BOUSSOLE Monthly Cruise Report

Cruise 21
April 04 - 06, 2003

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

Science Personnel: Alec Scott, David Antoine, Dominique Tailliez, Maria Vlachou

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Fig 1. Launching the SPMR.

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.

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European Space Agency

Centre National d'Etudes Spatiales, France

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Centre National de la Recherche Scientifique, France

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Observatoire Océanologique de Villefranche sur mer, France

Cruise Objectives:

Multiple SPMR profiles were 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 were to be performed consecutively where possible with SPMR if conditions suitably good. If conditions poor, SIMBADA data would be collected and used only to measure atmospheric optical thickness. A floating platform was to be used to support the SPMR Eu sensor approximately 20cm below the surface for approximately one 10 minute session per day where possible. This data would be compared with the near-surface extrapolation methods used in processing. CTD deployments were required before and after the profiling session. In addition to the depth profile from the CTD, CDOM fluorometer, Chl fluorometer and AC9, seawater samples were 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 served as a light field stability indicator during SPMR profiling

Maria Vlachou participated in the cruise to collect CDOM samples from CTD casts. These were to be used in the calibration of the new CDOM fluorometer through laboratory measurements using two different techniques; spectrophotometer with a 10-cm cuvette and a new instrument: the UltraPath.

In addition to the routine Boussole objectives, it was also planned for the initial sea trials of a release mechanism for the SPMR surface buoy to allow the SPMR to launch into freefall directly from the buoy.

Cruise Summary:

Similar to the last Boussole cruise, the weather and weather forecast led to cancellation of departures, this time for the first and last of the three days. However, weather conditions proved to be far better than expected on the Boussole site for the second day, Saturday and proved to be ideal for optics work. The sky remained perfectly clear throughout the day until late afternoon although there was some swell generated from the distant Mistral wind to the West. Disappointingly, the Satlantic surface reference unit was not working, having possibly sustained damage from the cable being connected to the wrong connector during setup. To compensate for this, more frequent Simbada recordings were taken throughout the day. These Simbada measurements commenced during transit to the site with the intention of continuing this activity in future cruises to ascertain the variability of aerosol/optical thickness measurements between Boussole and the Cimel sun photometer unit on Cap Ferrat. Despite the swell, conditions were acceptable for the testing of the SPMR surface float frame with the new release system for the SPMR. The initial launch ended in capsize because of insufficient buoyancy and the effects of the swell. However, after attaching additional floats, flushing the electronic release system and noting the necessity for better waterproofing of the electronics box, two very successful casts were achieved. With 5 knots of wind throughout a large part of the day, 10 SPMR profiles were performed including some simultaneous with both the Meris and SeaWiFS passes, so good matchups are expected from these results. Winds picked up to 15 knots towards the end of the afternoon but by this time, the optics work was near complete. Two CTD casts provided water for HPLC analysis and Maria's CDOM.

Cruise Report (all times in GMT)

Friday 4 April 2003

Cruise cancelled due to strong winds and high seas

Saturday 5th April 2003

0500 Departure delayed to attempt repair of SMSR.

0545 Depart Port of Nice for Boussole Site

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

0933 CTD boussole1. Max 400m. Bottle depths (m): 200,150,140,135,130,120,100,75,50,20,5.

1007 CTD on deck

1015 SPMR deployed

1035 SPMR on deck

1145 SPMR deployed

1215 SPMR on deck

1225 SPMR surface float launched

1230 SPMR surface float recovered in capsized state

1308 SPMR and surface float launched

1320 SPMR and surface float recovered with SPMR cable tangled around float

1325 SPMR and surface float launched

1335 SPMR and surface float recovered, all well

1340 SPMR and surface float launched

1350 SPMR and surface float recovered, all well

1414 CTD. Max 400m. Bottle depths (m): 220, 190, 170, 160, 145, 130, 100, 75, 50, 20, 5.

1505 SPMR deployed

1520 SPMR on deck

1525 Depart for Nice

1830 Arrival in Port of Nice

Sunday 6 April 2003

Weather forecast for the day and conditions in the morning were not favourable, especially in the absence of a surface reference unit for the SPMR. Subsequently, the cruise was cancelled.

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

SeaWiFS (times in GMT)

- 04 Apr 2003 11:22 at 29.04 degrees elevation
- 04 Apr 2003 13:00 at 28.73 degrees elevation
- 05 Apr 2003 12:03 at 65.17 degrees elevation
- 06 Apr 2003 11:06 at 20.49 degrees elevation
- 06 Apr 2003 12:44 at 39.88 degrees elevation

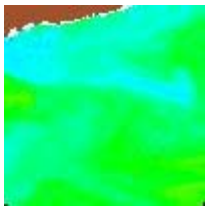
Meris (times in GMT)

- 04 Apr 2003 10:07
- 05 Apr 2003 09:36

Ligurian Sea Boussole Site Images

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

SeaWiFS



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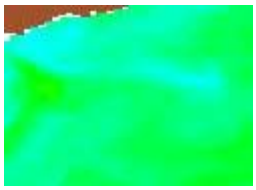
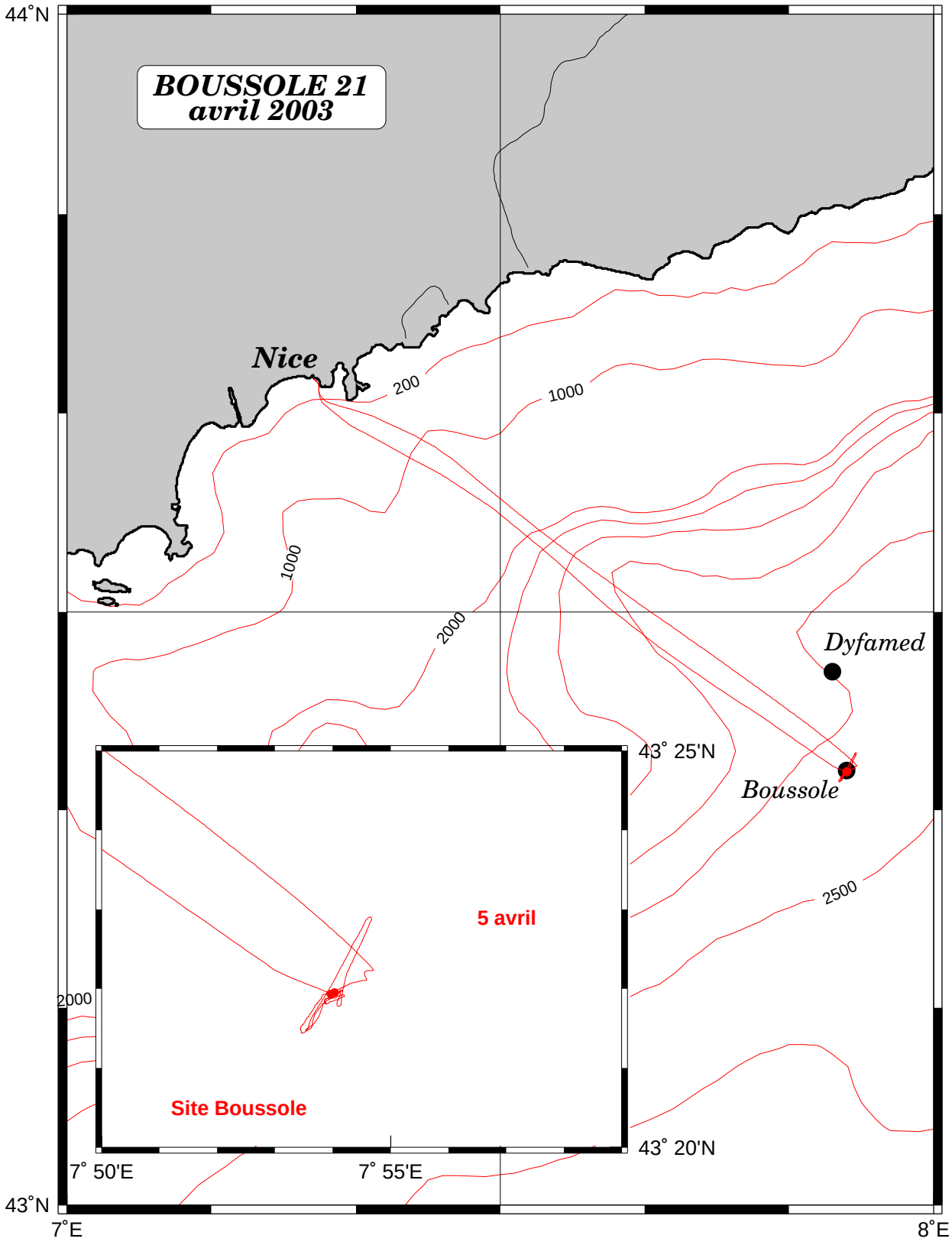


5th April, 2003

Tabulated Cruise Summary for Boussole 21

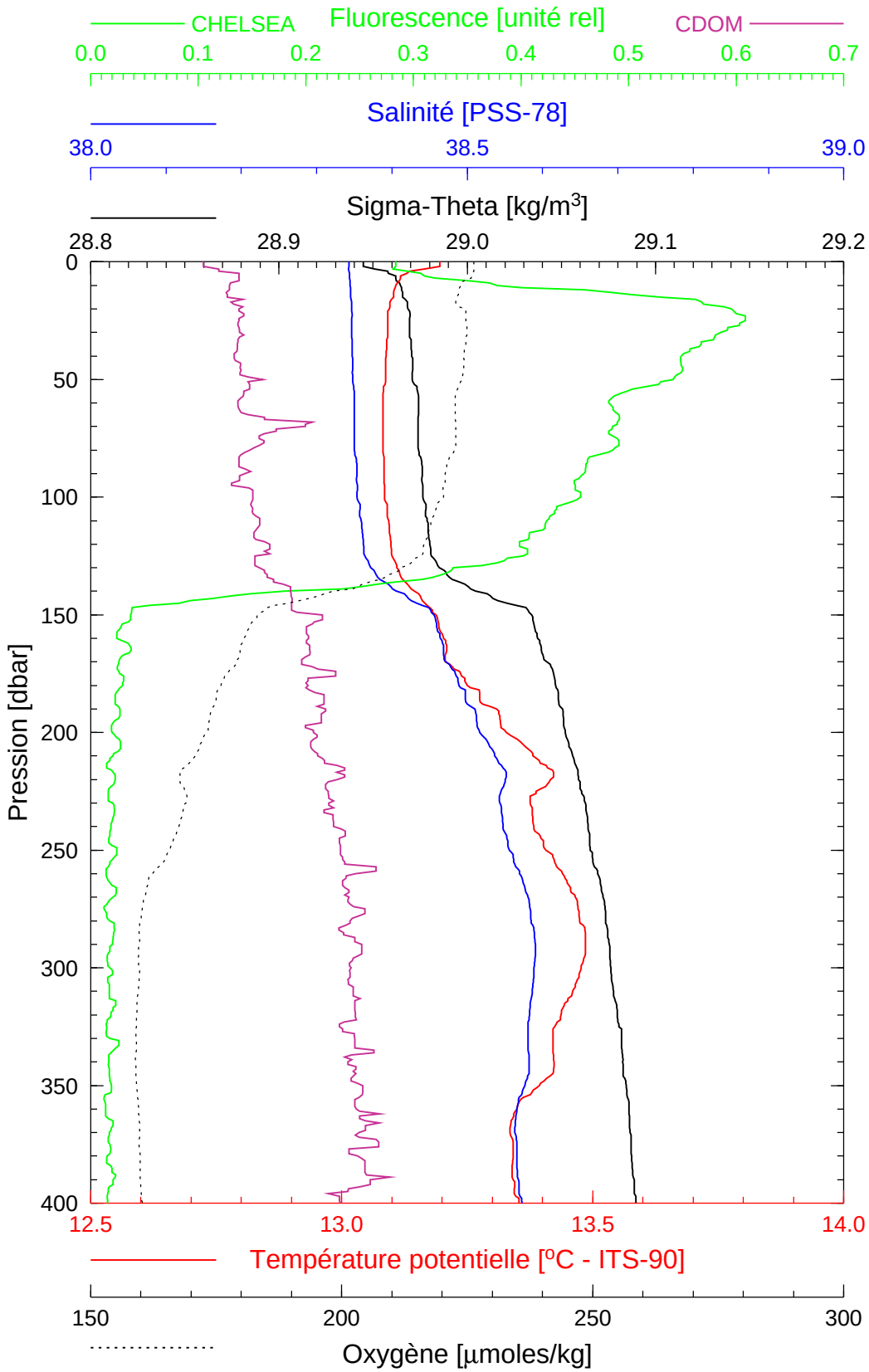
Date	Sensors:	Black names	Profile names	CTD notées /	Start Time	Duration	Depth max	Latitude (N)		50		Other sensors	Their cast	PAR	Start/Finish				Weather							Sea		
	spmr&smsr, smsr	(file extension: *.raw*)	(file extension: *.raw*)	satellite overpass	GMT (hour.min)	(min.sec)	(meter)	(Degree)	(Minute)	(Degree)	(Minute)	(hyperspectral:HS)			S/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
04/04/03																													
05/04/03				CTD BOUS001	9.33	25.00	400	43	21.934	7	53.974	Simbada	06:47-09:53			clear		0	4knts	246	1015.1	53		13.6		peu agitee			
	spmr&smsr	bou050403black1			10.13	03.00																							
			bou050403a		10.18		100	43	21.718	7	53.642	Simbada	10:22			clear blue		0	4knts	304	1015.2	50	good	15.5		good but swell	0.5	-	0
			bou050403b		Aborted																								
			bou050403c		10.27	02.13	100	43	21.653	7	53.587			PAR03040501	3, 4	clear blue		0	4knts	304	1015.2	50	good	15.5		good but swell	0.5	-	0
		bou050403black2			11.39	03.00																							
			bou050403d		11.47		120	43	21.828	7	54.054			PAR03040502	1, 2	clear blue		0	5knts		1014.7	66	good	13.2		good but swell	0.5		0
			bou050403e		11.54	02.42	120	43	21.815	7	53.917	Simbada	11:51	PAR03040502	3, 4	clear blue		0	5knts		1014.7	66	good	13.2		good but swell	0.5		0
			bou050403f		Aborted									PAR03040502															
			bou050403g		12.03	02.26	120	43	21.797	7	53.8535			PAR03040502	5	clear blue		0	5knts		1014.7	66	good	13.2		good but swell	0.5		0
			bou050403h		12.08	02.26	120	43	21.779	7	53.79			PAR03040502	7, 8	clear blue		0	5knts		1014.7	66	good	13.2		good but swell	0.5		0
			bou050403spmratsurface1		13.11	04.00	Aborted	43	21.929	7	54.076			PAR03040502	10, 11	clear/milky		0	5knts		1013.8		good			good but swell	0.5		0
			bou050403spmratsurface2		13.27	05.42	120	43	21.876	7	53.973			PAR03040502	12, 13	clear/milky		0	5knts		1013.8		good			good but swell	0.5		0
			bou050403spmratsurface3		13.43	05.17	120	43	21.85	7	53.855	Simbada	13:48	PAR03040502	14	clear/milky		0	5knts		1013.8		good			good but swell	0.5		0
		bou050403black3			13.56	03.00																							
				CTD BOUS002	14.14	36.00	400	43	21.953	7	54.027					clear/milky		0	9knts	60	1013.4	62	good	13.1		good			
		bou050403black4			14.56	03.00						Simbada	14:41																
			bou050403i		15.07		120	43	22.183	7	54.554	Simbada	15:11	PAR03040503	1, 2	clear/milky		0	15knts	~300	1012.4	65	good	13.1		increasing	0.5		few
			bou050403j		15.13	02.27	125	43	22.225	7	54.557			PAR03040503	3, 4	clear/milky		0	15knts	~300	1012.4	65	good	13.1		increasing	0.5		few
06/04/03																													



GMT 2004 May 3 12:16:18

Boussole 21 **05/04/2003** **BOUS030405_01**

BOUS001

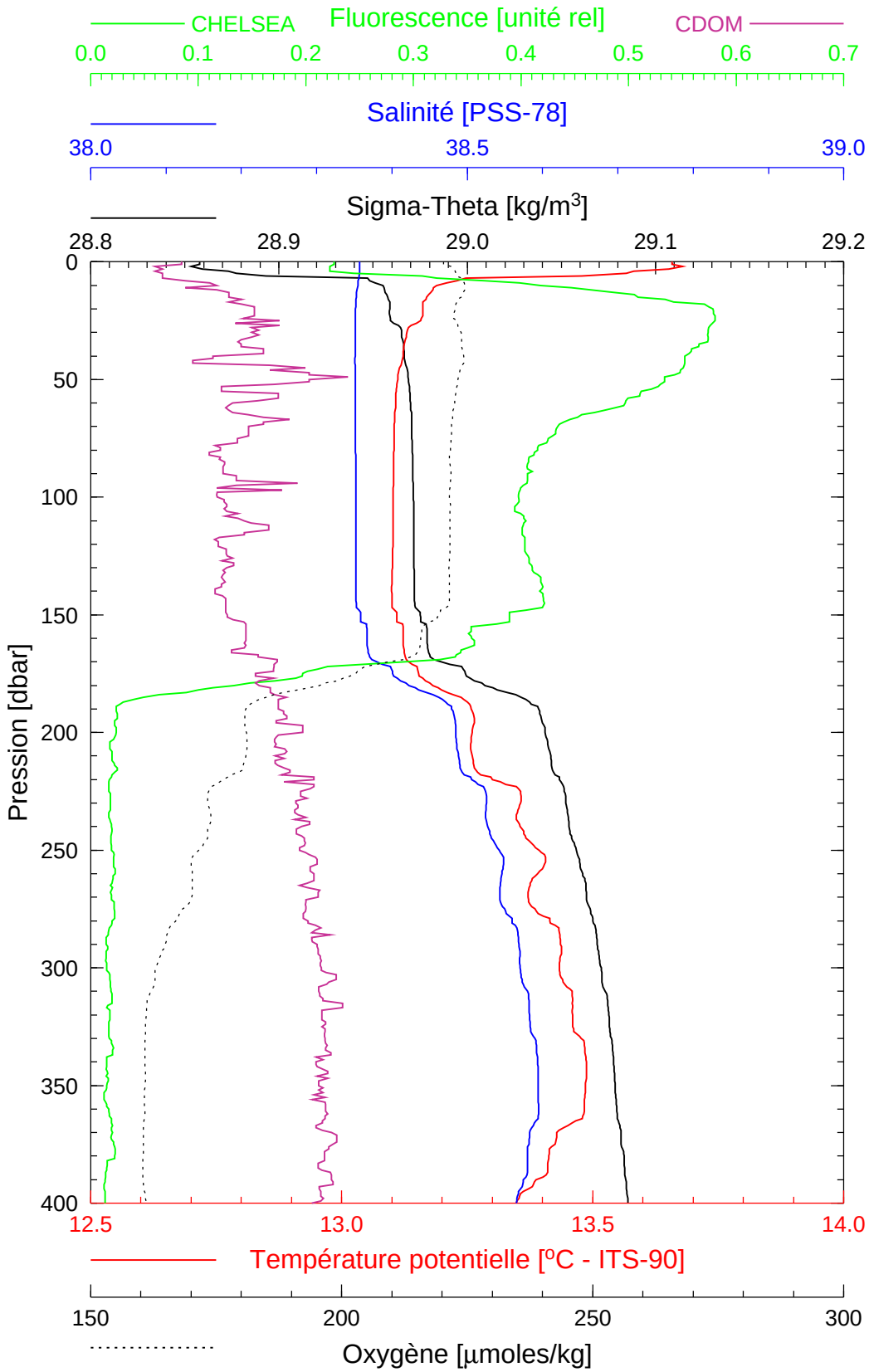


Date *05/04/2003* *Latitude* *43º21.934 N*

Heure déb *09h 33min [TU]* *Longitude* *07º53.974 E*

Boussole 21 **05/04/2003** **BOUS030405_02**

BOUS002



Date *05/04/2003* *Latitude* *43º21.953 N*

Heure déb *14h 14min [TU]* *Longitude* *07º54.027 E*

BOUSSOLE 21 5 avril 2003