BOUSSOLE Monthly Cruise Report

Cruise 29
December 16 – 18, 2003

Duty Chief: Alec Scott (alec.scott@obs-vlfr.fr)
Vessel: R/V Téthys II
(Captain: Rémy Lafond)

Science Personnel: Alec Scott, Dominique Tailliez, Edouard Leymarie

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Fig 1. The Tethys moored up in the Port of Nice.

BOUSSOLE project

ESA/ESRIN contract N° 17286/03/I-OL

Deliverable from WP#400/200

December 2, 2005

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 of the USA

Centre National de la Recherche Scientifique, France

Institut National des Sciences de l'Univers, France

Université Pierre & Marie Curie, France

Observatoire Océanologique de Villefranche sur mer, France

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Cruise Objectives

Multiple SPMR profiles are to occur within 1 hour of satellite overhead passes of SeaWiFS and MERIS and around solar noon. 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), SIMBADA measurements are to be performed consecutively where possible with SPMR profiles. If sea conditions are poor but sky is good, SIMBADA 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 the filters stored in LN2 for HPLC pigment and particulate absorption filter analysis 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 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 four fixed locations on-route from Boussole and a final two station positions to be decided during the transect in order to sample on both sides of the main frontal structure between the coastal waters and Ligurian Sea. The time of day of this transect should be similar for each cruise, if possible to minimise influence of diurnal variability. On other uninterrupted transits between Nice and Boussole, Simbada measurements of optical thickness should be taken every 30 minutes to characterise variability between the Cap Ferrat sun photometer site and the Boussole site.

Edouard Leymar is to participate in the cruise as an observer or assistant as required.

Cruise Summary

For the first day of the cruise, the visibility was superb with both mainland France and Corsica visible from the Boussole site. Winds from the northeast were just over 20knots during the morning and dropped just a little throughout the day, although only to as much as 17 knots for the part of the afternoon with a sun angle sufficient for the optics profiler. In addition to the wind, there was also a large swell from the same direction which created conditions unsuitable for CTD rosette profiling. However, the skies were very clear and blue so some optics profiles were performed with the SPMR during the period between the two SeaWiFS passes of the day. We were informed in the morning, once aboard the ship that, we were not permitted to conduct our transect between Boussole and Nice during this first day.

The second day provided very good sea conditions and winds less than 10 knots but, unfortunately, cloudy skies. The mainly light but extensive cover of cirrus cloud was too extensive for good satellite coverage so reducing the chances of a satellite matchup. However, despite the cloud cover, PAR levels did appear to be fairly stable so conditions were still quite good for optics profiles. The side supports for the pyramid were not on the ship so it was not possible to measure near-surface Eu this time. The weather forecast for the next day was indicating high wind so the quadrilateral was added to the schedule to ensure its completion during the cruise.

The last day was cancelled because of bad weather

Cruise Report

Tuesday 16th December (Times UTC)

0600 Depart Port of Nice
0930 Arrival at Boussole Site (43°22'N 7°54'E).
1020 SPMR in water
1050 SPMR on deck (3 profiles + Meris 1030)

1240 SPMR in water
1305 SPMR on deck (2 profiles + SeaWiFS 1150 and 1327)
1310 Depart site for port of Nice
1600 Arrival in port of Nice

Wednesday 17th December

0530 Depart Port of Nice
0850 Arrival at Boussole Site
0857 CTD Boussole 7. Max 400m. Bottle depths (m): 200,150,100,70,60,50,40,30,20,10,5.
0931 CTD on deck
1000 SPMR in water
1050 SPMR on deck (4 profiles + Meris 1030)
1215 SPMR in water
1310 SPMR on deck (3 profiles + SeaWiFS 1230)
1333 Quadrilateral started
1438 Quadrilateral finished
1456 CTD Boussole 8. Max 400m. Boussole site
1528 CTD on deck
1609 CTD Boussole 9. Max 400m. Transect Station 1 (43°25'N 7°28'E).
1711 CTD Boussole 10. Max 400m. Transect Station 2 (43°28'N 7°42'E).
1813 CTD Boussole 11. Max 400m. Transect Station 3 (43°31'N 7°37'E).
1912 CTD Boussole 12. Max 400m. Transect Station 4 (43°34'N 7°31'E).
2013 CTD Boussole 13. Max 400m. Transect Station 5 (43°37'N 7°25'E).
2035 Depart Station 5 for Port of Nice.
2130 Arrival in port of Nice

Boussole Site Satellite Overhead Pass Schedule

SeaWiFS: Viewing Times

Date Time (UTC)	Lat (DEG)	Lon (DEG)	Sat. Azi.	Sat. Elev.	Range (km)	Sun Azi.	Sun Elev.	Tilt	Flags*
16 Dec 2003 11:50:28	43.220	7.540	125.85	45.35	942	186.29	23.26	AFT	2
16 Dec 2003 13:27:48	43.220	7.540	283.67	19.08	1630	209.42	17.80	AFT	2 3
17 Dec 2003 12:30:51	43.220	7.540	243.23	59.07	804	196.08	21.81	AFT	2
18 Dec 2003 11:33:38	43.220	7.540	114.58	31.61	1197	181.85	23.41	AFT	2 3
18 Dec 2003 13:11:07	43.220	7.540	278.17	26.48	1344	205.41	19.21	AFT	2 3

MERIS: Viewing Times

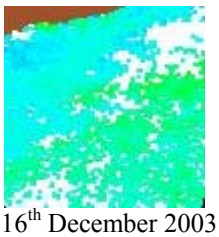
Date Time (UTC)	Lat (DEG)	Lon (DEG)	Sat. Azi.	Sat. Elev.	Range (km)	Sun Azi.	Sun Elev.	Tilt	Flags*
17 Dec 2003 10:30:03	43.220	7.540	289.74	51.24	980	166.19	22.25	NADIR	
18 Dec 2003 09:58:53	43.220	7.540	100.68	84.42	794	158.63	20.48	NADIR	

Ligurian Sea Boussole Site Satellite Colour Images

http://seawifs.gsfc.nasa.gov/cgi/seawifs_region_extracts.pl

SeaWiFS

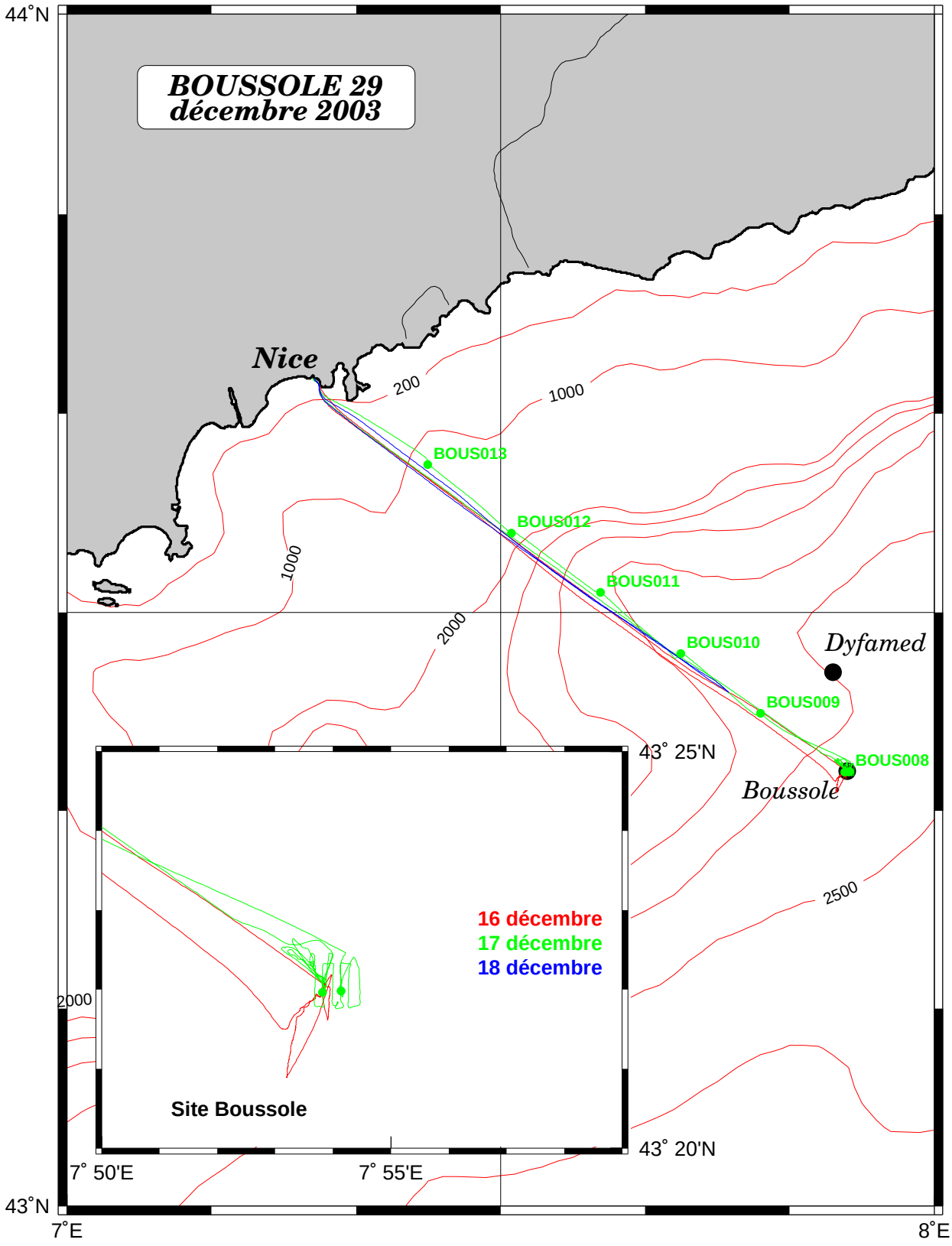


16th December 2003 17th December 2003 18th December 2003

Tabulated Cruise Summary for Boussole 29

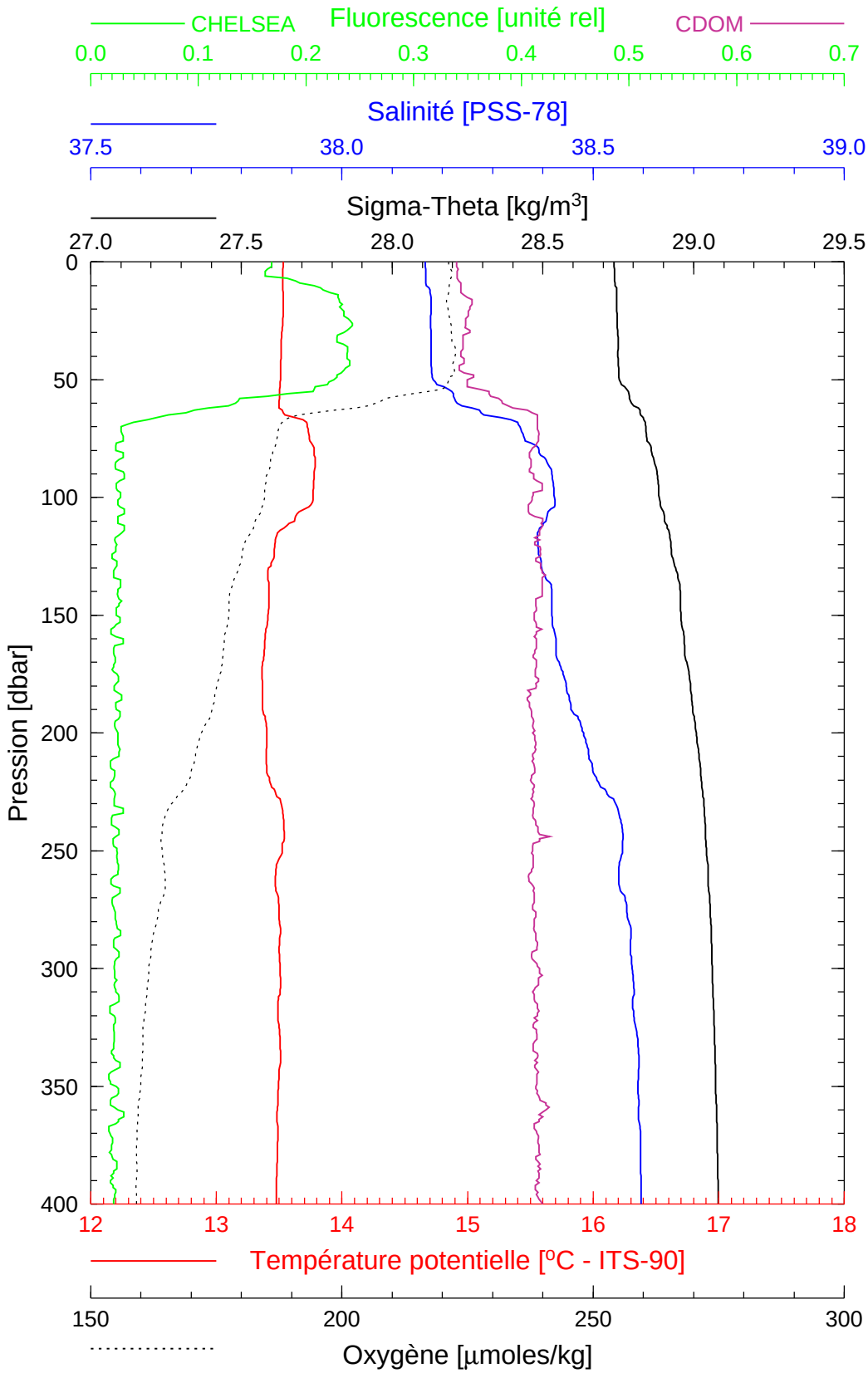
Date	Sensors:	Black names	Profile names	CTD notées /	Start Time	Duration	Depth max	Latitude (N)		Longitude (E)		Other sensors	Their cast	PAR	Start/Finish				Weather								Sea		
	spmr&smsr, smsr	(file extension: ".raw")	(file extension: ".raw")	satellite overpass	GMT (hour.min)	(min.sec)	(meter)	(Degree)	(Minute)	(Degree)	(Minute)	(hyperspectral:HS)			S mark# F mark#	Sky	Clouds	Qty (#/8)	Wind speed	Wind dir.	Atm. Press	humidity	Visibility	T air	T water	Sea	Swell height	Swell dir.	White horses
16/12/03	spmr&smsr, smsr	bou161203black1			10.00	03:00																							
			bou161203a		10.23	04:32	200	43	21.947	7	53.708					clear milky	none	0	16kts	55	1021.6	40	v good	12.3		rough	1.5	45	many
			bou161203b	Meris 1030	10.35	04:24	200	43	21.853	7	53.608					clear milky	none	0	16kts	55	1021.6	40	v good	12.3		rough	1.5	45	many
			bou161203c		10.44	04:24	200	43	21.777	7	53.524					clear milky	none	0	16kts	55	1021.6	40	v good	12.3		rough	1.5	45	many
		bou161203black2			11.02	03:00																							
		bou161203black3			12.27	03:00																							
			bou161203d	SeaWiFS 1150	12.43	04:24	200	43	21.924	7	53.708					blue	none	0	17kts	53	1021.8	43	v good	12.5		rough	1.5	45	many
			bou161203e	SeaWiFS 1327	12.54	04:44	200	43	21.784	7	53.48					blue	none	0	17kts	53	1021.8	43	v good	12.5		rough	1.5	45	many
		bou161203black4			13.10	03:00																							
17/12/03				CTDBOUS007	8:57	00:34		43	21.965	7	53.815							5	8	216	1026.5	47		16.2	13.56	BELLE			
		bou171203black1			9.50	03:00																							
			bou171203a		10.04	04:28	200	43	22.272	7	53.663	PAR20031217A				blue	wispy cirrus	6	8kts	227	1026.8	58	good	13.1		calm	0.3	225	none
			bou171203b		10.15	04:27	200	43	22.312	7	53.588	PAR20031217A	1,2			blue	wispy cirrus	6	8kts	227	1026.8	58	good	13.1		calm	0.3	225	none
			bou171203c	Meris 1030	10.26	04:28	200	43	22.375	7	53.487	PAR20031217A	3,4			blue	wispy cirrus	6	8kts	227	1026.8	58	good	13.1		calm	0.3	225	none
			bou171203d		10.38	04:25	200	43	22.439	7	53.29	PAR20031217A	5,6			blue	wispy cirrus	6	8kts	227	1026.8	58	good	13.1		calm	0.3	225	none
		bou171203black2			10.50	03:00																							
		bou171203black3			12:15	03:00																							
			bou171203e		12:19	04:17	200	43	22.21	7	53.21	PAR20031217B	1,2				gauze sheets	7	5kts	220	1026.4	49	good	13.3		calm	0.3		none
			bou171203f	SeaWiFS 1230	12:30	05:15	200	43	22.322	7	53.616	PAR20031217B	3,4				gauze sheets	7	5kts	220	1026.4	49	good	13.3		calm	0.3		none
			bou171203g		12:49	04:21	200	43	22.53	7	53.495	PAR20031217B	5,6				gauze sheets	7	5kts	220	1026.4	49	good	13.3		calm	0.3		none
				Q1	13:33			43	22.174	7	53.722																		
		bou171203black4			14:00	03:00																							
				Q2	14:05			43	21.316	7	54.063																		
				Q3	14:33			43	22.341	7	54.411																		
				CTDBOUS008	14:56	00:32		43	21.984	7	54.142							7	7	196	1026.5	51		13.3	14.71	BELLE			
				CTDBOUS009	16:09	00:26		43	24.919	7	47.984							8	9	192	1026.5	58		13.2	15.7	BELLE			
				CTDBOUS010	17:11			43	27.934	7	42.452							8	7	190	1026.4	52		13.3	16.1	BELLE			
				CTDBOUS011	18:13	00:25		43	31.004	7	36.926							8	5	199	1026.7	52		13.3	16.15	BELLE			
				CTDBOUS012	19:12			43	34.002	7	30.762							8	5	6	1027	63		12.5	16.12	BELLE			
				CTDBOUS013	20:13	00:22		43	37.443	7	24.963							8	3	147	1026.9	54		13	16.13	BELLE			



GMT 2005 Apr 12 11:12:02

Boussole 29 **17/12/2003** **BOUS031217_01**

BOUS007

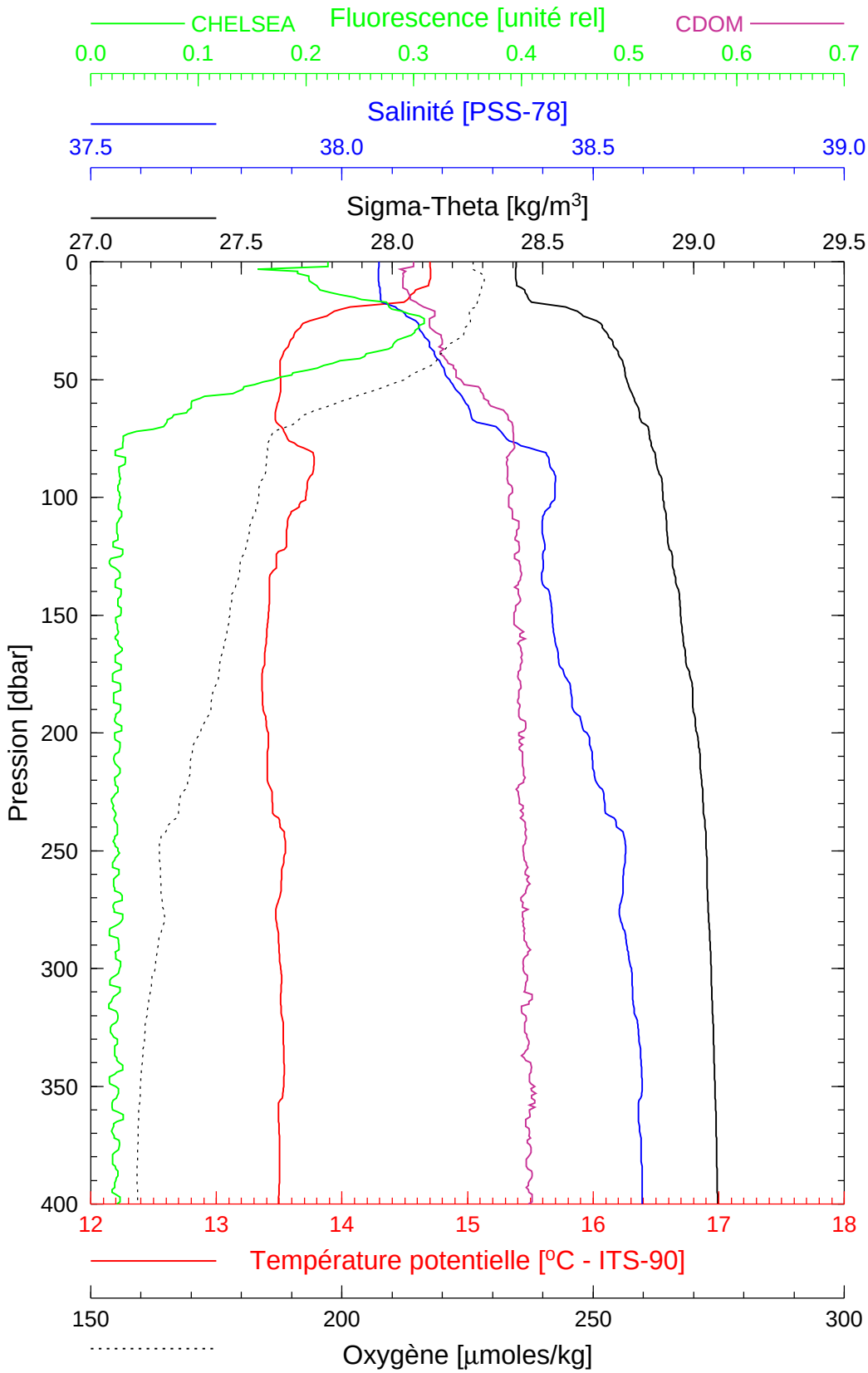


Date *17/12/2003* *Latitude* *43º21.965 N*

Heure déb *08h 57min [TU]* *Longitude* *07º53.815 E*

Boussole 29 **17/12/2003** **BOUS031217_02**

BOUS008

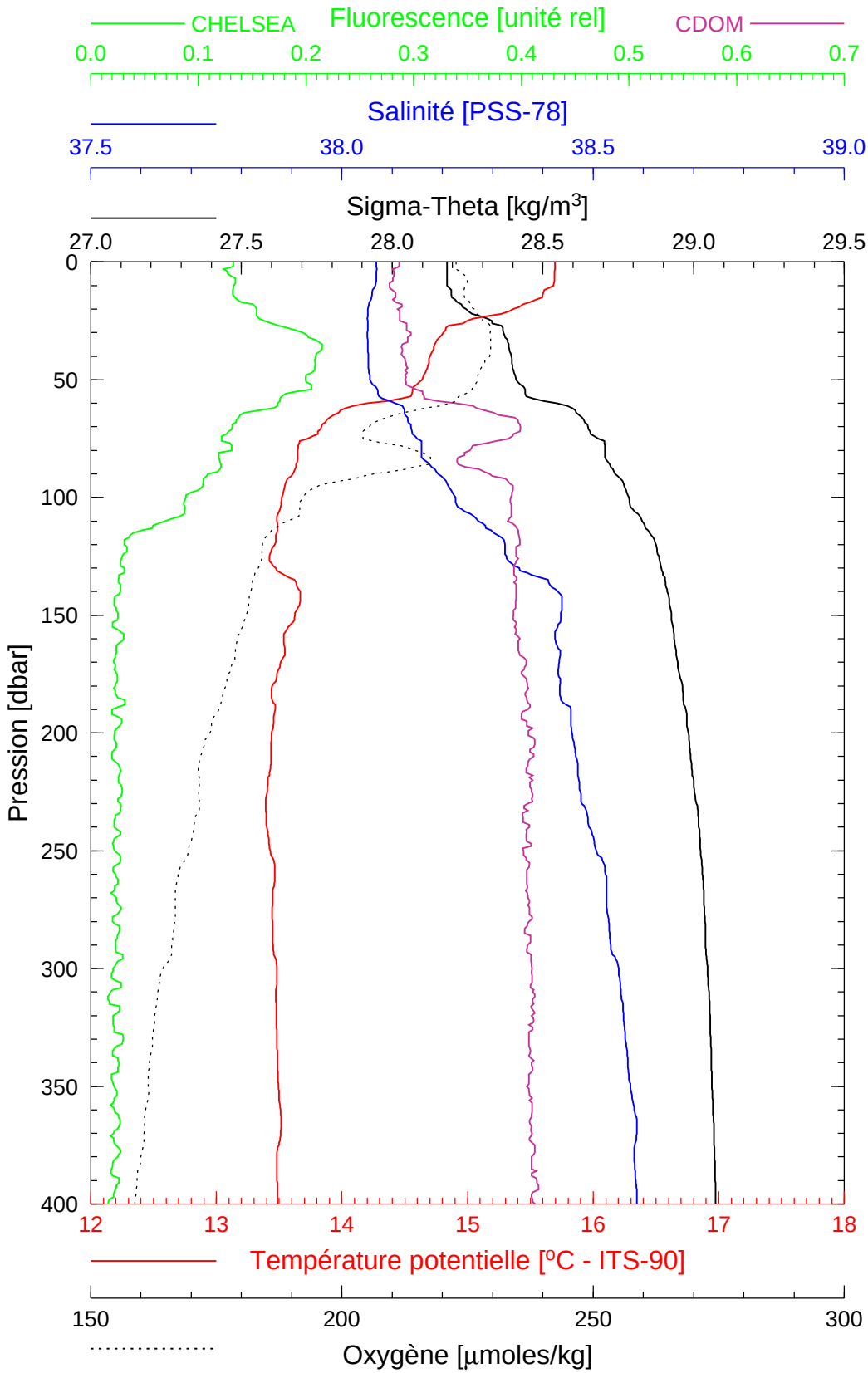


Date *17/12/2003* *Latitude* *43º21.984 N*

Heure déb *14h 56min [TU]* *Longitude* *07º54.142 E*

Boussole 29 **17/12/2003** **BOUS031217_03**

BOUS009

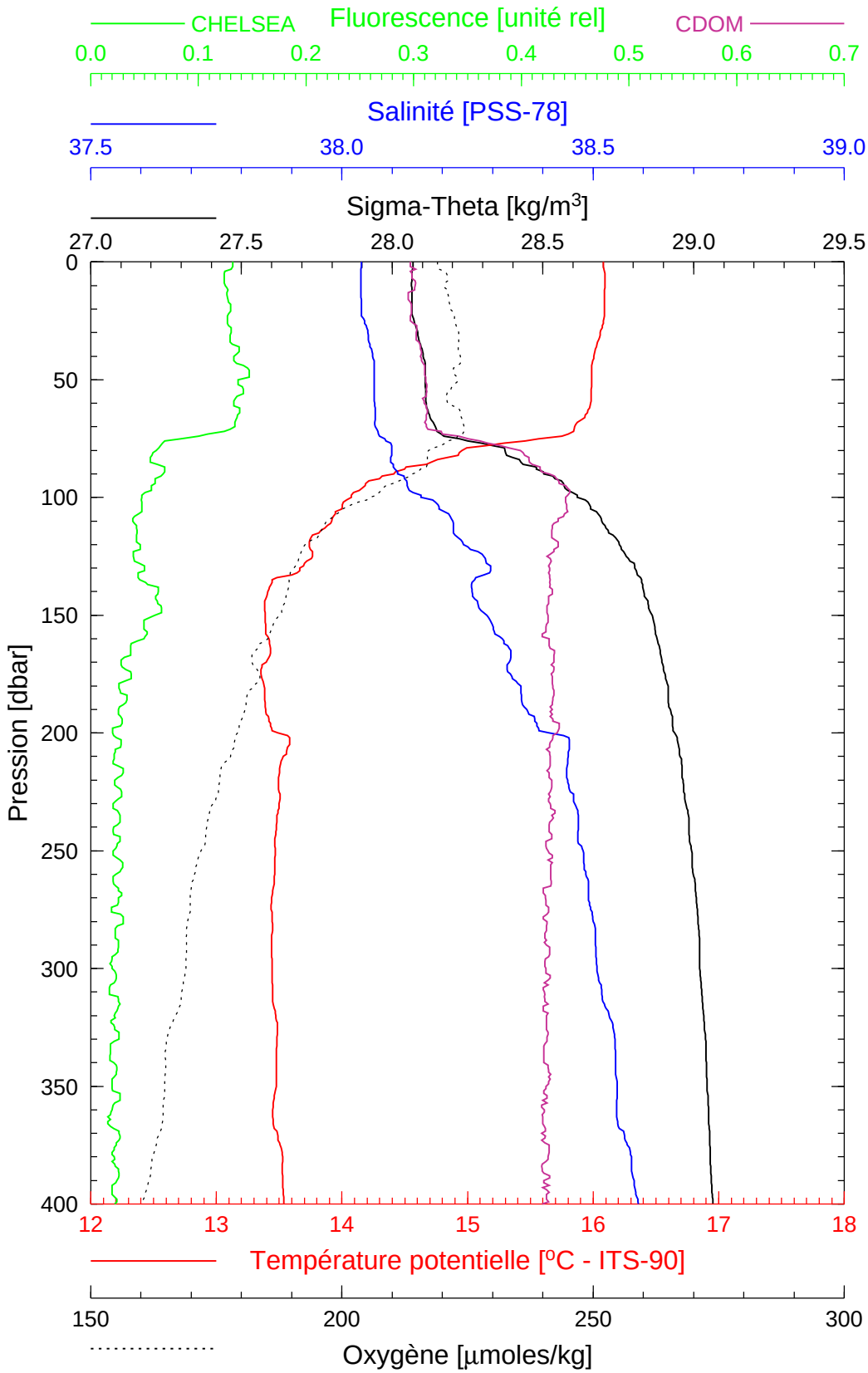


Date *17/12/2003* *Latitude* *43º24.919 N*

Heure déb *16h 09min [TU]* *Longitude* *07º47.984 E*

Boussole 29 **17/12/2003** **BOUS031217_04**

BOUS010

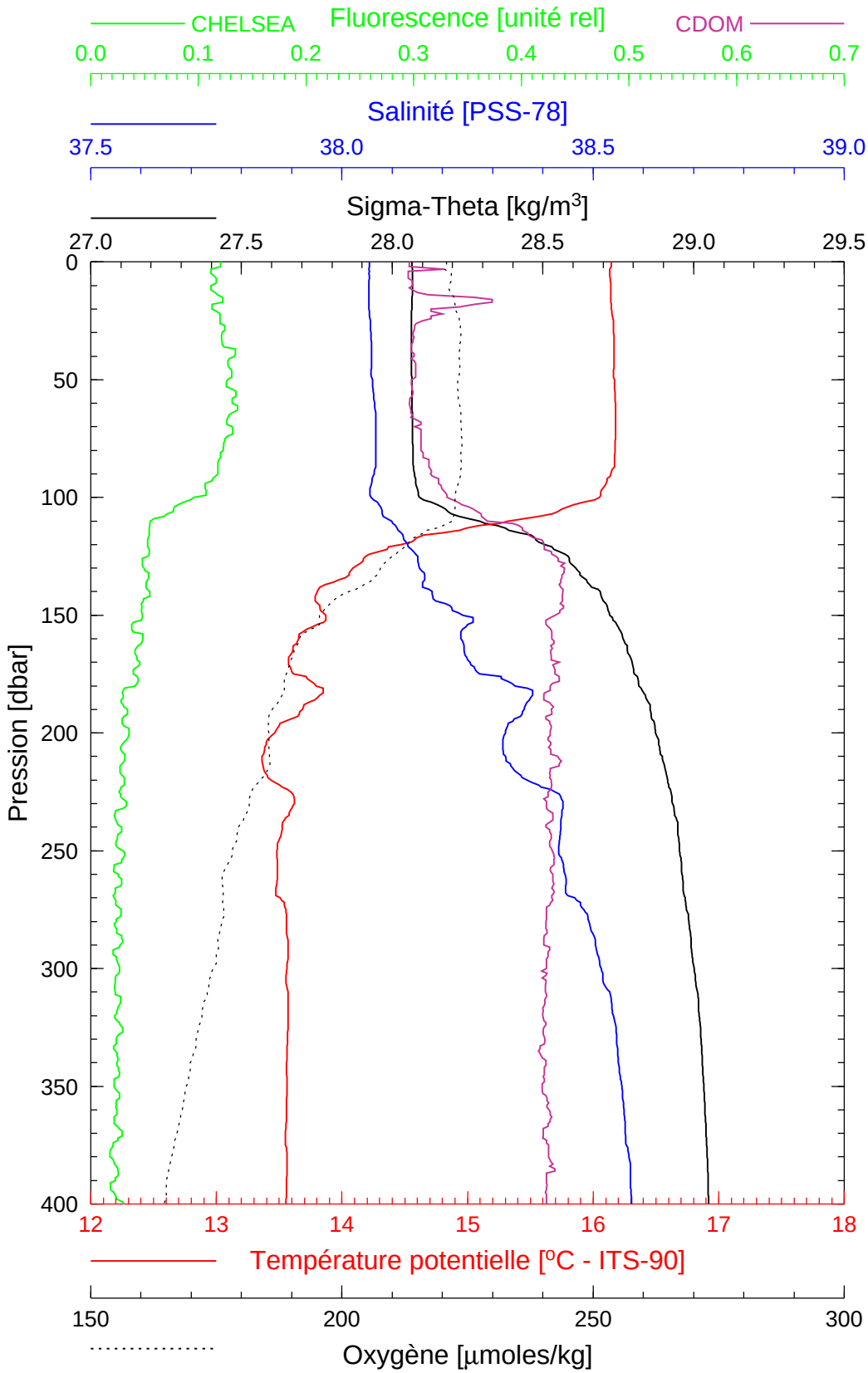


Date *17/12/2003* *Latitude* *43º27.934 N*

Heure déb *17h 11min [TU]* *Longitude* *07º42.452 E*

Boussole 29 **17/12/2003** **BOUS031217_05**

BOUS011

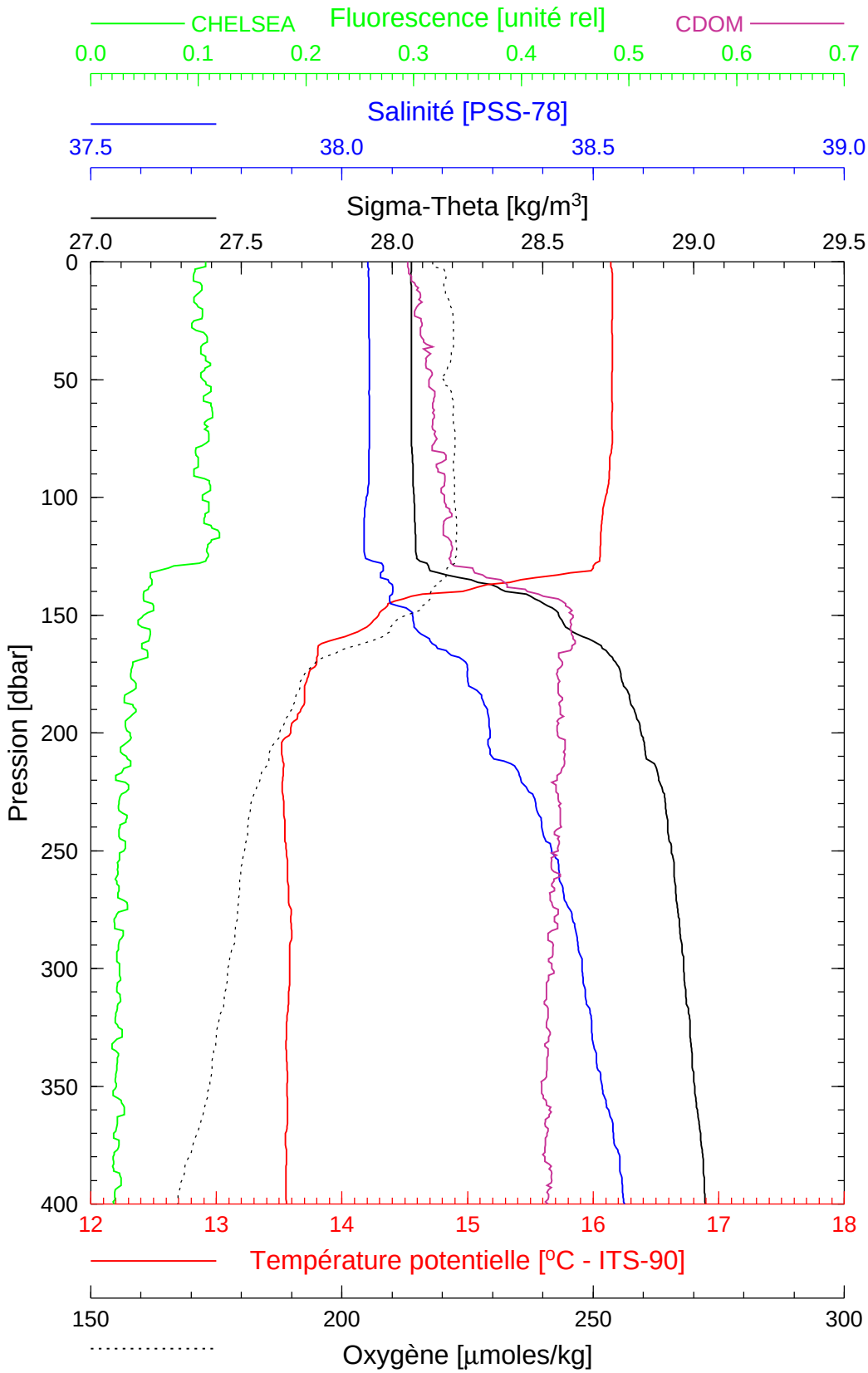


Date *17/12/2003* *Latitude* *43º31.004 N*

Heure déb *18h 13min [TU]* *Longitude* *07º36.926 E*

Boussole 29 **17/12/2003** **BOUS031217_06**

BOUS012

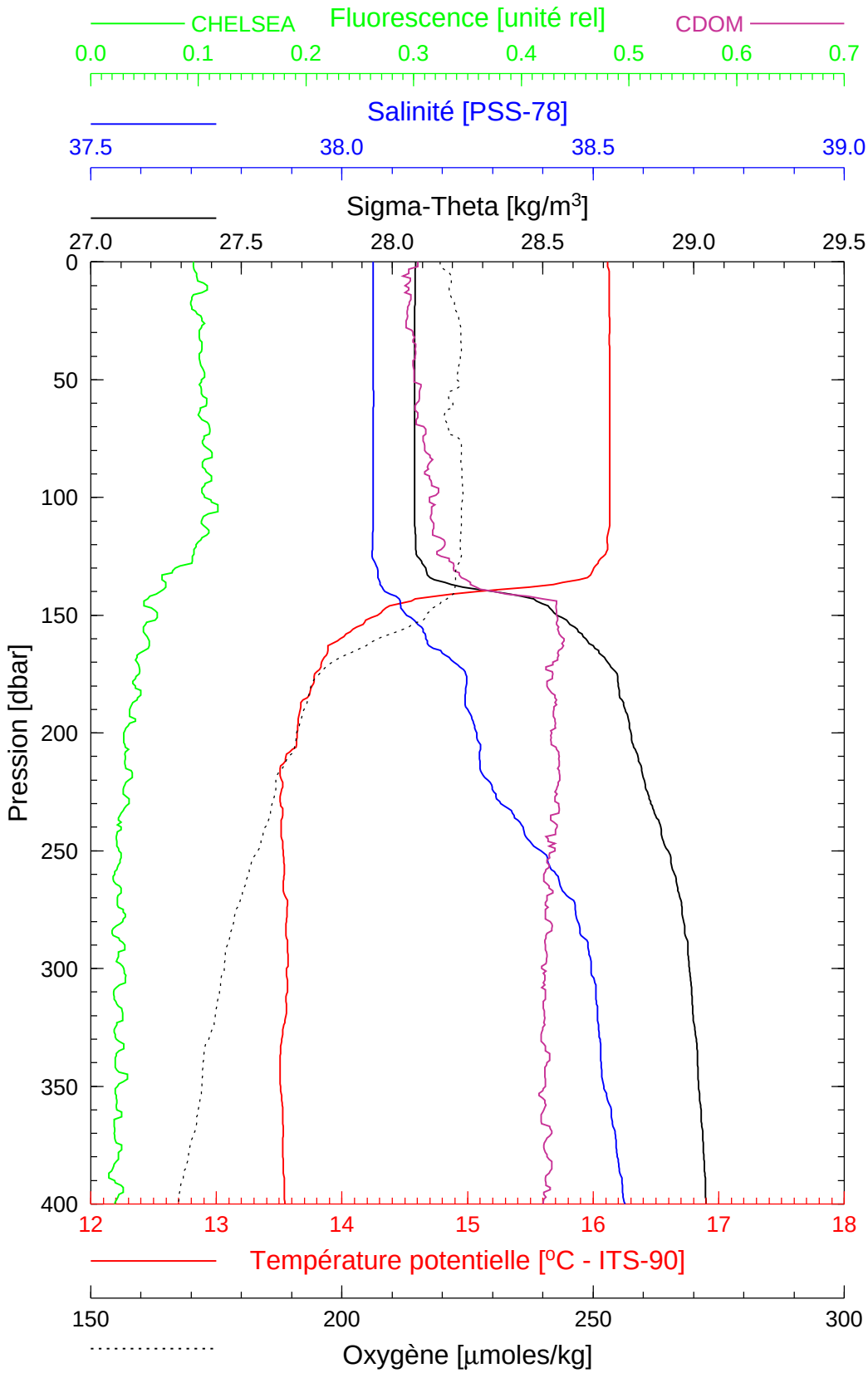


Date *17/12/2003* *Latitude* *43º34.002 N*

Heure déb *19h 12min [TU]* *Longitude* *07º30.762 E*

Boussole 29 **17/12/2003** **BOUS031217_07**

BOUS013



Date *17/12/2003* *Latitude* *43º37.443 N*

Heure déb *20h 13min [TU]* *Longitude* *07º24.963 E*