BOUSSOLE Monthly Cruise Report

Cruise 76
June 11 - June 15, 2008

Duty Chiefs: Vincenzo Vellucci (enzo@obs-vlfr.fr)
Vessel: R/V Téthys II
(Captain: Alain Stéfan)

Science Personnel: Sebastien Bouvier, Lionel Chiron, Corinne Desnos, Grigor Obolensky, Marc Picheral, Lars Stemmann, Vincenzo Vellucci.

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Fig 1. Oceanographic winch on board the *Tethys II* with a brand-new CTD cable.

BOUSSOLE project

ESA/ESRIN contract N° 17286/03/I-OL

Deliverable from WP#400/200

June 30, 2008

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Cruise Objectives

Routine operations

Multiple SPMR profiles are to occur within 1 hour of satellite overhead passes of MERIS 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 SPMR 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 and AC9, 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.

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.

For one day of each cruise, 250 ml of sea water will be sampled at 200, 150, 80, 70, 6, 50, 40, 30, 20, 10 and 5 meters depth. For each sample, 125 ml will be filtered through a 0.2 µm GF/F filter and both total and filtered water samples will be analysed with the UltraPath for CDOM absorption determination.

Additional operations

Lionel Chiron (CEBC Marseille) and Sebastien Bouvier (Micro Module) will be on board to test a new mini fluorometer (Micro Module V1) integrated on Elephant Seals CTD beacon attached to the rosette. Marc Picheral, Lars Stemman and Corinne Desnos, will be on board to perform a PVM 0-1000 m profile and two Plankton Net 0-100 m profiles at the BOUSSOLE site; they will also test the new PVM 5 attached to the rosette.

Cruise Summary

The June BOUSSOLE monthly cruise had five available cruise days, but due to technical problems and instrument availability, only two days were used for sampling at sea. The first day the CTD Carousel did not work so preventing sampling at depth; after an inspection, a new Carousel engine was ordered but was not available by the end of the cruise. During the second day one of the propellers of the *Tethys II* broke down; then the ship went back to the Nice port for the needed repairs that were completed on the fourth day. The SPMR was not available for this cruise being at factory for calibrations and repairs, so the last day was not used since the remaining part of the program was completed. The first day was used for a CTD cast at the BOUSSOLE site and for completing the transect on the route to the port of Nice. The second day was spent for a CTD cast and a PVM profile at the BOUSSOLE site. For these two days weather conditions were good.

Wednesday 11 June 2008

This day the sea state was good (H1/3 < 0.5 m) with low wind; the sky was partially covered. 1 CTD cast was performed at the BOUSSOLE site. The Carousel for closing Niskin bottles was out of order, so samples for HPLC, A_p and TSM were collected with a bucket at surface. Some Elephant Seals CTD beacons with integrated

mini-fluorometers were clumped to the rosette for testing at sea. A new PVM (v5) was fixed at the rosette too for testing. The 6 CTD stations on transect to the port of Nice were performed.

Thursday 12 June 2008

Weather conditions were still good for the second cruise day. 1 CTD cast and 1 Secchi Disk (14 m) were performed at the BOUSSOLE site. The Carousel was still out of order and samples were not collected. The arrival of a new engine for the Carousel is scheduled for the next week. A PVM 0-1000 m profile and 2 x 0-100 m plankton net profiles were collected too. Tests on Elephant Seals CTD beacons and PVMv5 continued.

Friday 13 June 2008

Ship stopped for repair.

Saturday 13 June 2008

Ship stopped for repair.

Sunday 14 June 2008

Not used.

Cruise Report

Wednesday 11 June 2008 (UTC)

People on board: Sébastien Bouvier, Lionel Chiron, Corinne Desnos, Grigor Obolensky Marc Picheral, and Vincenzo Vellucci.

0455 Departure from the Nice port.
0805 Arrival at the BOUSSOLE site.
0810 CTD 01, 400 m. Problems with the Carousel. Water sampling at surface with a bucket for HPLC, Ap, and TSM.
0950 CTD 02, 400 m, station 01 (43°25'N 07°48'E).
1050 CTD 03, 400 m, station 02 (43°28'N 07°42'E).
1150 CTD 04, 400 m, station 03 (43°31'N 07°37'E).
1250 CTD 05, 400 m, station 04 (43°34'N 07°31'E).
1350 CTD 06, 400 m, station 05 (43°37'N 07°25'E).
1435 CTD 07, 400 m, station 06 (43°39'N 07°21'E).
1530 Arrival at the Nice port.

Thursday 12 June 2008

People on board: Sébastien Bouvier, Lionel Chiron, Corinne Desnos, Grigor Obolensky Marc Picheral, and Lars Stemmann.

0530 Departure from the Nice port.
0900 Arrival at the BOUSSOLE site, problems with one of the propellers.
0910 PVM 1000m.
1000 2 x Plankton Net 0-100 m.
1030 CTD 08, 400 m.
1100 Secchi Disk 01 (14 m).
1230 Departure to the Nice port
1535 Arrival at the Nice port

Friday 13 June 2008

Ship stopped for repair.

Saturday 13 June 2008

Ship stopped for repair.

Sunday 14 June 2008

Not used.

Calculated Swath paths for the MERIS Sensor (ESOV Software)

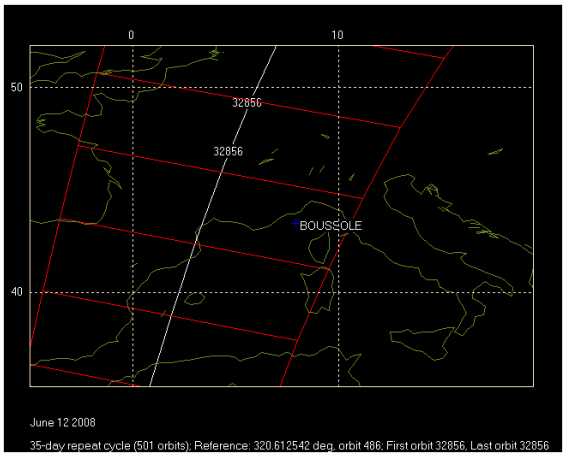


Figure 2. Calculated swath paths for MERIS (Esov software) above BOUSSOLE site for June 12 2008.

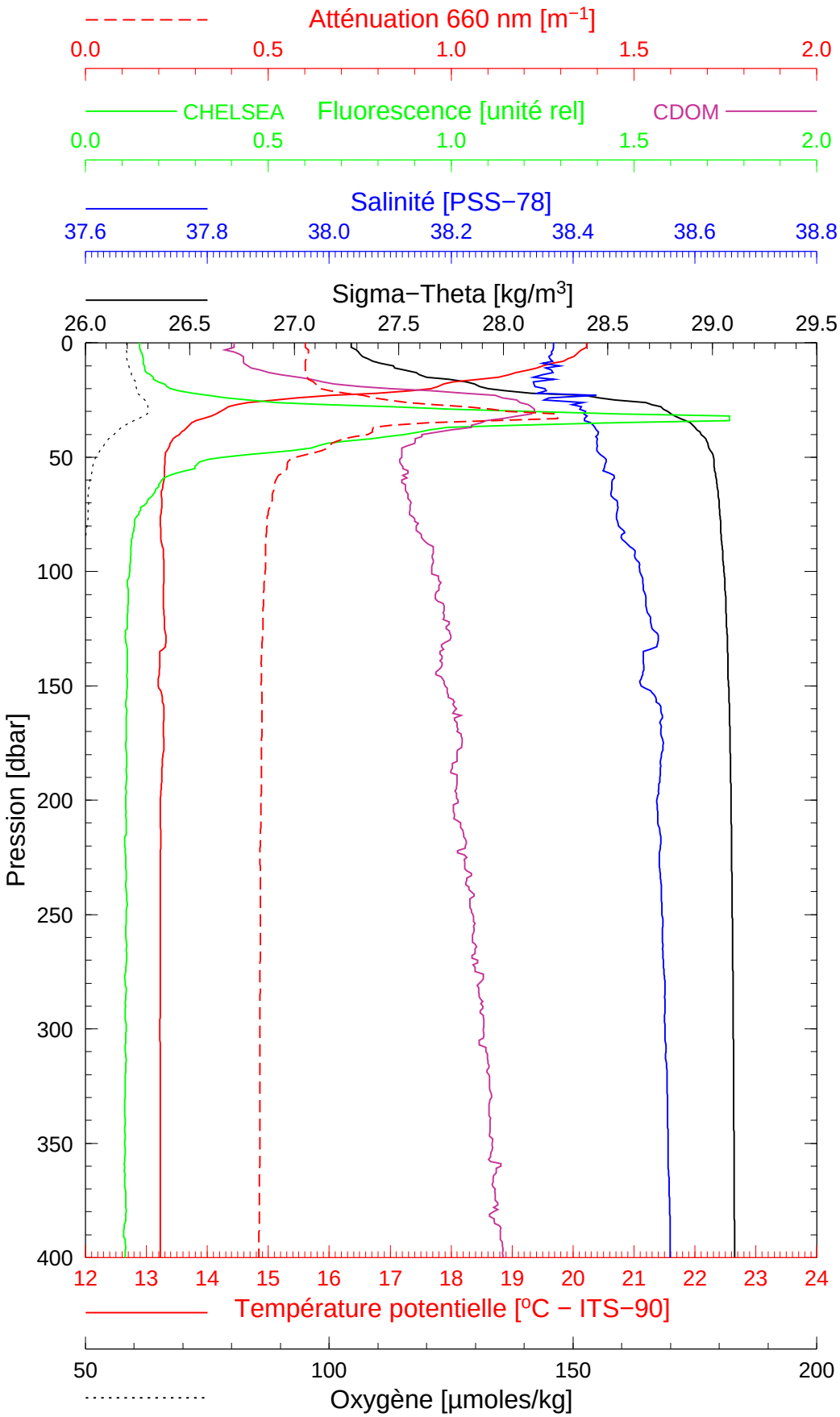
Appendix

Cruise Summary Table for Boussole 76

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
11/06/08			CTDBOUS001	wat. samp. TSM	08:18	24:00	400	43	22.871	7	54.460			4	6		1019.9	83		20.3	20.2	slightly moved			
			CTDBOUS002		09:55	23:00	400	43	25.002	7	48.044			4	7	133	1021.3	82		20.3	21.0	slightly moved			
			CTDBOUS003		10:55	22:00	400	43	28.005	7	41.803			4	9	109	1022.5	83		20.7	21.3	slightly moved			
			CTDBOUS004		11:58	21:00	400	43	30.918	7	36.555			4	6	90	1027.0	87		20.7	20.7	slightly moved			
			CTDBOUS005		12:55	22:00	400	43	33.956	7	30.947			4	8	187	1028.1	87		20.8	21.2	slightly moved			
			CTDBOUS006		13:51	23:00	400	43	37.070	7	25.031			4	6	180	1028.0	80		21.3	22.6	slightly moved			
			CTDBOUS007		14:39	21:00	400	43	39	7	21										22.7	slightly moved			
12/06/2008			CTDBOUS008		10:33	22:00	400	43	23.822	7	54.973			6	5	358	1025.8	80		20.3	20.3	slightly moved			
				Secchi Disk 01	11:00	3:00	14	43	22	7	54														
13/06/2008	ship stopped for repair																								
14/06/2008	ship stopped for repair																								
15/06/2008	not used																								

Boussole **11/06/2008** **BOUS080611_01**

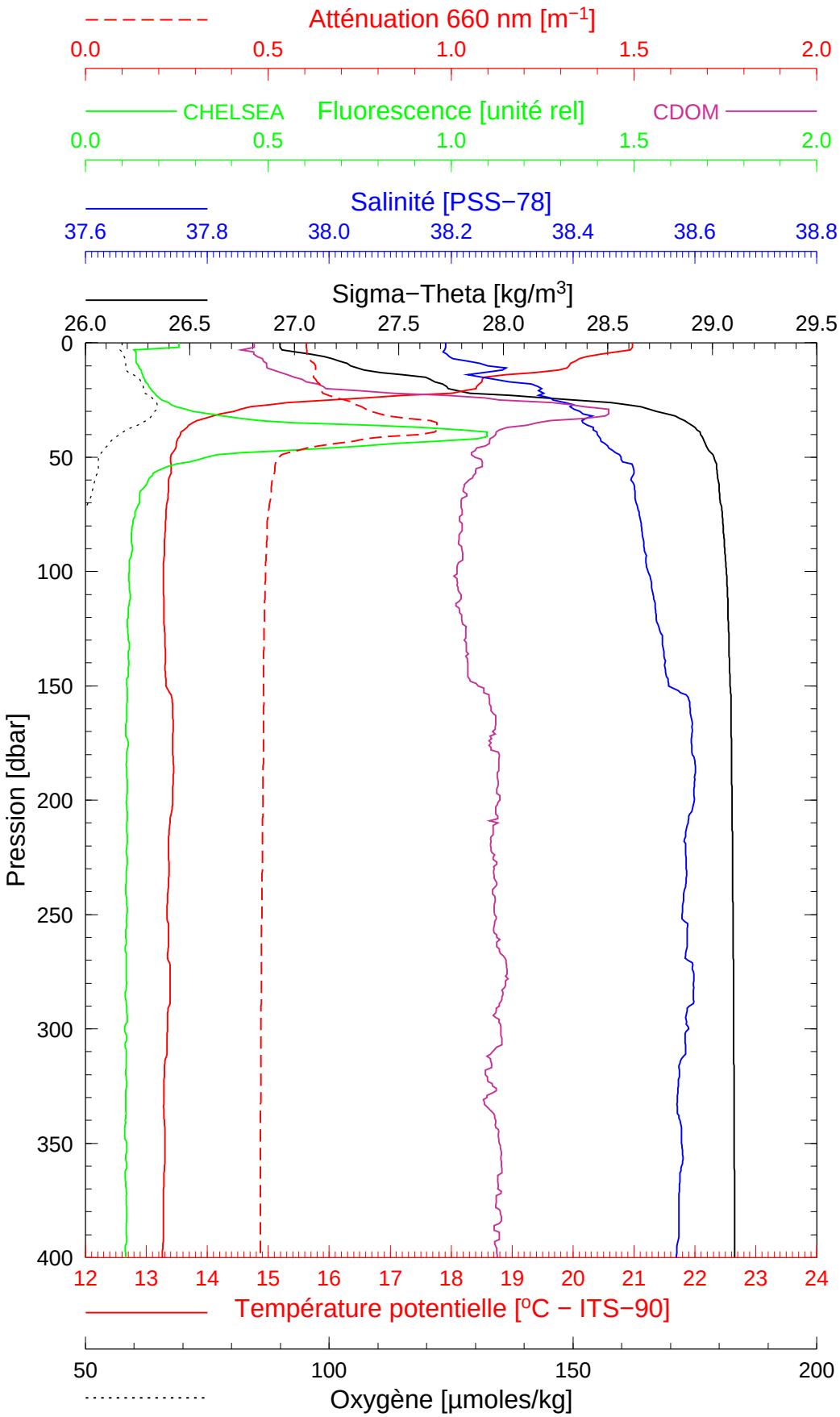
BOUS001



Date	*11/06/2008*	*Latitude*	*43°22.811*
Heure déb	*08h 18min [TU]*	*Longitude*	*07°54.460*

Boussole **11/06/2008** **BOUS080611_02**

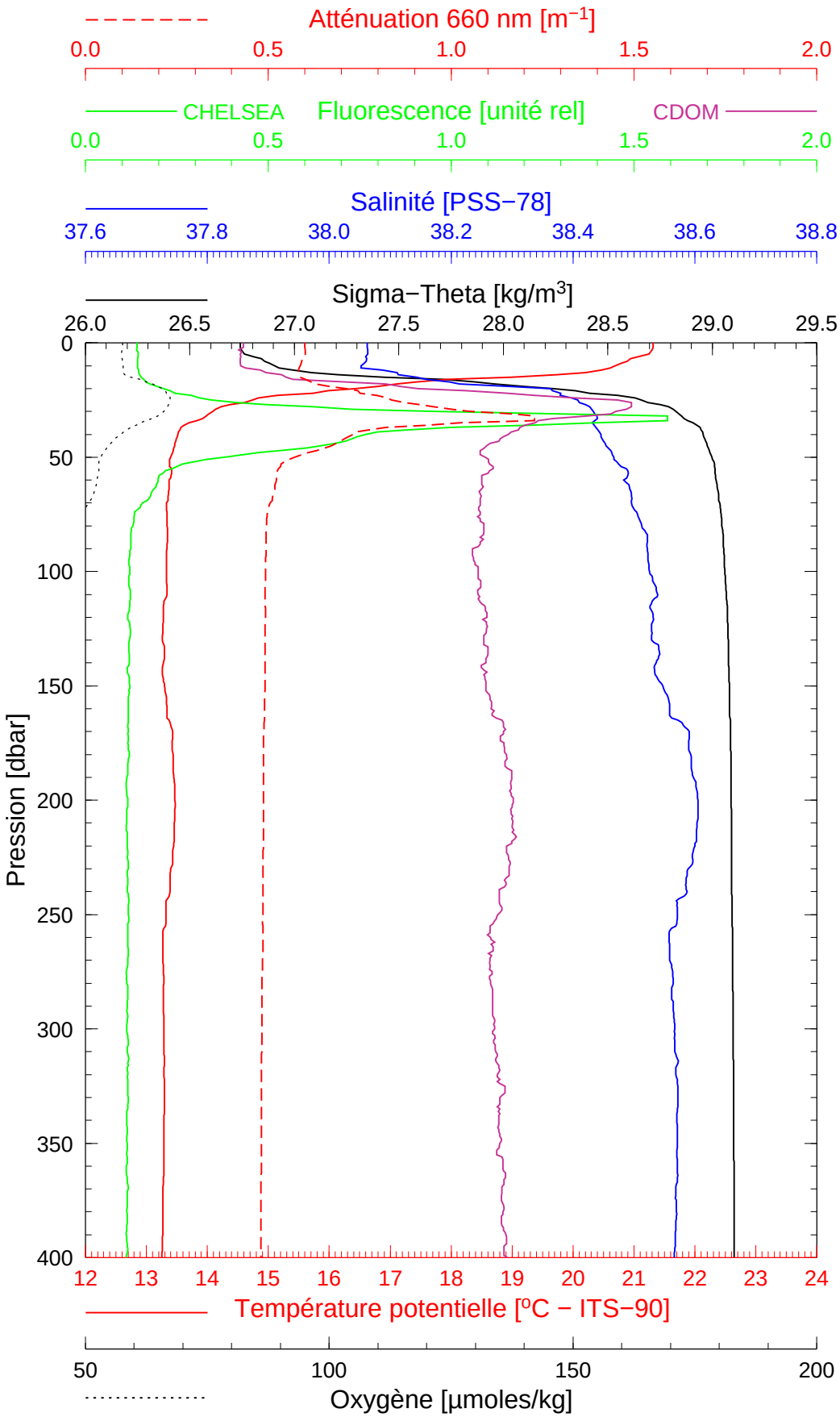
BOUS002



Date	*11/06/2008*	*Latitude*	*43°25.002*
Heure déb	*09h 55min [TU]*	*Longitude*	*07°48.044*

Boussole **11/06/2008** **BOUS080611_03**

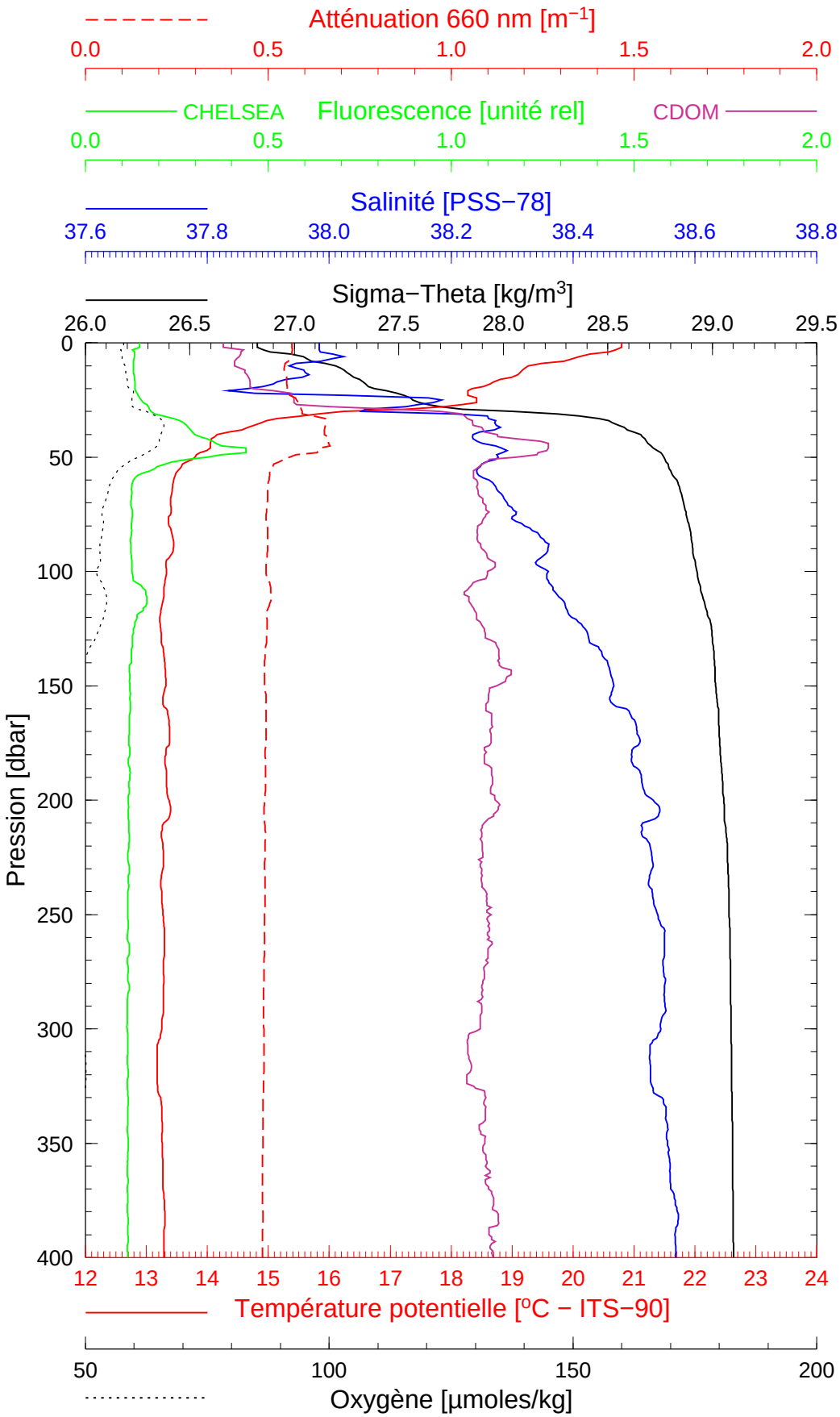
BOUS003



Date	*11/06/2008*	*Latitude*	*43°28.005*
Heure déb	*10h 55min [TU]*	*Longitude*	*07°41.803*

Boussole **11/06/2008** **BOUS080611_04**

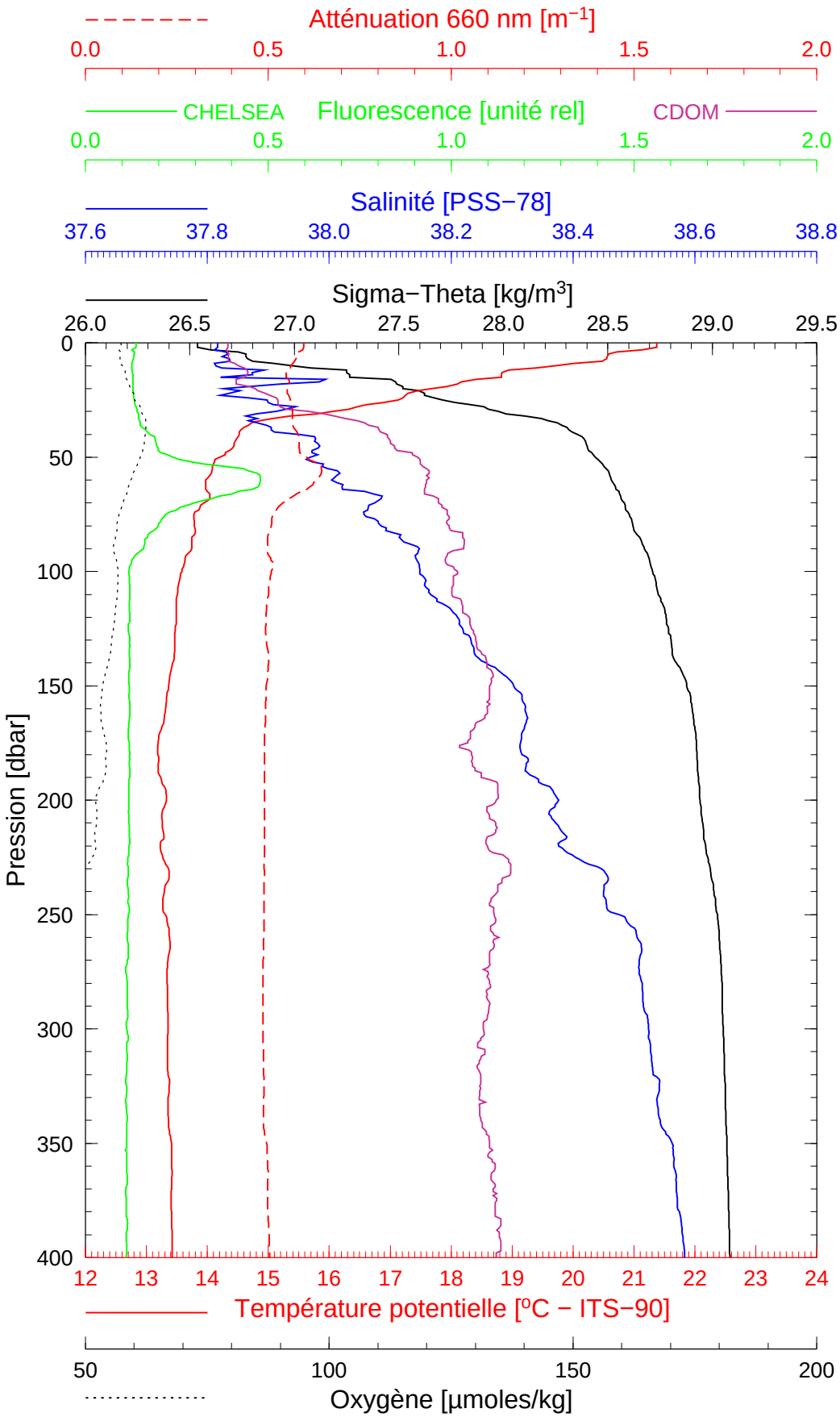
BOUS004



Date	*11/06/2008*	*Latitude*	*43°30.918*
Heure déb	*11h 58min [TU]*	*Longitude*	*07°36.955*

Boussole **11/06/2008** **BOUS080611_05**

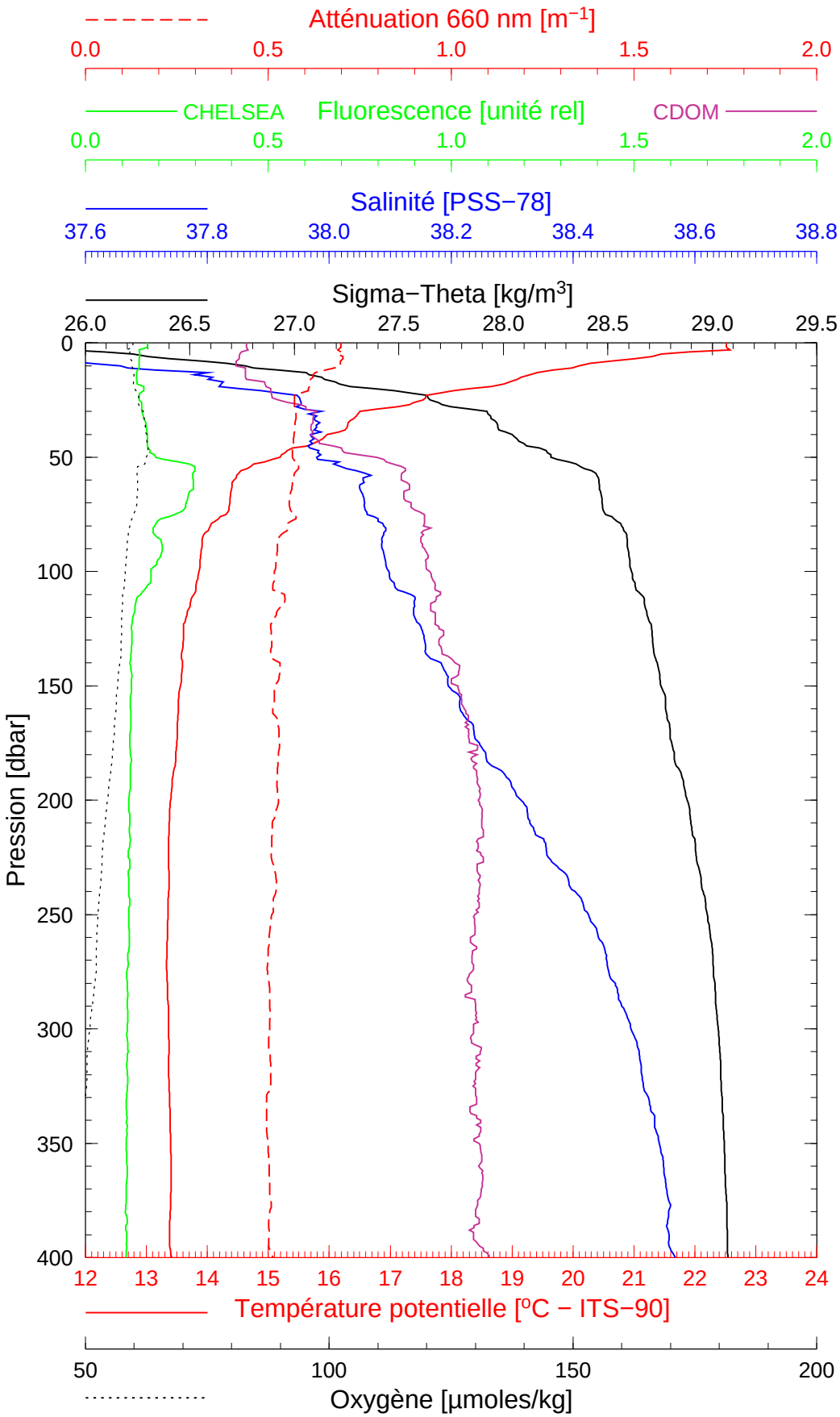
BOUS005



Date	*11/06/2008*	*Latitude*	*43°33.956*
Heure déb	*12h 55min [TU]*	*Longitude*	*07°30.947*

Boussole **11/06/2008** **BOUS080611_06**

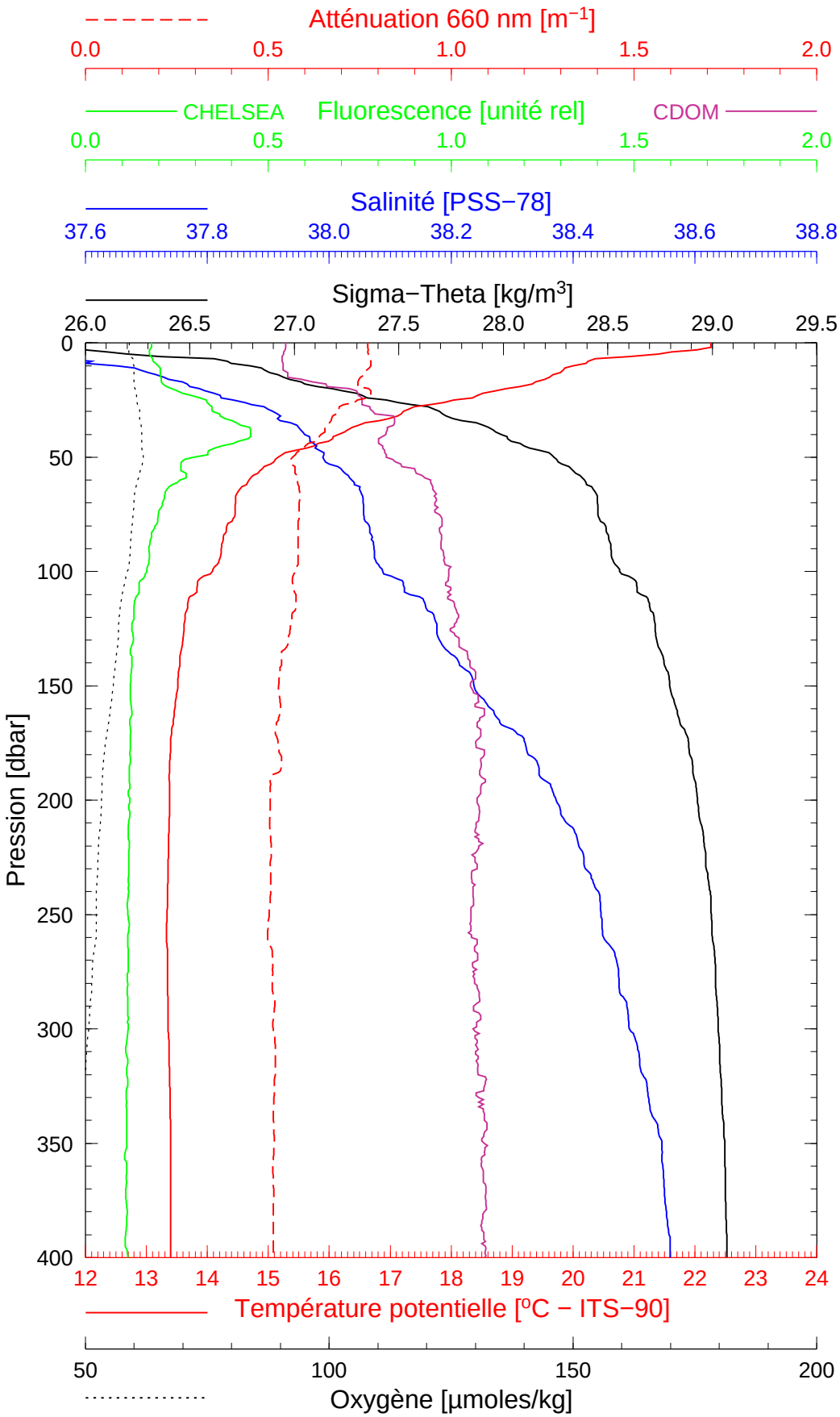
BOUS006



Date	*11/06/2008*	*Latitude*	*43°37.070*
Heure déb	*13h 51min [TU]*	*Longitude*	*07°25.031*

Boussole **11/06/2008** **BOUS080611_07**

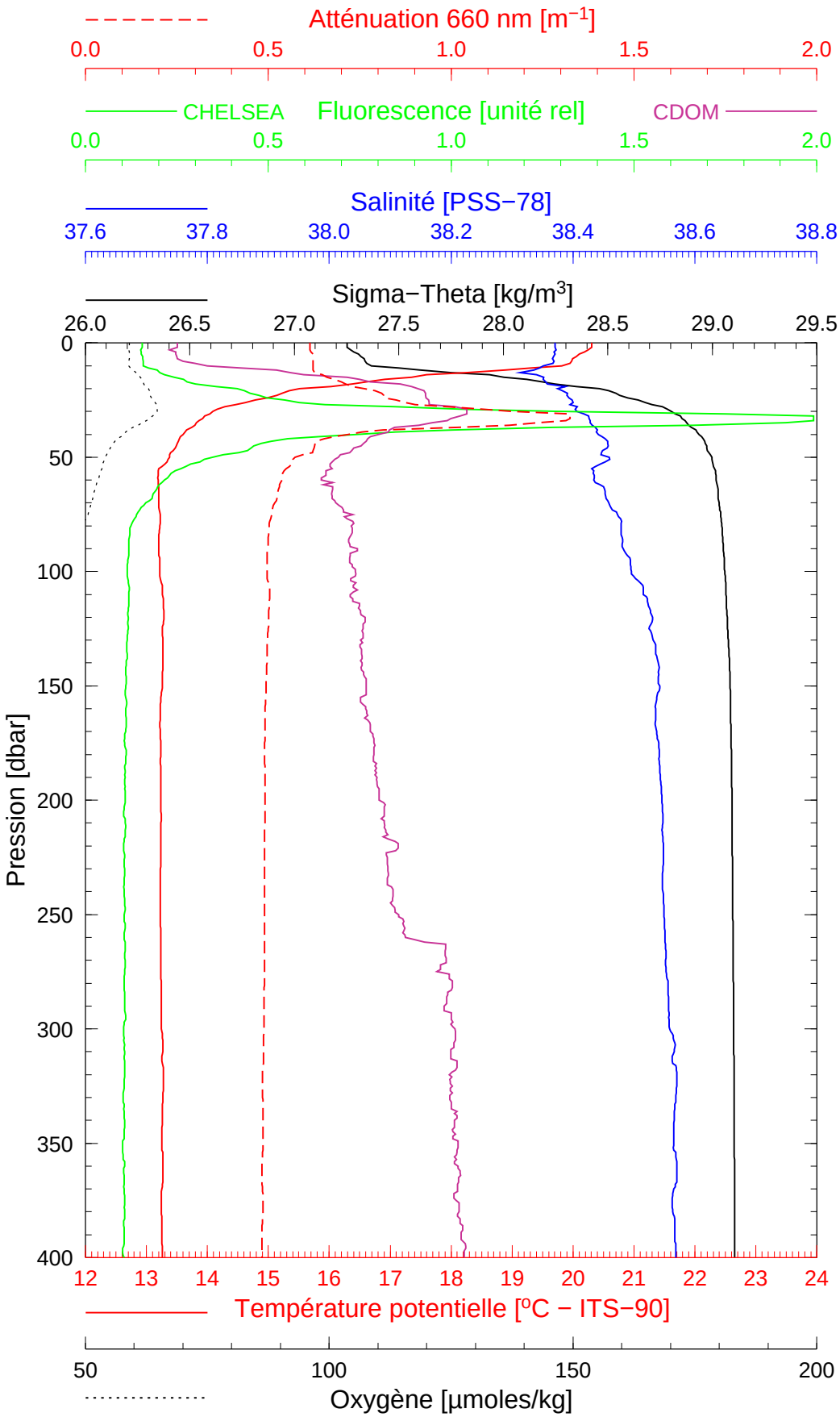
BOUS007



Date	*11/06/2008*	*Latitude*	*43°41.728*
Heure déb	*14h 39min [TU]*	*Longitude*	*07°17.068*

Boussole **12/06/2008** **BOUS080612_08**

BOUS008



Date	*12/06/2008*	*Latitude*	*43°23.822*
Heure déb	*10h 33min [TU]*	*Longitude*	*07°54.973*