

# BOUSSOLE Monthly Cruise Report

## Cruise 83

January 18 - 21, 2009

Duty Chiefs: Grigor Obolensky (obolensky@obs-vlfr.fr)

Vessel: R/V Téthys II

(Captains: Alain Stephan)

Science Personnel: Céline Bachelier, Floriane Desprez and Grigor Obolensky.

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



Fig 1. Organic matter of terrestrial origin near the Boussole site.

## BOUSSOLE project

ESA/ESRIN contract N° 17286/03/I-OL

Deliverable from WP#400/200

March 24, 2009



## Contents

1. Cruise Objectives
2. Cruise Summary
3. Cruise Report
4. Calculated Swath paths for Meris Sensor

Appendix

## **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<sub>2</sub> 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 gimble 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**

One of the four days, Céline Bachelier and Floriane Desprez will complete the MOOSE and DYCOMED programs with a deep CTD cast and water sampling.

## **Cruise Summary**

Two of the four cruise days were used; the second and third days bad weather prevented departure from the Nice port. The CIMEL photometer and the SPMR/SMSR radiometers were not available since both were at factory for calibration/repair. The first day was spent for CTD sampling at the BOUSSOLE site and for completing the transect. The last day was used for CTD sampling at the BOUSSOLE and DYFAMED sites.

### **Sunday 18 January 2009**

This day weather conditions were not optimal but allowed sampling. Sky was covered, wind speed and sea roughness augmented during the day. When on site, the BOUSSOLE buoy was not visible. A CTD cast with water sampling was performed; CDOM samples were also taken but the filtration ramp was not working properly. The transect was completed on the way back to Nice

## Monday 19 January 2009

Bad weather prevented departure from the Nice port.

## Tuesday 20 January 2009

Bad weather prevented departure from the Nice port.

## Wednesday 21 January 2009

This day weather conditions were similar to the first day but lower currents at sea allowed the buoy to be about 2.5 m above water. 1 CTD cast was performed close to the buoy and CDOM samples were taken since the filtration ramp was repaired. Then the DYFAMED station was sampled to complete the MOOSE/DYCOMED program.

## Cruise Report

### Sunday 18 January 2009 (UTC)

People on board: Céline Bachelier and Grigor Obolensky.

0520 *Thetys II* arrival at the Nice port.  
0600 Departure from the Nice port.  
0930 Arrival at the BOUSSOLE site.  
0950 CTD 01, 400 m. with water sampling at 200, 150, 80, 70, 60, 50, 30, 20, 10 and 5 m for HPLC, Ap  
1115 CTD 02, 400 m, station 01 (43°25'N 07°48'E).  
1210 CTD 03, 400 m, station 02 (43°28'N 07°42'E).  
1310 CTD 04, 400 m, station 03 (43°31'N 07°37'E).  
1410 CTD 05, 400 m, station 04 (43°34'N 07°31'E).  
1510 CTD 06, 400 m, station 05 (43°37'N 07°25'E).  
1600 CTD 07, 400 m, station 06 (43°39'N 07°21'E).  
1700 Arrival at the Nice port.

## Monday 19 January 2009

Bad weather prevented departure from the Nice port.

## Tuesday 20 January 2009

Bad weather prevented departure from the Nice port.

## Wednesday 21 January 2009

People on board: Céline Bachelier, Floriane Desprez and Grigor Obolensky.

0625 Departure from the Nice port.  
0935 Arrival at the BOUSSOLE site.  
0940 CTD 08, 400 m with water sampling at 200, 150, 80, 70, 60, 50, 30, 20, 10 and 5 m for HPLC, Ap, and CDOM. Departure to DYFAMED.  
1040 CTD MOOSE/DYCOMED, 2200 m  
1310 Departure to the Nice port.  
1600 Arrival at the Nice port.  
1730 End of sampling.

**Calculated Swath paths for the MERIS Sensor (ESOV Software)**

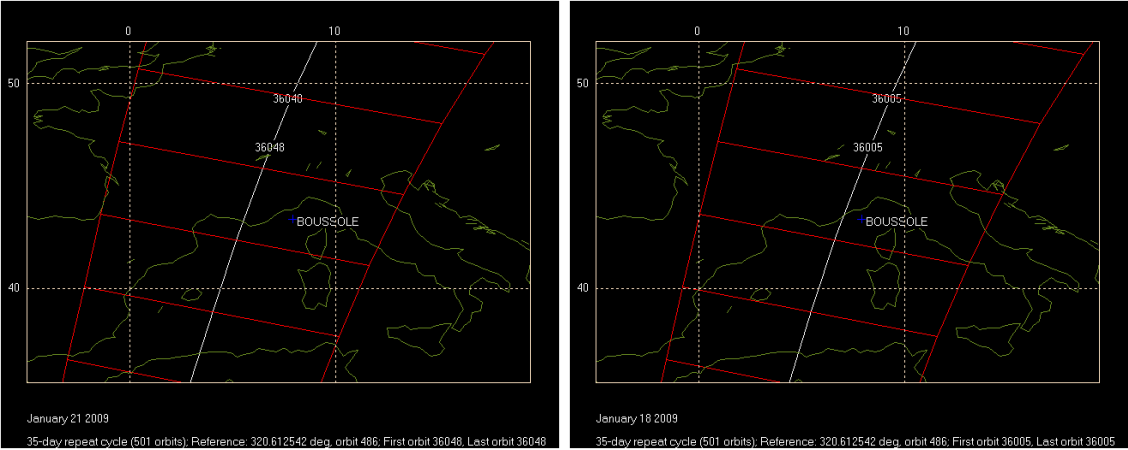


Figure 2. Calculated swath paths for MERIS (Esov software) above BOUSSOLE site for January 18 and 21 2009.

# Appendix

Cruise Summary Table for Boussole 83

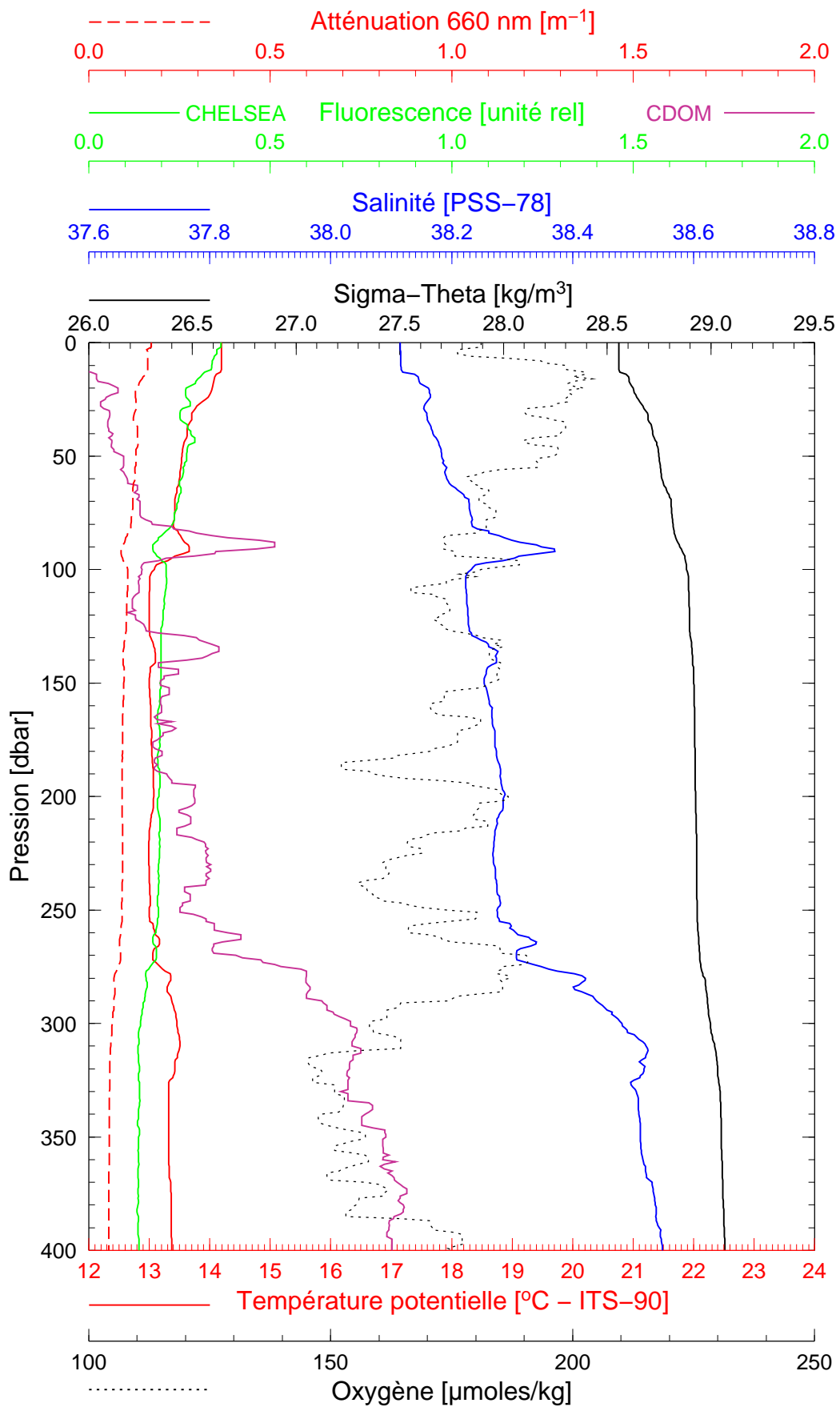
Date	Black names	Profile names	CTD notes /	Other sensors	Start Time	Duration	Depth max	Latitude (N)			longitude		Sky	Clouds	Weather			Atm. Pressure (hPa)	Humidity (%)	Visibility	T air	T water	Sea		Swell H (m)	Swell dir.	Whitecaps
	(file ext: ".raw")	(file extension: ".raw")	satellite overpass		GMT (hour:min)	(min:sec)	(meter)	(Degree)	(Minute)	(Degree)	(Minute)	Quantity (#/8)			Wind sp. (kn)	Wind dir.											
18/01/2009			CTDBOUS001	HPLC & TSM	09:49	22:00	400	43	23.028	7	53.294	overcast		8	10	225	1019	80			14.2	slightly moved					
			CTDBOUS002		11:11	28:00	400	43	25.446	7	47.317	overcast		8	12	270	1018	80			14.2	slightly moved					
			CTDBOUS003		12:14	21:00	400	43	28.168	7	53.916	overcast		8	13	225	1018	80			13.8	moved					
			CTDBOUS004		13:15	22:00	400	43	31.228	7	37.260	overcast		8	15	225	1016	80			13.1	moved					
			CTDBOUS005		14:15	23:00	400	43	34.090	7	31.111	overcast		8	19	270	1016	80			13.1	moved					
			CTDBOUS006		15:18	23:00	400	43	36.812	7	24.724	overcast		8	22	270	1015	77			14.2	moved					
			CTDBOUS007		16:06	23:00	400	43	39.053	7	21.148	overcast		7	22	270	1015	80			14.2	moved					
19/01/2009	Bad Weather																										
20/01/2009	Bad Weather																										
21/01/2009			CTDBOUS008	HPLC & CDM	09:04	27:00	400	43	23	7	54	overcast		7							14.3	moved					

BOUSSOLE 83

18/01/2009

BOUS090118\_01

BOUS001



Date 18/01/2009

Latitude 43°23.028

Heure déb 10h 49min [TU]

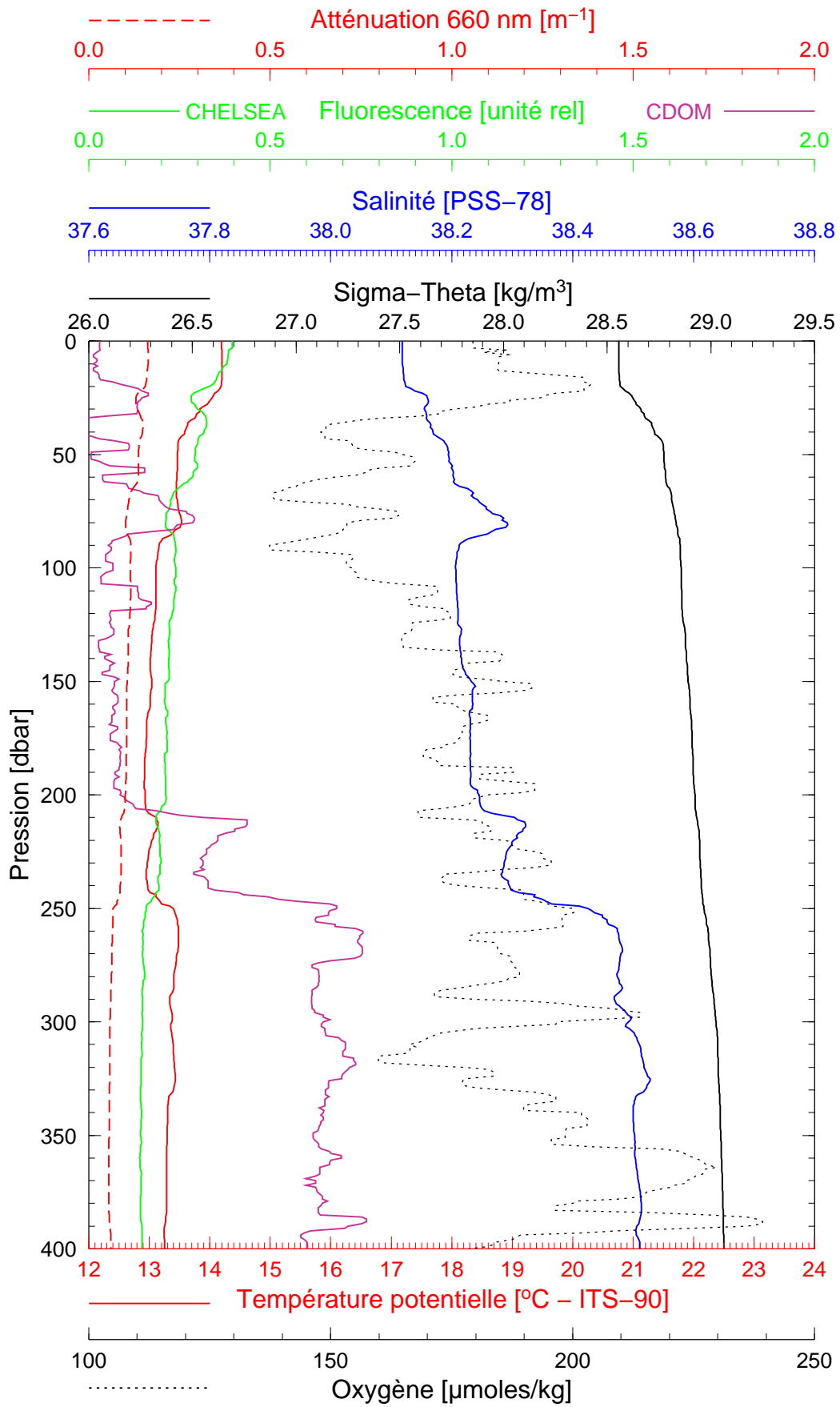
Longitude 07°53.294

BOUSSOLE 83

18/01/2009

BOUS090118\_02

BOUS002



Date 18/01/2009

Latitude 43°25.446

Heure déb 12h 30min [TU]

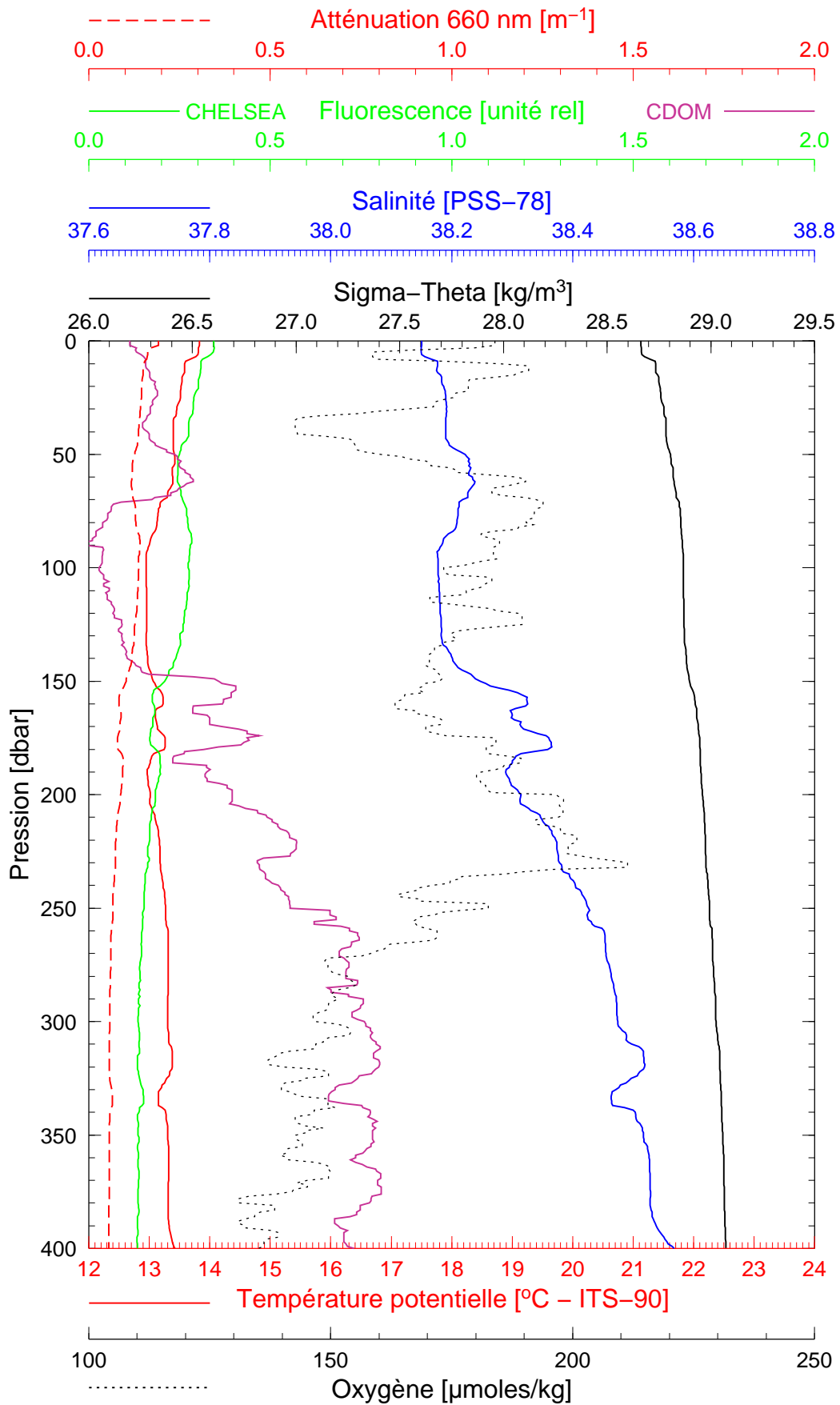
Longitude 07°47.317

BOUSSOLE 83

18/01/2009

BOUS090118\_03

BOUS003



Date 18/01/2009

Latitude 43°28.168

Heure déb 13h 14min [TU]

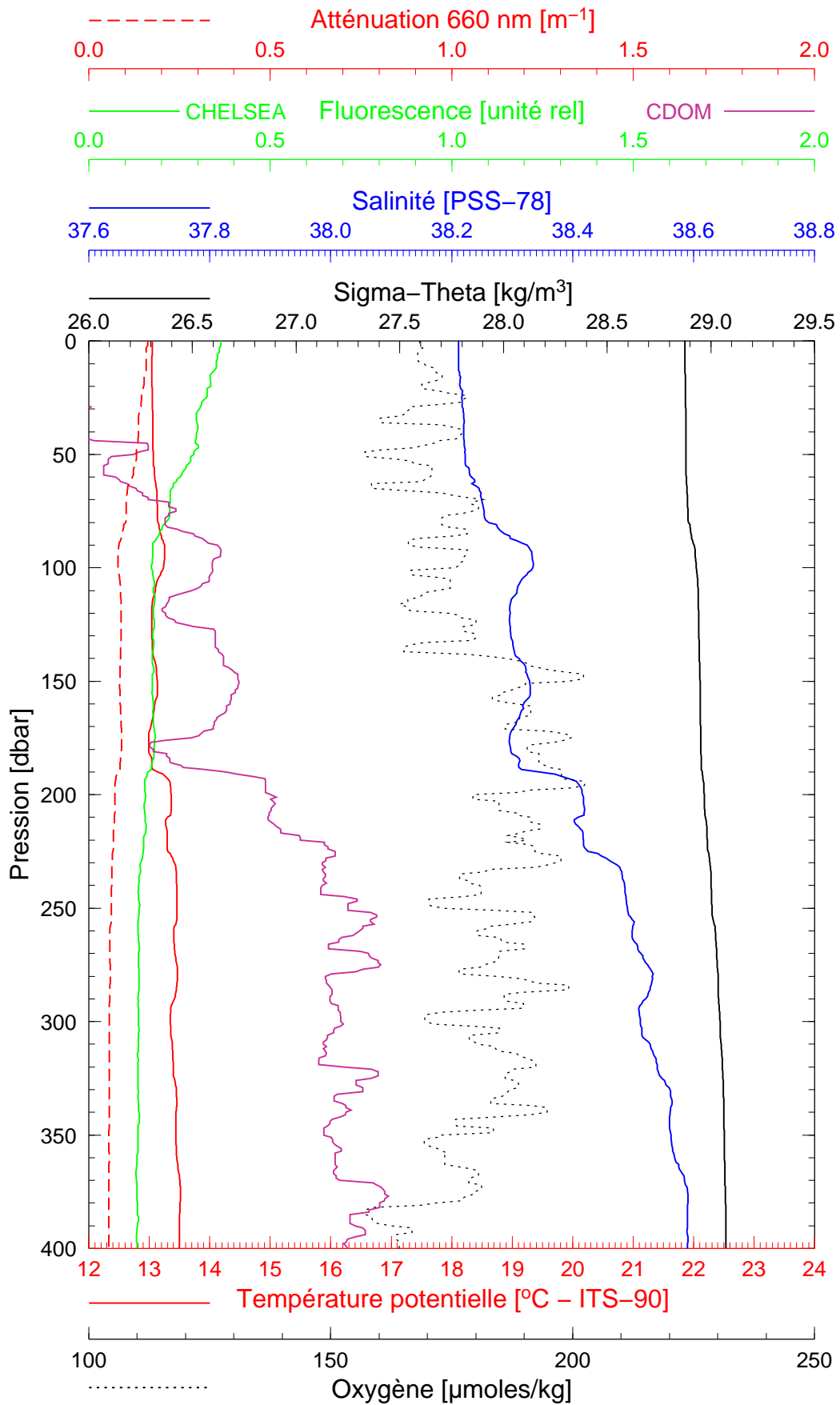
Longitude 07°53.916

BOUSSOLE 83

18/01/2009

BOUS090118\_04

BOUS004



Date 18/01/2009

Latitude 43°31.228

Heure déb 14h 15min [TU]

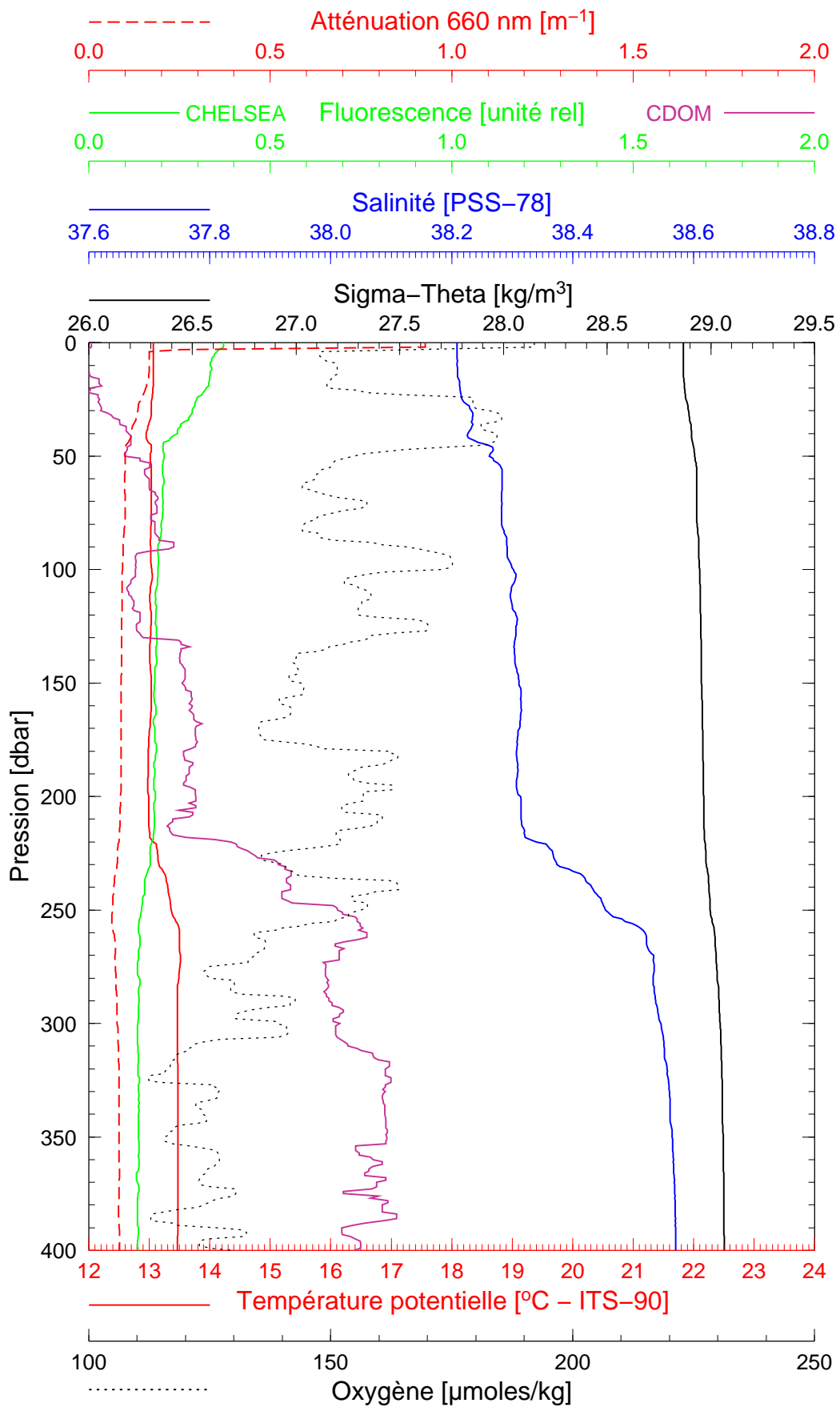
Longitude 07°37.260

BOUSSOLE 83

18/01/2009

BOUS090118\_05

BOUS005



Date 18/01/2009

Latitude 43°34.090

Heure déb 15h 15min [TU]

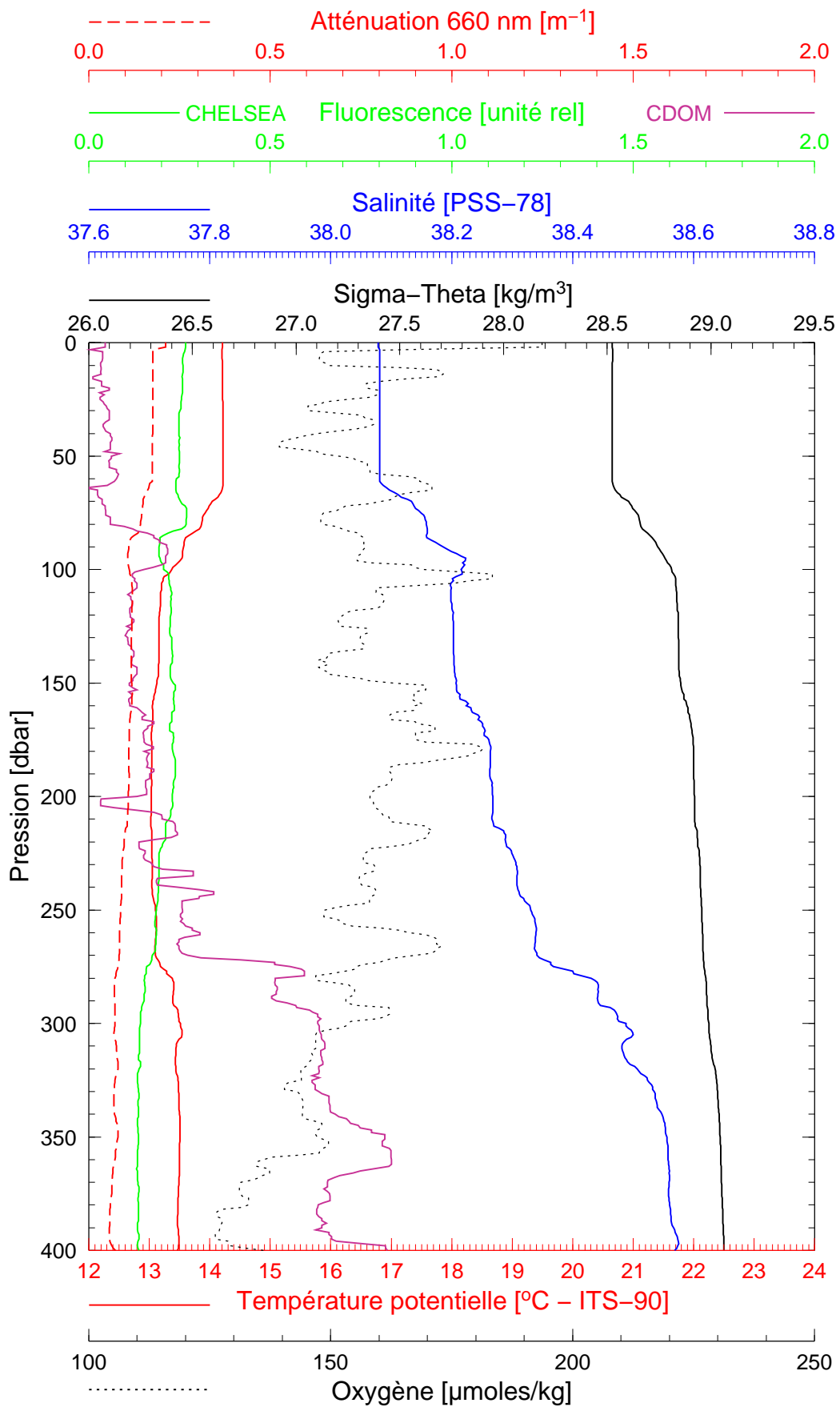
Longitude 07°31.111

BOUSSOLE 83

18/01/2009

BOUS090118\_06

BOUS006



Date 18/01/2009  
Heure déb 16h 18min [TU]

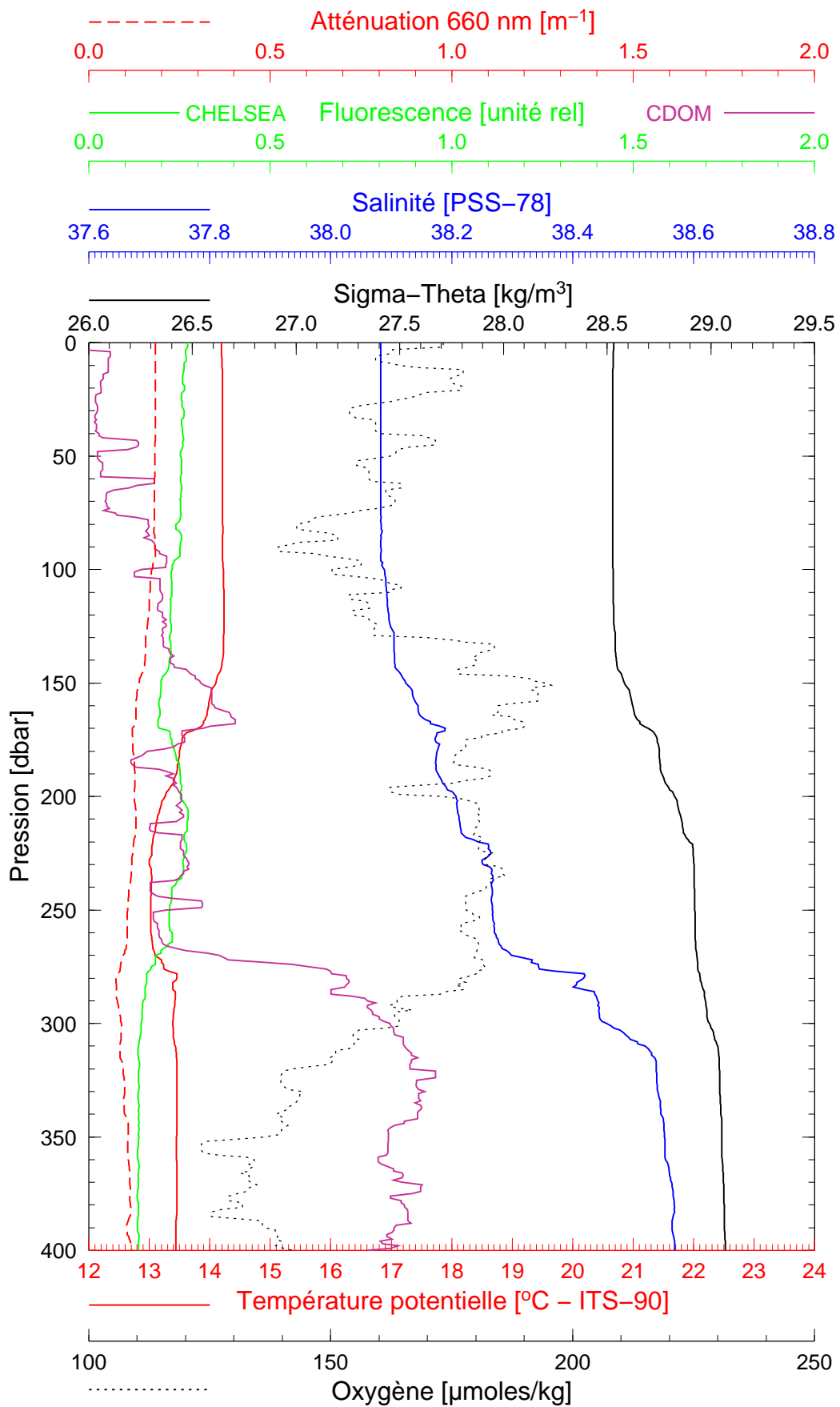
Latitude 43°36.812  
Longitude 07°24.724

BOUSSOLE 83

18/01/2009

BOUS090118\_07

BOUS007



Date 18/01/2009

Latitude 43°39.053

Heure déb 17h 06min [TU]

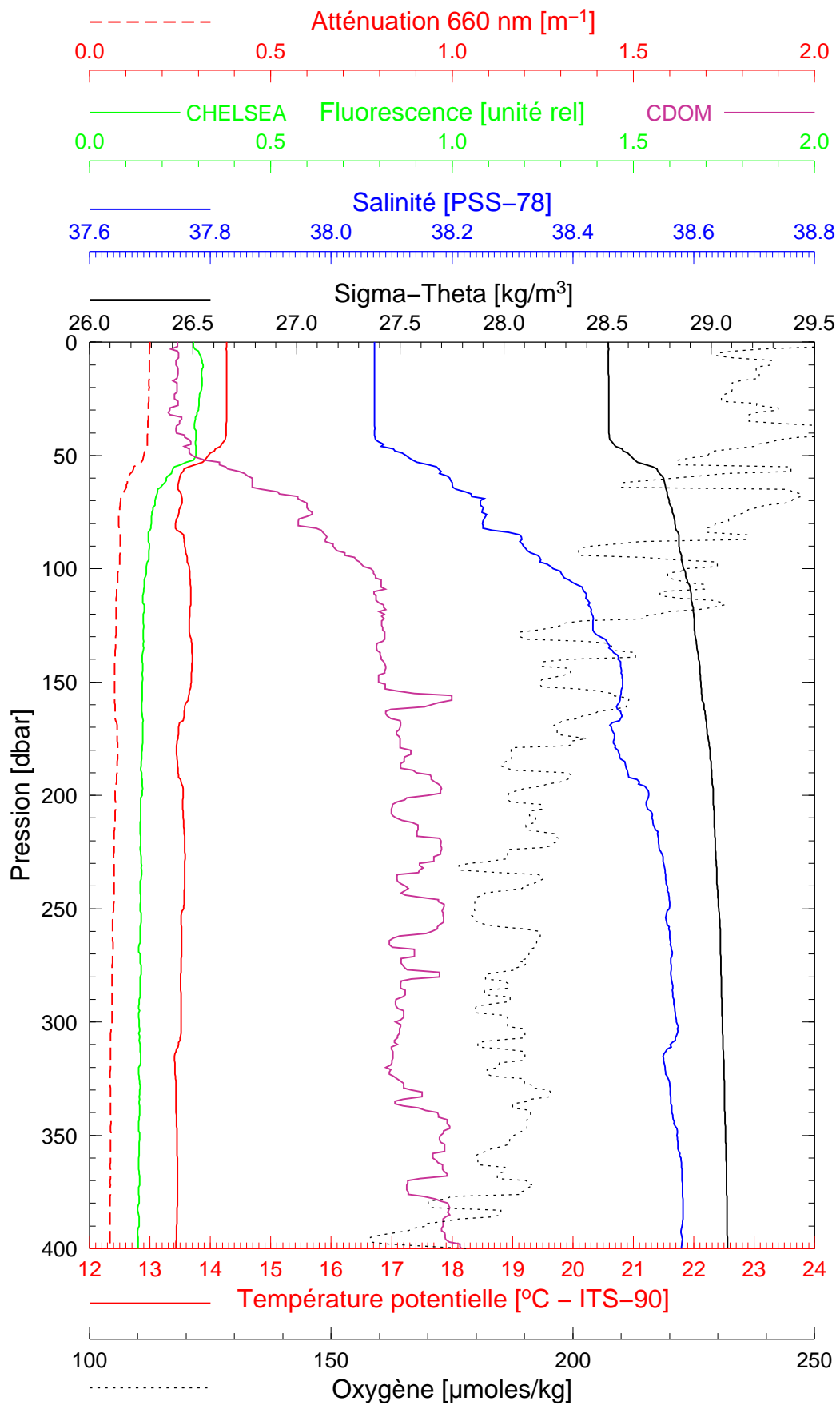
Longitude 07°21.148

BOUSSOLE 83

21/01/2009

BOUS090121\_01

BOUS008



Date 21/01/2009

Latitude 43°25.046

Heure déb 10h 04min [TU]

Longitude 07°51.110