BOUSSOLE Monthly Cruise Report

Cruise 22
May 27 – 29, 2003

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

Science Personnel: Alec Scott, Dominique Tailliez, Guillaume Lecomte, Guillaume Peraldi

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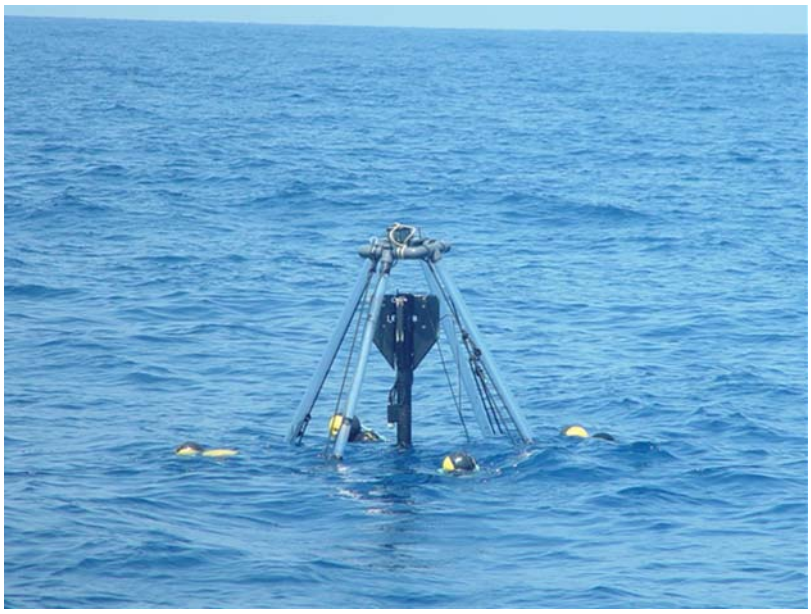

Fig 1. SPMR surface float with electric release mechanism.

BOUSSOLE project

ESA/ESRIN contract N° 17286/03/I-OL

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December 2, 2005

Foreword

This report is part of the technical report series that is being established by the BOUSSOLE project.

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European Space Agency

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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. SIMBADA measurements are to be performed consecutively where possible with SPMR if conditions are suitably good. If sea conditions are poor but sky is good, SIMBADA data will be collected and used only to measure atmospheric optical thickness. A floating platform is to be used to support the SPMR Eu sensor approximately 20cm below the surface for several minutes 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. This data will later be compared with the near-surface extrapolation methods used in processing. CTD deployments are required before and after the SPMR profiling day. In addition to the depth profile from the CTD, CDOM fluorometer, Chl fluorometer and AC9, seawater samples are to be collected and stored in LN2 for further HPLC pigment and AP 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.

An additional feature intended to be continued for all Boussole cruises is a ctd transect between the boussole site and the Port of Nice. This transect consists of four fixed locations on route from Boussole and with the last two station positions to be decided on each cruise in order to sample on each side of the main ocean front. The time of day of this transect should be similar for each cruise, if possible.

Students Guillaume Lecomte and Guillaume Peraldi will participate in the cruise in order to carry out two profiles to 1000m with a bathyphotometer, for the measurement of bioluminescence.

Cruise Summary:

Despite overcast and rainy conditions on the first day, which cleared by the first evening into very clear skies for the remainder of the cruise, the sea state remained very good for all three days. Sea conditions on Tuesday 27th, and uniformly overcast skies allowed good conditions for SPMR surface buoy data collection specifically for the surface extrapolation model comparisons. One session of profiles with the buoy followed a session of normal SPMR profiling at the Boussole Site. A 1000m profile was then performed with the bathyphotometer before starting the transect to Nice in the evening. During this time, the two students discovered a problem with the bathyphotometer data, suggestive of a main pump malfunction. The transect went well although we failed to monitor the inline temperature and salinity during the outward journey in the morning to ascertain the exact position of the front. Hence, constant monitoring of the T and S display was necessary from the fourth station onwards. The front appeared to have been crossed before station 5 so station 6 was deviated slightly off the transect line to cross perpendicular to the front. The time spent at Boussole had to be curtailed slightly because of a request by the captain to allow adequate rest time for the crew. However, considering the overcast conditions, objectives for the day were achieved

Wednesday 28th provided flat seas and fairly clear skies; good conditions for optics work. A steady day of SPMR profiling and surface buoy provided a good spread of data throughout the day and a good possibility of a matchup with the 1200 UTC SeaWiFS pass. The original program remained virtually unchanged for the day's activities. After several hours of the students working on the problem with the bathyphotometer, a broken wire was identified as the fault and rectified. A successful profile to 1000m was achieved in the afternoon. After the optics objectives were achieved, the ship headed to Nice to allow Guillaume Peraldi to disembark. Guillaume Lecomte stayed aboard to do another profile and help further with the optics work. Gerald, the deckhand, came up with a good system for hauling the SPMR using the capstan.

Thursday 29th consisted of glassy sea conditions and clear skies for most of the day; a very good day for optics so a heavy work load of SPMR profiles and SPMR floats was scheduled. Conditions seemed very good for both the 0918 UTC Meris and 1110 and 1248 UTC SeaWiFS matchups. For the Meris pass, an additional CTD profile to 100m collected 5 and 10m chlorophylls. Cloud cover increased and

sky conditions deteriorated towards late afternoon but only after our objectives were achieved. There was also some pressure from the captain to get the ship back to Nice to allow their transit to Marseille.

Guillaume Lecomte and Guillaume Peraldi performed all the Simbada measurements on the cruise, allowing an extensive Simbada data set for the final two days. The crew were worked hard on this cruise in order for us to capitalise on , what has of late been a rarity, good weather. However, regular cruises with a similar work load could prove problematic, in terms of crew co-operation.

After the cruise it became apparent that the CTD water collections were only taken from 5 and 10 m rather than there being sampling down to 200m.

Cruise Report (all times in GMT)

Tuesday 27th May 2003

0600 Depart Port of Nice.

0915 Arrival at Boussole Site (43°22'N 7°54'E).

1020 CTD Boussole 1. Max 400m. Bottle depths (m): 10, 5.

1050 CTD on deck.

1120 SPMR deployed

1148 SPMR on deck (4 profiles)

1200 SPMR surface float deployed

1235 SPMR surface float recovered (2 profiles)

1245 Bathyphotometer Deployed. Max 1000m.

1320 Bathyphotometer Recovered

1325 CTD Boussole 2. Max 400m. Bottle depths (m): 10, 5.

1351 CTD on deck

1424 CTD Boussole 3 Transect Station 1 (43°25.000'N 07°47.962'E)

1510 CTD Boussole 4 Transect Station 2 (43°28.047'N 07°42.477'E)

1556 CTD Boussole 5 Transect Station 3 (43°31.042'N 07°36.946'E)

1654 CTD Boussole 6 Transect Station 4 (43°34.043'N 07°30.931'E)

1742 CTD Boussole 7 Transect Station 5 (43°37.49'N 07°25.021'E)

1809 CTD Boussole 8 Transect Station 6 (43°38.516'N 07°25.027'E)

1830 Depart for Boussole site

Wednesday 28th May, 2003

0705 CTD Boussole 9. Boussole Site. Max 400m. Bottle Depths (m) 10, 5.

0738 CTD on deck.

0747 SPMR deployed.

0815 SPMR on deck (5 profiles).

0838 Ship orientation exercise

0855 SPMR in water

0920 SPMR on deck (3 profiles).

1030 SPMR surface float in water

1110 SPMR surface float on deck (3 profiles).

1155 SPMR in water

1235 SPMR on deck (5 profiles – SeaWiFS 1200)

1323 SPMR in water

1345 SPMR on deck (3 profiles)

1430 SPMR in water

1450 SPMR on deck (3 profiles)

1501 CTD Boussole 10. Boussole Site. Max 400m. Bottle Depths (m) 10, 5.

1526 CTD on deck

1527 Commence quadrilateral

1630 Quadrilateral completed, depart for Nice

1945 Arrive Nice. Disembark G. Leconte.

2100 Depart for Boussole Site

Thursday 29th May, 2003

0545 Bathyphotometer in water

0630 Bathyphotometer on deck

0748 CTD Boussole 11. Boussole Site. Max 400m. Bottle Depths (m) 10, 5.

0813 CTD on deck

0745 SPMR in water

0800 SPMR on deck (3 profiles)

0815 SPMR surface float in water

0850 SPMR surface float on deck (3 profiles)

0905 CTD Boussole 12. Boussole Site. Max 100m. Bottle Depths (m) 10, 5.

0913 CTD on deck

0914 SPMR in water

0918 Meris Overhead Pass

0935 SPMR on deck (3 profiles)

1100 SPMR in water

1110 SeaWiFS Overhead Pass

1122 SPMR on deck

1135 SPMR surface float in water

1210 SPMR surface float on deck (3 profiles)

1240 SPMR in water

1248 SeaWiFS Overhead Pass

1300 SPMR on deck (3 profiles)

1345 CTD Boussole 13. Boussole Site. Max 400m. Bottle Depths (m) 10, 5.

1409 CTD on deck

1415 SPMR in water

1425 SPMR on deck (1 profile)

1427 Depart Boussole Site for Port of Nice

1745 Arrive Port of Nice

Satellite Overhead Passes at Boussole Site (43°22'N 7°54'E)

SeaWiFS (times in GMT)

- 27 May 2003 11:27 at 30.32 degrees elevation
- 27 May 2003 13:04 at 27.51 degrees elevation
- 28 May 2003 12:07 at 66.53 degrees elevation
- 29 May 2003 11:10 at 21.34 degrees elevation
- 29 May 2003 12:48 at 38.23 degrees elevation

Meris (times in GMT)

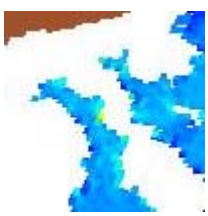
- 29 May 2003 09:18

Ligurian Sea Boussole Site Images

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

SeaWiFS



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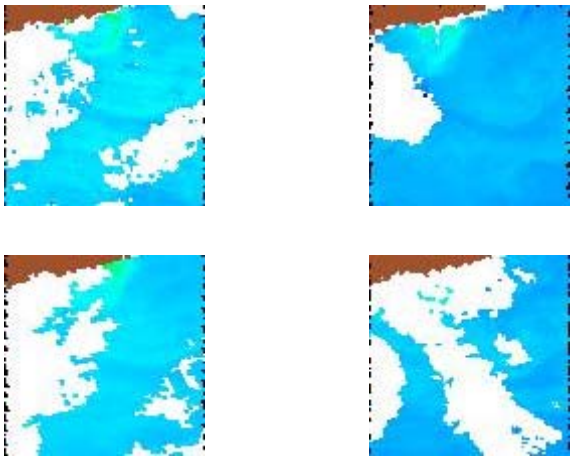
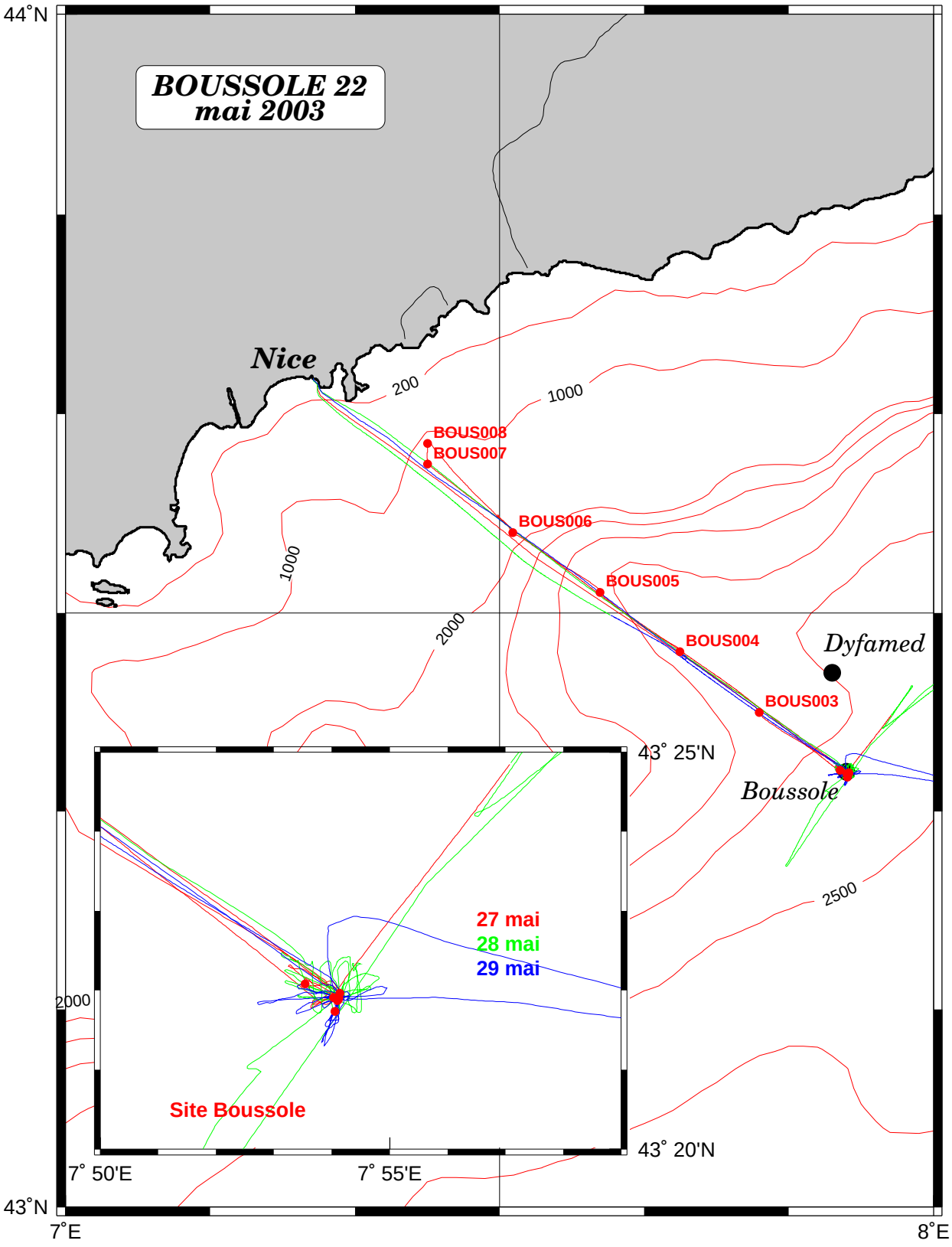


Tabulated Cruise Summary for Boussole 22

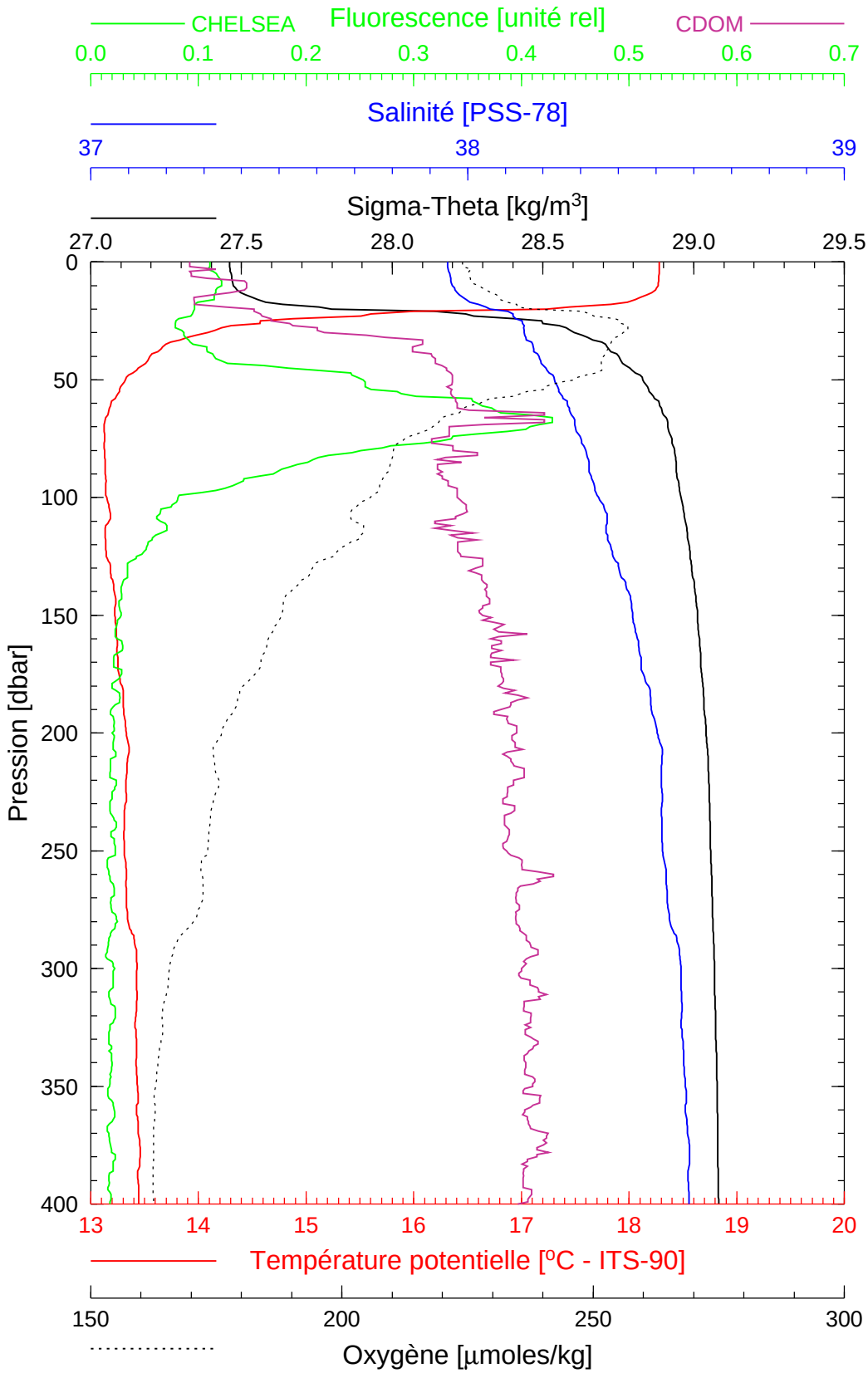
Date	Sensors:	Black names	Profile names	CTD notées /	Start Time	Duration	Depth max	Latitude (N)		50		Other sensors	cast	PAR	Start/Finish				Weather							Sea		
	spmr&smsr, smsr	(file extension: *.raw*)	(file extension: *.raw*)	satellite overpass	GMT (hour.min)	(min.sec)	(meter)	(Degree)	(Minute)	(Degree)	(Minute)				S/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
27/05/03				CTDBOUS001	10.20	30:00	400	43	21.907	7	54.033																		
	spmr&smsr	bou270503black1			11.02	03:00																							
			bou270503a		11.15	02:30	120	43	21.976	7	54.185					overcast/rain	Heavy cloud/rain	8	8knts	325	1017.2	82	poor	16.9		quite calm	0.6m		0
			bou270503b		11.24	02:20	100	43	22.084	7	54.055					overcast/rain	Heavy cloud/rain	8	8knts	325	1017.2	82	poor	16.9		quite calm	0.6m		0
			bou270503c		11.32	04:12	100	43	22.073	7	53.787					overcast/rain	Heavy cloud/rain	8	8knts	325	1017.2	82	poor	16.9		quite calm	0.6m		0
			bou270503d		11.43	02:52	128	43	220.017	7	53.615					overcast/rain	Heavy cloud/rain	8	8knts	325	1017.2	82	poor	16.9		quite calm	0.6m		0
			bou270503spmratsurface1		12.07	06:14	90	43	22.079	7	53.935					overcast/rain	Heavy cloud/rain	8	6knts	294	1016.5	83	fair	17.5		quite calm	0.3m		0
			bou270503spmratsurface2		12.26	05:02	90	43	22.162	7	53.761					overcast/rain	Heavy cloud/rain	8	6knts	294	1016.5	83	fair	17.5		quite calm	0.3m		0
		bou270503black2			12.57	03:00																							
				CTDBOUS002	13.25	26:00	400	43	21.965	7	54.136																		
				CTDBOUS003	14.24	14:00	300	43	25	7	47.962																		
				CTDBOUS004	15.10	15:00	400	43	28.047	7	42.477																		
				CTDBOUS005	15.56	25:00	400	43	31.042	7	36.946																		
				CTDBOUS006	16.54	15:00	400	43	34.043	7	30.931																		
				CTDBOUS007	17.42	16:00	400	43	37.49	7	25.021																		
				CTDBOUS008	18.09	16:00	400	43	38.516	7	25.027																		
28/05/03				CTDBOUS009	7.05	33:00	400	43	22.084	7	53.54	Simbada	07:17																
	spmr&smsr	bou280503black1			7.30	03:00																							
			bou280503a		7.50	02:31	120	43	21.874	7	54.081	Simbada	07:50			clear/very milky	none	0	5knts	339	1014.8	85	good	19.1		calm	0		0
			bou280503b		7.56		120	43	21.888	7	53.952					clear/very milky	none	0	5knts	339	1014.8	85	good	19.1		calm	0		0
			bou280503c		8.03	28:00	120	43	21.902	7	53.823	Simbada	08:01			clear/very milky	none	0	5knts	339	1014.8	85	good	19.1		calm	0		0
			bou280503d		8.09	02:28	120	43	21.891	7	53.717			PAR030528A	1(end)	clear/very milky	none	0	5knts	339	1014.8	85	good	19.1		calm	0		0
			bou280503e		8.16	02:08	120	43	21.911	7	53.607	Simbada	08:19	PAR030528A	2,3	clear/very milky	none	0	5knts	339	1014.8	85	good	19.1		calm	0		0
	smsr		bou280503suntest1		8.38	03:00										milky	light cirrus	4	6knts	336	1014.8	82	good	19.9		calm	0		0
			bou280503suntest2		8.42	03:00										milky	light cirrus	4	6knts	336	1014.8	82	good	19.9		calm	0		0
			bou280503suntest3		8.46	03:00										milky	light cirrus	4	6knts	336	1014.8	82	good	19.9		calm	0		0
	spmr&smsr		bou280503suntest4		8.50	03:00										milky	light cirrus	4	6knts	336	1014.8	82	good	19.9		calm	0		0
			bou280503f		9.00		120	43	21.882	7	54.053	Simbada	08:58			milky	light cirrus	4	6knts	336	1014.8	82	good	19.9		calm	0		0
			bou280503g		9.06		120	43	21.879	7	53.88			PAR030528B	1,2	milky	light cirrus	4	6knts	336	1014.8	82	good	19.9		calm	0		0
			bou280503h		9.14		120	43	21.9	7	53.741	Simbada	09:14	PAR030528B	3,4	milky	light cirrus	4	6knts	336	1014.8	82	good	19.9		calm	0		0
		bou280503black2			10.18	03:00																							
			bou280503spmratsurface1		10.33	03:00		43	22.369	7	53.39	Simbada	10:29			milky	light cirrus	4	5knts	325	1015	81	good	20.8		calm	0		0
			bou280503spmratsurface2		10.36	02:21	120	43	22.392	7	53.3			PAR030528C		milky	light cirrus	4	5knts	325	1015	81	good	20.8		calm	0		0
			bou280503spmratsurface3		10.46	04:31	60	43	22.433	7	53.24	Simbada	10:45	PAR030528C	4,5	milky	light cirrus	4	5knts	325	1015	81	good	20.8		calm	0		0
			bou280503spmratsurface4		11.04	05:40	100	43	21.96	7	54.214	Simbada	11:03	PAR030528C		milky	light cirrus	4	5knts	325	1015	81	good	20.8		calm	0		0
		bou280503black3			11.50	03:00																							
			bou280503i	SeaWiFS 1200	11.59	03:06	120	43	21.922	7	54.128			PAR030528D	1,2	milky	light cirrus	4	5knts	325	1015	81	good	20.8		calm	0		0
			bou280503j		12.05	02:20	120	43	21.998	7	54.077			PAR030528D	3,4	milky	light cirrus	4	5knts	325	1015	81	good	20.8		calm	0		0
			bou280503k		12.13		120	43	22.089	7	54.073			PAR030528D	5,6	milky	light cirrus	4	5knts	325	1015	81	good	20.8		calm	0		0
			bou280503l		12.20	03:32	120	43	22.207	7	54.012	Simbada	12:24	PAR030528D	7(start)	milky	light cirrus	4	5knts	325	1015	81	good	20.8		calm	0		0
			bou280503m		12.27	02:19	120	43	22.253	7	54.027			PAR030528D	8,9	milky	light cirrus	4	5knts	325	1015	81	good	20.8		calm	0		0
			bou280503n		13.26		120	43	22.07	7	54.212	Simbada	13:25	PAR030528E	1,2	milky	cumulus	4	5knts	292	1014	78	good	21.3		calm	0		0
			bou280503o		13.35	02:25	120	43	22.127	7	54.298			PAR030528E	3,4	milky	cumulus	4	5knts	292	1014	78	good	21.3		calm	0		0
			bou280503p		13.41	02:32	120	43	22.162	7	54.377	Simbada	13:42	PAR030528E	5,6	milky	cumulus	4	5knts	292	1014	78	good	21.3		calm	0		0
		bou280503black4			14.19	03:00																							
			bou280503q		14.31		120	43	21.962	7	54.209	Simbada	14:27	PAR030528F	1,2	blue/haze	cirrus	2	7knts	274	1013.4	76	good	21.5		calm	0		0
			bou280503r		14.37		120	43	22	7	54.359			PAR030528F	3,4	blue/haze	cirrus	2	7knts	274	1013.4	76	good	21.5		calm	0		0
			bou280503s		14.43		120	43	22.01	7	54.48	Simbada	14:50	PAR030528F	5,6	blue/haze	cirrus	2	7knts	274	1013.4	76	good	21.5		calm	0		0
				CTDBOUS010	15.01	25:00	400	43	21.884	7	54.112																		
				Quadrilatere 001	15.47		5	43	22.342	7	54.377																		
				Quadrilatere 002	16.05		5	43	21.767	7	54.056																		
				Quadrilatere 003	16.21		5	43	22.367	7	53.662																		
		bou280503black5			18.26	03:00																							
29/05/03	29/05/03			CTDBOUS011	7.48	25:00	400	43	21.912	7	54.125																		
		bou290503black1			7.32	03:00																							
			bou290503a		7.48		120	43	21.766	7	54.111	Simbada	07:42			milky	none	0	0		1012.9	81	fair(hazy)	21.2		glassy	0		0
			bou290503b		7.52		120	43	21.7005	7	54.111			PAR030529A	1,2	milky	none	0	0		1012.9	81	fair(hazy)	21.2		glassy	0		0
			bou290503c		7.55	02:33	120	43	21.635	7	54.112	Simbada	07:55	PAR030529A	3,4	milky	none	0	0		1012.9	81	fair(hazy)	21.2		glassy	0		0
			bou290503spmratsurface1		8.16	05:15	120	43	21.93	7	54.155	Simbada	08:13	PAR030529B	1,2	milky	none	0	0		1012.8	83	fair	21.5		glassy	0		0
			bou290503spmratsurface2		8.32	05:52	5	43	21.923	7	54.106	Simbada	08:30	PAR030529B	3,4(release)	milky	none	0	0		1012.8	83	fair	21.5		glassy	0		0
			bou290503spmratsurface3		8.43		120	43	21.798	7	54.088	Simbada	08:40	PAR030529B	5,6,7	milky	none	0	0		1012.8	83	fair	21.5		glassy	0		0
		bou290503black2			9.00	03:00																							
				CTDBOUS012	9.05	08:00	100	43	21.739	7	54.054																		
			bou290503d	Meris 0918	9.16	02:37	120	43	21.575	7	54.049	Simbada	09:14	PAR030529C	1,2	milky	none	2	2knts	293	1012.9	82	fair	21.8		glassy	0		0
			bou290503e		9.24		120	43	21.533	7	53.968	Simbada	09:24	PAR030529C	3,4	milky	none	2	2knts	293	1012.9	82	fair	21.8		glassy	0		0
			bou290503f		9.30	02:23	120	43	21.45	7	53.882	Simbada	09:31	PAR030529C	5,6	milky	none	2	2knts	293	1012.9	82	fair	21.8		glassy	0		0
			bou290503g		11.04	02:34	120	43	21.909	7	53.842	Simbada	11:01	PAR030529D	1,2	blue	none	0	4knts	106	1012.9	68	v good	23.5		glassy	0		0
			bou290503h	SeaWiFS 1110	11.11	02:43	120	43	21.849	7	53.674			PAR030529D	3,4	blue	none	0	4knts	106	1012.9	68	v good	23.5		glassy	0		0
			bou290503i		11.18	02:50	120	43	21.822	7	53.557	Simbada	11:18	PAR030529D	5,6	blue	none	0	4knts	106	1012.9	68	v good	23.5		glassy	0		0
			bou290503spmratsurface4		11.36	05:40	120	43	21.979	7	54	Simbada	11:33	PAR030529E	3(end)	milky	high cirrus		3knts	124	1012.7	72	v good	23		glassy	0		0
			bou290503spmratsurface5		11.50	06:15	140	43	21.961	7	53.689	Simbada	11:50	PAR030529E	4,5,6	milky	high cirrus		3knts	124	1012.7	72	v good	23		glassy	0		0
			bou290503spmratsurface6		12.04		120	43	21.916	7	53.306	Simbada	12:06	PAR030529E	7,8,9	milky	high cirrus		3knts	124	1012.7	72	v good	23		glassy	0		0
		bou290503black3			12.34	03:00							12:16																
			bou290503k		12.42		100	43	21.964	7	53.894	Simbada	12:41	PAR030529F	1(end)	milky	cirrus	4	1knts	258	1012.5	77	good	22.7		glassy	0		0
			bou290503l	SeaWiFS 1248	12.48		120	43	21.978	7	53.812			PAR030529F	2,3	milky	cirrus	4	1knts	258	1012.5	77	good	22.7		glassy	0		0
			bou290503m		12.55		100	43	21.992	7	53.63	Simbada	12:55	PAR030529F	4,5	milky	cirrus	4	1knts	258	1012.5	77	good	22.7		glassy	0		0
		bou290503black4			13.14	03:00																							
				CTDBOUS013	13.45	24:00	400	43	21.872	7	54.096																		
		bou290503black5			14.04	03:00																							
			bou290503n		14.18	02:44	120	43	22.032	7	54.045			PAR030529G	1,2		cumulus	7	9	305	1012.4	77	fair	22.7		rippled	0		0
		bou290503black6			14.37	03:00																							



GMT 2004 May 13 18:00:48

Boussole 22 **27/05/2003** **BOUS030527_01**

BOUS001

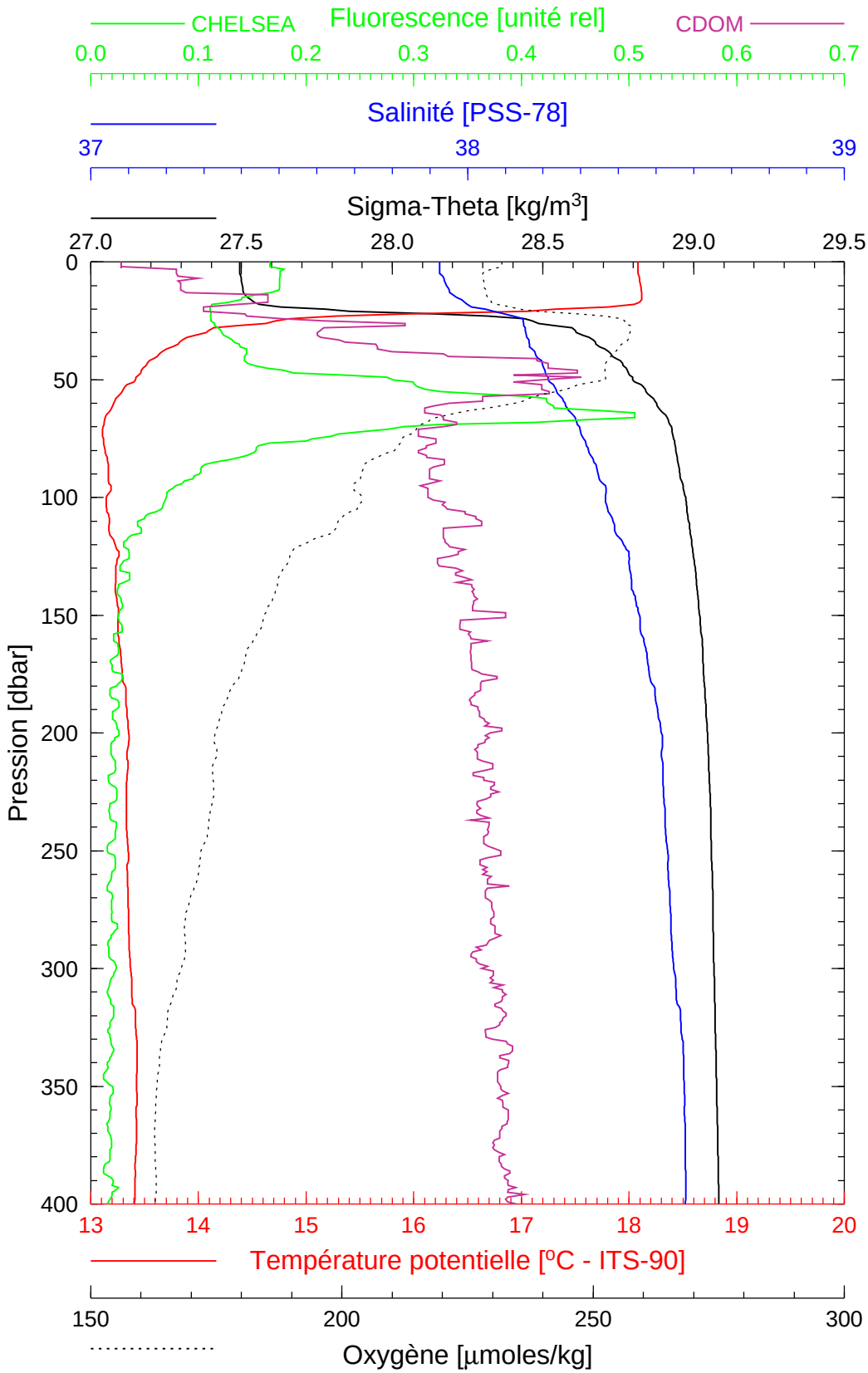


Date *27/05/2003* *Latitude* *43º21.907 N*

Heure déb *10h 20min [TU]* *Longitude* *07º54.033 E*

Boussole 22 **27/05/2003** **BOUS030527_02**

BOUS002

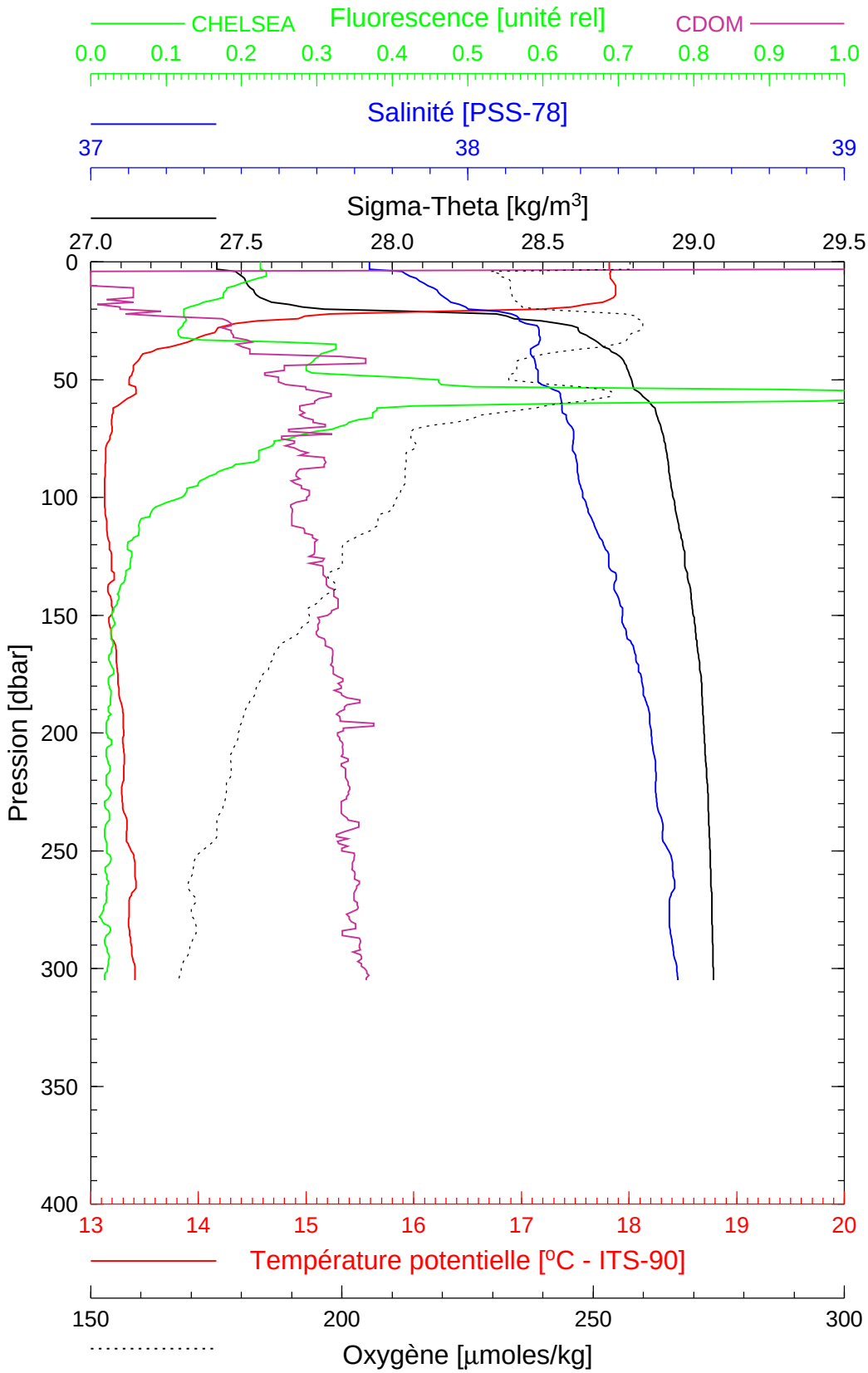


Date *27/05/2003* *Latitude* *43º21.965 N*

Heure déb *13h 25min [TU]* *Longitude* *07º54.136 E*

Boussole 22 **27/05/2003** **BOUS030527_03**

BOUS003

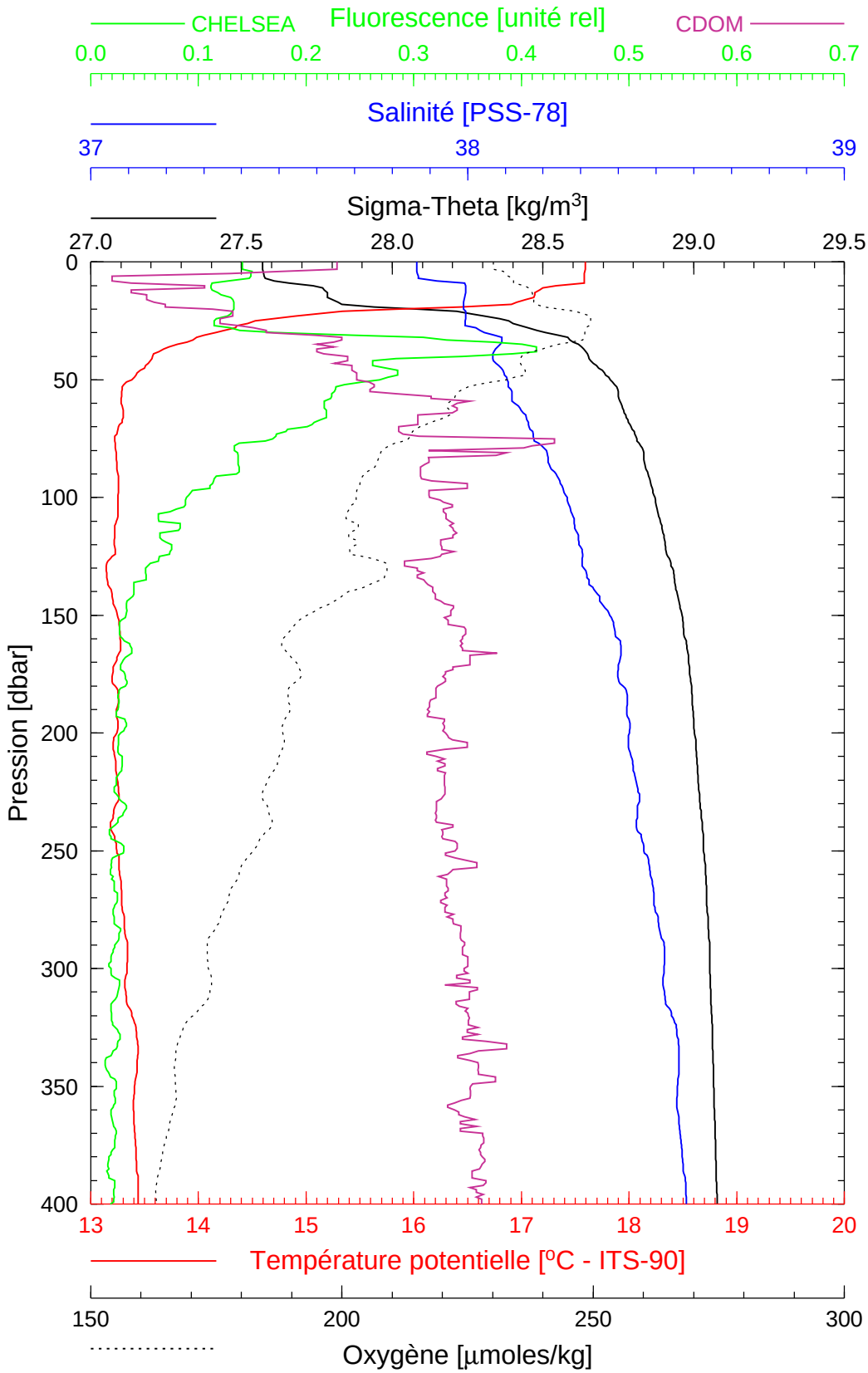


Date *27/05/2003* *Latitude* *43º25.004 N*

Heure déb *14h 24min [TU]* *Longitude* *07º47.962 E*

Boussole 22 **27/05/2003** **BOUS030527_04**

BOUS004

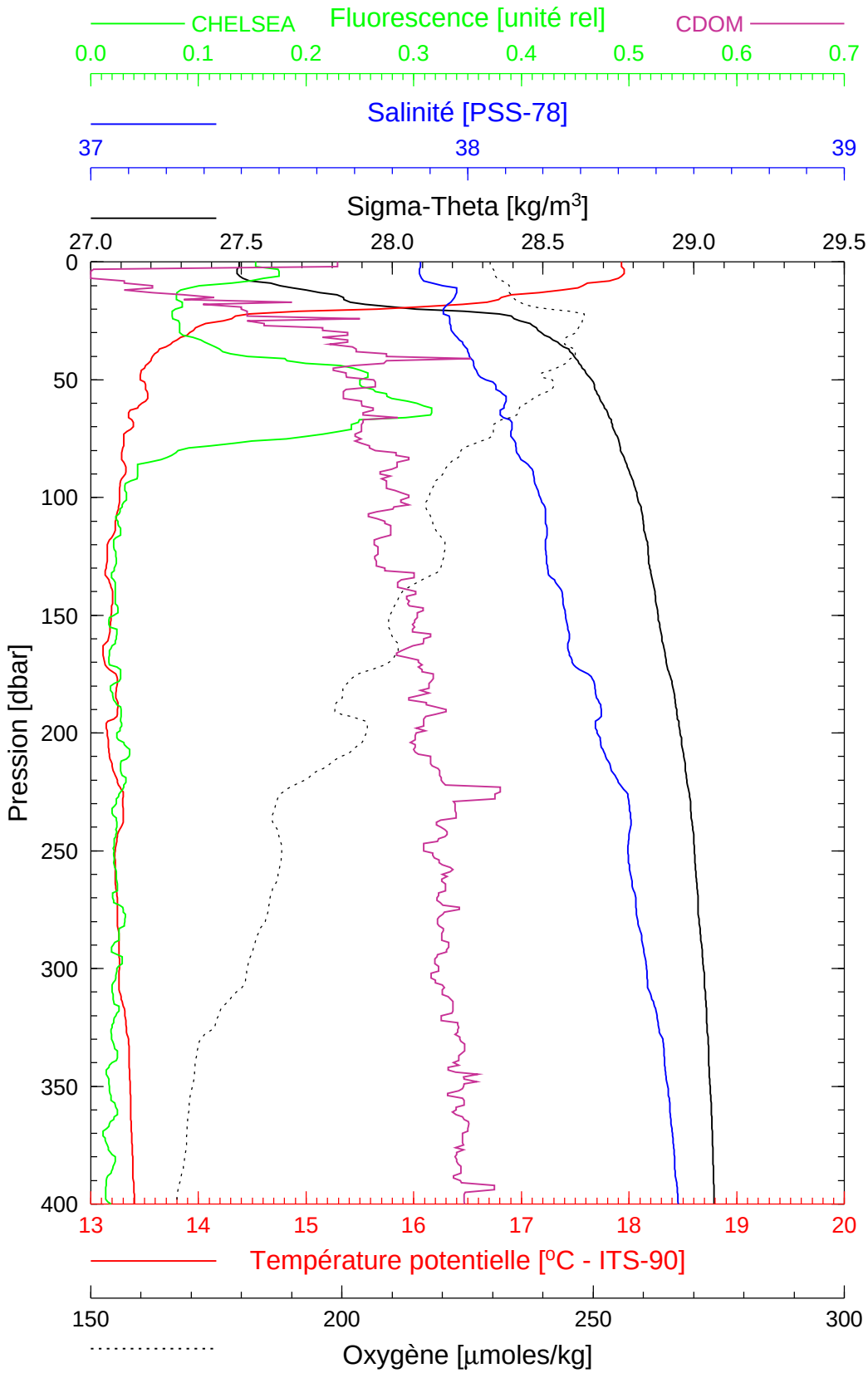


Date *27/05/2003* *Latitude* *43º28.047 N*

Heure déb *15h 10min [TU]* *Longitude* *07º42.477 E*

Boussole 22 **27/05/2003** **BOUS030527_05**

BOUS005

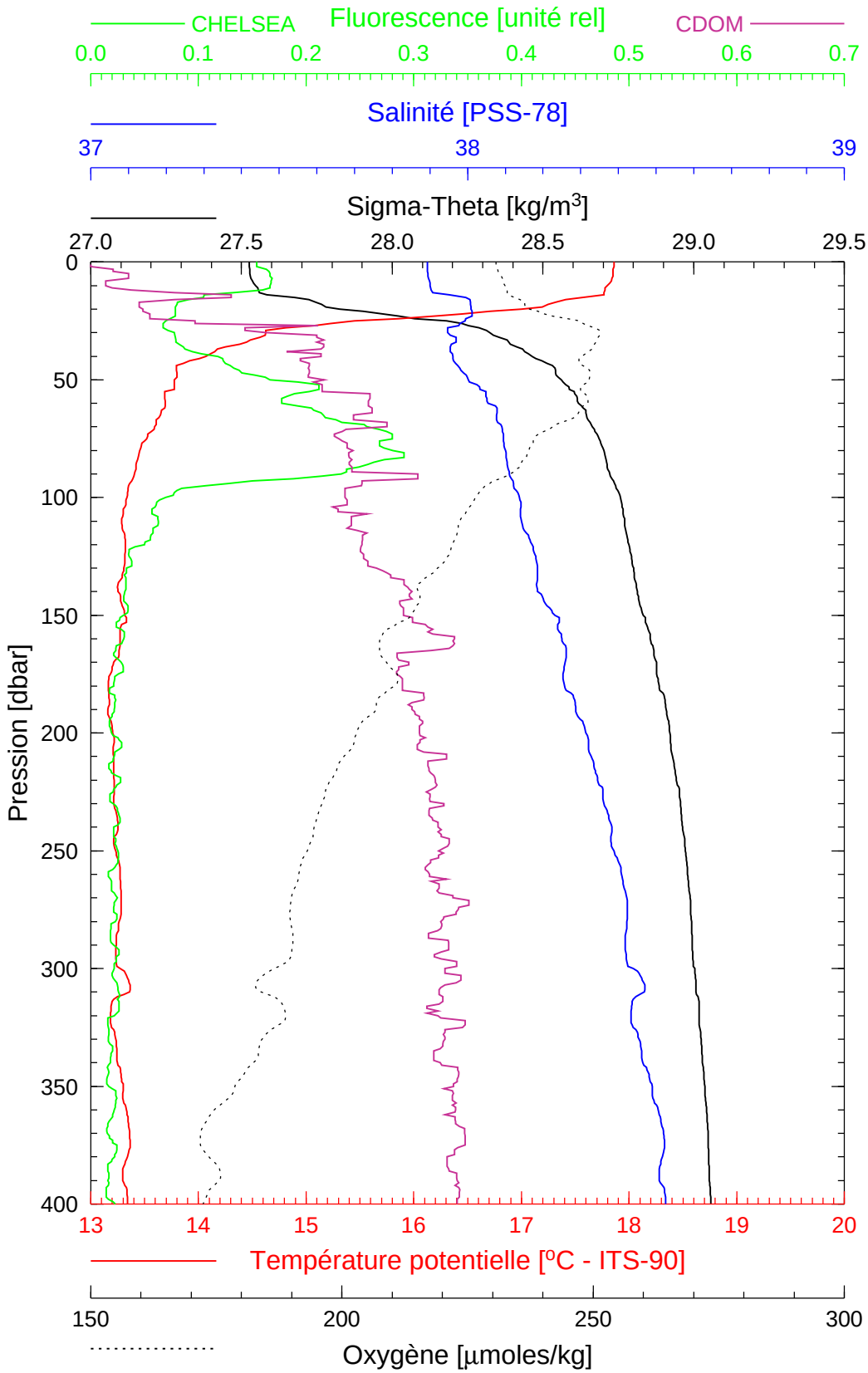


Date *27/05/2003* *Latitude* *43º31.042 N*

Heure déb *15h 56min [TU]* *Longitude* *07º36.946 E*

Boussole 22 **27/05/2003** **BOUS030527_06**

BOUS006

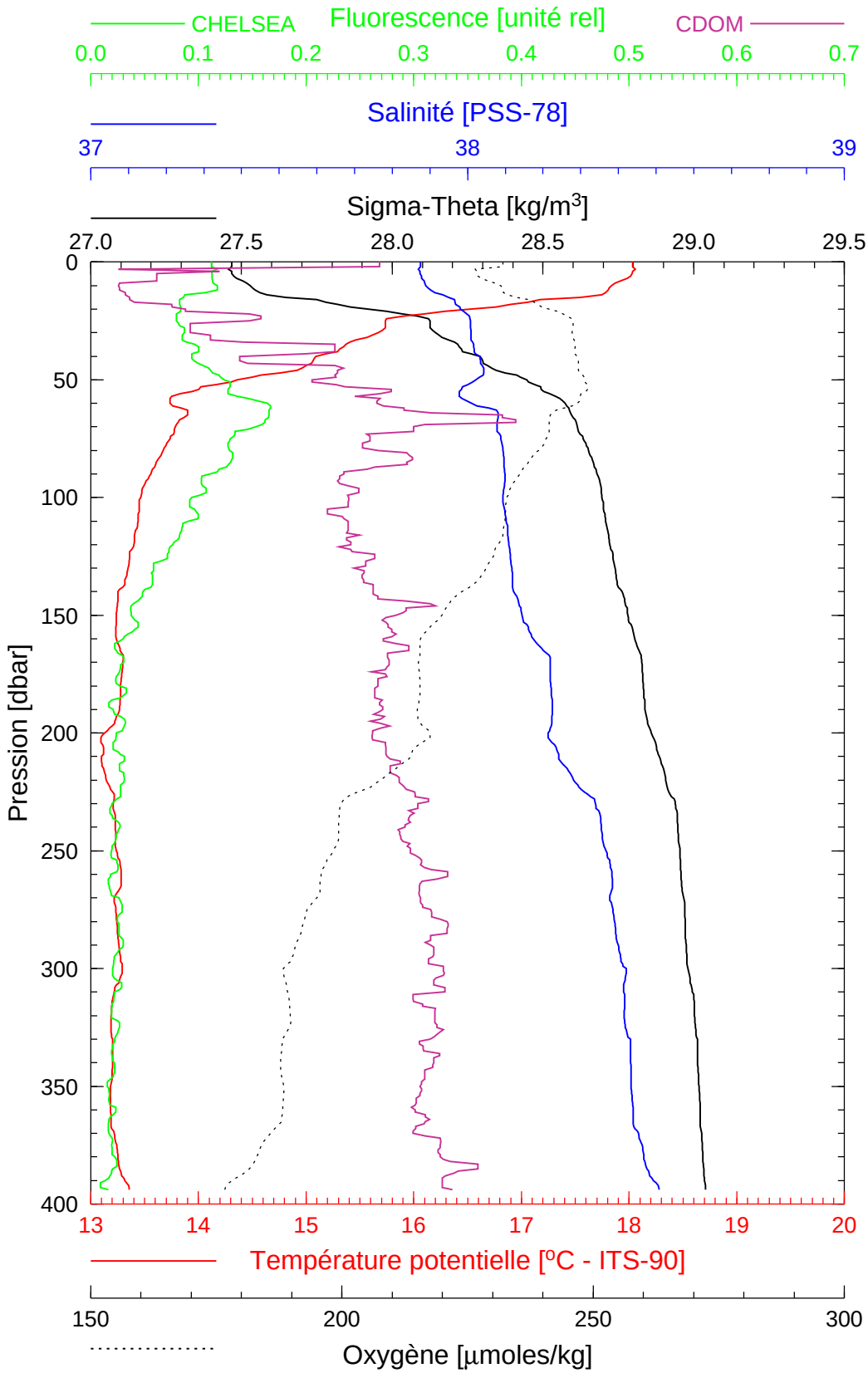


Date *27/05/2003* *Latitude* *43º34.043 N*

Heure déb *16h 54min [TU]* *Longitude* *07º30.931 E*

Boussole 22 **27/05/2003** **BOUS030527_07**

BOUS007

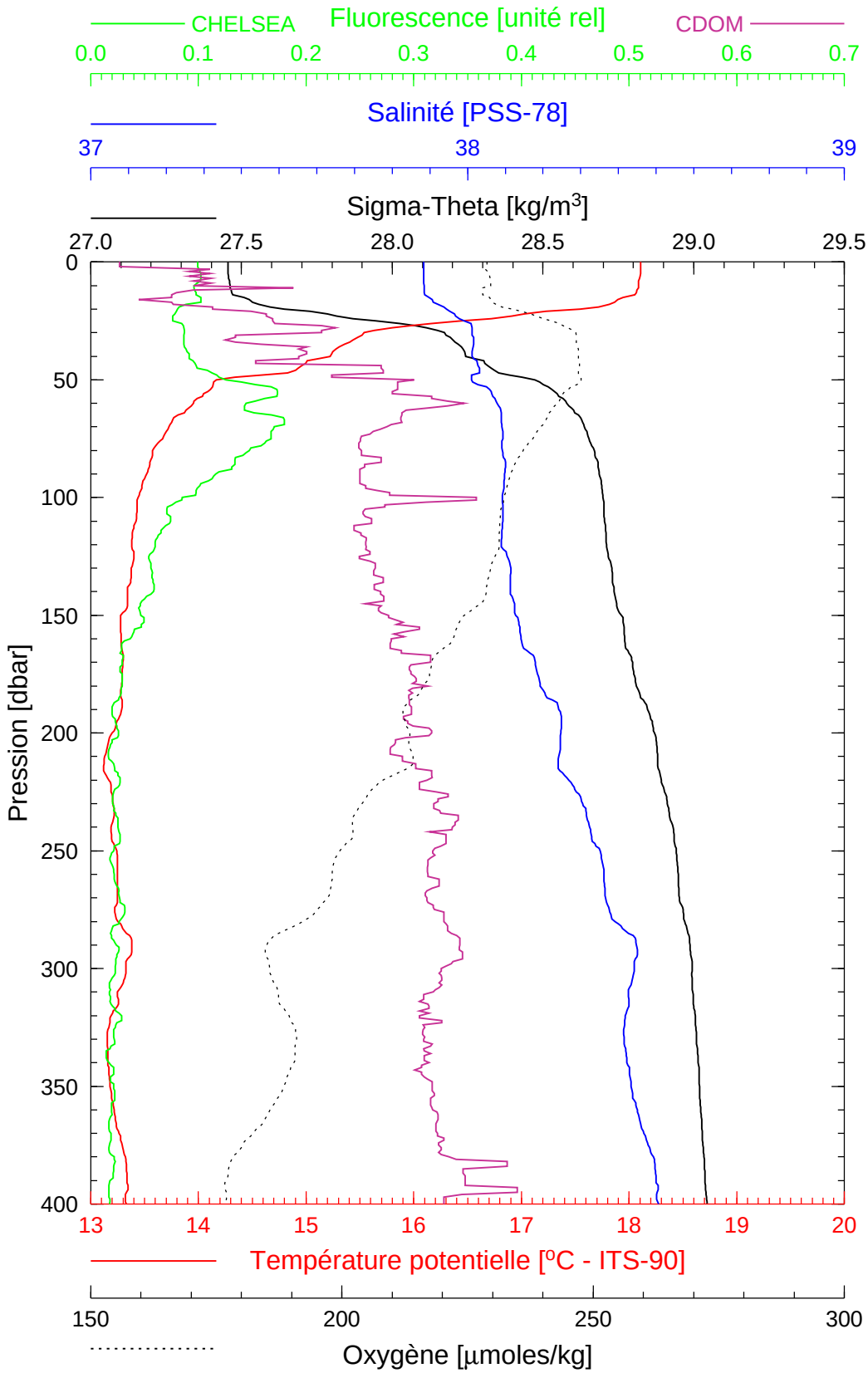


Date *27/05/2003* *Latitude* *43º37.490 N*

Heure déb *17h 42min [TU]* *Longitude* *07º25.021 E*

Boussole 22 **27/05/2003** **BOUS030527_08**

BOUS008

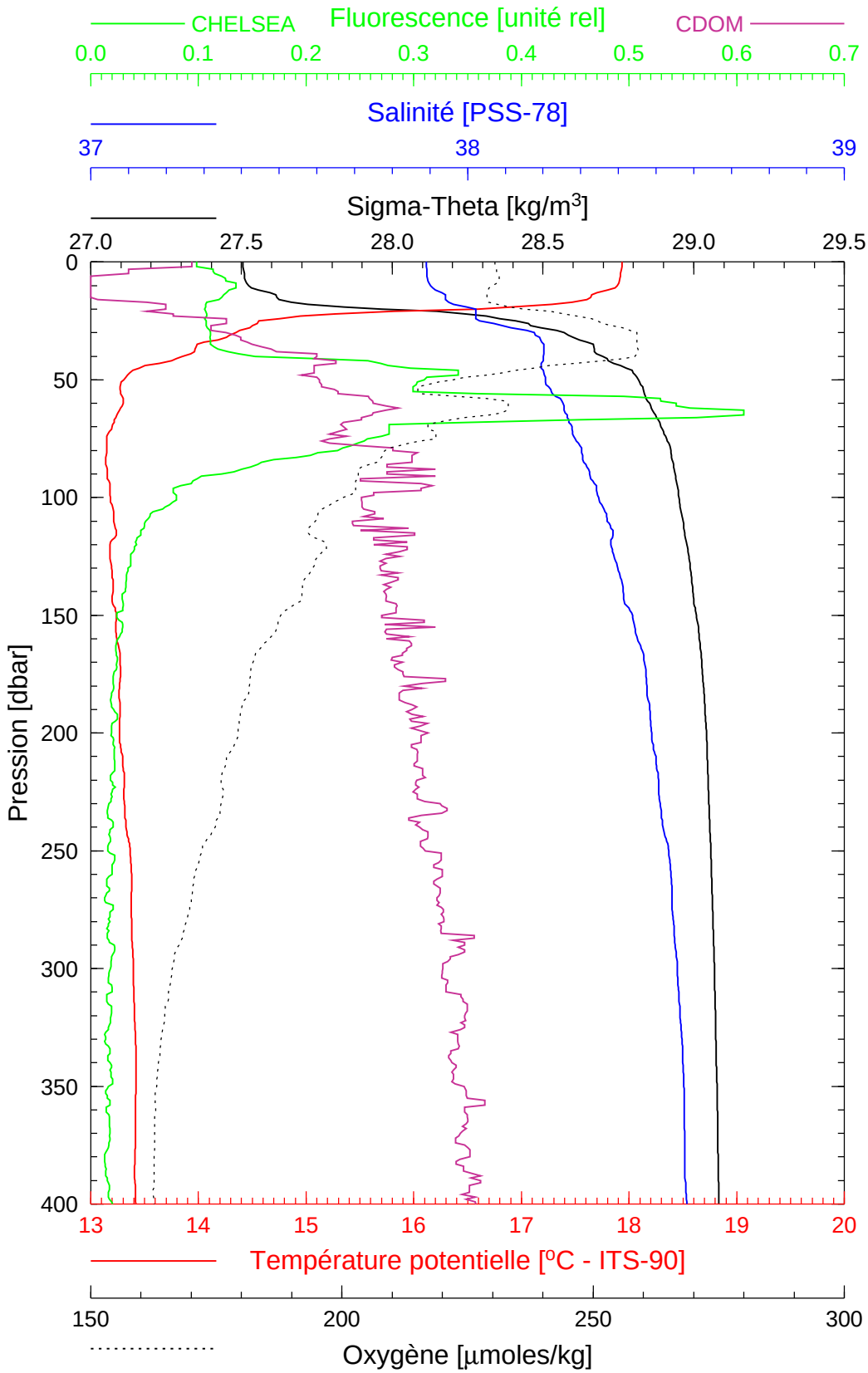


Date *27/05/2003* *Latitude* *43º38.516 N*

Heure déb *18h 09min [TU]* *Longitude* *07º25.027 E*

Boussole 22 **28/05/2003** **BOUS030528_01**

BOUS009

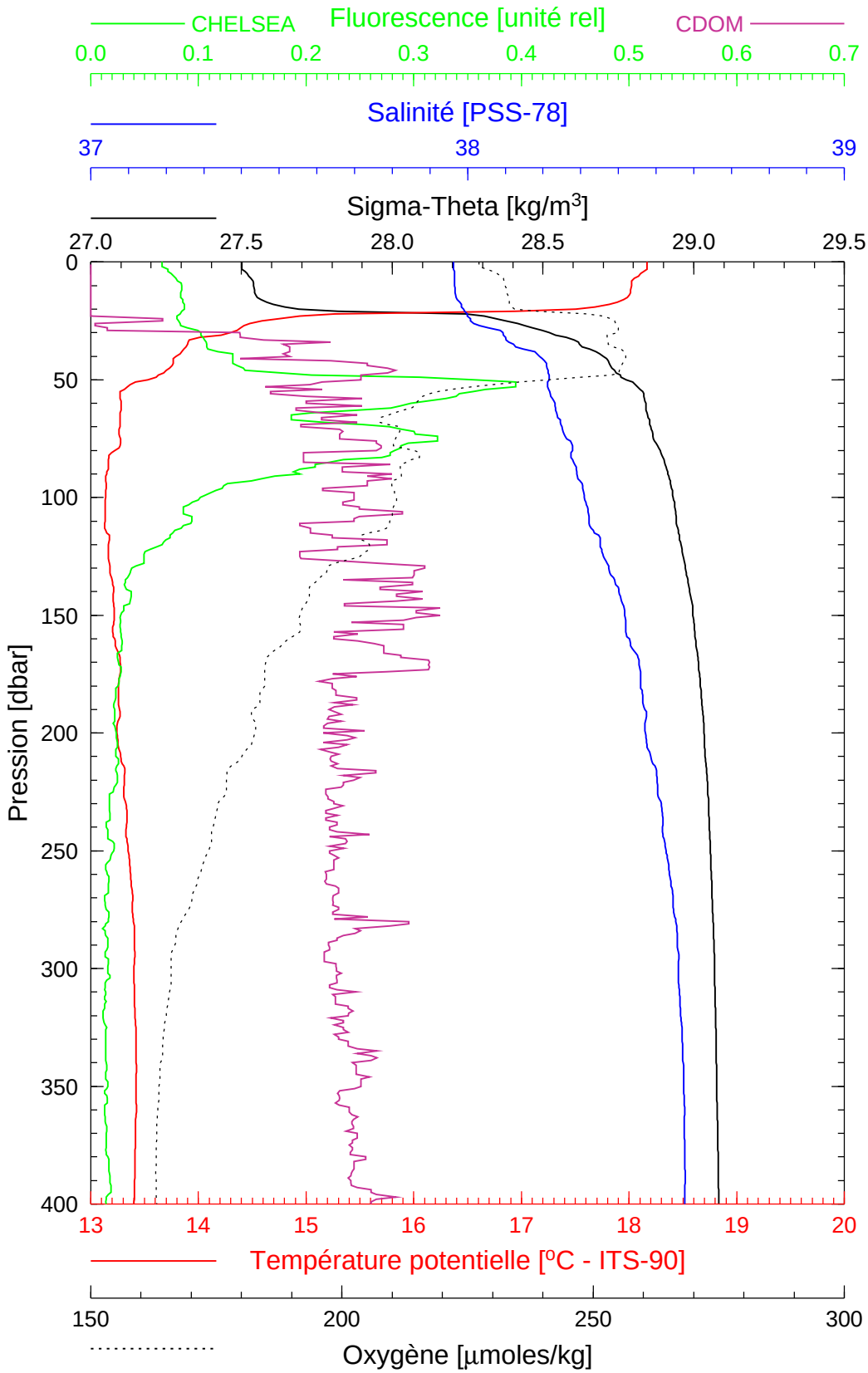


Date *28/05/2003* *Latitude* *43º22.084 N*

Heure déb *07h 05min [TU]* *Longitude* *07º53.540 E*

Boussole 22 **28/05/2003** **BOUS030528_02**

BOUS010

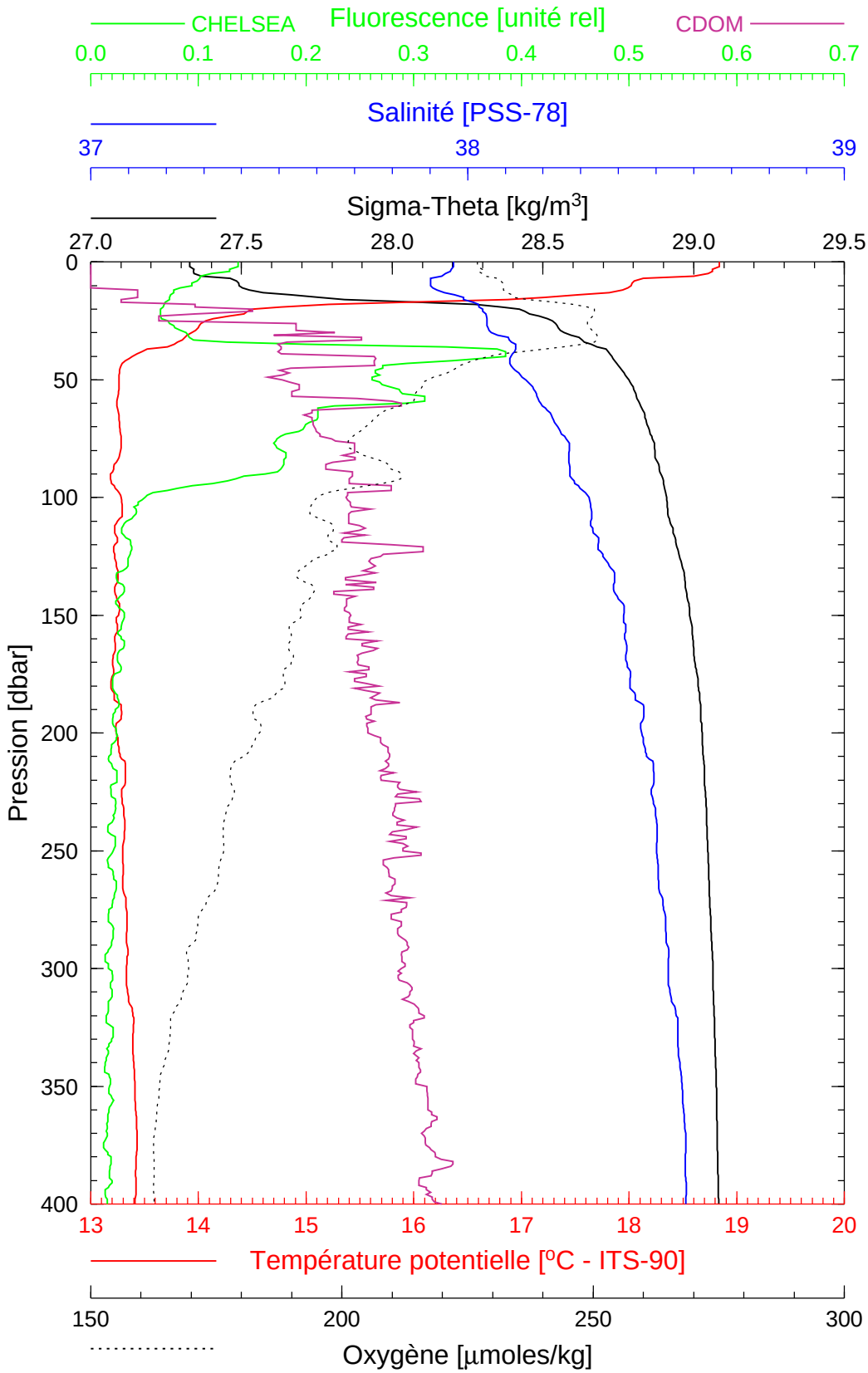


Date *28/05/2003* *Latitude* *43º21.884 N*

Heure déb *15h 01min [TU]* *Longitude* *07º54.112 E*

Boussole 22 **29/05/2003** **BOUS030529_01**

BOUS011

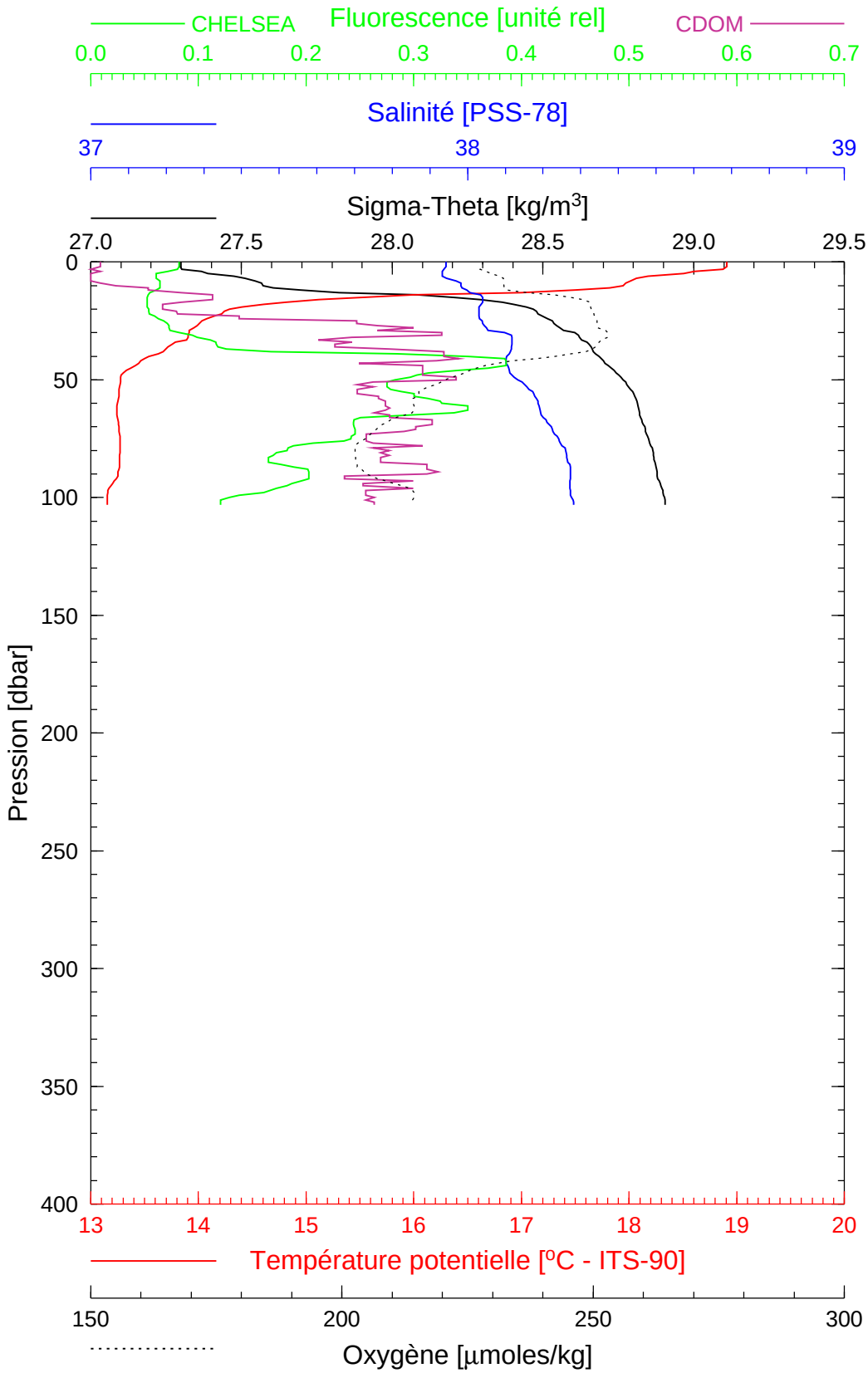


Date *29/05/2003* *Latitude* *43º21.912 N*

Heure déb *07h 08min [TU]* *Longitude* *07º54.125 E*

Boussole 22 **29/05/2003** **BOUS030529_02**

BOUS012

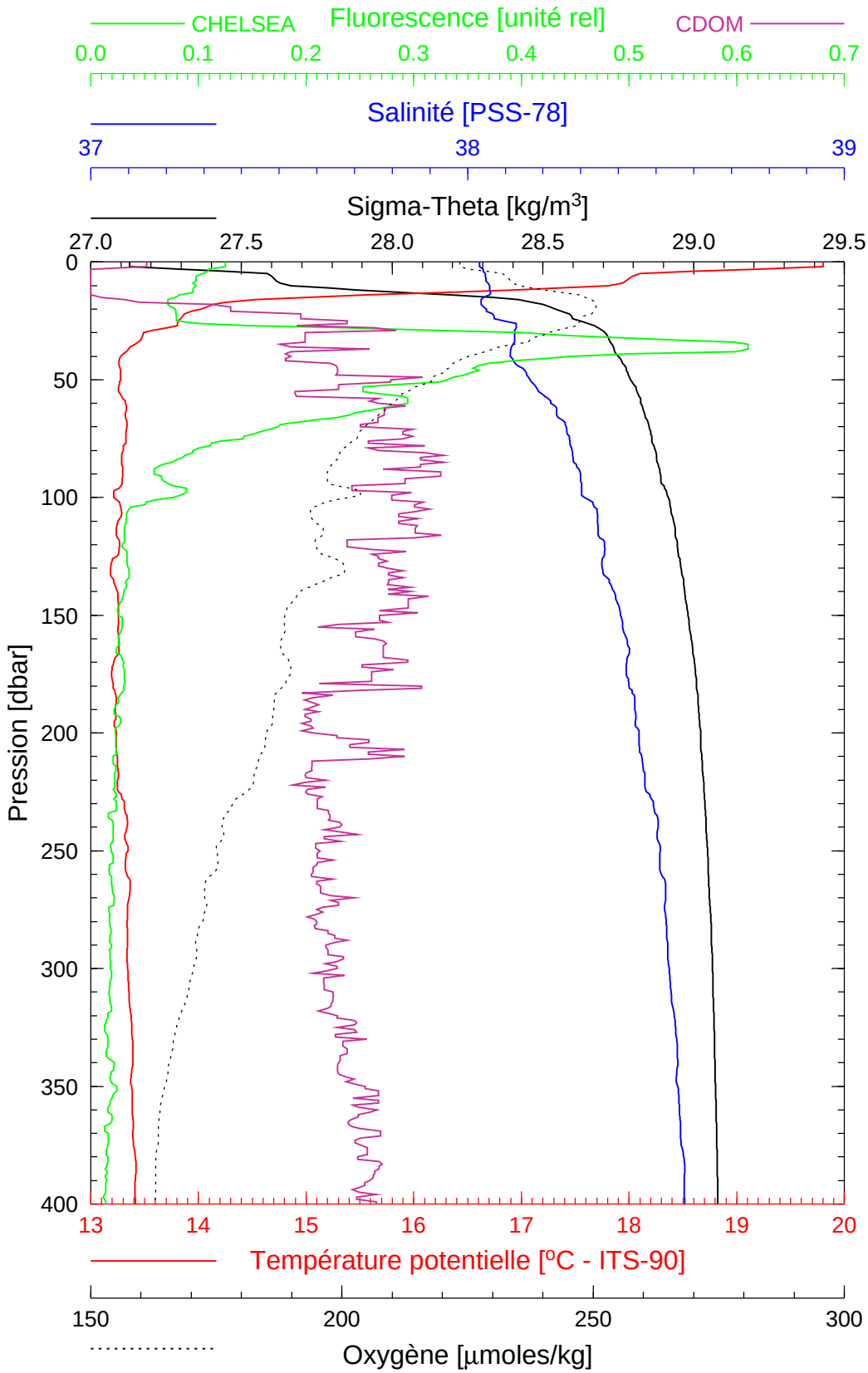


Date *29/05/2003* *Latitude* *43º21.739 N*

Heure déb *09h 05min [TU]* *Longitude* *07º54.054 E*

Boussole 22 **29/05/2003** **BOUS030529_03**

BOUS013



Date *29/05/2003* *Latitude* *43º21.872 N*

Heure déb *13h 45min [TU]* *Longitude* *07º54.096 E*