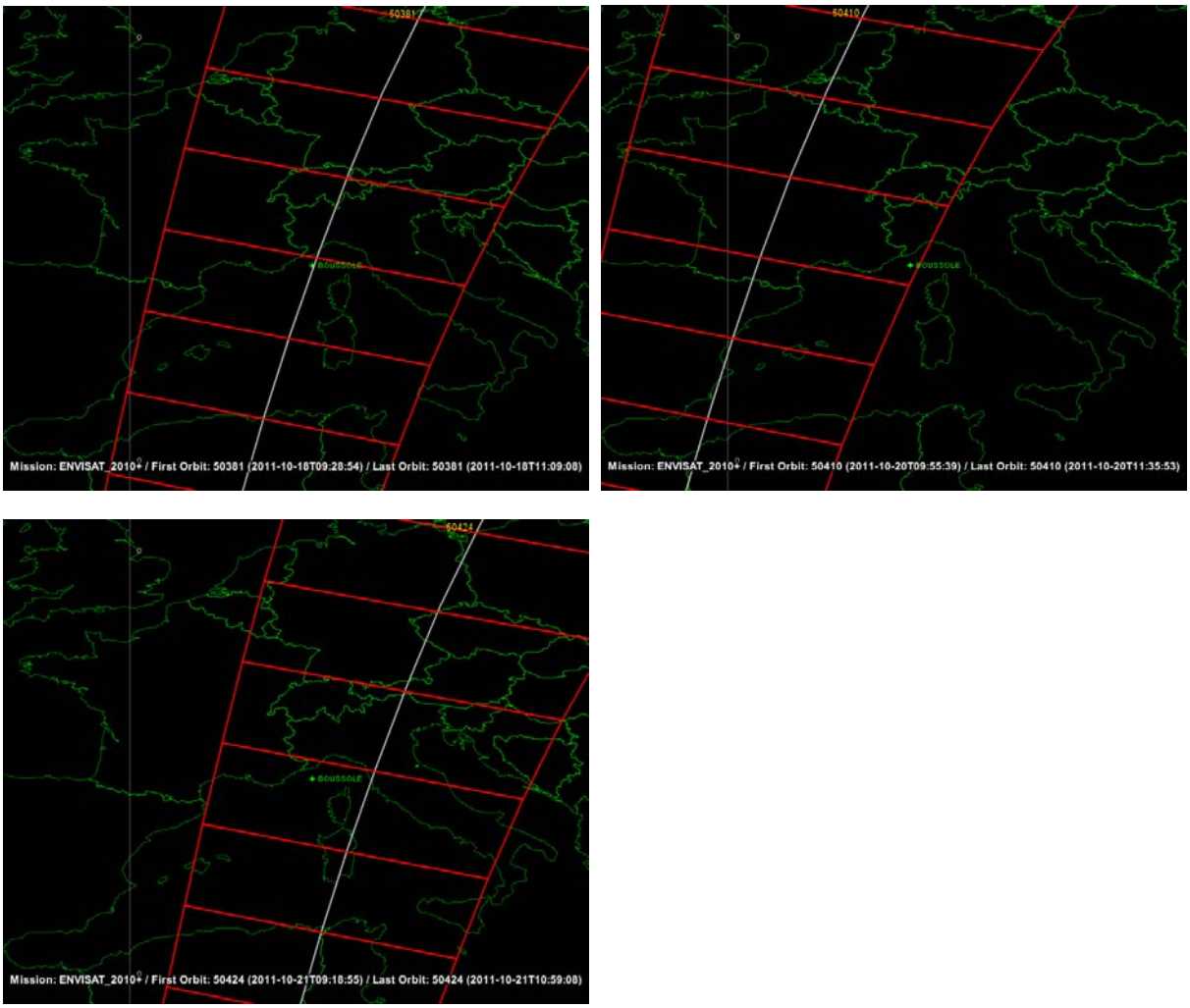
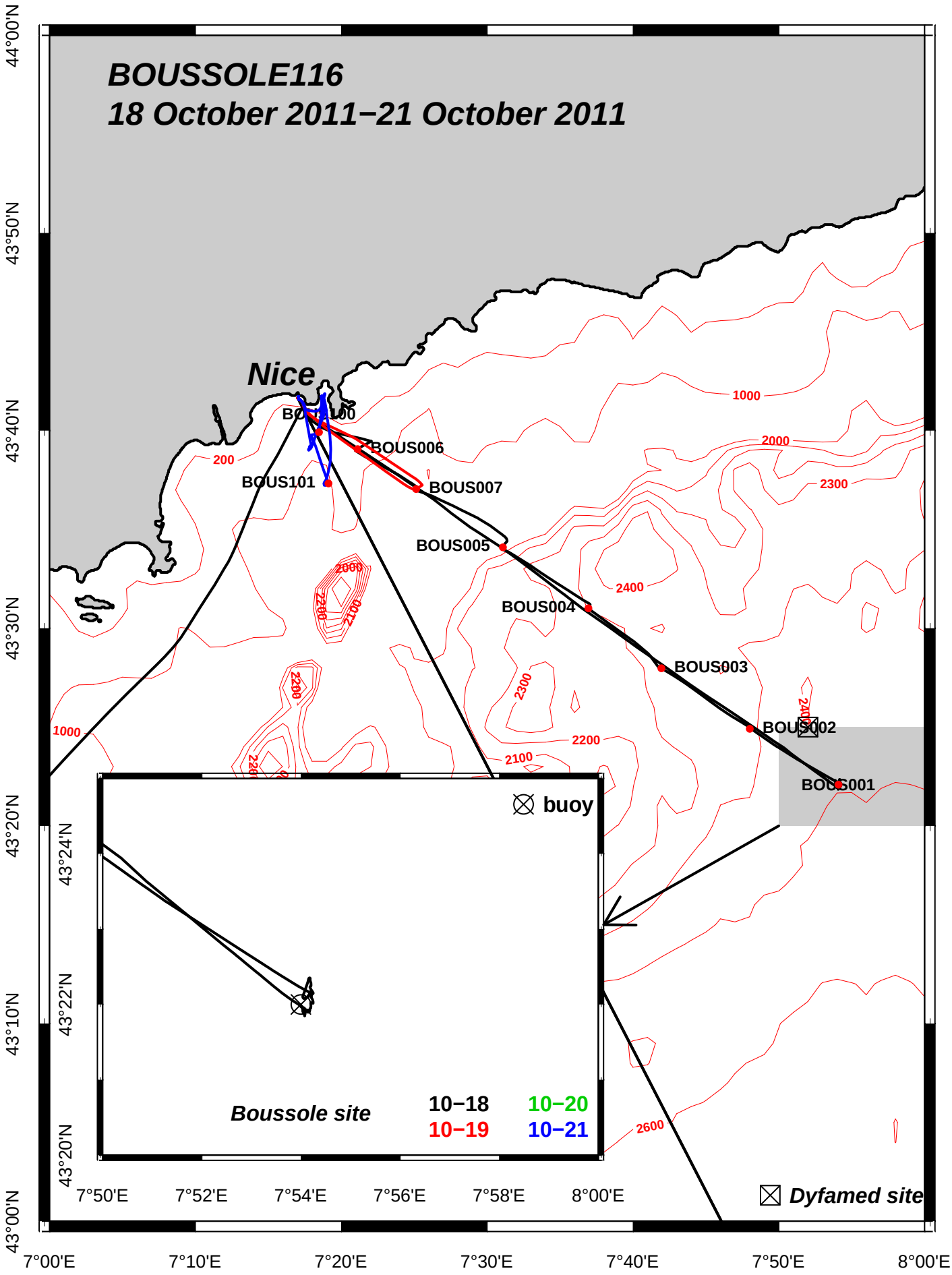


Figure 1. Calculated swath path for MERIS (Esov NG software) above the BOUSSOLE site for the 18th, 20th and 21st of September 2011.

Appendices

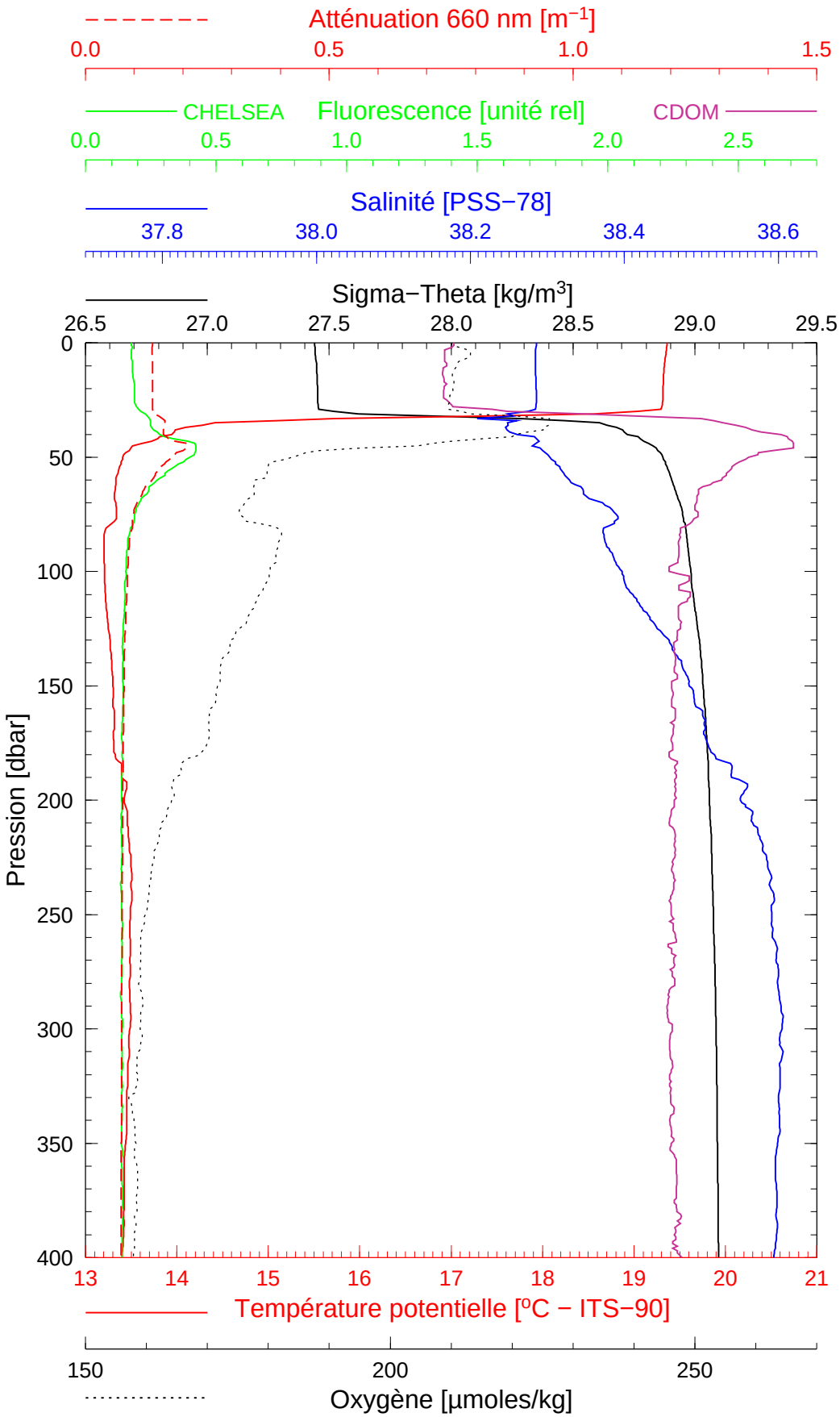
Cruise Summary Table for Boussole 116

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_111018_0959_001_data.csv				10:00	2:13																			
		bou_c-ops_111018_0959_002_data.csv			10:21	4:48	100.7	43	22.198	7	54.198	blue	Cu	3	10	294	1022.3	68	good	18.0		calm	0.6		few
		bou_c-ops_111018_0959_006_data.csv			10:42	3:56	80.6	43	22.157	7	54.177	blue	Cu	3	10	294	1022.3	68	good	18.0		calm	0.6		few
		bou_c-ops_111018_0959_007_data.csv			10:54	4:09	83.1	43	22.235	7	54.184	blue	Cu	3	10	294	1022.3	68	good	18.0		calm	0.6		few
	bou_c-ops_111018_0959_008_data.csv				10:54	1:15																			
			CTDBOUS001	HPLC, Ap, CDOM & POC	11:21	33:00	400	43	22.087	7	54.095	blue		3	11	101	1022	71		18.0	19.4	calm			few
18/10/11				Bucket: TSM	12:05	2:00	surface	43	22	7	54	blue		3	10	96	1022	72		18.0		calm			few
				Secchi01	12:50	4:00	23	43	22	7	54	blue		1					good			calm			few
			CTDBOUS002		12:51	27:00	400	43	24.912	7	48.014	blue		3	14	105	1021	74		18.3	19.7	moved			yes
			CTDBOUS003		13:58	26:00	400	43	27.975	7	41.953	blue		3	18	252	1020	73		18.6	20.1	moved			yes
			CTDBOUS004		14:57	25:00	400	43	31.012	7	36.948	overcast		6	20	94	1020	75		18.7	20.2	moved			yes
			CTDBOUS005		16:03	31:00	400	43	34.096	7	31.086	blue		3	22	100	1020	73		18.8	20.5	moved			yes
			CTDBOUS006		17:42	31:00	400	43	39.066	7	21.121	night		8	23	97	1020	76		18.9	20.5	moved			yes
19/10/11			CTDBOUS007		12:04	26:00	400	43	37.044	7	25.139	overcast		8	12	253	1018	75		18.7	20.4	moved			yes
20/10/11	Bad weather																								
21/10/11			CTDBOUS100		07:33	27:00	400	43	39.919	7	18.475	blue		1	10	87	1021	55		14.8	20.1	moved			yes
			CTDBOUS101		08:41	35:00	1000	43	37.329	7	19.127	blue		1	6	308	1022	48		16.2	20.1	moved			yes


BOUSSOLE116
18 October 2011−21 October 2011
Nice
BOUS100
BOUS006
BOUS101
BOUS007
BOUS005
BOUS004
BOUS003
BOUS002
BOUS001
200
1000
2000
2300
2400
2100
2200
2600
buoy
Boussole site
10−18
10−19
10−20
10−21
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 116 **18/10/2011** **BOUS111018_01**

BOUS001

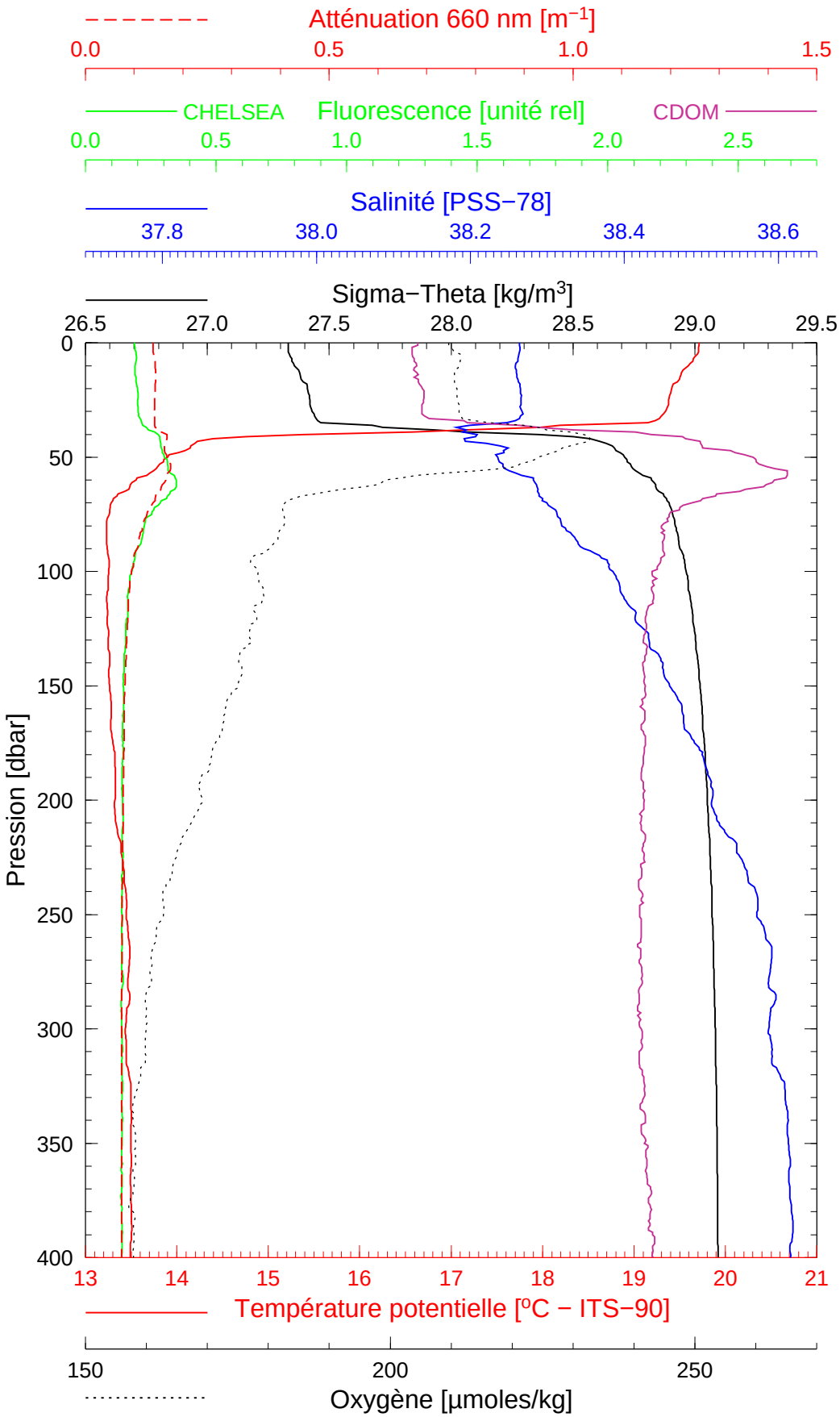


Date *18/10/2011* *Latitude* *43°22.087 N*

Heure déb *11h 21min [TU]* *Longitude* *07°54.095 E*

BOUSSOLE 116 **18/10/2011** **BOUS111018_02**

BOUS002

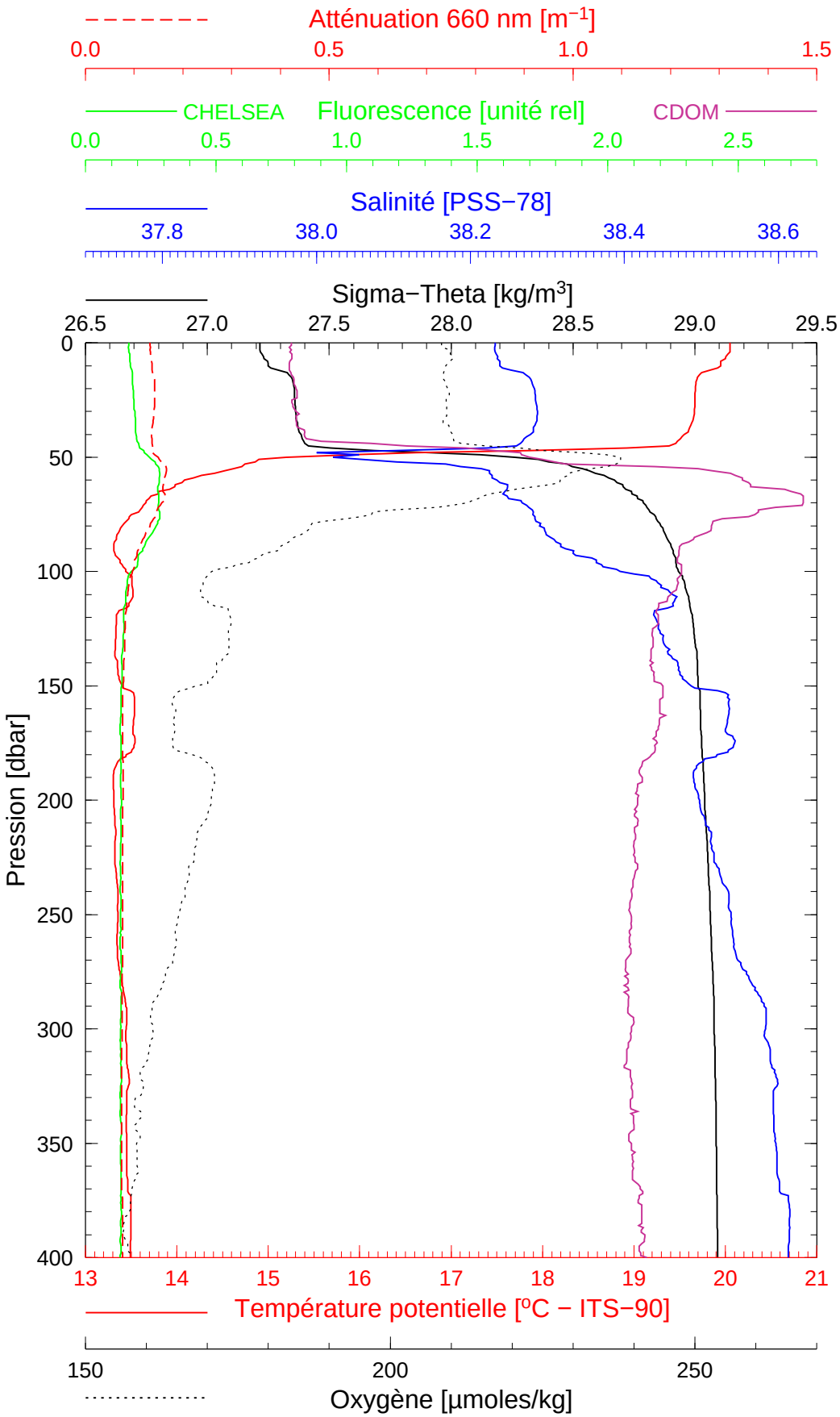


Date *18/10/2011* *Latitude* *43°24.912 N*

Heure déb *12h 51min [TU]* *Longitude* *07°48.014 E*

BOUSSOLE 116 **18/10/2011** **BOUS111018_03**

BOUS003

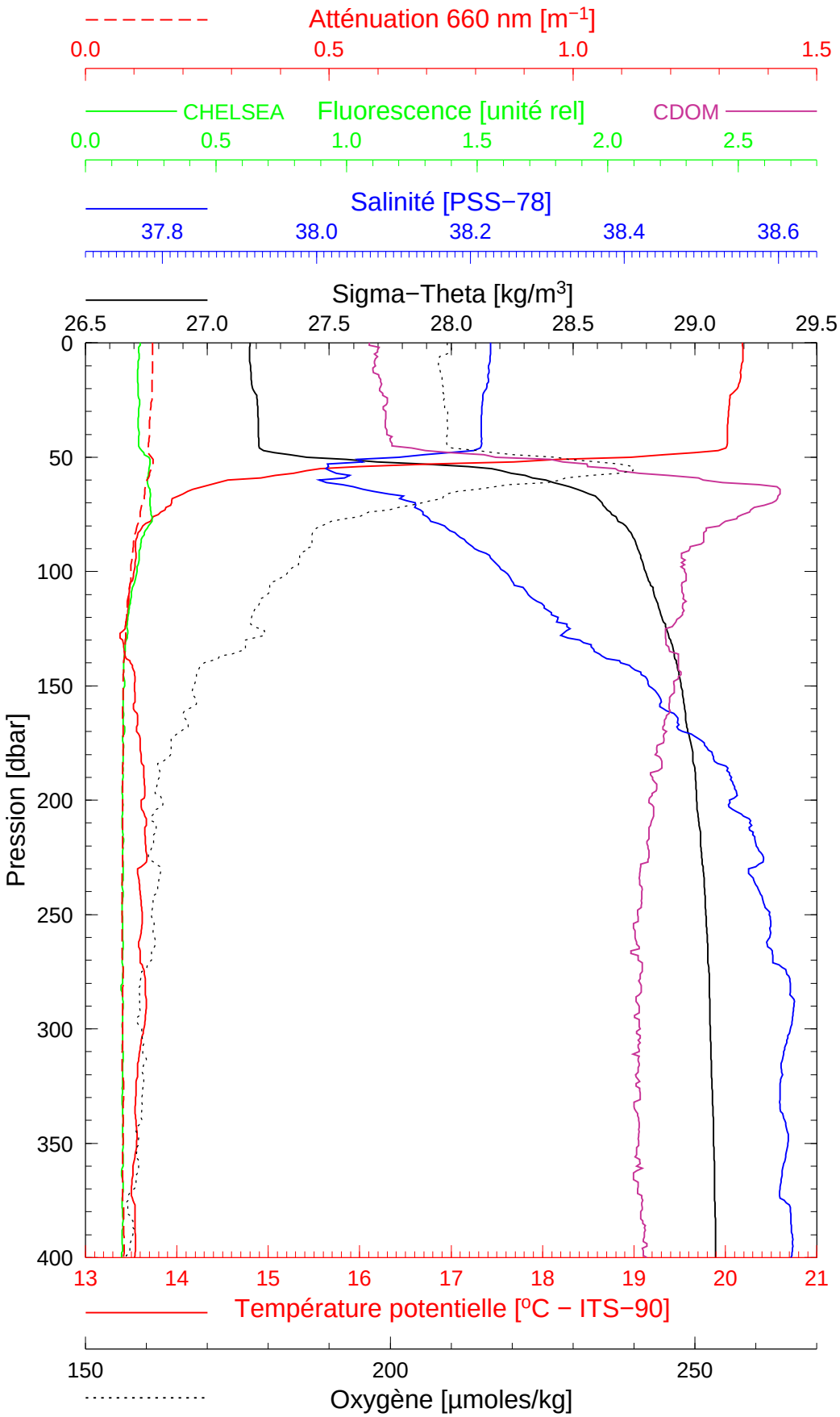


Date *18/10/2011* *Latitude* *43°27.975 N*

Heure déb *13h 58min [TU]* *Longitude* *07°41.953 E*

BOUSSOLE 116 **18/10/2011** **BOUS111018_04**

BOUS004

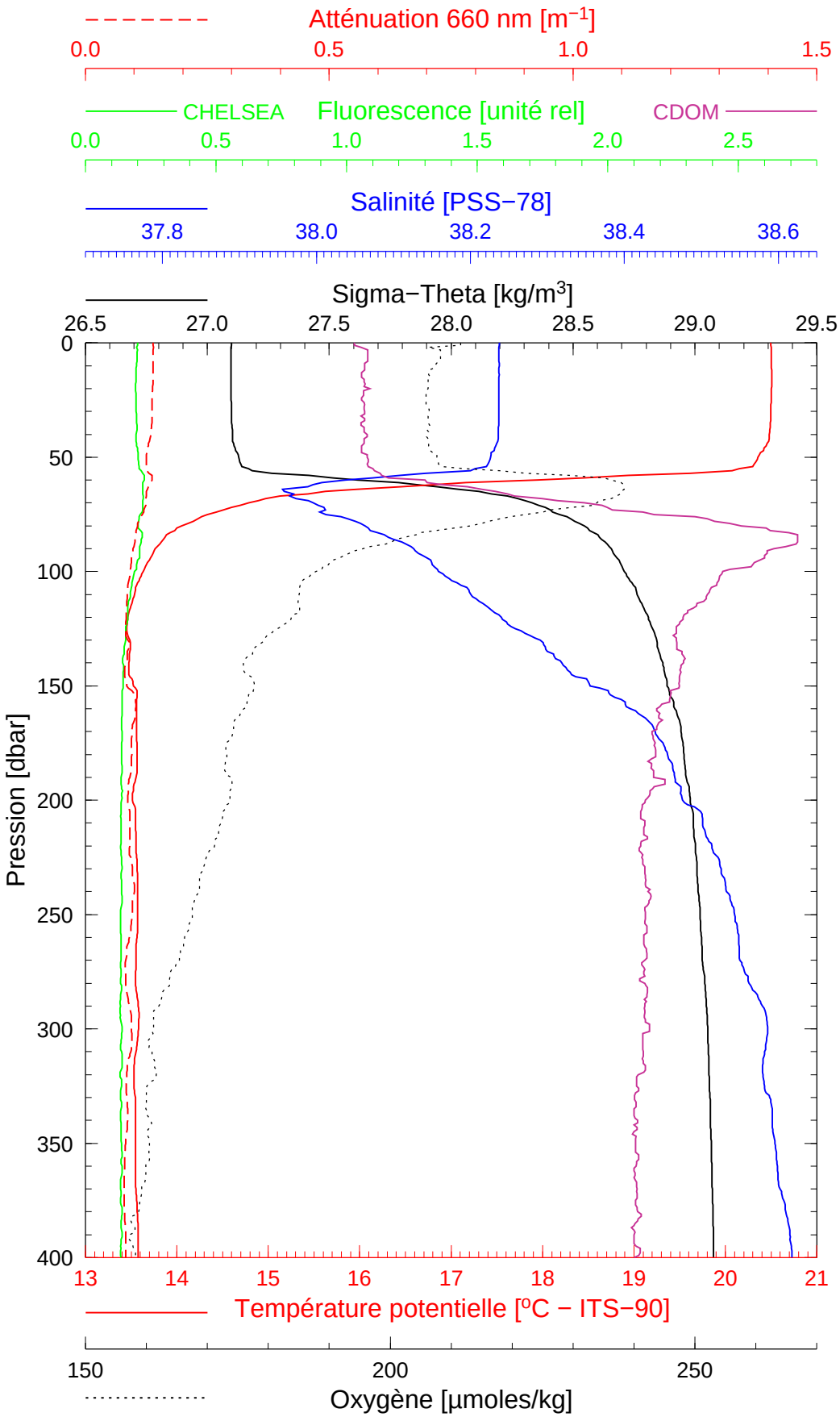


Date *18/10/2011* *Latitude* *43°31.012 N*

Heure déb *14h 57min [TU]* *Longitude* *07°36.948 E*

BOUSSOLE 116 **18/10/2011** **BOUS111018_05**

BOUS005

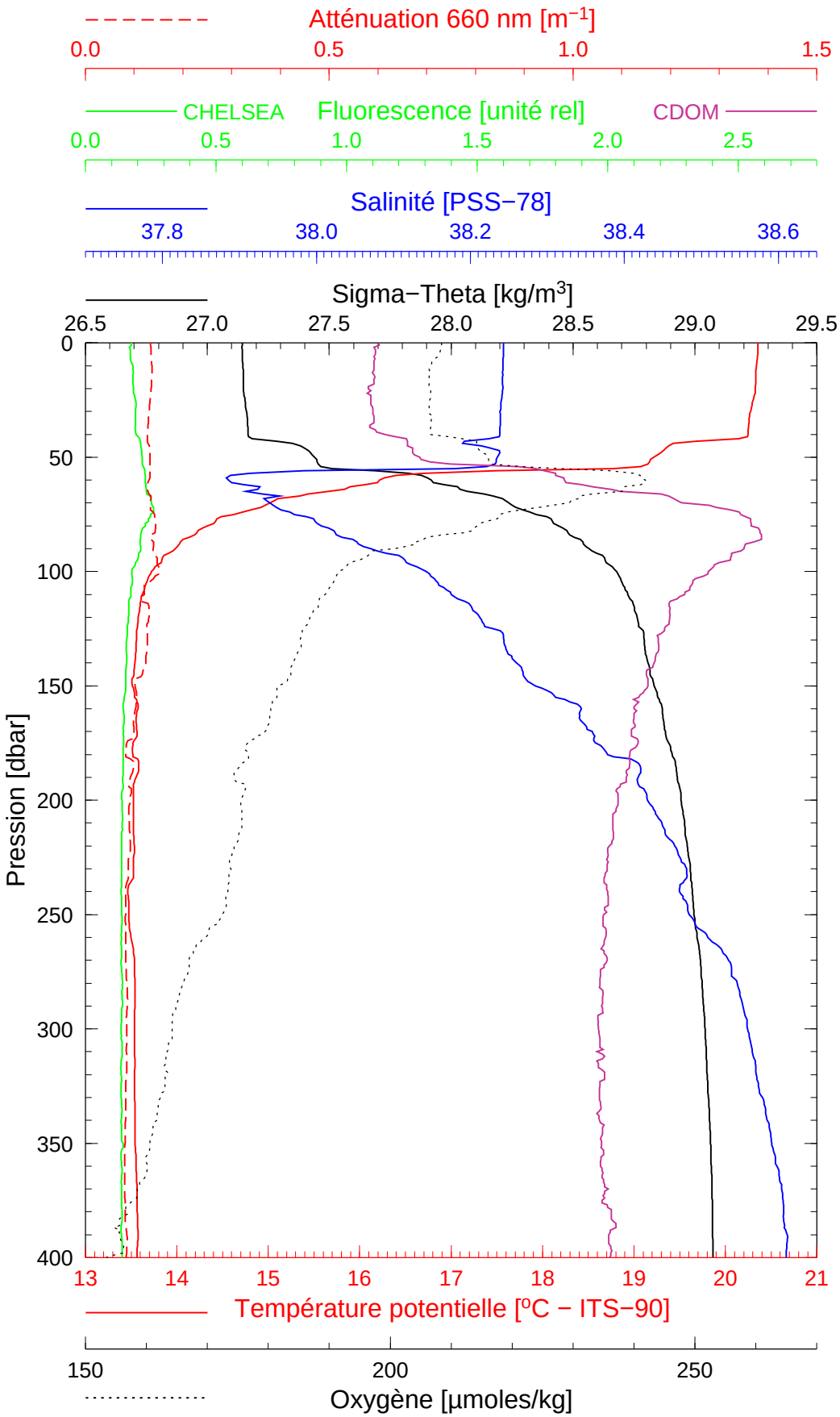


Date *18/10/2011* *Latitude* *43°34.096 N*

Heure déb *16h 03min [TU]* *Longitude* *07°31.086 E*

BOUSSOLE 116 **19/10/2011** **BOUS111019_01**

BOUS007

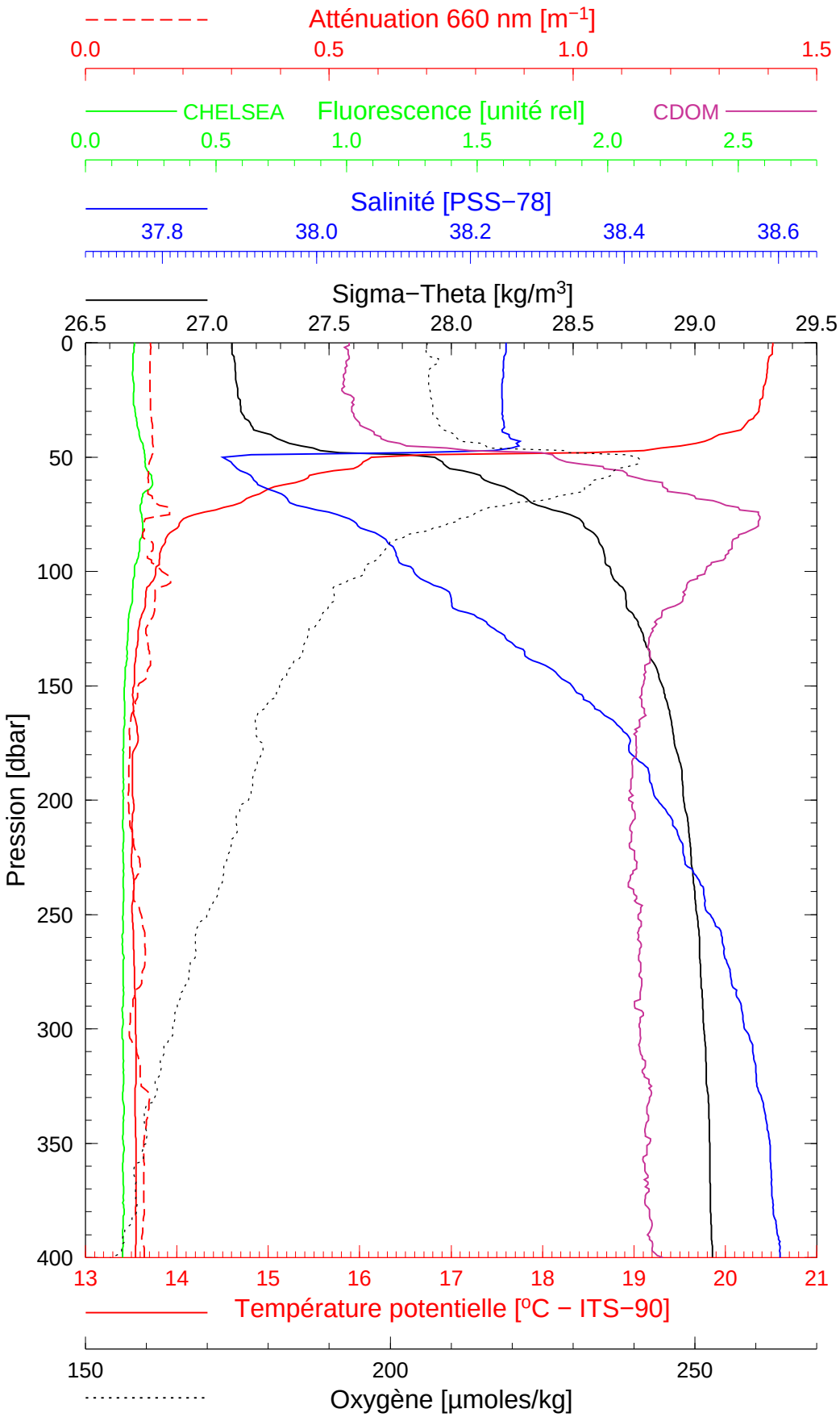


Date *19/10/2011* *Latitude* *43°37.044 N*

Heure déb *12h 04min [TU]* *Longitude* *07°25.139 E*

BOUSSOLE 116 **18/10/2011** **BOUS111018_06**

BOUS006

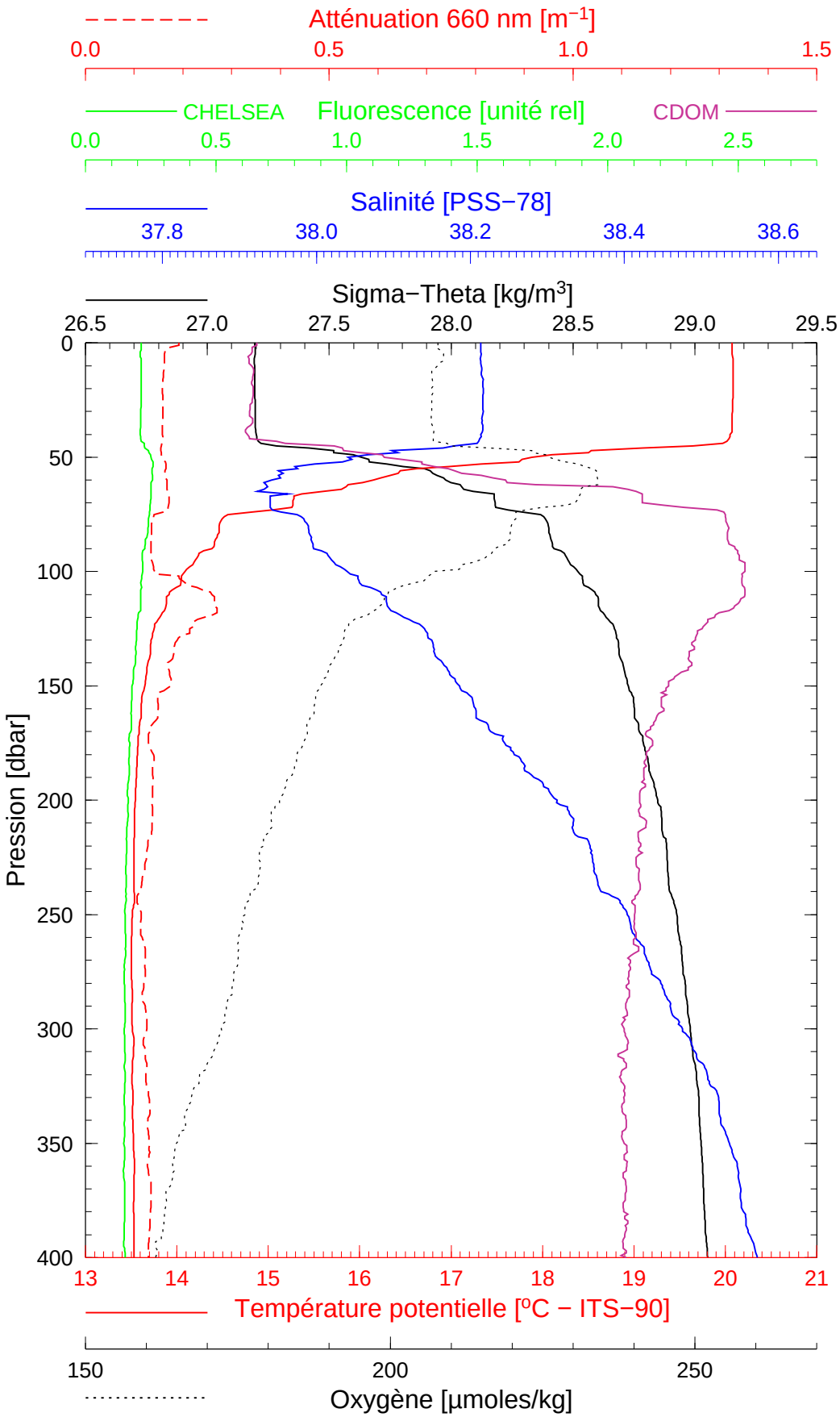


Date *18/10/2011* *Latitude* *43°39.066 N*

Heure déb *17h 42min [TU]* *Longitude* *07°21.121 E*

BOUSSOLE 116 **21/10/2011** **BOUS111021_01**

BOUS100

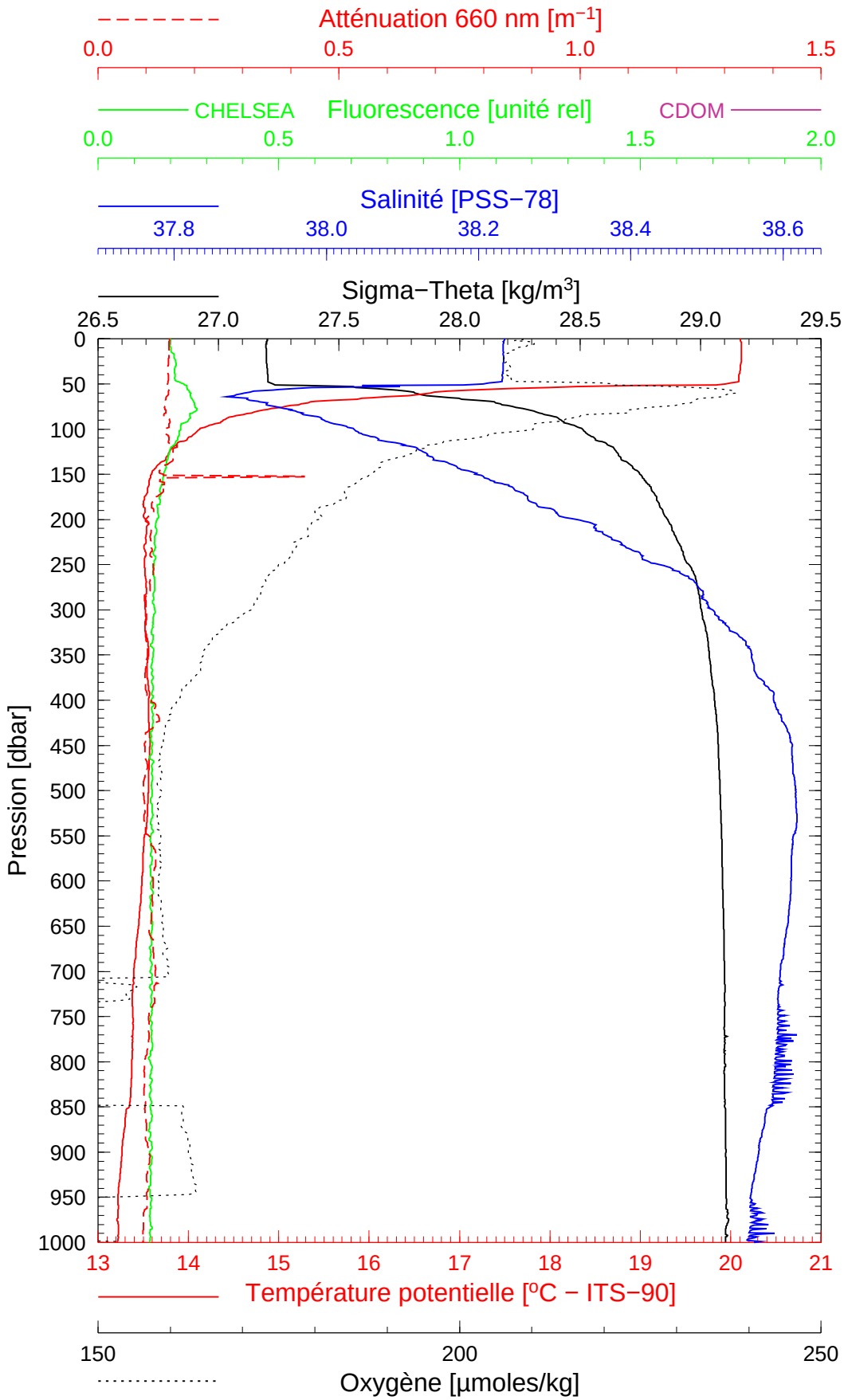


Date *21/10/2011* *Latitude* *43°39.919 N*

Heure déb *07h 33min [TU]* *Longitude* *07°18.475 E*

BOUSSOLE 116 **21/10/2011** **BOUS111021_02**

BOUS101



Date *21/10/2011* *Latitude* *43°37.329 N*

Heure déb *08h 41min [TU]* *Longitude* *07°19.127 E*