BOUSSOLE Monthly Cruise Report

Cruise 99
June 10 - 12, 2010

Duty Chiefs: Emilie Diamond (diamond@obs-vlfr.fr)
Vessel: R/V Téthys II
(Captain: Guy Le Falher)

Science Personnel: Jean De Vaugelas, Emilie Diamond, Olivier Javoy, Yves Lamblard, Grigor Obolensky, Mustapha Ouhssain, Martina Sailerova, Vincent Taillandier, Vincenzo Vellucci, Lise Barneoud (journalist) and Luc (diver).

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

Figure 1. Sunrise behind Saint Jean Cap Ferrat.

BOUSSOLE project

ESA/ESRIN contract N° 17286/03/I-OL

Deliverable from WP#400/200

June 21, 2010

Contents

Cruise Objectives

Routine operations

Multiple SPMR profiles are to occur within about 1 hour of satellite overhead passes of MERIS around solar noon, under optimal conditions: clear blue skies and flat, calm sea surface. From last mission, we restart deploying the SPMR SN 006 and its SMSR reference SN 006. From April 2010, we perform optical profiles with a Biospherical's C-OPS (Compact Optical Profiling System) on 0-200 m at the BOUSSOLE site. It will replace the SPMR/SMSR system at short-term. 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 or 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. 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, AC9 (from July 2002) and Eco-BB3 (from June 2003), seawater samples are to be collected, filtered and stored in N_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 (until summer of 2007).

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. Divers will also put a neoprene cap on the HS4 and on the transmissometers for acquiring three dark measurements (started in 2009).

Additional operations

Since the 12th of April 2010, data from instruments connected to the buoy OCP at 4m were sending constant values; the OCP fuse into the Dacnet have been changed to solve this problem when divers were on board. The hydrophone of the CRC (Marineland) for identification of cetaceans has also been taken off that day. Several elephant seal CTD-fluorometer from the Centre d'Etudes Biologiques of Chizé have been tested on the CTD-rosette. The last day, Grigor Obolensky was on board to perform 2 plankton nets at BOUSSOLE site.

Cruise Summary

Two of the three cruise days were used due to the bad weather on the first day. The second day was used for optical casts and water sampling. The last day was used for diving operations, buoy data retrieval, plankton nets, optical and CTD casts with water sampling at the BOUSSOLE site and for completing the transect.

Thursday 10 June 2010

Bad weather prevented departure from the Nice port.

Friday 11 June 2010

The second day, sea state was good with some wind blowing and blue sky. When arrived at the BOUSSOLE site, the connection between the CTD deck-unit and the Seasave software did not work. So 1 Secchi disk, 3 SPMR and 6 C-OPS profiles were performed. Then water sampling and AC9 cast were performed with also several elephant seal CTD-fluorometers on the rosette.

Saturday 12 June 2010

The last day, sea state was good with some wind blowing. The sky was blue to overcast. When on site, divers went at sea to clean the instruments and to take off the hydrophone and the Dacnet. ARGOS and CISCO connectors were also cleaned and a direct connection with the buoy was established for data retrieval. Then, 2 plankton net samples were collected, 1 Secchi disk and 3 C-OPS profiles were performed. During this time, the OCP fuse of Dacnet was changed with a new one. Then divers reinstalled the Dacnet. The light blaze on the top of the buoy was also changed. Several attempt of CISCO connection failed after. Then 1 CTD cast with water sampling was performed and the transect was completed.

Cruise Report

Thursday 10 June 2010 (UTC)

Bad weather prevented departure from the Nice port.

Friday 11 June 2010 (UTC)

People on board: Emilie Diamond, Mustapha Ouhssain, Martina Seilerova, Vincent Taillandier and 1 journalist.

0415 Departure from the Nice port.
0735 Arrival at the BOUSSOLE site.
0740 CTD did not work.
0755 SPMR 01, 02, 03.
0850 C-OPS balancing.
0925 C-OPS 01, 02, 03.
1015 Attempt of CISCO connection with the buoy: unsuccessful.
1035 Secchi disk 01 (17 m).
1100 CTD did not work.
1115 Attempt of CISCO connection with the buoy: unsuccessful.
1125 Rosette 01 with CTD-fluorometers, 400 m with water sampling at 200, 150, 80, 70, 60, 50, 40, 30, 20, 10 and 5 m for HPLC, Ap and TSM.
1215 Attempt of CISCO connection with the buoy: unsuccessful.
1225 C-OPS 04, 05, 06.
1315 Attempt of CISCO connection with the buoy: unsuccessful.
1330 Departure to the Nice port.
1645 Arrival at the Nice port.

Saturday 12 June 2010 (UTC)

People on board: Emilie Diamond and Grigor Obolensky, Vincenzo Vellucci and 4 divers.

0410 Departure from the Nice port.
0725 Arrival at the BOUSSOLE site.
0735 Diving on the buoy for cleaning instruments and for rebooting the Dacnet through AK connector: did not work.
0750 2 x Plankton net, 0-100 m.
0815 Direct CISCO connection with buoy and data retrieval. CISCO and ARGOS connections cleaned on the top of the buoy.
0820 Divers took off the Dacnet and the hydrophone.
0825 Secchi disk 02 (17 m).
0850 C-OPS 07, 08, 09.
0900 On board substitution of the Dacnet OCP fuse.
0945 Diving on the buoy for reinstalling the Dacnet. A new light blaze installed on the top of the buoy.
1015 Attempt of CISCO connection with the buoy: unsuccessful.
1040 Attempt of CISCO connection with the buoy during 1 hour near the buoy because of the unknown delay of Dacnet time: unsuccessful.
1155 CTD 02, 400 m with water sampling at 200, 150, 80, 70, 60, 50, 40, 30, 20, 10 and 5 m for HPLC, Ap, TSM and CDOM.
1230 Departure to the first transect station.
1310 CTD 03, 400 m, station 01 (43°25’N 07°48’E).
1410 CTD 04, 400 m, station 02 (43°28’N 07°42’E).

1505 CTD 05, 400 m, station 03 (43°31’N 07°37’E).
1635 CTD 06, 400 m, station 05 (43°37’N 07°25’E).
1730 CTD 07, 400 m, station 06 (43°39’N 07°21’E).
1755 Departure to the Nice port.
1830 Arrival at the Nice port.

Problems identified during the cruise

- Bad weather prevented departure from Nice port the first day.
- The 2nd day, the connection between the CTD deck-unit and Seasave software did not work because the PAR button was switched on. The connection with AC9 and with the water sampler control worked well.
- All attempts of CISCO connection with the buoy were unsuccessful.

Calculated Swath paths for the MERIS Sensor (ESOV Software)

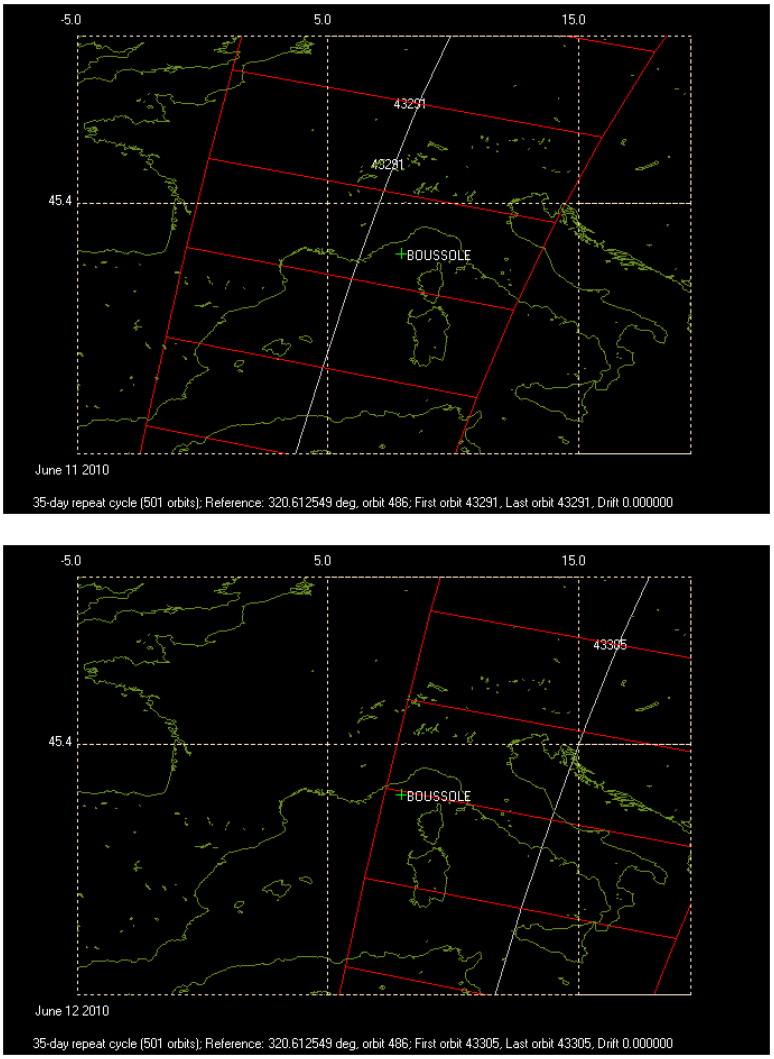
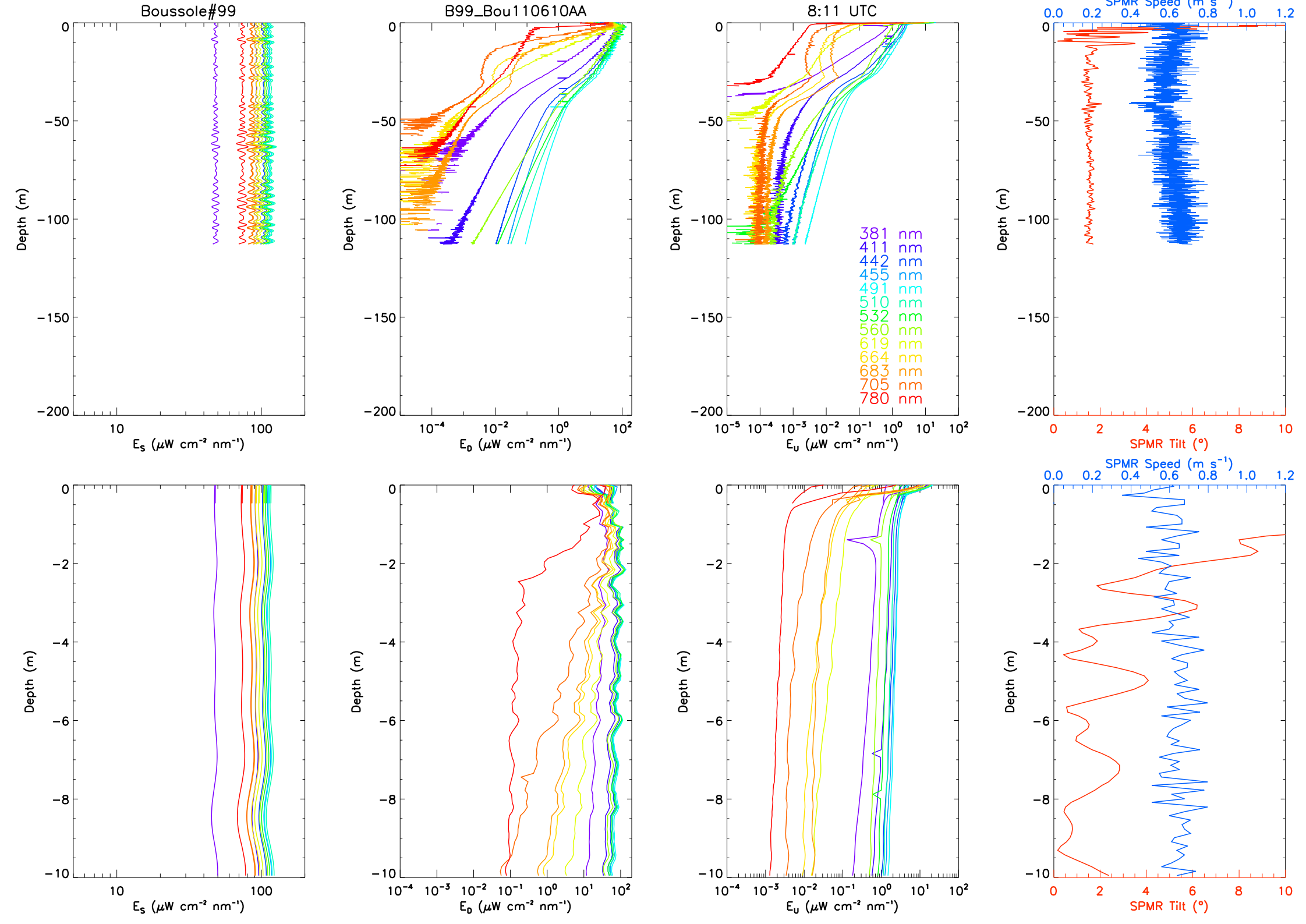


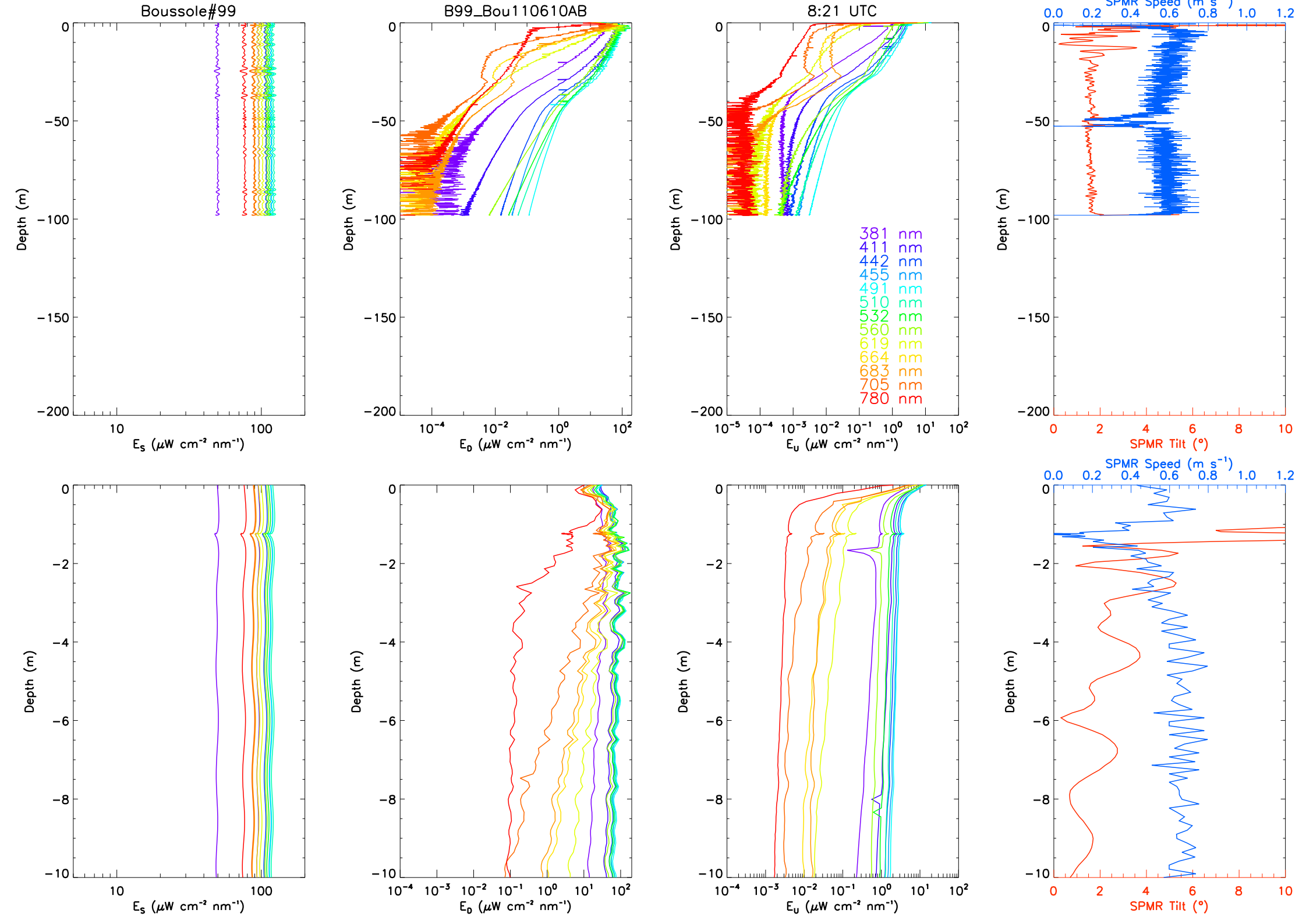
Figure 2. Calculated swath paths for MERIS (Esov software) above BOUSSOLE site for 11 and 12 June 2010.

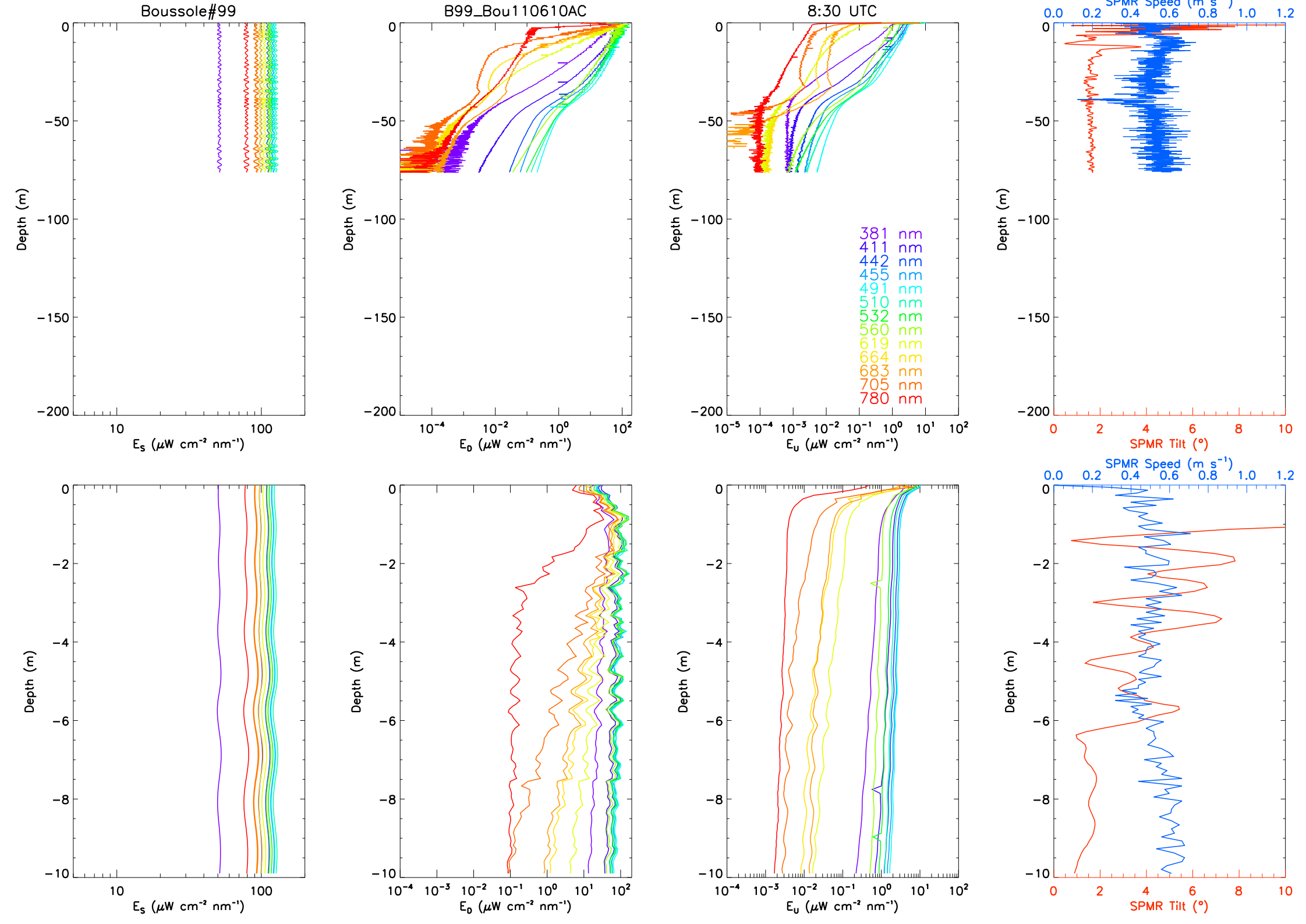
Appendix

Cruise Summary Table for Boussole 99

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
10/06/10	Bad weather																								
	Bou110610black1				07:57	3:00																			
		Bou110610AA			08:11	3:06	113	43	22.148	7	53.544	blue	Cu	1	5	113	1012.1	90	good	20.9		calm	0.8		no
		Bou110610AB			08:20	3:03	98	43	22.248	7	53.247	blue	Cu	1	5	113	1012.1	90	good	20.9		calm	0.8		no
		Bou110610AC			08:30	2:28	76	43	22.290	7	53.085	blue	Cu	1	5	113	1012.1	90	good	20.9		calm	0.8		no
	Bou110610black2				08:46	3:00											1015.4								
	bou_c-ops_100611_0925_001_data				09:29	1:20																			
		bou_c-ops_100611_0925_002_data			09:36	3:30	113	43	22.238	7	53.461	blue	None	0	8	137	1012.4	91	good	20.2		calm	0.8		no
		bou_c-ops_100611_0925_003_data			09:46	3:30	100	43	22.371	7	53.218	blue	None	0	8	137	1012.4	91	good	20.2		calm	0.8		no
11/06/10		bou_c-ops_100611_0925_004_data			09:56	4:00	126	43	22.490	7	52.933	blue	None	0	8	137	1012.4	91	good	20.2		calm	0.8		no
	bou_c-ops_100611_0925_005_data				10:31	1:20																			
				Secchi01	10:35	3:00	17	43	22	7	54	blue		0					good			calm			no
			CTD001	Rosette: HPLC, Ap & TSM	11:29	34:00	400	43	22.147	7	53.739	blue		1	8	300	1012.6	93		20.1	19.9	calm			no
	bou_c-ops_100611_1227_001_data				12:28	1:20																			
		bou_c-ops_100611_1227_002_data			12:34	3:30	121	43	22.308	7	53.861	blue	Cu	1	7	81	1012.3	94	good	20.9		calm	0.6		no
		bou_c-ops_100611_1227_003_data			12:44	3:30	120	43	22.492	7	53.875	blue	Cu	1	7	81	1012.3	94	good	20.9		calm	0.6		no
		bou_c-ops_100611_1227_004_data			12:53	3:30	123	43	22.676	7	53.873	blue	Cu	1	7	81	1012.3	94	good	20.9		calm	0.6		no
	bou_c-ops_100611_1227_005_data				13:33	1:30																			
				Secchi02	08:25	3:00	17	43	22	7	54	blue		2					good			calm			no
	bou_c-ops_100612_0859_001_data				09:02	1:20																			
		bou_c-ops_100612_0859_002_data			09:06	3:30	130	43	21.716	7	53.961	blue	Ci & Sc	2	4	301	1012.1	87	good	20.2		calm	0.5		no
		bou_c-ops_100612_0859_003_data			09:17	3:30	122	43	21.555	7	53.706	blue	Ci & Sc	2	4	301	1012.1	87	good	20.2		calm	0.5		no
		bou_c-ops_100612_0859_004_data			09:27	3:30	125	43	21.493	7	53.500	blue	Ci & Sc	2	4	301	1012.1	87	good	20.2		calm	0.5		no
12/06/10	bou_c-ops_100612_0859_005_data				09:43	1:20																			
			CTDBOUS002	HPLC, Ap, TSM & CDOM	11:57	29:00	400	43	21.660	7	54.248	overcast		7	9	12	1013.1	84		20.7	20.7	calm			no
			CTDBOUS003		13:11	24:00	400	43	24.976	7	47.997	overcast		6	4	330	1012.7	80		21.6	20.7	calm			no
			CTDBOUS004		14:10	24:00	400	43	27.954	7	42.101	blue		1	5	340	1012.1	82		21.2	20.7	calm			no
			CTDBOUS005		15:07	24:00	400	43	30.872	7	36.786	overcast		6	6	285	1011.8	83		21.3	21.6	calm			no
			CTDBOUS006		16:35	24:00	400	43	36.897	7	25.025	overcast		5	7	66	1011.1	80		21.3	21.8	calm			no
			CTDBOUS007		17:31	22:00	400	43	38.869	7	21.236	overcast		6	5	166	1011.2	82		21.0	22.3	calm			no

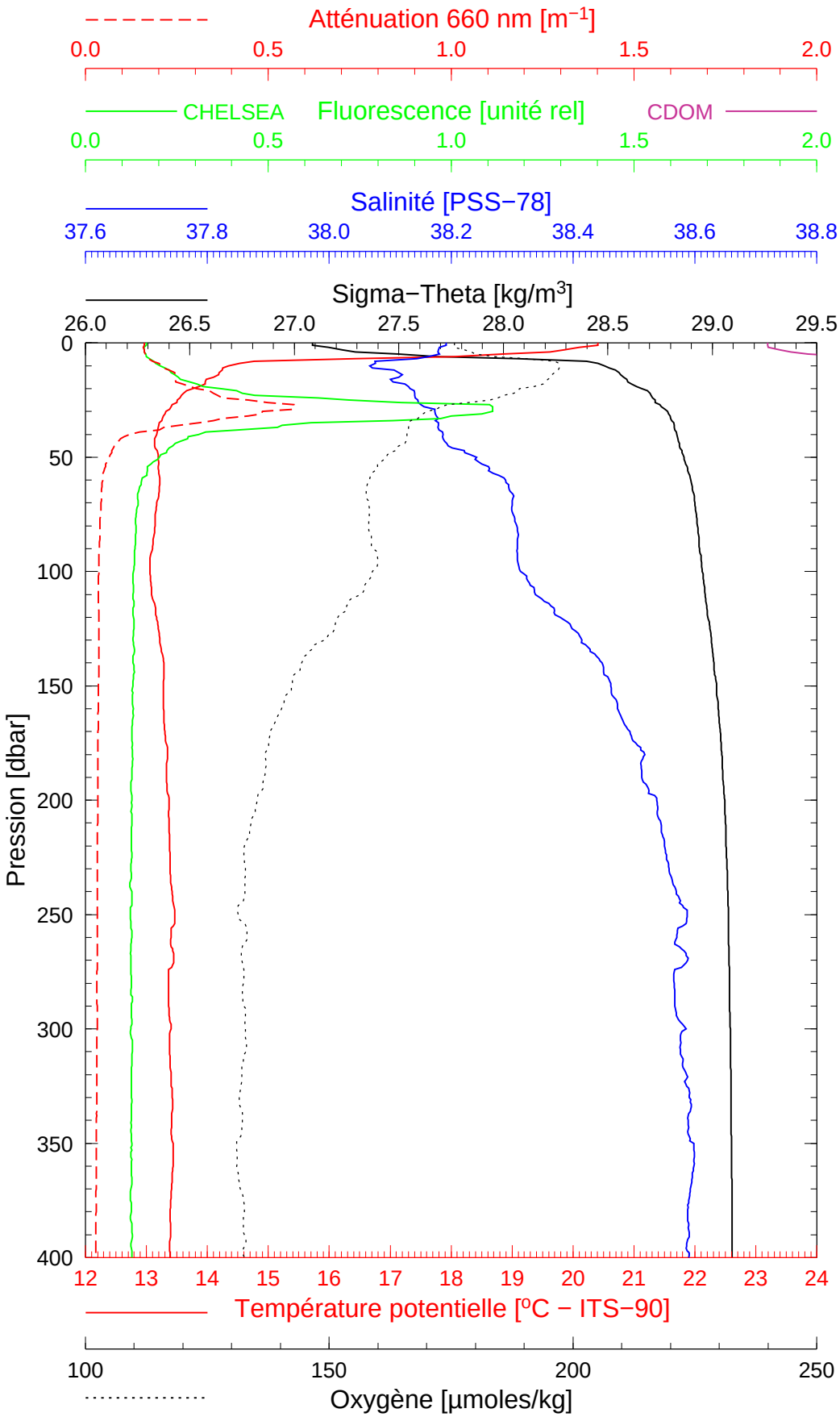

Boussole#99
B99_Bou110610AA
8:11 UTC
Depth (m)
E_S (μW cm^{-2} nm^{-1})
E_D (μW cm^{-2} nm^{-1})
E_U (μW cm^{-2} nm^{-1})
381 nm
411 nm
442 nm
455 nm
491 nm
510 nm
532 nm
560 nm
619 nm
664 nm
683 nm
705 nm
780 nm
SPMR Speed (m s^{-1})
SPMR Tilt (°)


Boussole#99
B99_Bou110610AB
8:21 UTC
Depth (m)
E_S (μW cm^{-2} nm^{-1})
E_D (μW cm^{-2} nm^{-1})
E_U (μW cm^{-2} nm^{-1})
SPMR Speed (m s^{-1})
SPMR Tilt (°)
381 nm
411 nm
442 nm
455 nm
491 nm
510 nm
532 nm
560 nm
619 nm
664 nm
683 nm
705 nm
780 nm


Boussole#99
B99_Bou110610AC
8:30 UTC
Depth (m)
E_S (μW cm^{-2} nm^{-1})
E_D (μW cm^{-2} nm^{-1})
E_U (μW cm^{-2} nm^{-1})
381 nm
411 nm
442 nm
455 nm
491 nm
510 nm
532 nm
560 nm
619 nm
664 nm
683 nm
705 nm
780 nm
SPMR Speed (m s^{-1})
SPMR Tilt (°)

BOUSSOLE 99 **12/06/2010** **BOUS100612_01**

BOUS002

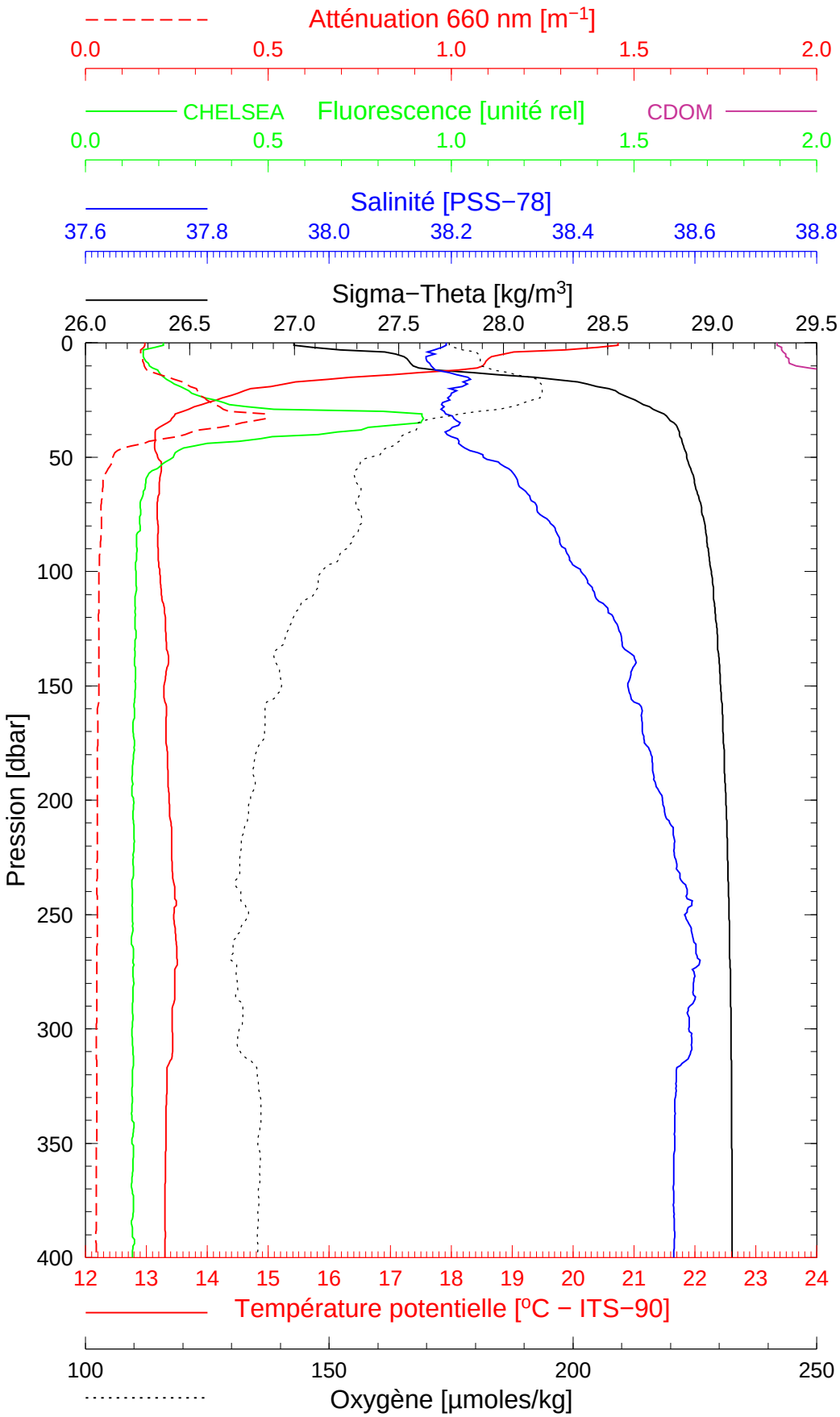


Date *12/06/2010* *Latitude* *43°21.660 N*

Heure déb *11h 57min [TU]* *Longitude* *07°54.248 E*

BOUSSOLE 99 **12/06/2010** **BOUS100612_02**

BOUS003

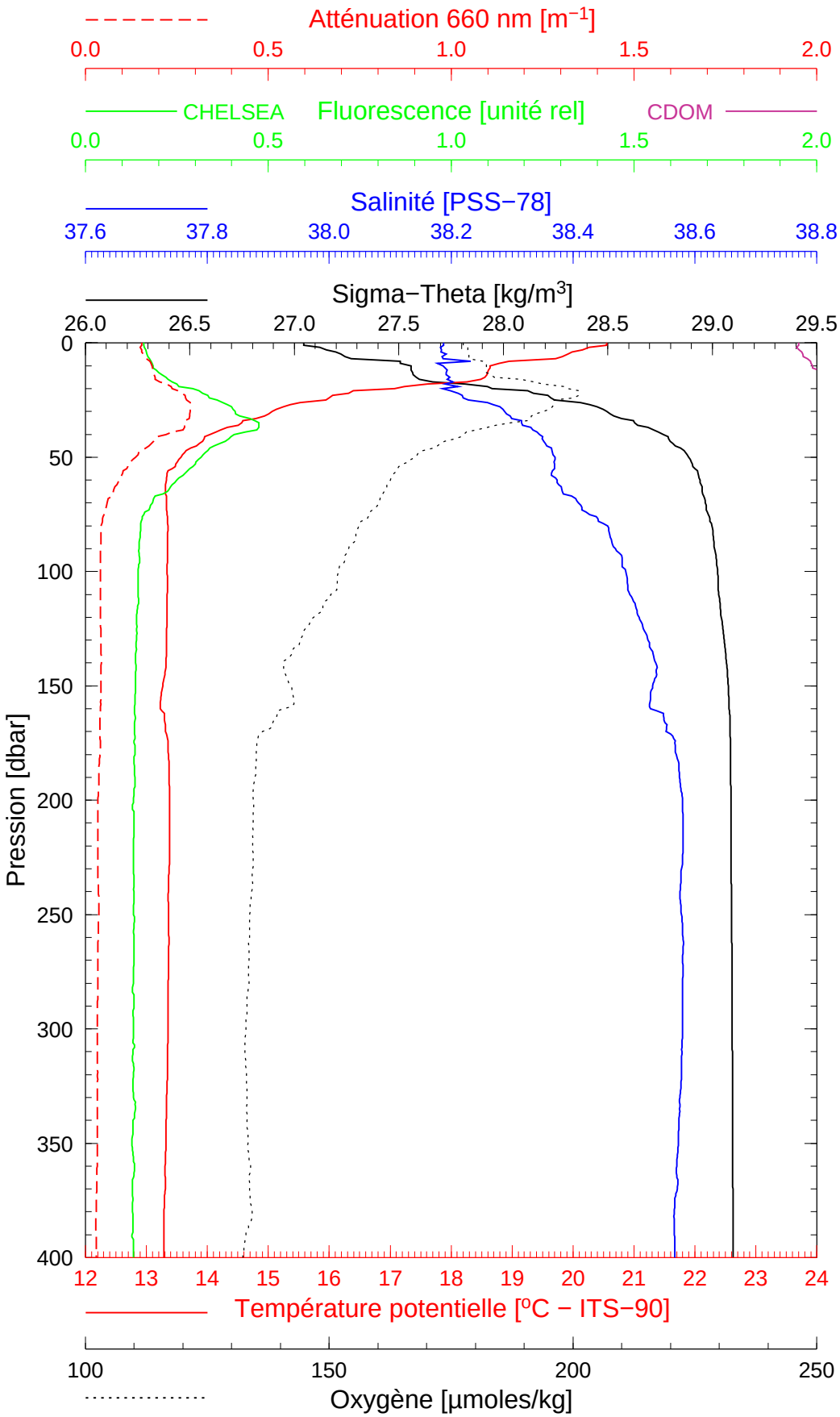


Date *12/06/2010* *Latitude* *43°24.976 N*

Heure déb *13h 11min [TU]* *Longitude* *07°47.997 E*

BOUSSOLE 99 **12/06/2010** **BOUS100612_03**

BOUS004

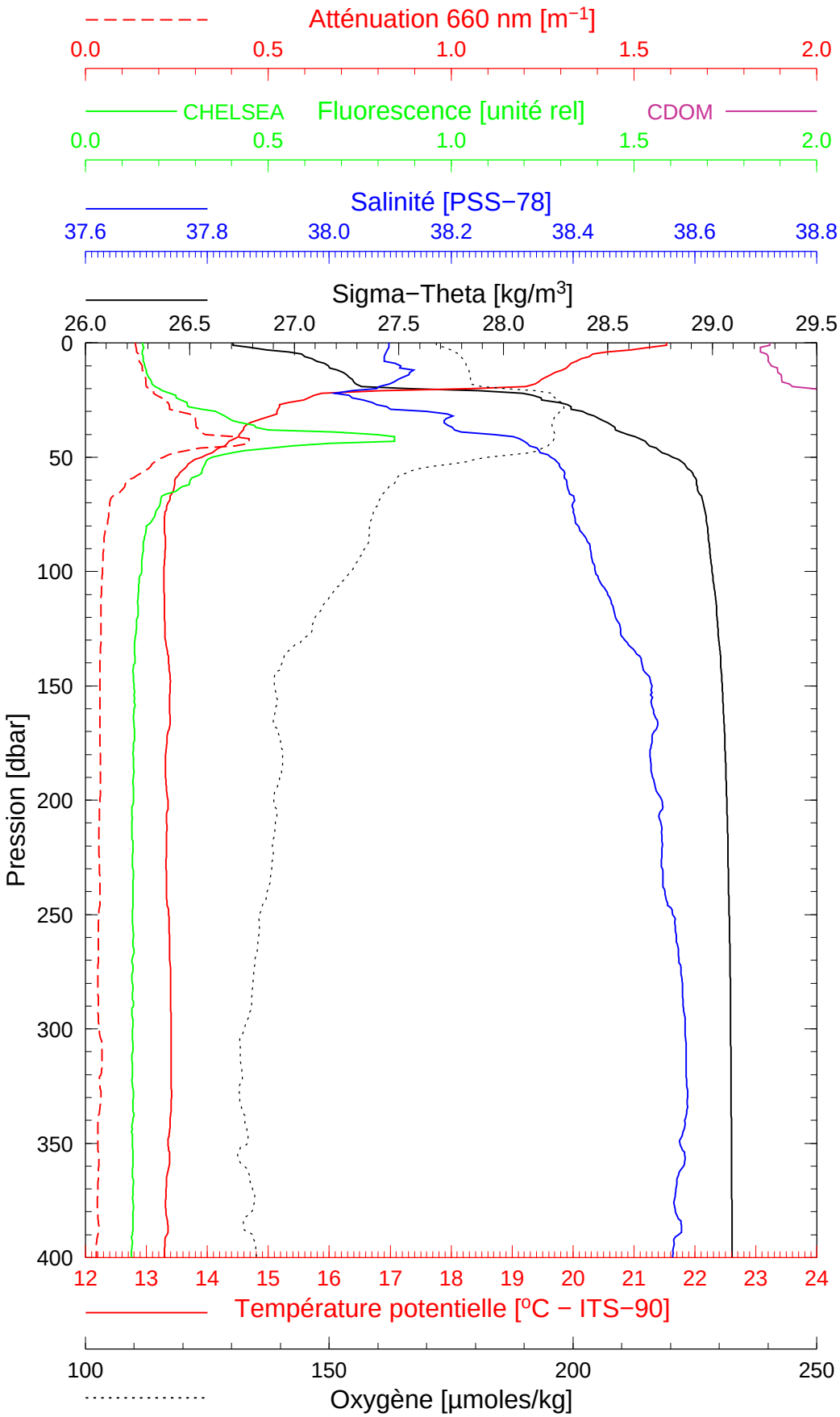


Date *12/06/2010* *Latitude* *43°27.954 N*

Heure déb *14h 10min [TU]* *Longitude* *07°42.101 E*

BOUSSOLE 99 **12/06/2010** **BOUS100612_04**

BOUS005

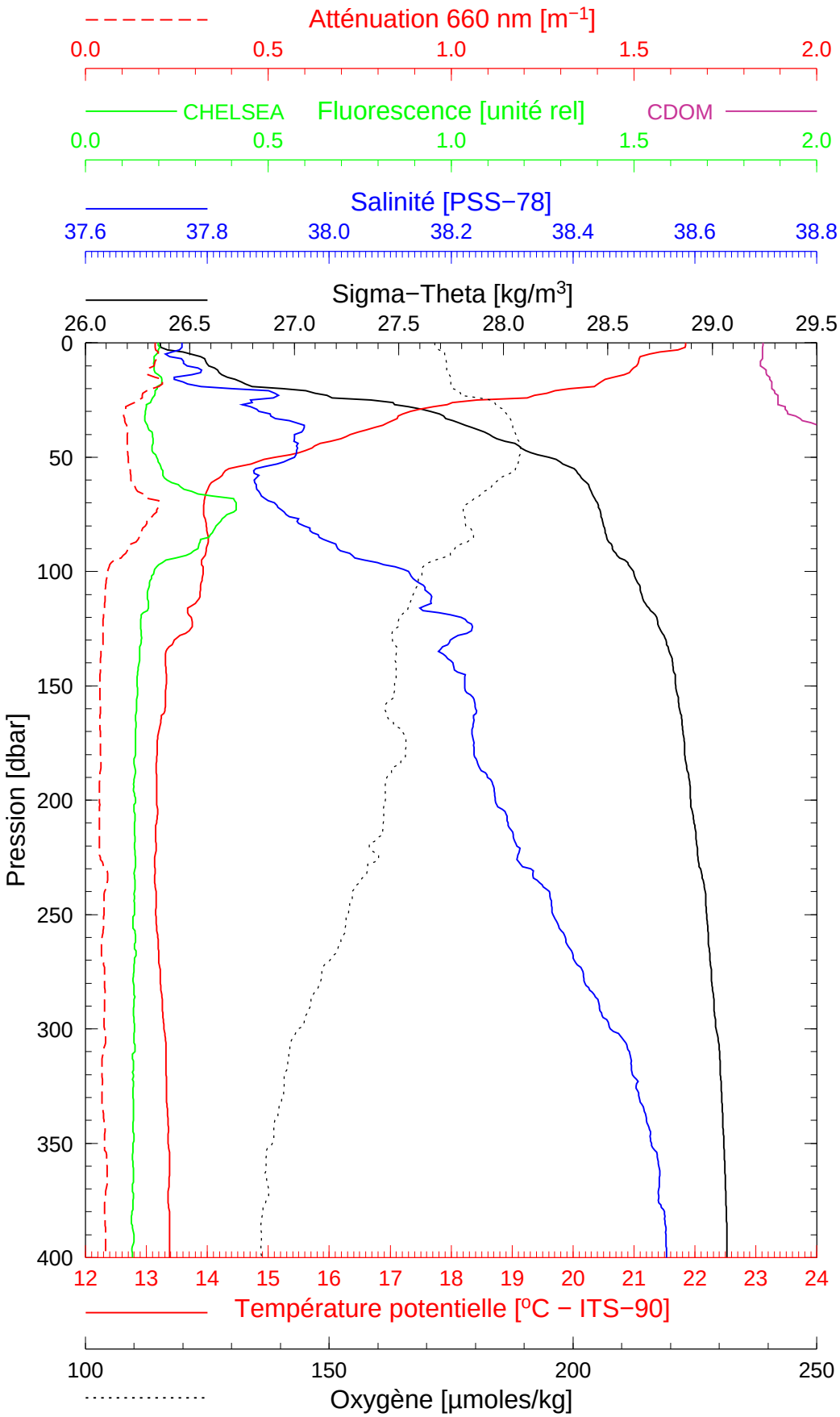


Date *12/06/2010* *Latitude* *43°30.872 N*

Heure déb *15h 07min [TU]* *Longitude* *07°36.786 E*

BOUSSOLE 99 **12/06/2010** **BOUS100612_05**

BOUS006

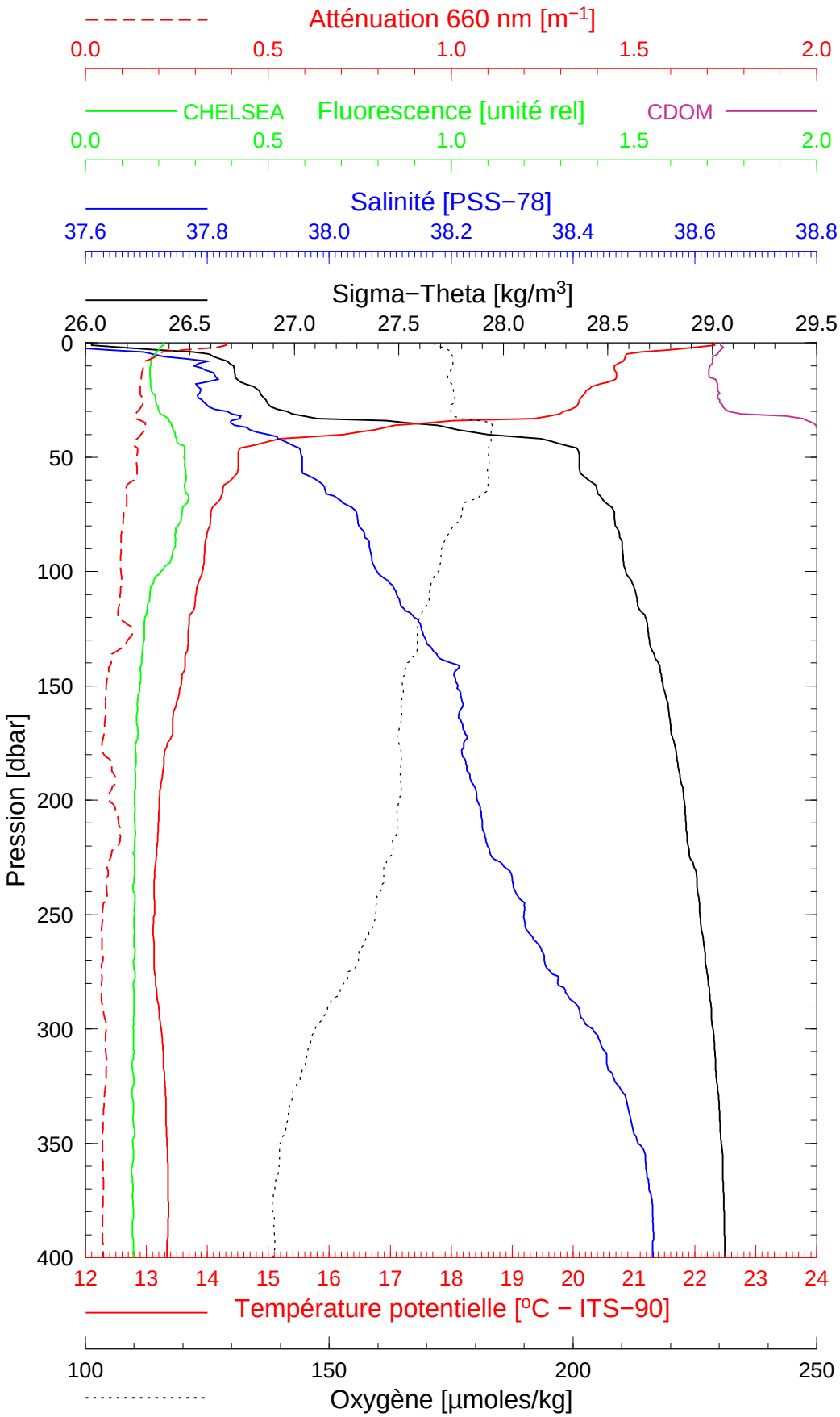


Date *12/06/2010* *Latitude* *43°36.897 N*

Heure déb *16h 35min [TU]* *Longitude* *07°25.025 E*

BOUSSOLE 99 **12/06/2010** **BOUS100612_06**

BOUS007



Date *12/06/2010* *Latitude* *43°38.869 N*

Heure déb *17h 31min [TU]* *Longitude* *07°21.236 E*