BOUSSOLE Monthly Cruise Report

Cruise 80
Octobre 13 - 16, 2008

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

Science Personnel: Céline Bachelier, Jean De Vaguelas, Lars-Eric Heimbuerger, David Luquet, Vincenzo Vellucci, and Luc.

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

Fig 1. *Tethys II* over the flat sea .

BOUSSOLE project

ESA/ESRIN contract N° 17286/03/I-OL

Deliverable from WP#400/200

Novembre 10, 2008

Contents

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

One of the four days a hydrophone for identification of cetaceans will be installed on the buoy from Sophie Laran of the CRC (Marineland).

Cruise Summary

The first three days the sea was almost flat with sky condition varying from cloudy to very moist, instead, the last one a strong wind from south started blowing during the morning and sampling was not possible already at noon. The first day was spent for sampling near the buoy, completing the transect and data retrieval. The other days were spent for sampling at the BOUSSOLE site. The third day was also used for diving on the buoy.

Monday 13 October 2008

This day weather conditions were good calm (H 1/3 < 0.3 m, wind < 5 Kn), but sky was covered. Once on site, a CISCO connection with the buoy was established and data since last cruise was downloaded. Then a CTD, 3 SPMR and 1 Secchi Disk were performed close to the buoy. Samples for HPLC and Ap were also taken. The transect on the way to Nice was completed too.

Tuesday 14 October 2008

The second cruise day weather conditions were again good (H1/3 ~ 0.1 m, wind ~ 5 Kn) with variable sky, still partially covered. 2 CTD, 6 SPMR, and 2 Secchi Disk were performed at the Boussole site. Water sample for HPLC, Ap and TSM were collected.

Wednesday 15 October 2008

This day the sea was almost flat (H1/3 ~ 0.0 m, wind ~ 2 Kn, see Fig. 1) sky was almost blue with high moisture lowering visibility. When on site, divers went at sea for a general inspection of the buoy that was found in good conditions. Then an hydrophone for cetacean was installed along one of the tube under the sphere (at ~ 20 m), and sensors were cleaned. In the meantime, sensor on the buoy head were cleaned too, and contact grease was put on ARGOS connector. 1 CTD casts, 5 SPMR profiles, 1 Secchi Disk and 3 CIMEL were performed at BOUSSOLE; samples for HPLC and Ap were taken.

Thursday 16 October 2008

The last cruise day weather conditions worsened, (H1/3 up to 1.0 m, wind up to 25 Kn) and sky conditions were very variable. 1 CTD, 3 SPMR and 1 Secchi Disk were performed before sampling conditions became critical. Water samples for HPLC, Ap and CDOM were collected.

Cruise Report

Monday 13 October 2008 (UTC)

People on board: Lars-Eric Heimburger and Vincenzo Vellucci.

0430 Departure from the Nice port.
0700 Arrival at the BOUSSOLE site.
0715 Attemped CISCO connection with the Buoy: successful, retrieved data.
0745 CTD 01 , 400 m with water sampling at 200, 150, 80, 70, 60, 50, 30, 20, 10 and 5 m for HPLC, Ap.
0935 SPMR 01, 02, 03.
1010 Secchi Disk 01.
1100 CTD 02, 400 m, station 01 (43°25'N 07°48'E).
1200 CTD 03, 400 m, station 02 (43°28'N 07°42'E).
1300 CTD 04, 400 m, station 03 (43°31'N 07°37'E).
1405 CTD 05, 400 m, station 04 (43°34'N 07°31'E).
1505 CTD 06, 400 m, station 05 (43°37'N 07°25'E).
1555 CTD 07, 450 m, station 06 (43°39'N 07°21'E).
1700 Arrival at the Nice port.

Tuesday 14 October 2008

People on board: Vincenzo Vellucci.

0545 Departure from the Nice port.
0905 Arrival at the BOUSSOLE site.
0910 CTD 08 , 400 m with water sampling at 200, 150, 80, 70, 60, 50, 30, 20, 10 and 5 m for HPLC, Ap.
0940 Secchi Disk 02.
1030 SPMR 04, 05, 06.
1125 CTD 09 , 400 m with water sampling at 10 and 5 m for HPLC, Ap and TSM.
1200 SPMR 07, 08, 09.
1230 Secchi Disk 03.
1240 Departure to the Nice port.
1600 Arrival at the Nice port.

Wednesday 15 October 2008

People on board: Jean De Vaguelas, Sophie Laran, David Luquet, Vincenzo Vellucci and Luc.

0430 Departure from the Nice port.
0800 Arrival at the BOUSSOLE site.
0815 Divers at sea for buoy inspection and cleaning. ARGOS connector cleaned.
0930 SPMR 10, 11.
1100 CTD 10, 400 m with water sampling at 200, 150, 80, 70, 60, 50, 30, 20, 10 and 5 m for HPLC and Ap.
1135 Secchi Disk 04.
1150 SPMR 12, 13, 14.
1225 CIMEL 01, 02, 03.
1310 Secchi Disk 05.
1315 Departure to the Nice port.
1630 Arrival at the Nice port.

Thursday 16 October 2008

People on board: Céline Bachelier and Vincenzo Vellucci.

0500 Departure from the Nice port.
0830 Arrival at the BOUSSOLE site.
0835 CTD 11, 400 m with water sampling at 200, 150, 80, 70, 60, 50, 30, 20, 10 and 5 m for HPLC, Ap and CDOM.
0900 Secchi Disk 06.
0920 SPMR 15, 16, 17.
1000 Departure to the Nice port.
1400 Arrival at the Nice port

Calculated Swath paths for the MERIS Sensor (ESOV Software)

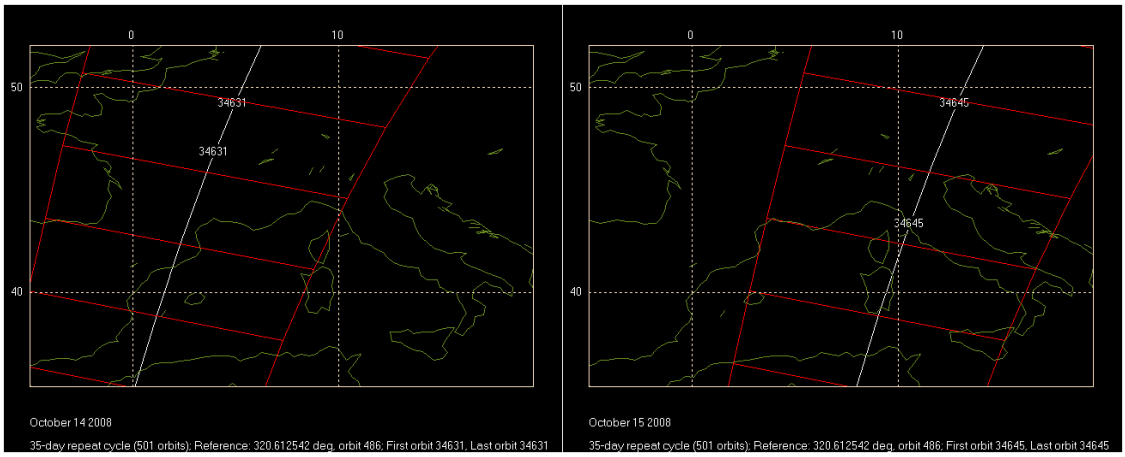


Figure 2. Calculated swath paths for MERIS (Esov software) above BOUSSOLE site for October 14 and 15 2008.

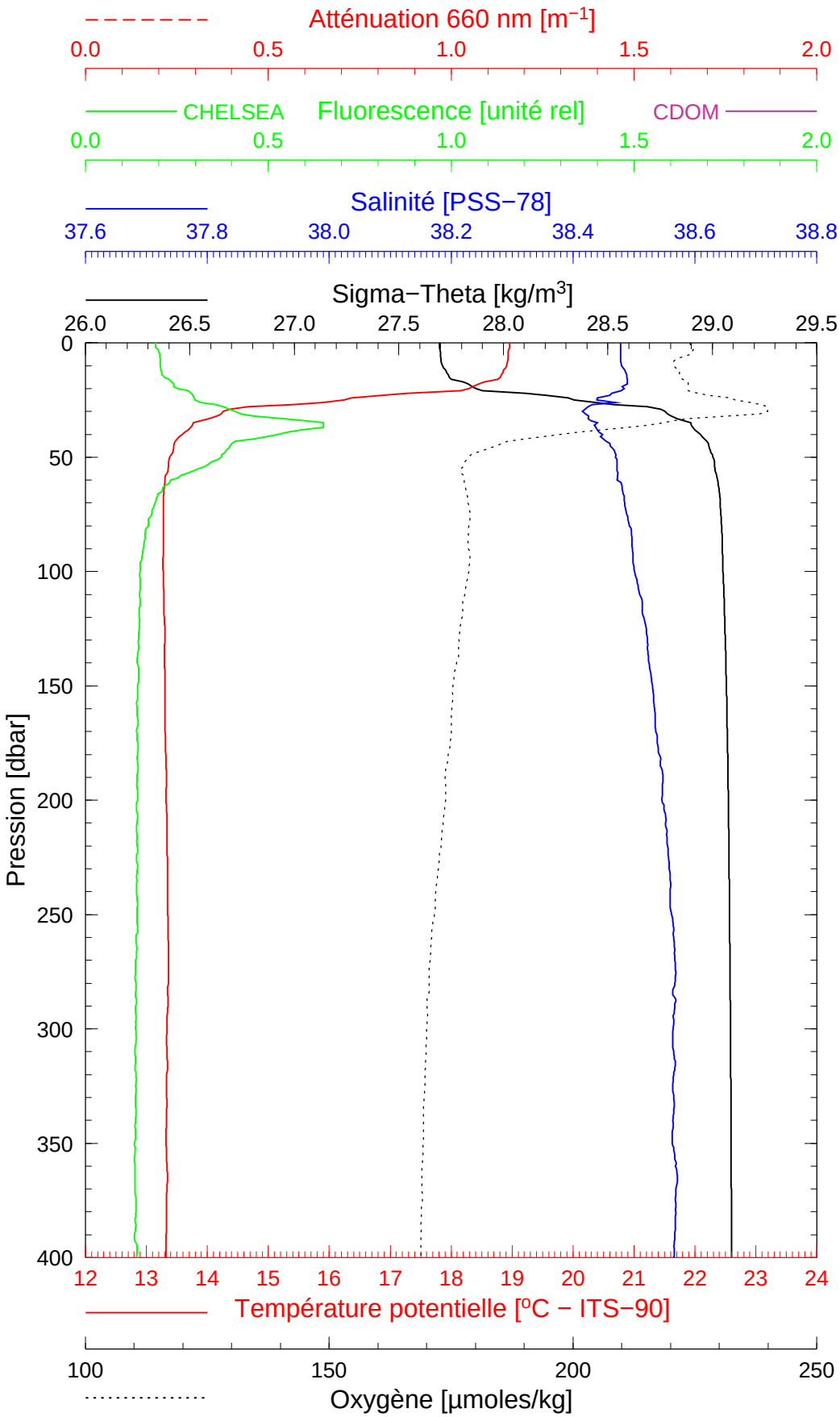
Appendix

Cruise Summary Table for Boussole 80

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
			CTDBOUS001	HPLC	08:43	24:00	400	43	22.147	7	54.025			8	2	296	1025.2	88		18.6		calm			
	Bou131008black1				09:36	3:00																			
		Bou131008AA			09:57	3:41	180	43	22.268	7	53.822	covered	Stratus	8	2	8	1025.0	83	discrete	19.4		calm	0.3		no
		Bou131008AB			10:07	3:21	180	43	22.290	7	53.706	covered	Stratus	8	2	8	1025.0	83	discrete	19.4		calm	0.3		no
		Bou131008AC			10:10	3:44	180	43	22.322	7	53.607	covered	Stratus	8	2	8	1025.0	83	discrete	19.4		calm	0.3		no
				Secchi01	10:15	3:00	16																		
13/10/08			CTDBOUS002		11:00	27:00	400	43	25.044	7	47.908			8	3	21	1024.4	86		18.5					
	Bou131008black2				11:04	3:00		43	22.322	7	53.607														
			CTDBOUS003		12:00		400	43	28.007	7	41.917			8	2	48	1023.9	84		19.9					
			CTDBOUS004		13:00	23:00	400	43	31.002	7	36.978			7	2	231	1023.2	80		19.0					
			CTDBOUS005		14:05	25:00	400	43	34.029	7	30.691			6	5	222	1022.9	68		20.2					
			CTDBOUS006		15:04	26:00	400	43	37.036	7	24.870			6	6	218	1022.4	67		20.1					
			CTDBOUS007		15:55	22:00	400	43	39.084	7	21.044			6			1022.0	76		19.8					
			CTDBOUS009	HPLC	09:13	24:00	400	43	22.101	7	53.686			8	6	72	1020.6	93		18.9		calm			
				Secchi02	09:40	24:00	19	43	22.102	7	53.687														
	Bou141008black1				10:32	3:00																			
		Bou141008AA			10:54	3:39	180	43	22.140	7	53.747			5/6	5	67	1020.3	91	discrete	19.5		calm	0.1		no
		Bou141008AB			11:03	3:33	185	43	22.162	7	53.622			5/6	5	67	1020.3	91	discrete	19.5		calm	0.1		no
		Bou141008AC			11:12	4:04	185	43	22.166	7	53.506			5/6	5	67	1020.3	91	discrete	19.5		calm	0.1		no
14/10/08	Bou141008black2				11:25	3:00																			
			CTDBOUS009	HPLC & TSM	11:31	21:00	400	43	22.183	7	53.317			3	7	62	1020.0	90		19.6			0.1		
	Bou141008black3				12:01	3:00																			
		Bou141008AD			12:08	3:59	168	43	22.216	7	53.691	blu		4/5	4	67	1019.7	90	discrete	19.7		calm	0.1		no
		Bou141008AE			12:17	3:55	180	43	22.281	7	53.595	blu		4/5	4	67	1019.7	90	discrete	19.7		calm	0.1		no
		Bou141008AF			12:27	3:48	180	43	22.343	7	55.479	blu		4/5	4	67	1019.7	90	discrete	19.7		calm	0.1		no
				Secchi03	12:30	3:00	19.5	43	22.343	7	55.479	blu		4/5	4	67	1019.7	90	discrete	19.7		calm	0.1		no
	Bou141008black4				12:40	3:00																			
	Bou151008black1				09:36	3:00																			
		Bou151008AA			09:44	3:16	150	43	22.189	7	53.732	blu	Ci-Cu	3/4	2	260	1021.5	77	discrete	20.5		calm	0.0		no
		Bou151008AC			09:54		150	43	22.127	7	53.753	blu	Ci-Cu	3/4	2	260	1021.5	77	discrete	20.5		calm	0.0		no
	Bou151008black2				10:06	3:00																			
			CTDBOUS010	HPLC	11:08	25:00	400	43	22.164	7	54.261			4	3	241	1021.2	79		19.7		calm			
				Secchi04	11:35	3:00	26	43	22.164	7	54.261	blu		4					discrete	19.7		calm	0.0		no
	Bou151008black3				11:51	3:00																			
15/10/08		Bou151008AD			11:57	4:30	177	43	22.149	7	54.307	blu		4	3	259	1020.7	81	discrete	19.7		calm	0.0		
		Bou151008AE			12:09	4:17	210	43	22.177	7	54.240														
		Bou151008AG			12:20	4:50	230	43	22.125	7	54.261														
				CIMEL01	12:27	3:00		43	22	7	54														
				CIMEL02	12:30	3:00		43	22	7	54														
				CIMEL03	12:33	2:00		43	22	7	54														
	Bou151008black4				13:07	3:00																			
				Secchi05	13:13	3:00	28	43	38	7	83														
			CTDBOUS011	HPLC & CDOM	08:39	23:00	400	43	22.152	7	54.018			7	12	238	1017.7	91		19.1		moved	0.5		
				Secchi06	09:00	3:00	16	43	22.152	7	54.018														
16/10/08		Bou161008AA			09:37	3:18	150	43	22.162	7	53.945	covered		7	25	231	1016.8	89		19.3		moved	1.0		many
		Bou161008AB										covered		7	25	231	1016.8	89		19.3		moved	1.0		many
		Bou161008AC			09:53	1:29	65	43	22.284	7	54.224	covered		7	25	231	1016.8	89		19.3		moved	1.0		many
	Bou151008black2					3:00																			

Boussole 80 **13/10/2008** **BOUS081013_01**

BOUS001



Date	*13/10/2008*	*Latitude*	*43°22.147*
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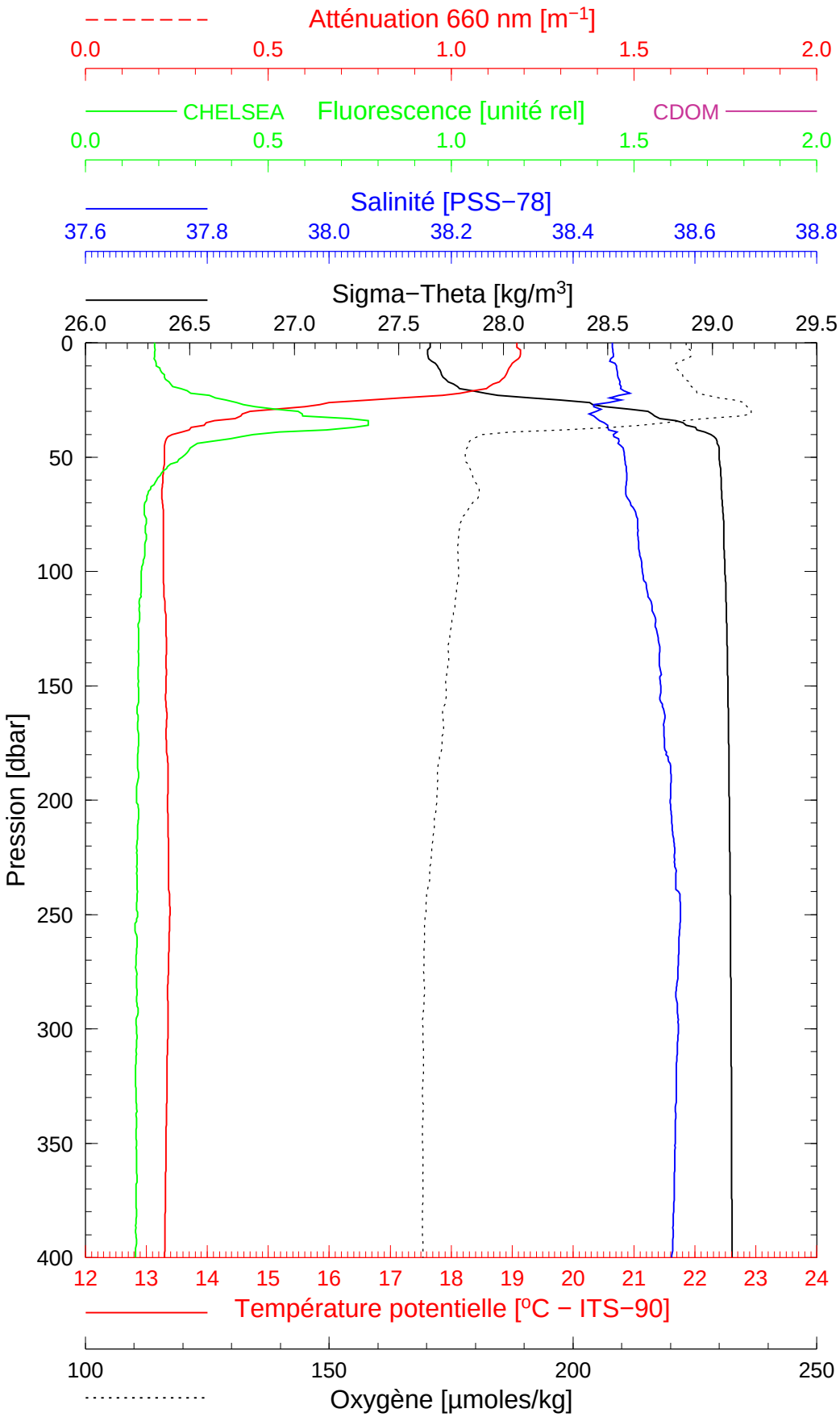
Boussole 80 **13/10/2008** **BOUS081013_02**

BOUS002



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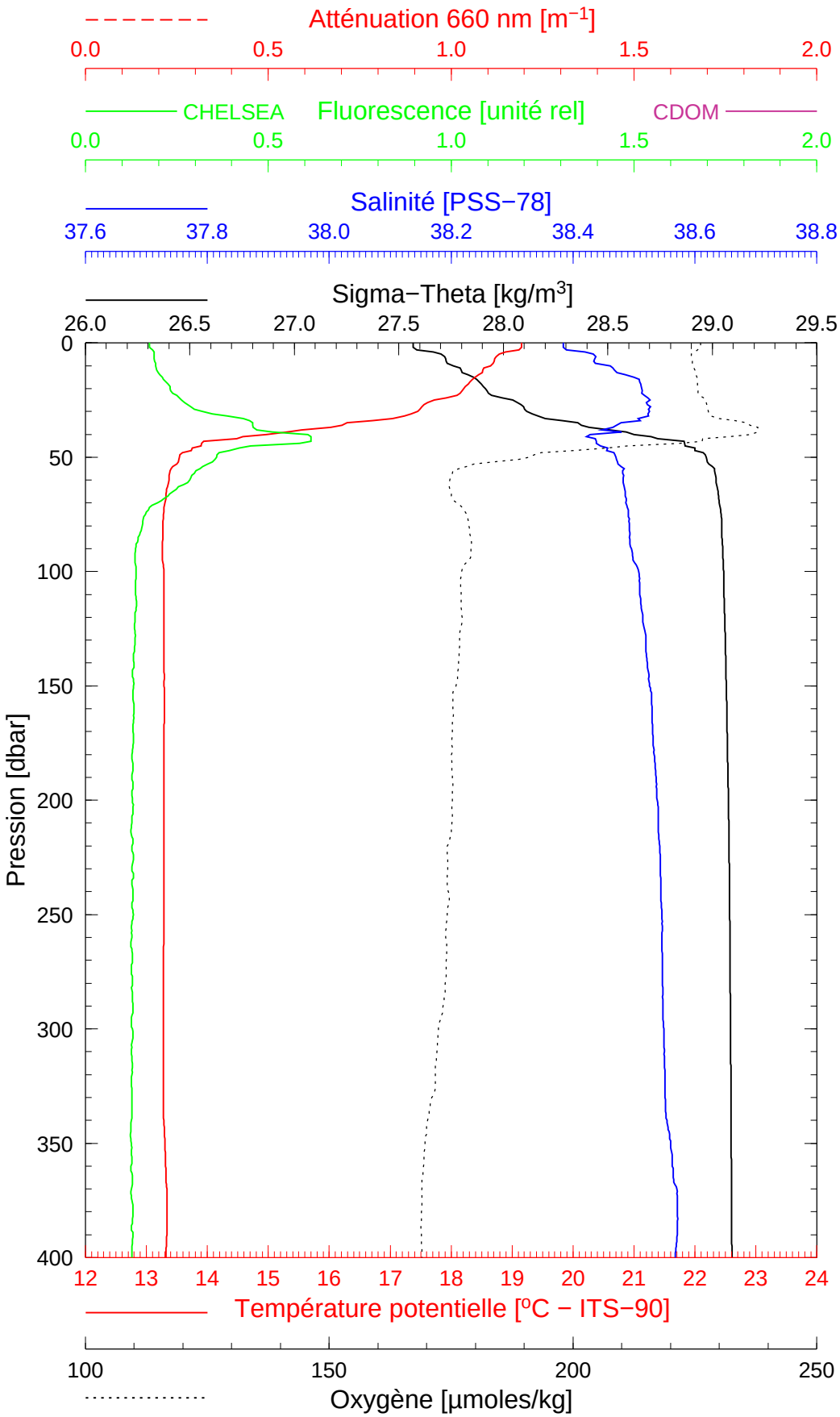
Boussole 80 **13/10/2008** **BOUS081013_03**

BOUS003



Date	*13/10/2008*	*Latitude*	*43°28.007*
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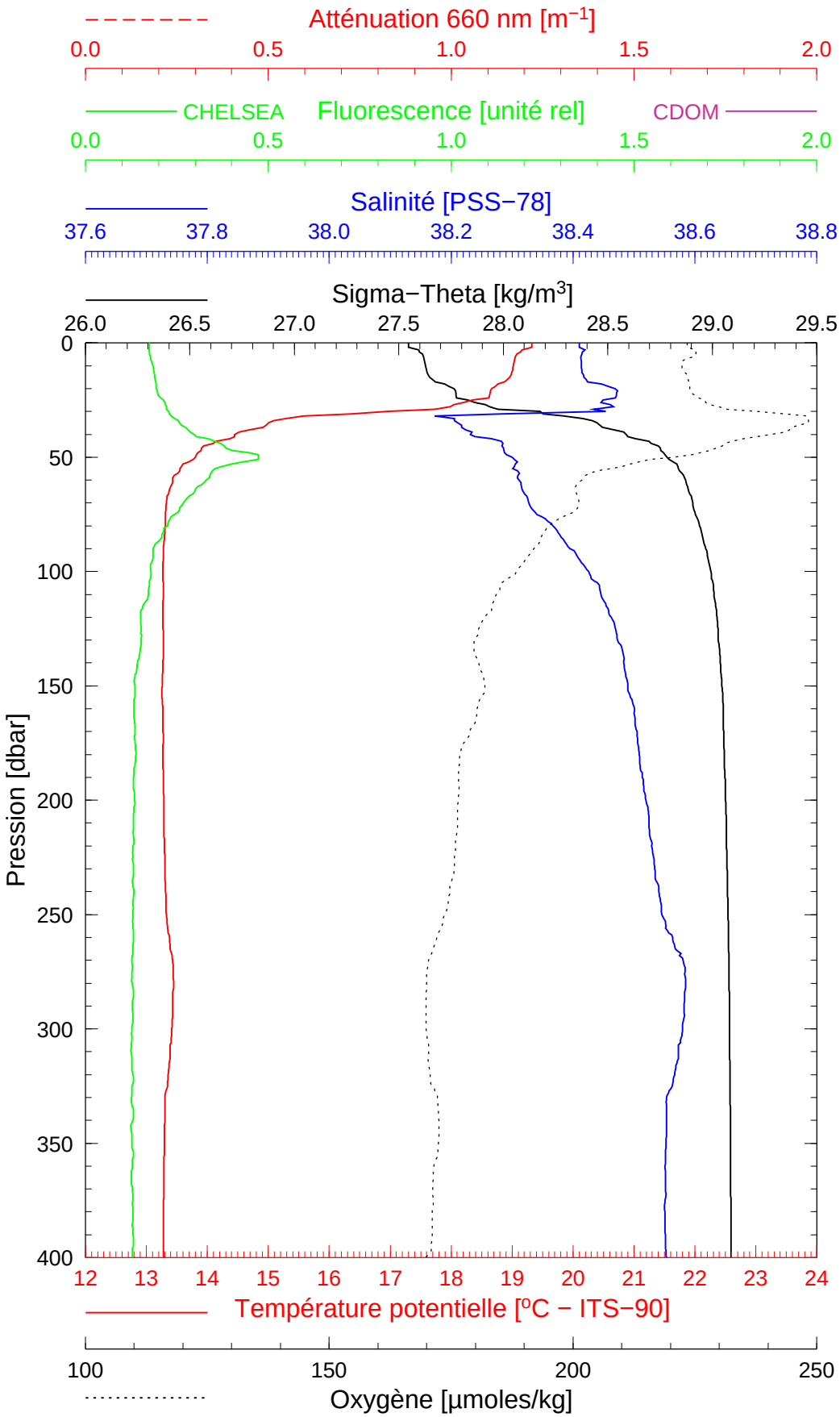
Boussole 80 **13/10/2008** **BOUS081013_04**

BOUS004



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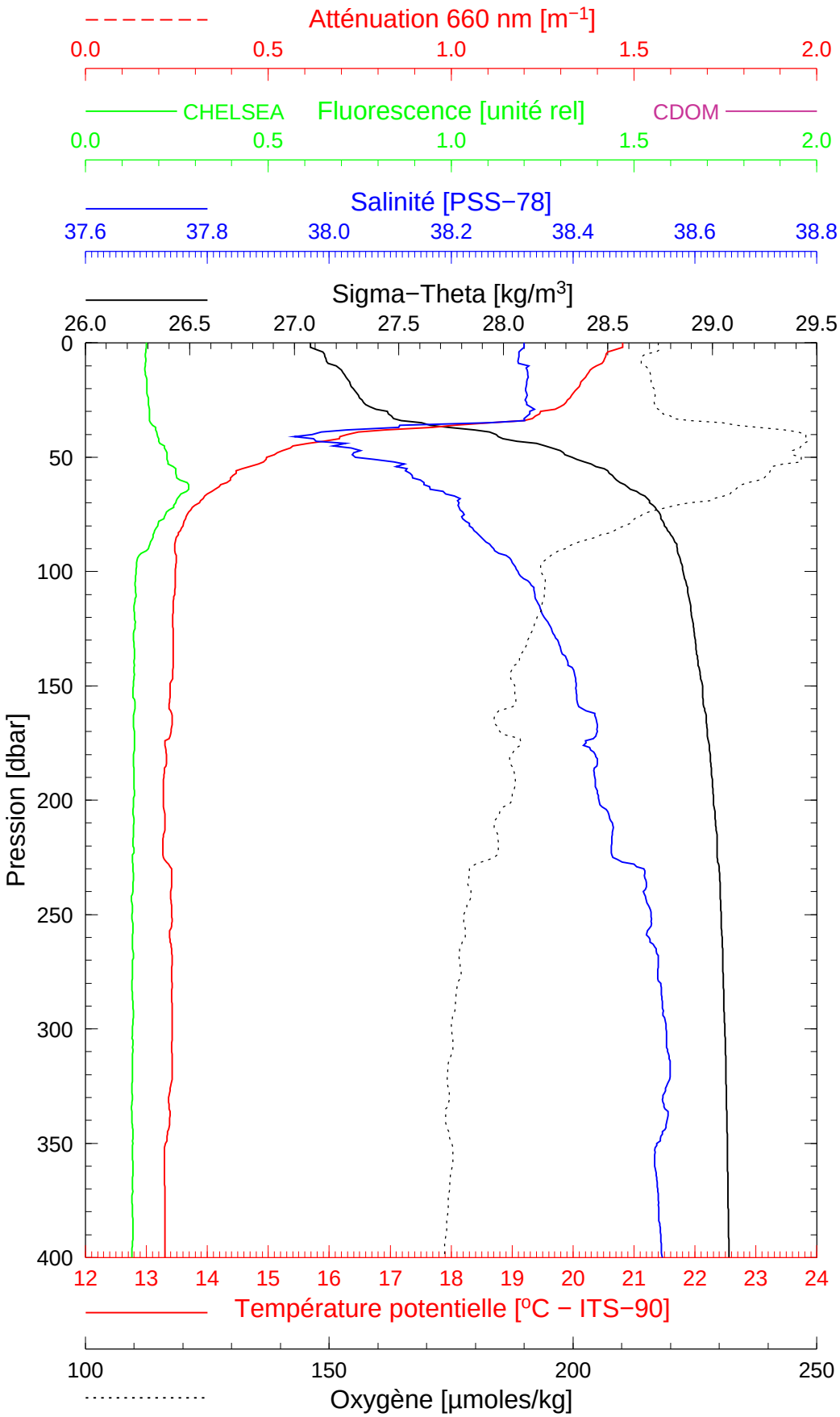
Boussole 80 **13/10/2008** **BOUS081013_05**

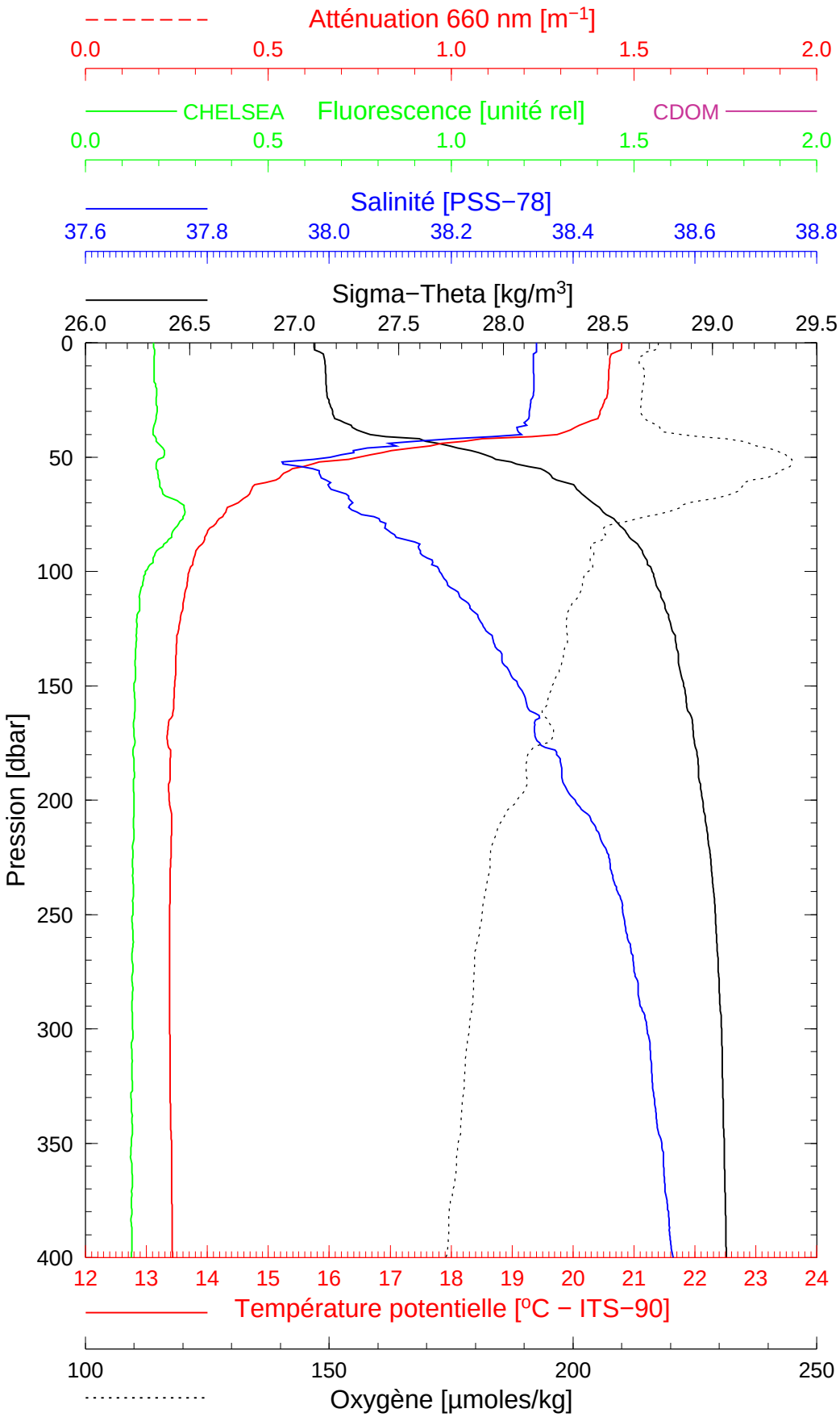
BOUS005



Date	*13/10/2008*	*Latitude*	*43°34.029*
Heure déb	*14h 04min [TU]*	*Longitude*	*07°30.691*

Boussole 80 **13/10/2008** **BOUS081013_06**

BOUS006



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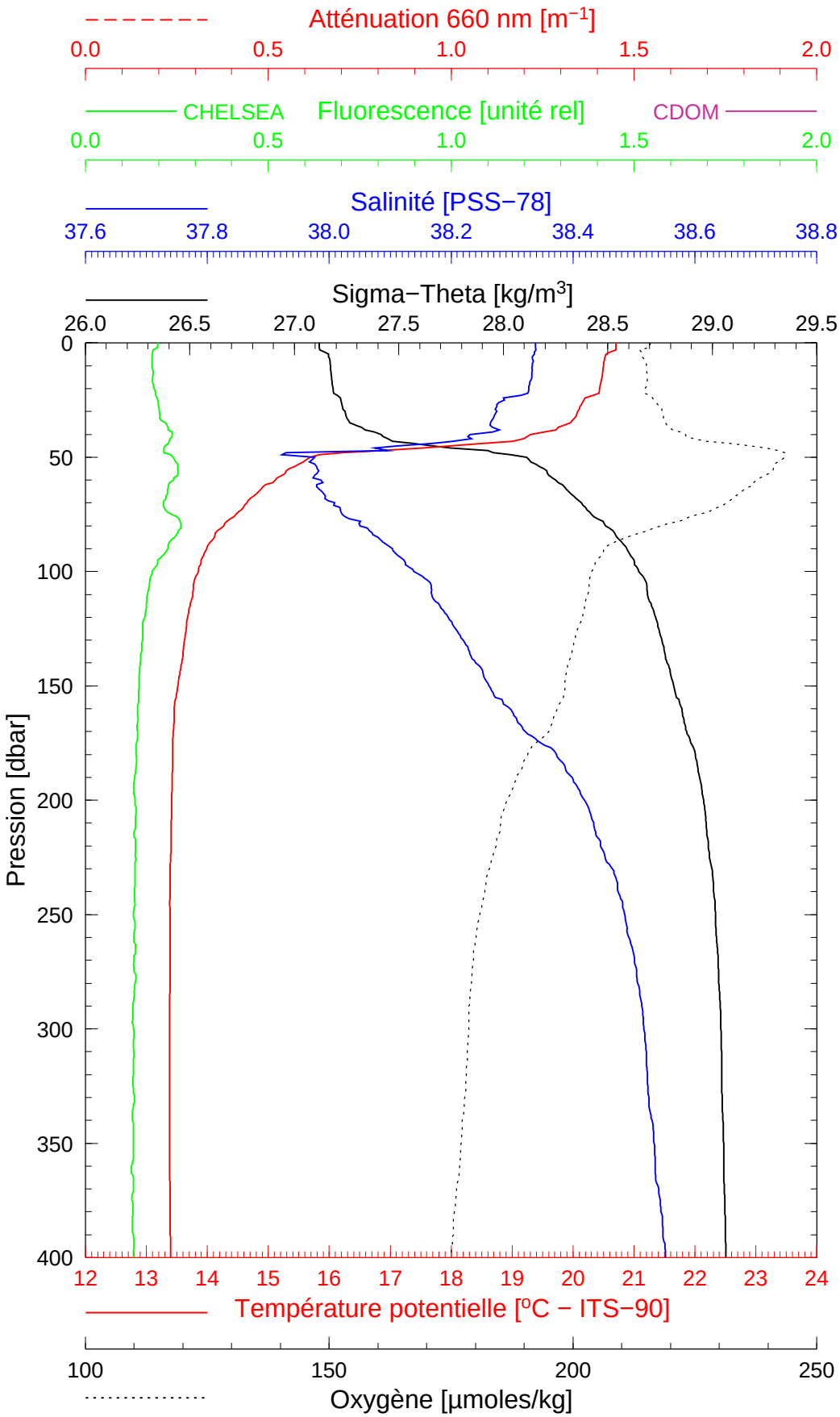
Boussole 80 **13/10/2008** **BOUS081013_07**

BOUS007



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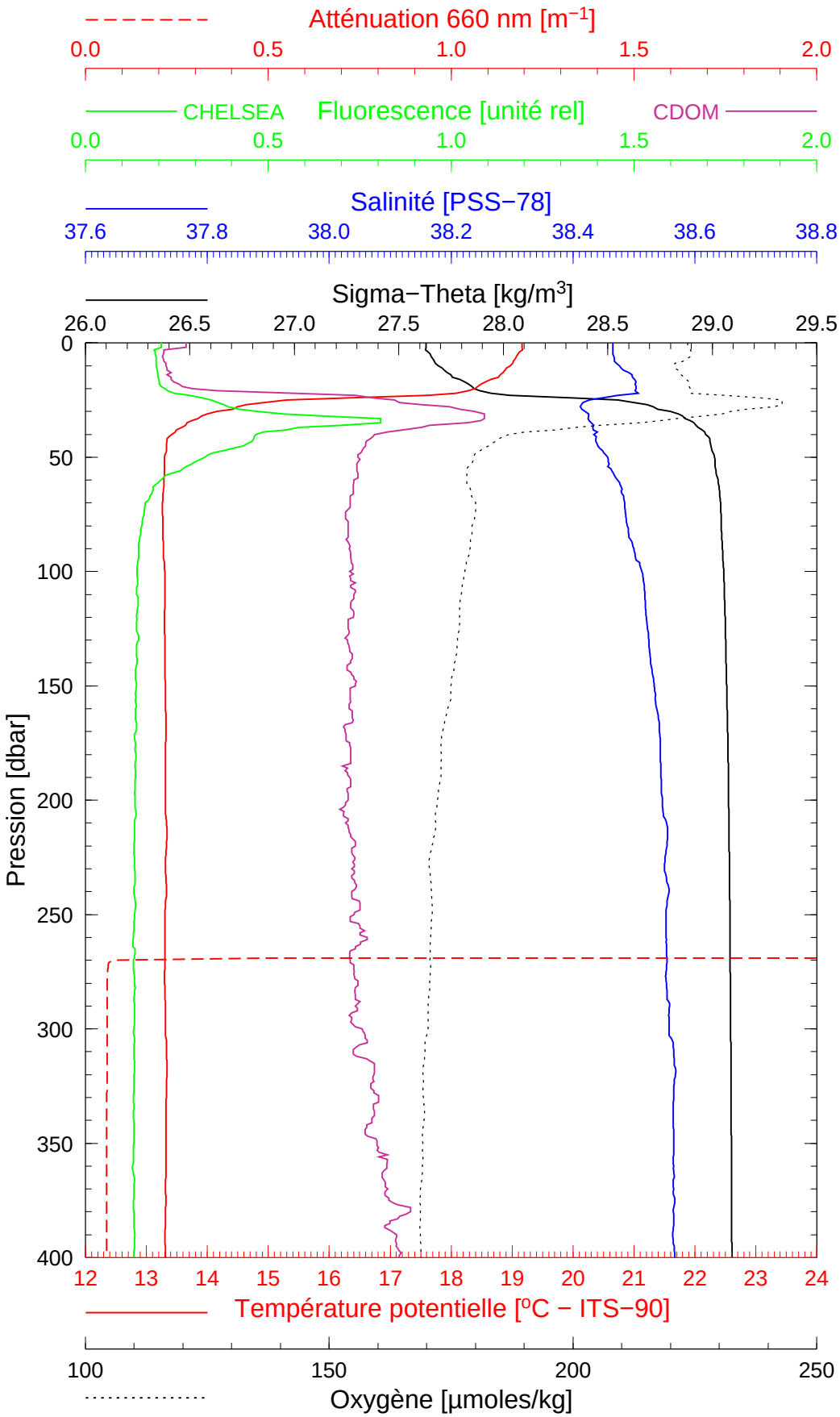
Boussole 80 **14/10/2008** **BOUS081014_01**

BOUS008



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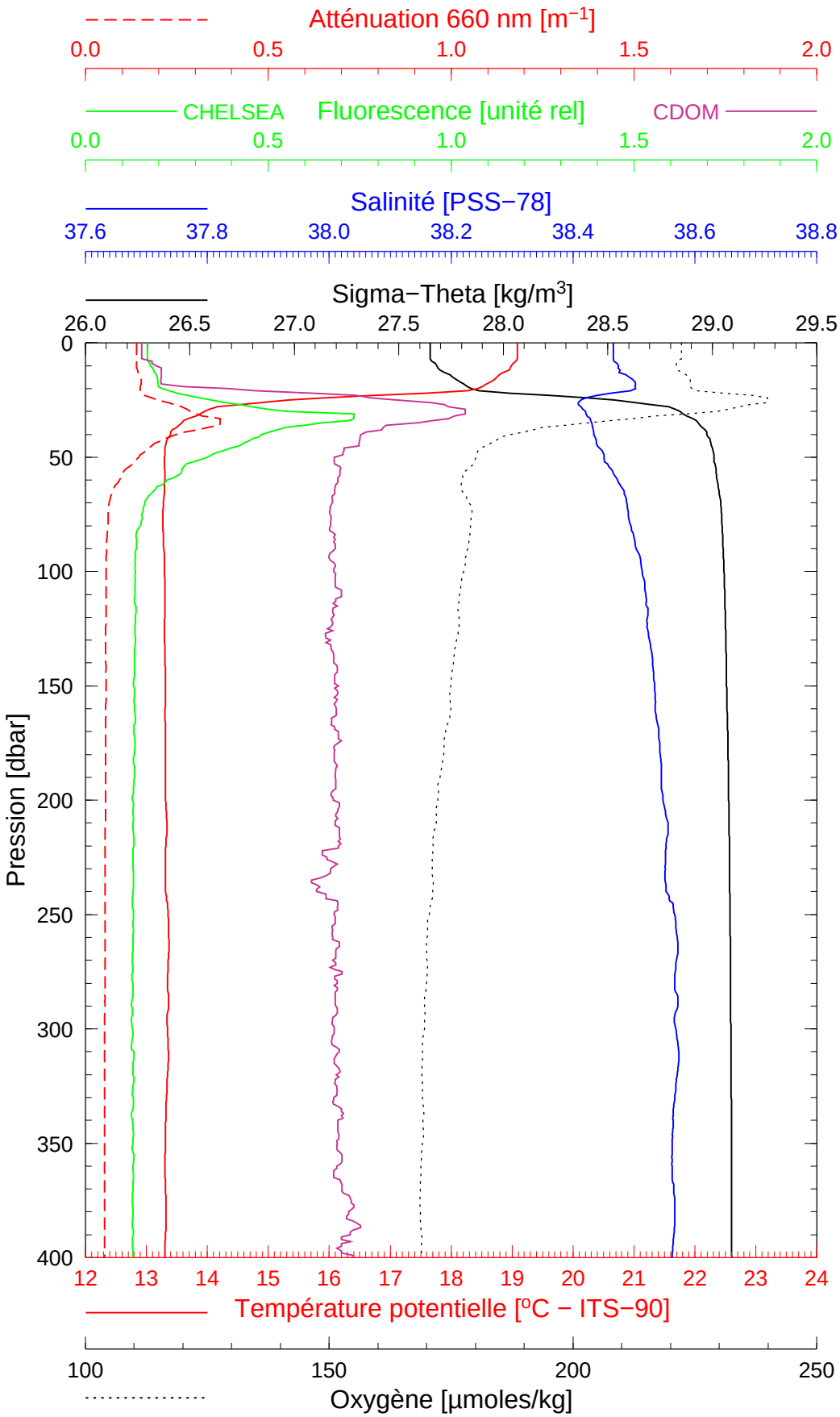
Boussole 80 **14/10/2008** **BOUS081014_02**

BOUS009



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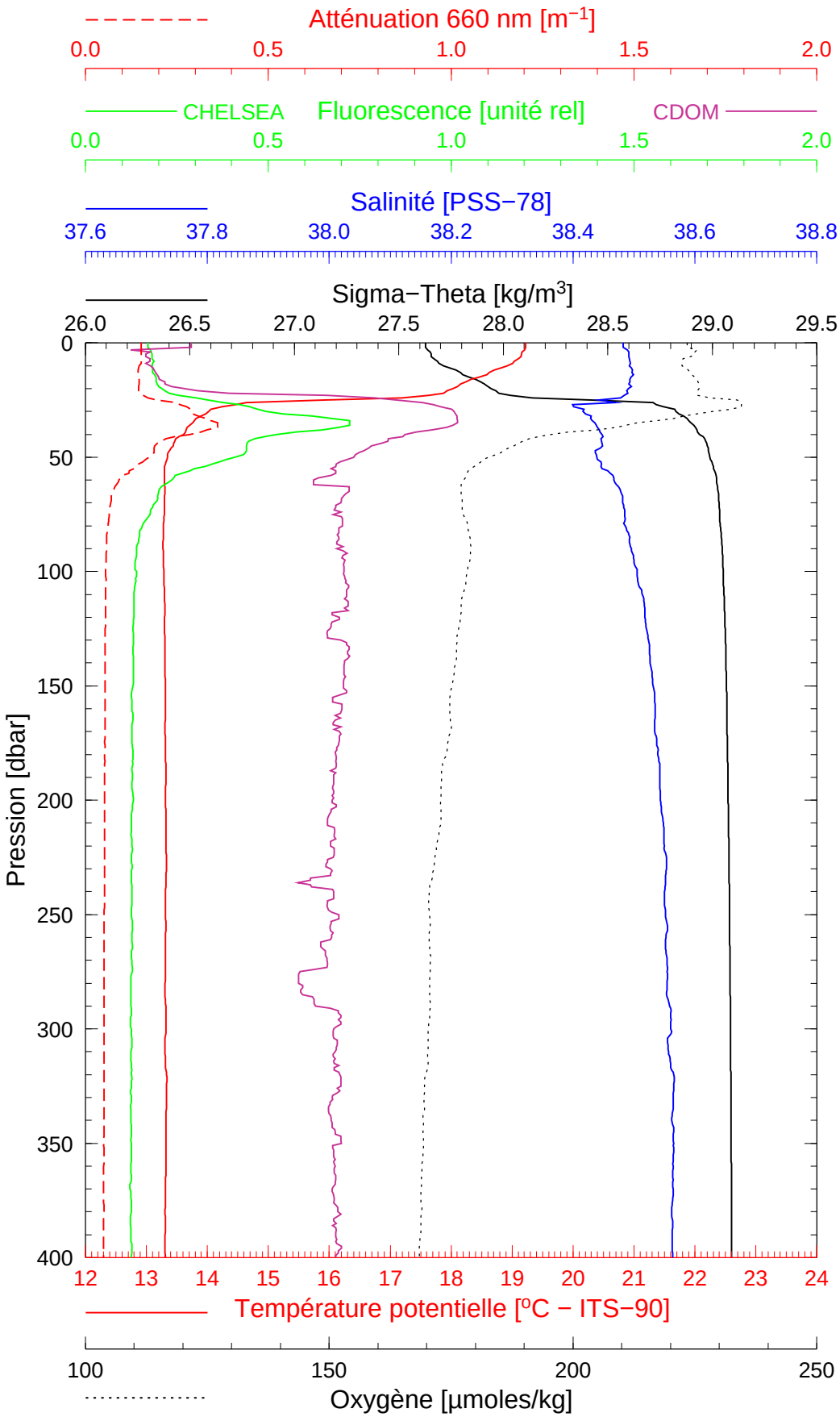
Boussole 80 **15/10/2008** **BOUS081015_01**

BOUS010



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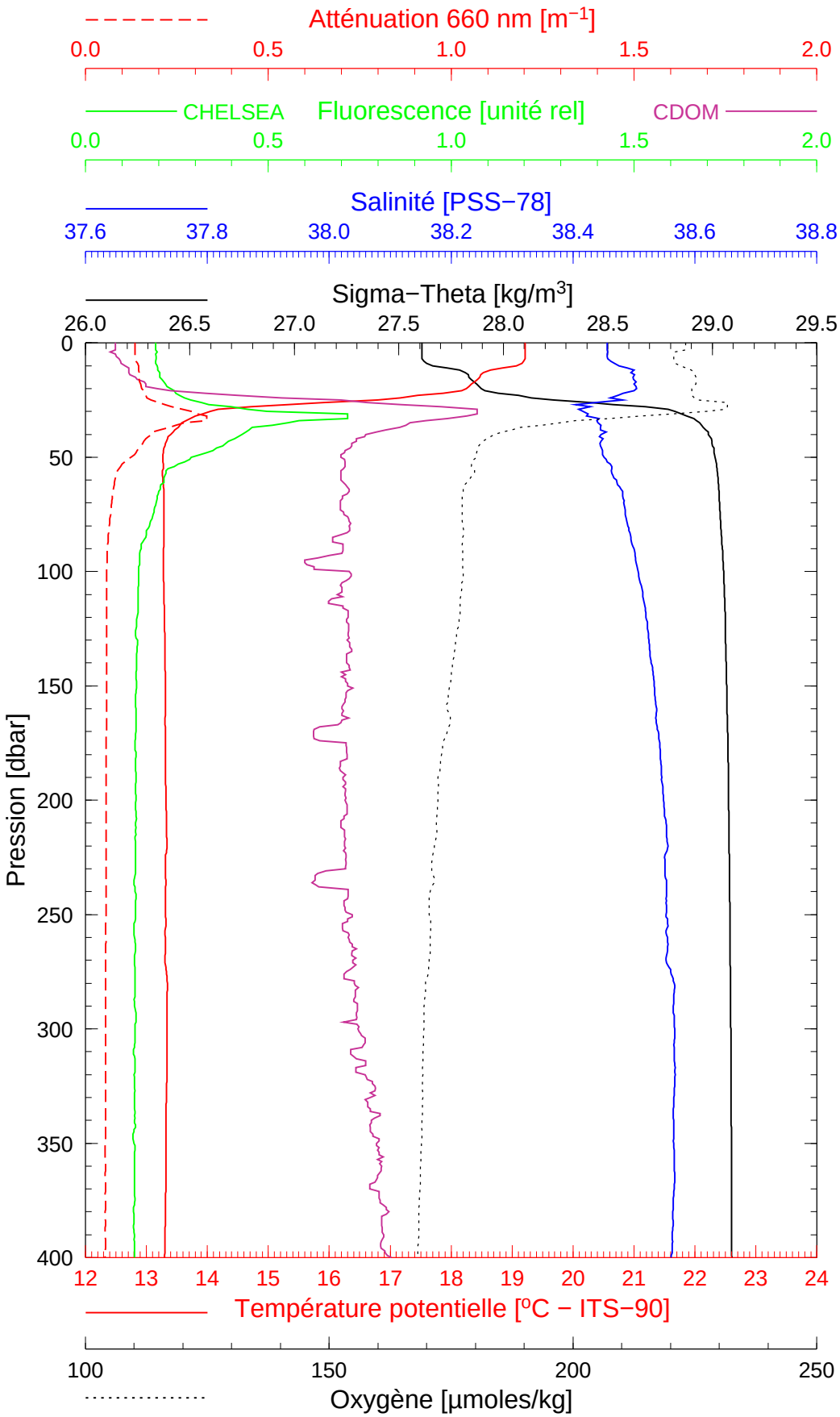
Boussole 80 **15/10/2008** **BOUS081016_01**

BOUS011



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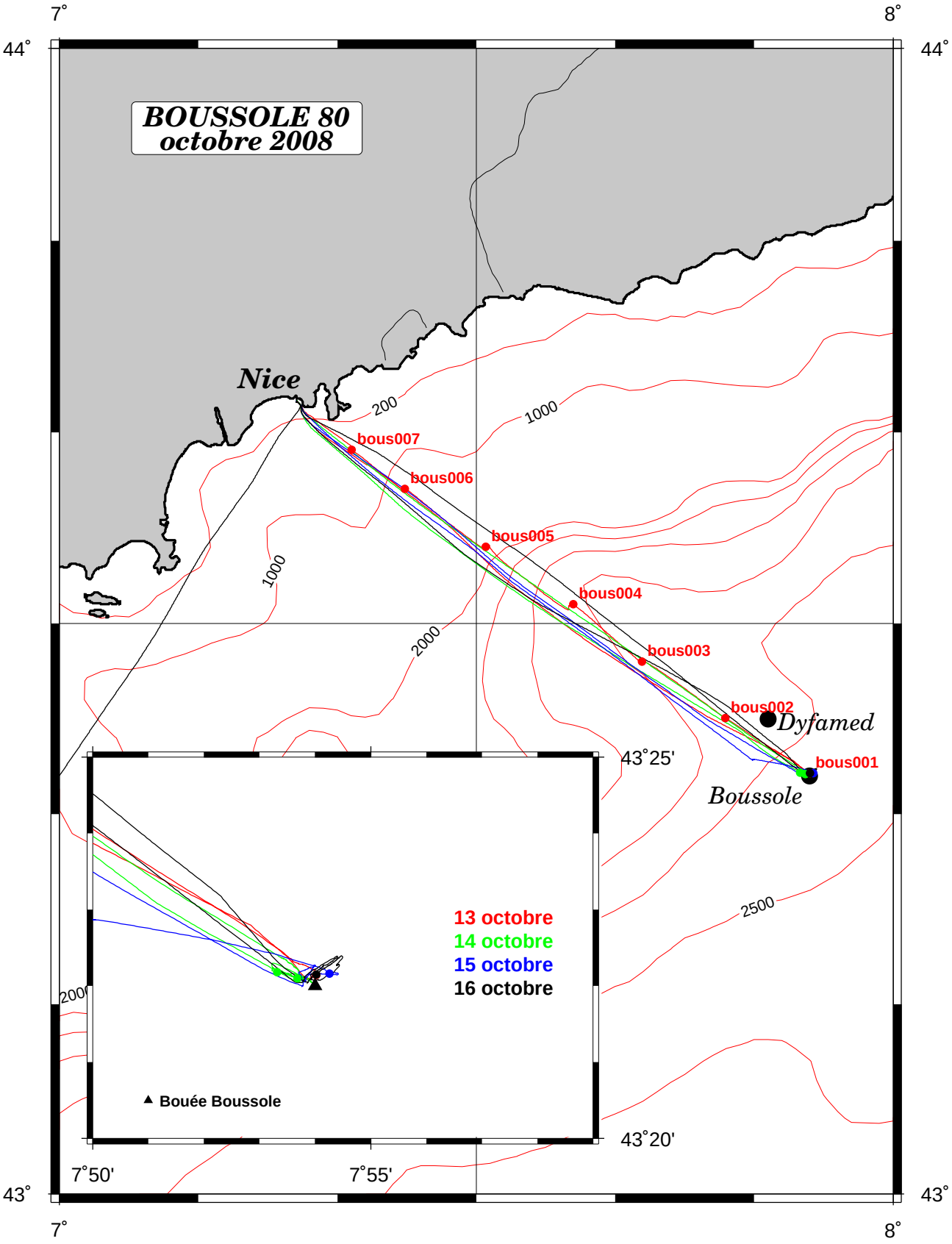

GMT 2008 Nov 3 14:09:58