BOUSSOLE Monthly Cruise Report

Cruise 39
February 22 – 25, 2005

Duty Chief: Guislain Bécu (guislain.becu@obs-vlfr.fr)
Vessel: R/V Téthys II
(Captain: Rémy Lafond)

Science Personnel: Guislain Bécu, Dominique Tailliez, Endre Marken

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

Fig 1. Damaged "DACNet to CISCO" cable.

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

Contents

Cruise Objectives

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 particule absorption spectrophotometric 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.

Endre Marken, Norwegian student in short stay at LOV, will be aboard on Wednesday 23 February.

Other activities will also be performed on the buoy to download the data off the buoy and verify that everything is as expected above the waterline (the DACNet was exchanged on 18 February by SAMAR divers, but no communication could have been established…).

Cruise Summary

The weather for the 4 days was globally bad, especially for the first day. Few SPMR profiles were possible on the last day, and communication with the buoy didn't work via CISCO Ethernet bridge, even not via a direct connection (see details beneath).

CTD profiles were still realized with Bigelow AC9+ (s/n 147).

The PAROSCIENTIFIC pressure sensor was still unavailable (cf. BOUSSOLE #36 report); depth was again measured with a SBE39 hand held CTD fixed onto the SPMR body.

For one day of the campaign, the first (CTD profiles) samples set are taken at 10 and 5 m, and the second samples set are taken at between 200 and 5 m. Before usual water filtration, a first 250 ml water is taken from each Niskin bottle and separated into two bottles, one with intact sea water (nevertheless filtered at 200 microns), and another filtered at 0.2 microns. These samples are straight away brought back to LOV to pass through the "Ultrapath" instrument (for Hervé Claustre and Fanny Tièche), which measures absorption of both filtered and non-filtered samples (i.e. it measures dissolved and total absorption respectively). For this day, the ship leaves BOUSSOLE site just after the second CTD has went up on ship deck.

Tuesday 22 February 2005

Weather conditions prevented departure.

Wednesday 23 February 2005

The weather was a little bit better, allowing CTD profiles (including transect), but preventing SPMR/SMSR profiles (too many whitecaps, too many heterogeneous clouds). Acoustic coupling batteries were tested, but failed. Always no communication with the buoy could be established.

Thursday 24 February 2005

Like the previous day, no SPMR/SMSR were realized, just CTD profiles were possible. Acoustic coupling batteries were again tested, and this time it was successful.
Ultrapath filtrations were realized (first CTD sampling at 10 and 5 m, and second sampling between 200 and 5 m), just followed by departure to Port of Nice.

Friday 25 February 2005

The weather was as bad as the 2 previous days, but some SPMR/SMSR profiles were nevertheless realized (the sky was cloudy, but these were more homogeneous). As no CISCO communication were established, Guislain Bécu went on the buoy to directly communicate with it, but did not get the UTC 1500 communication (sailors broke a little zodiac motor piece, so that the laptop and communication software were on at 1459, less than one minute before connection attempt!). He staid on the buoy for one hour, but did not get this communication as well. When unconnecting the "DACNet to CISCO" cable, it appeared that this one was really damaged (see cover picture).

Cruise Report

22 February 2005 (UTC)

Bad weather prevented departure.

23 February 2005

0530 Departure from port of Nice.
0850 Arrival at BOUSSOLE site. No buoy communication at 0900.
0858 CTD profile 1 (400 m), with water sampling and filtration at 200, 100, 80, 70, 60, 50, 40, 30, 20, 10 and 5 m.
1000 too many heterogeneous clouds, too many swell and whitecaps, so no SPMR/SMSR profiles realized, the ship turned around the buoy to try to catch a communication with it… unsuccessful again.
1215 Wind increases, so SPMR/SMSR profiles are given up, and acoustic coupling batteries test is performed. Unfortunately, this is also unsuccessful.
1256 CTD profile 2 at BOUSSOLE site (400 m), with no water sampling. Transect Station 1 (43°25'N 7°48'E).
1406 CTD profile 3 (400 m). Transect Station 2 (43°28'N 7°42'E).
1509 CTD profile 4 (400m). Transect Station 3 (43°31'N 7°37'E).
1618 CTD profile 5 (400m). Transect Station 4 (43°34'N 7°31'E).
1727 CTD profile 6 (400m). Transect Station 5 (43°37'N 7°25'E).
1831 CTD profile 7 (400m).
2000 Arrival at port of Nice.

24 February 2005

0830 Departure from port of Nice (late departure as "Météo France" buoy indicated 2 m swell during the night and early morning.
1145 Arrival at BOUSSOLE site. Always no CISCO communication with the buoy at 1200.
1215 Acoustic coupling batteries test. This time it was successful. Transducer #1 indicated a distance of 2638 m, a "1998" response to the diagnostic command "449". Transducer #2 indicated a strange distance of 0954 m and a "0890" response to the "449" diagnostic command.
1320 CTD profile 8 (400m), with sampling at 200, 100, 80, 70, 60, 50,40, 30, 20, 10 and 5 m for Ultrapath and filtration unit operations.
1420 begin of Ultrapath filtration.
1450 end of Ultrapath filtration and departure to port of Nice.
1619 Test of the SBE25 (Zoology) at station 5 (43°37'N 7°25'E) (500m).

25 February 2005

0630 Departure from port of Nice.

0940 Arrival at BOUSSOLE site; always no communication with the buoy at 1000.

1015 weather conditions very bad (from 28 decreasing to 16 knots, whereas “theyr.net” had forecasted Beaufort 2 winds…), but SPMR/SMSR profiles 1, 2 and 3 nevertheless realized. No more shortcuts occur since Francis Louis cut about 2 m cable at SPMR side.

1210 CTD profile 9 (400m) with water sampling and filtration at 10 and 5 m (triplicate).

1300 SPMR/SMSR profiles 5 and 6 while waiting the sea conditions to become suitable to go on the buoy head.

1359 Direct connection to buoy attempted (Guislain Bécu arrived quite late onto the buoy, as sailors broke a piece of zodiac motor before putting it at Sea), but unsuccessful. The laptop connected during one hour to buoy, to check if the problem was a clock malfunctioning. Apparently not : always no communication at 1505. When unconnecting the “DACNet to CISCO” cable, it appeared to be clearly out of order (see cover picture), explaining why there was no communication since few weeks.

1515 Departure for port of Nice.

1845 Arrival to port of Nice.

Calculated Swath paths for MERIS Sensor (ESOV Software)

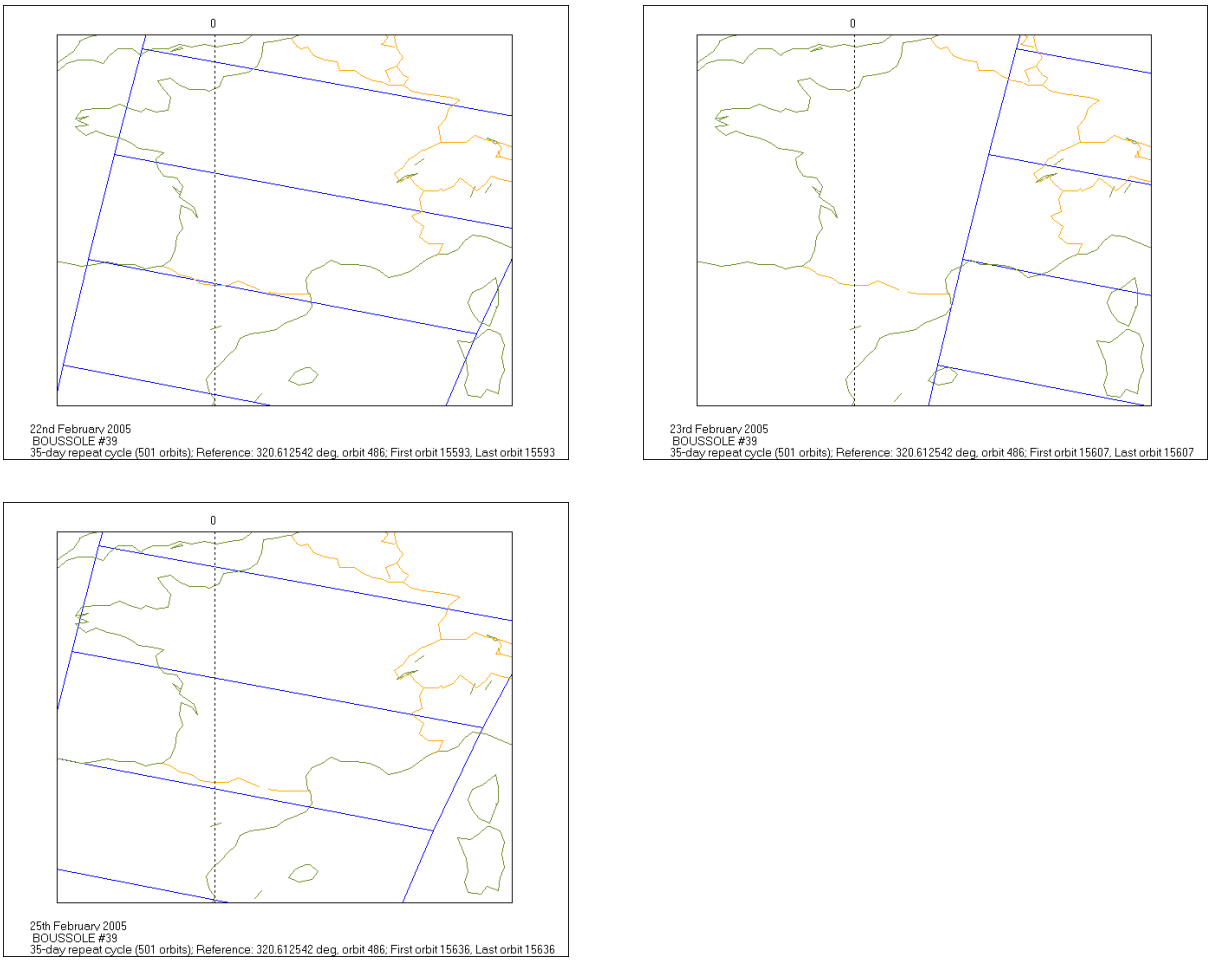
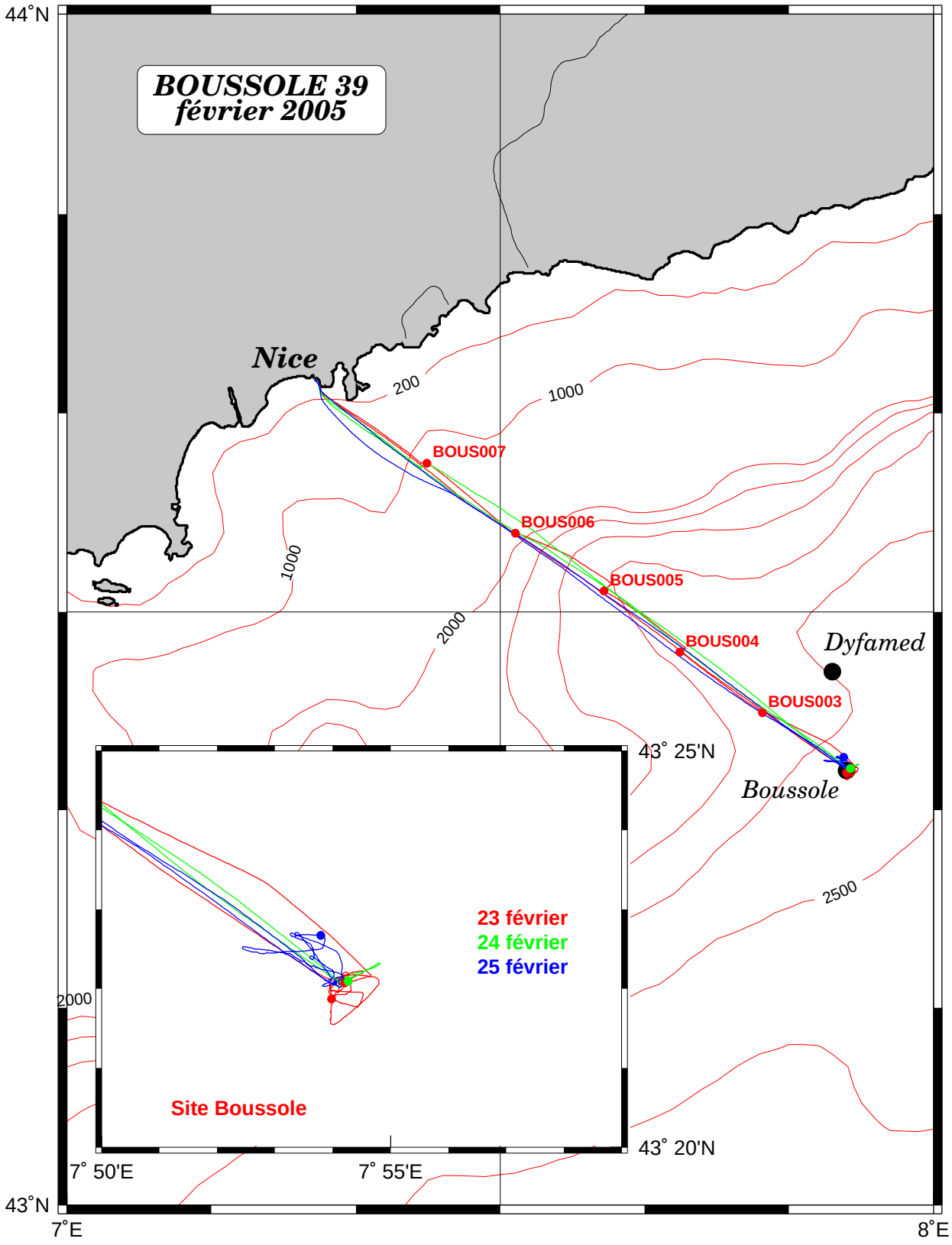


Figure 2. Calculated swath paths for MERIS (Esov software) above BOUSSOLE site for 22, 23 and 25 Feb 2005.

Appendix

Cruise Summary Table for Boussole 39

Date	Black names	Profile names	CTD notées /	Start Time	Duration	Depth max	Latitude (N)		longitude		Other sensors	Their cast	Start/Finish			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 speed	Wind dir.	Atm. Pressure	humidity	Visibility	T air	T water	Sea	Swell height	Swell dir.	White horses
22/02/2005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	F5-F6	-	-	-	-	-	-	-	1,5 m	-	yes
23/02/2005			CTDBOUS001	08:58	30:00	400	43	21.872	7	53.981				-	heter.	7	9 kn	337	1005.0	50	very good	6.8	13.1	agitated	1,5 m		yes
				12:16			43	22.000	7	54.000	acc. coupl. test.		12:16														
			CTDBOUS002	12:56	27:00	400	43	22.076	7	54.207				-	heter.	2	11 kn	167	1006.7	51	excellent	7.3	13.2	choppy	1,3 m		yes
			CTDBOUS003	14:06	28:00	400	43	24.923	7	48.147				-	heter.	2	10 kn	178	1006.7	50	excellent	7.1	13.5	choppy	1,2 m		yes
			CTDBOUS004	15:09	31:00	400	43	27.972	7	42.432				-	heter.	2	18 kn	175	1006.2	36	excellent	7.7	13.2	choppy	1,2 m		yes
			CTDBOUS005	16:18	29:00	400	43	31.059	7	37.172				-	heter.	1	13 kn	172	1006.4	43	excellent	8.2	13.3	choppy	1,2 m		yes
			CTDBOUS006	17:27	24:00	400	43	33.976	7	31.052				-	heter.	2	10 kn	164	1006.9	32	excellent	8.7	13.2	choppy	1,2 m		yes
			CTDBOUS007	18:31	28:00	400	43	37.487	7	24.919				-	heter.	8	12 kn	191	1007.2	44	excellent	8.2	13.0	choppy	1,2 m		yes
24/02/2005				12:15			43	22.000	7	54.000	acc. coupl. test.		12:15														
			CTDBOUS008	13:20	37:00	400	43	22.097	7	54.271				-	heter.	7	10 kn	168	1011.1	51	excellent	7.4	13.2	choppy	1,3 m		yes
				16:19	40:00	400	43	37.429	7	24.828	SBE25 Zoo		16:59	-	heter.	7	-	-	-	-	-	-	-	-	-		-
25/02/2005	bou250205black1																									
		bou250205A		10:24	04:30	180	43	22.379	7	53.393				covered/milky	Cu. + fog	7	15 kn	65	1010.8	58	very good	8.0		choppy	1,3 m		yes
		bou250205B		10:36	04:30	180	43	22.448	7	53.243				covered/milky	Cu. + fog	7	15 kn	65	1010.8	58	very good	8.0		choopy	1,3 m		yes
		bou250205C		10:47	03:30	120	43	22.486	7	52.913				covered/milky	Cu. + fog	7	15 kn	65	1010.8	58	very good	8.0		choppy	1,3 m		yes
	bou250205black2																									
			CTDBOUS009	12:10	27:00	400	43	22.674	7	53.795				covered	Cu.	8	14 kn	70	1010.4	63	very good	8.2	13.2	choppy	1,2 m		yes
	bou250205black3																									
		bou250205D		12:58	05:00	210	43	22.197	7	54.017				gray	large Cu.	7	11 kn	61	1010.0	57	very good	8.1		choppy	1 m		yes
		bou250205E		13:18	05:00	210	43	22.422	7	53.680				gray	large Cu.	7	11 kn	61	1010.0	57	very good	8.1		choppy	1 m		yes
	bou250205black4																									



GMT 2005 Feb 27 18:23:24

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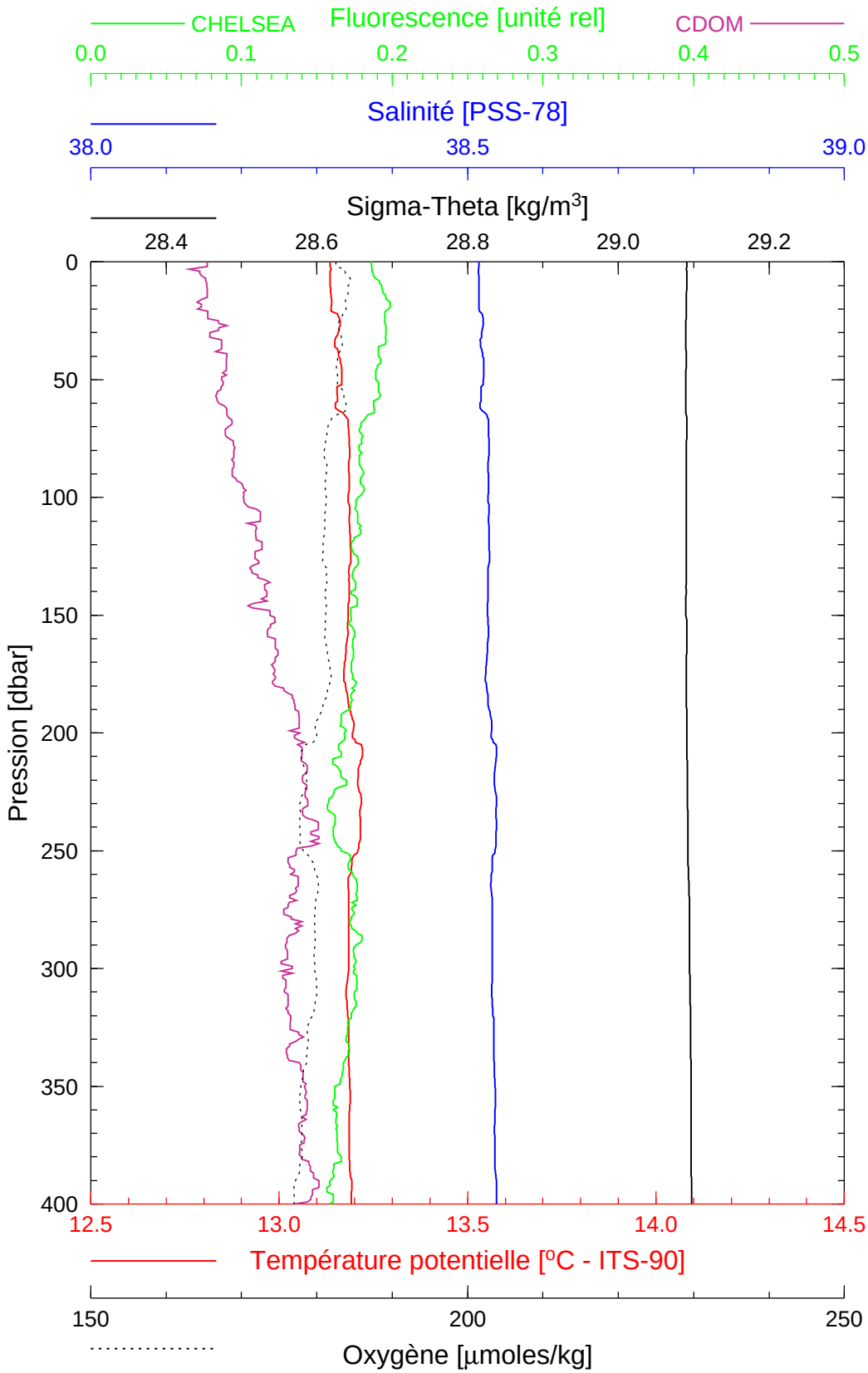
BOUS001

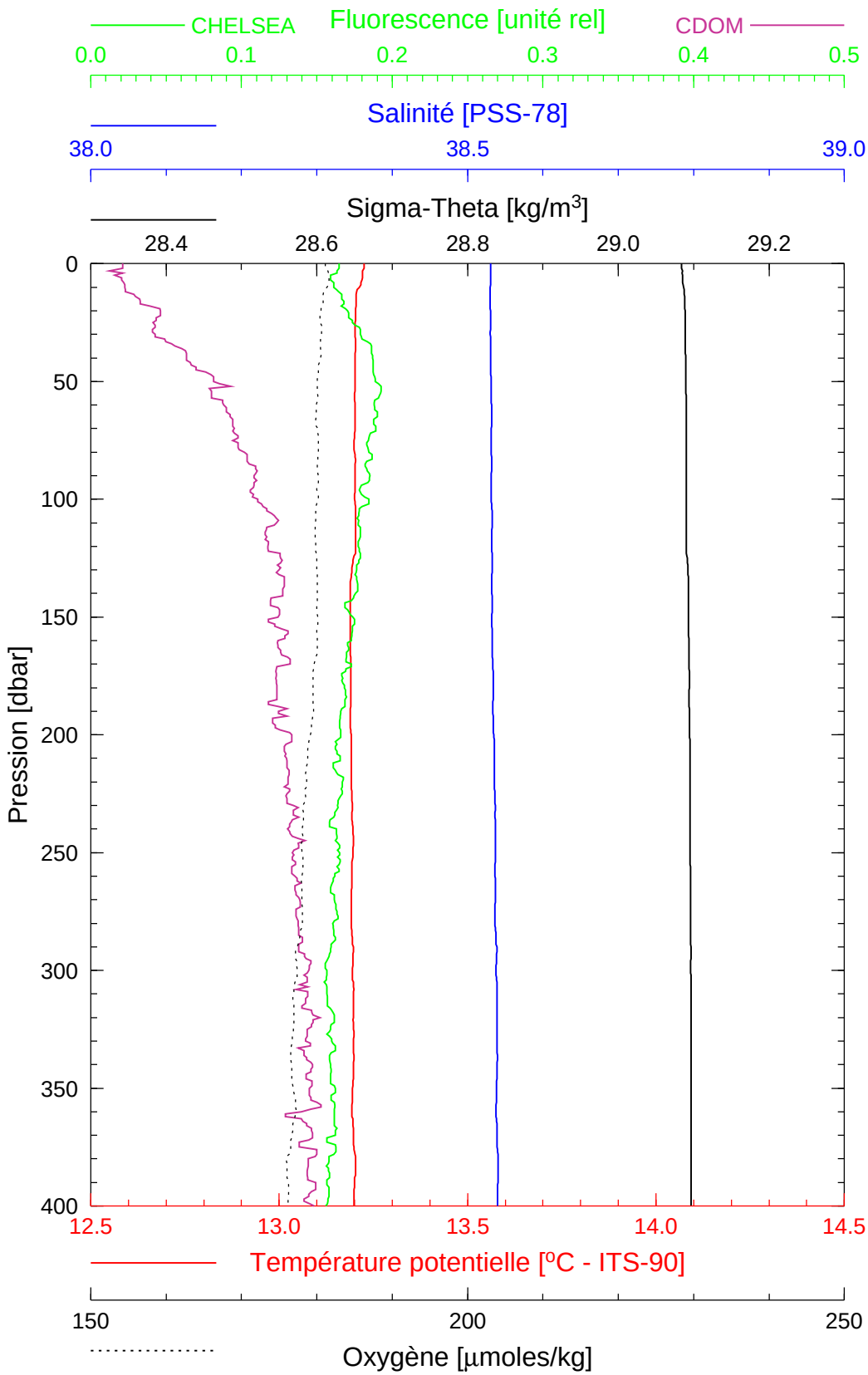


Date *23/02/2005* *Latitude* *43°21.872 N*

Heure déb *08h 58min [TU]* *Longitude* *07°53.981 E*

Boussole 39 **23/02/2005** **BOUS050223_02**

BOUS002

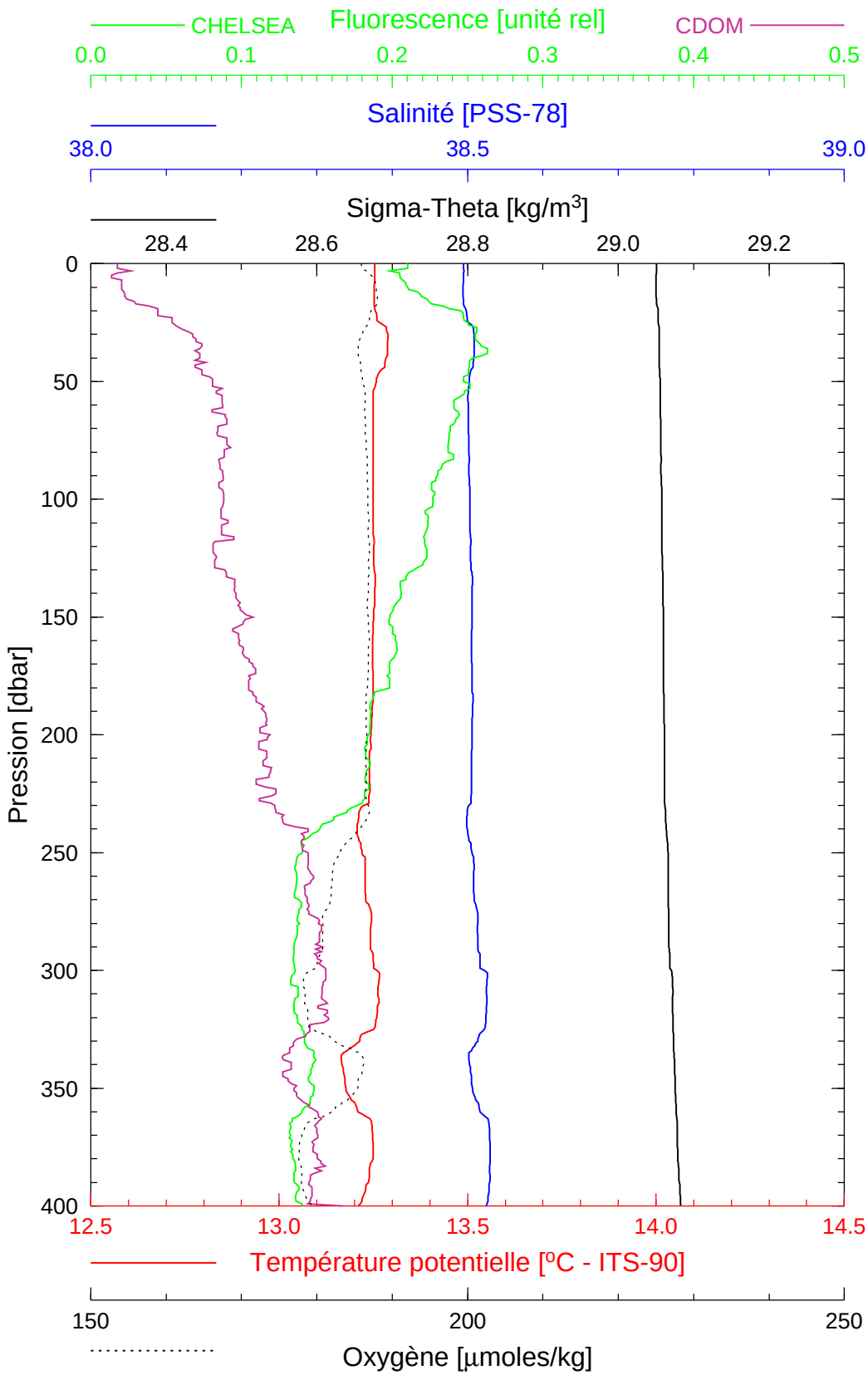


Date *23/02/2005* *Latitude* *43°22.076 N*

Heure déb *12h 56min [TU]* *Longitude* *07°54.207 E*

Boussole 39 **23/02/2005** **BOUS050223_03**

BOUS003

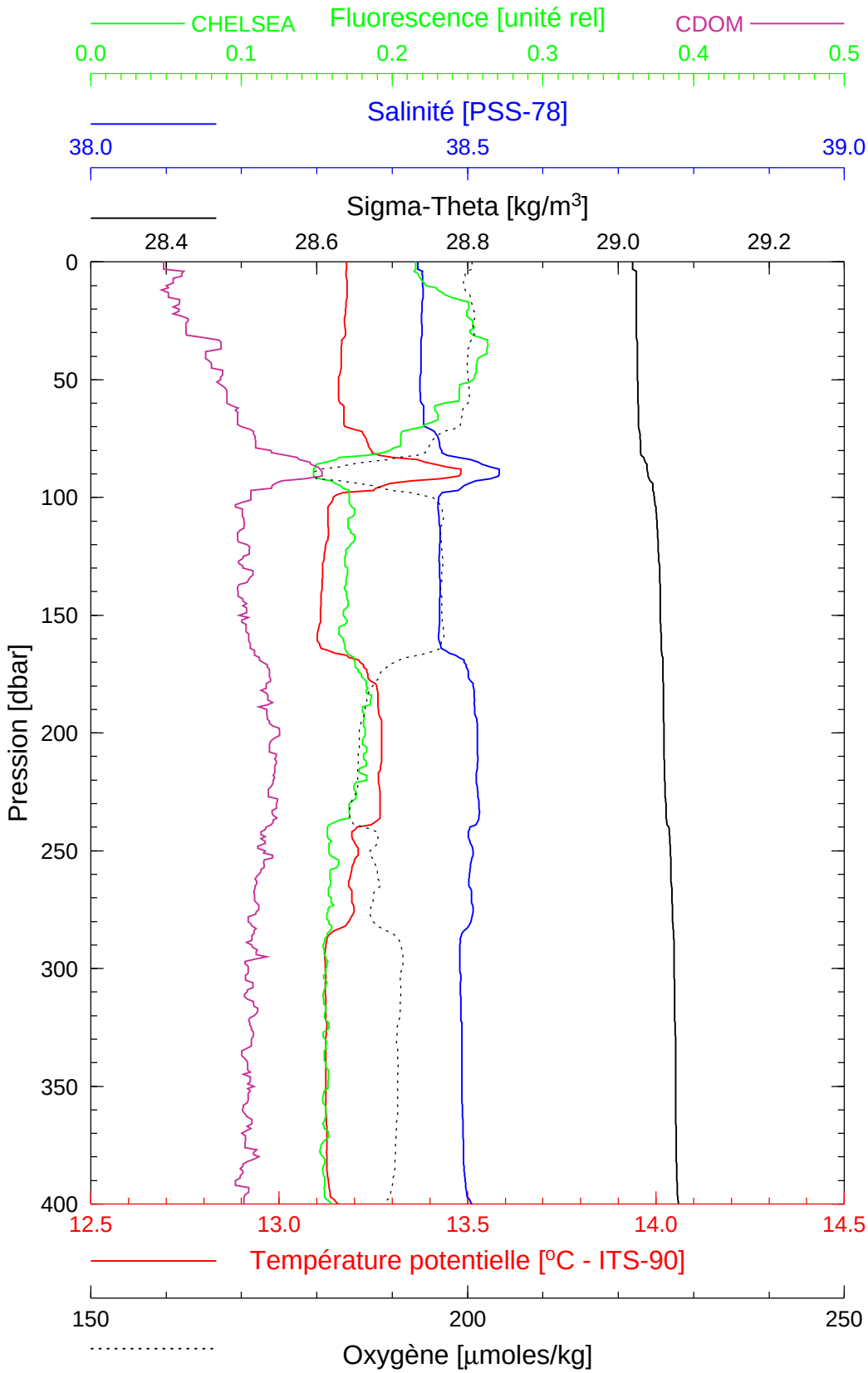


Date *23/02/2005* *Latitude* *43º24.923 N*

Heure déb *14h 06min [TU]* *Longitude* *07º48.147 E*

Boussole 39 **23/02/2005** **BOUS050223_04**

BOUS004

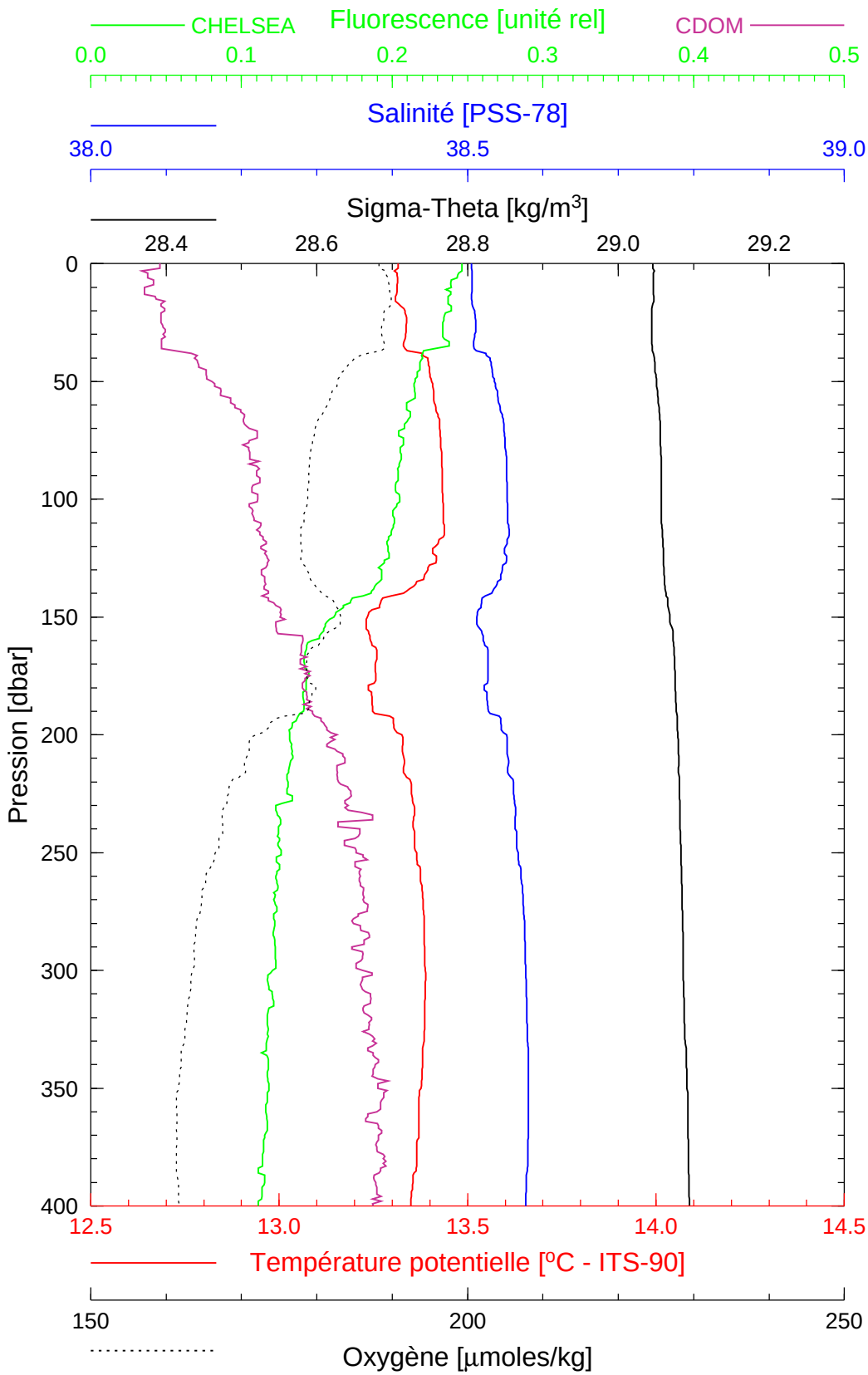


Date *23/02/2005* *Latitude* *43º27.972 N*

Heure déb *15h 09min [TU]* *Longitude* *07º42.432 E*

Boussole 39 **23/02/2005** **BOUS050223_05**

BOUS005

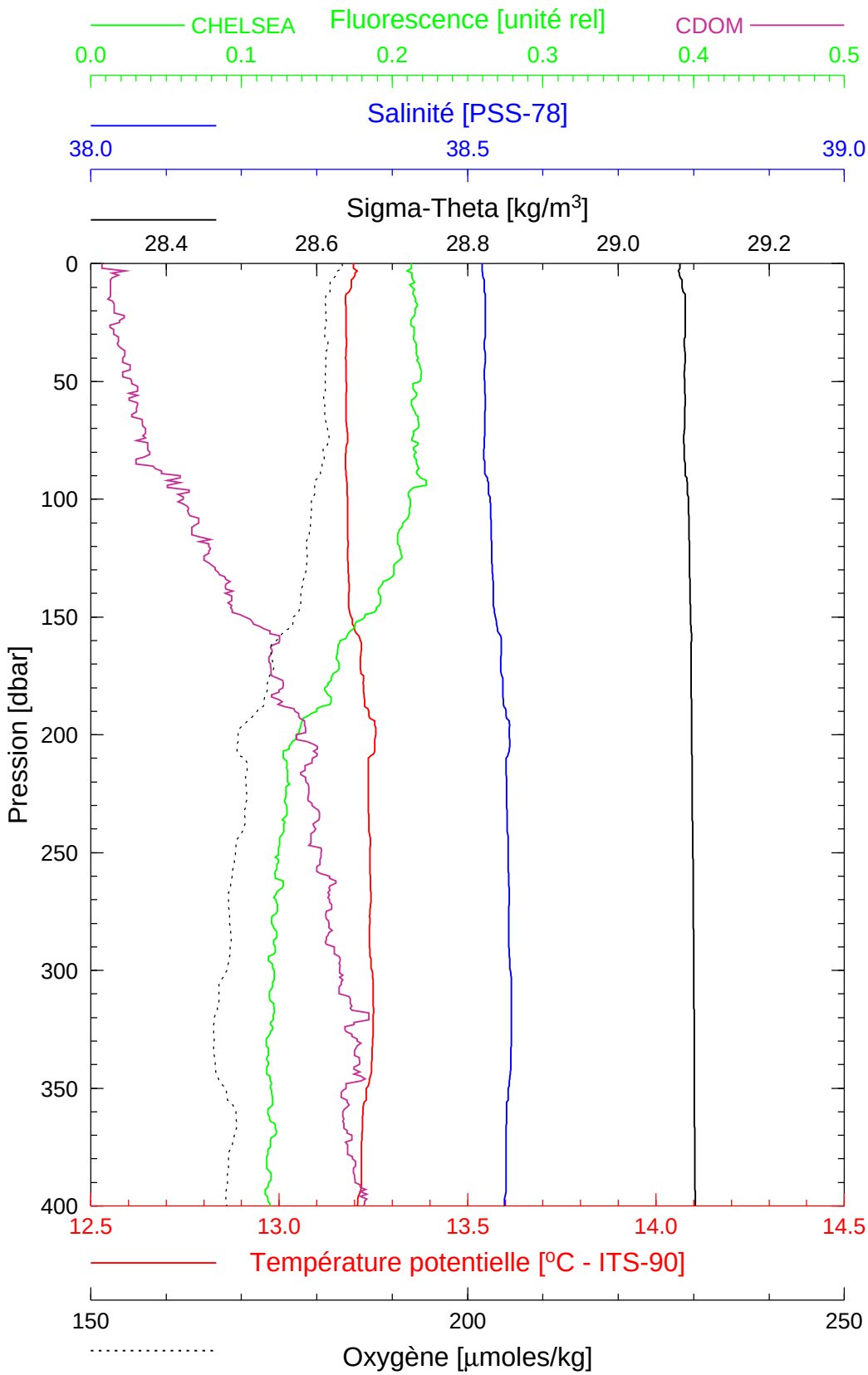


Date *23/02/2005* *Latitude* *43º31.059 N*

Heure déb *16h 18min [TU]* *Longitude* *07º37.172 E*

Boussole 39 **23/02/2005** **BOUS050223_06**

BOUS006

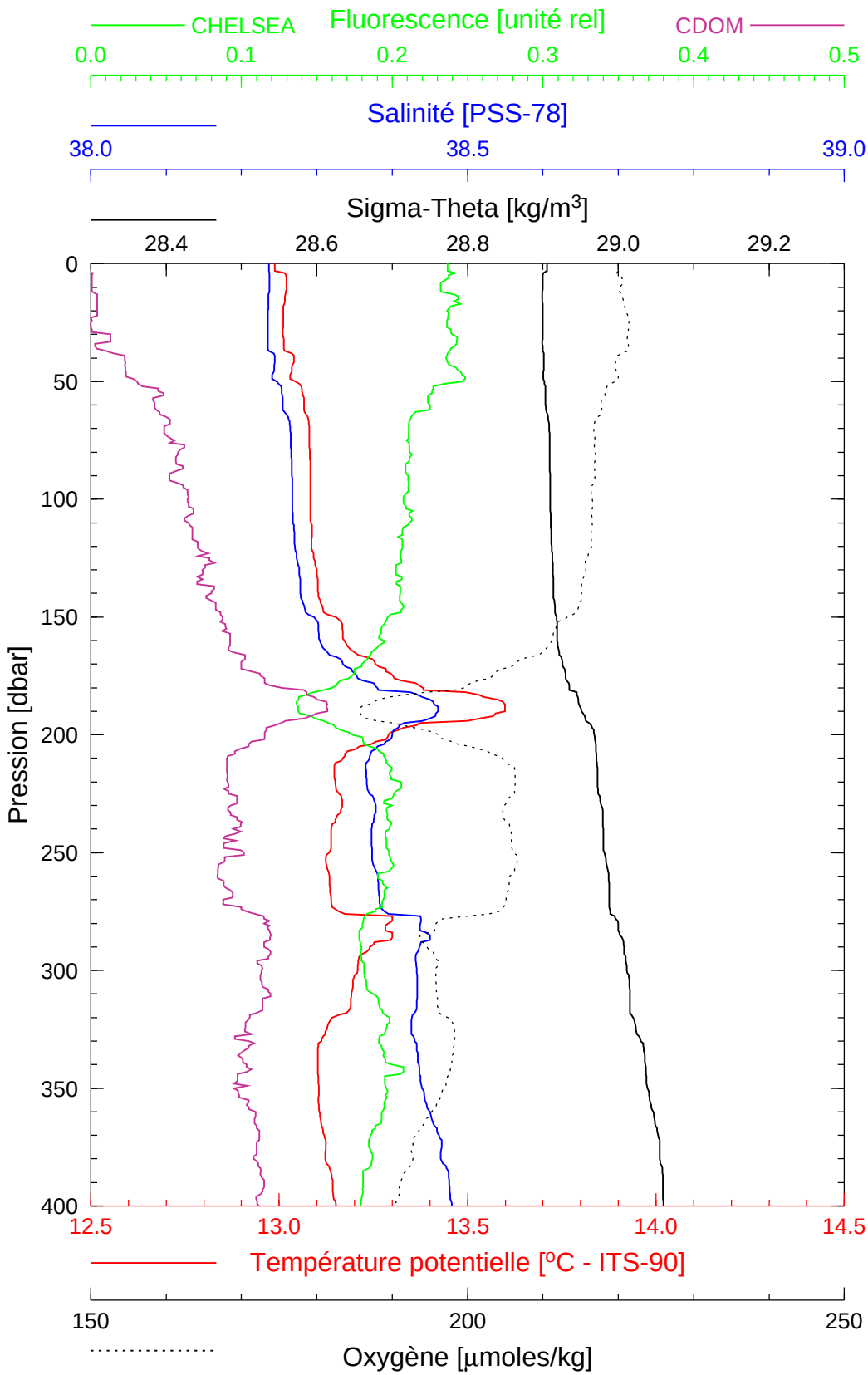


Date *23/02/2005* *Latitude* *43º33.976 N*

Heure déb *17h 27min [TU]* *Longitude* *07º31.052 E*

Boussole 39 **23/02/2005** **BOUS050223_07**

BOUS007

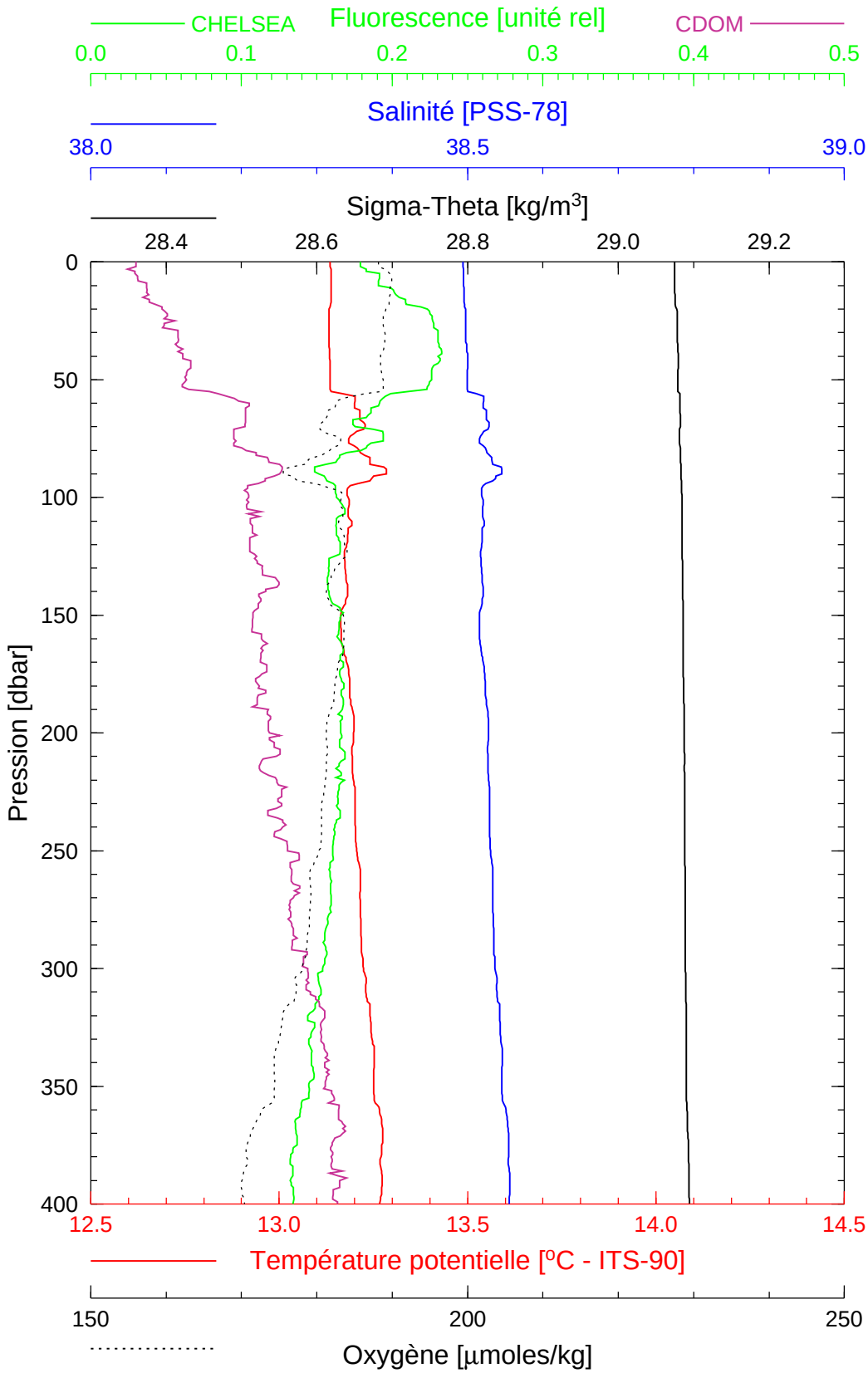


Date *23/02/2005* *Latitude* *43º37.487 N*

Heure déb *18h 31min [TU]* *Longitude* *07º24.919 E*

Boussole 39 **24/02/2005** **BOUS050224_01**

BOUS008

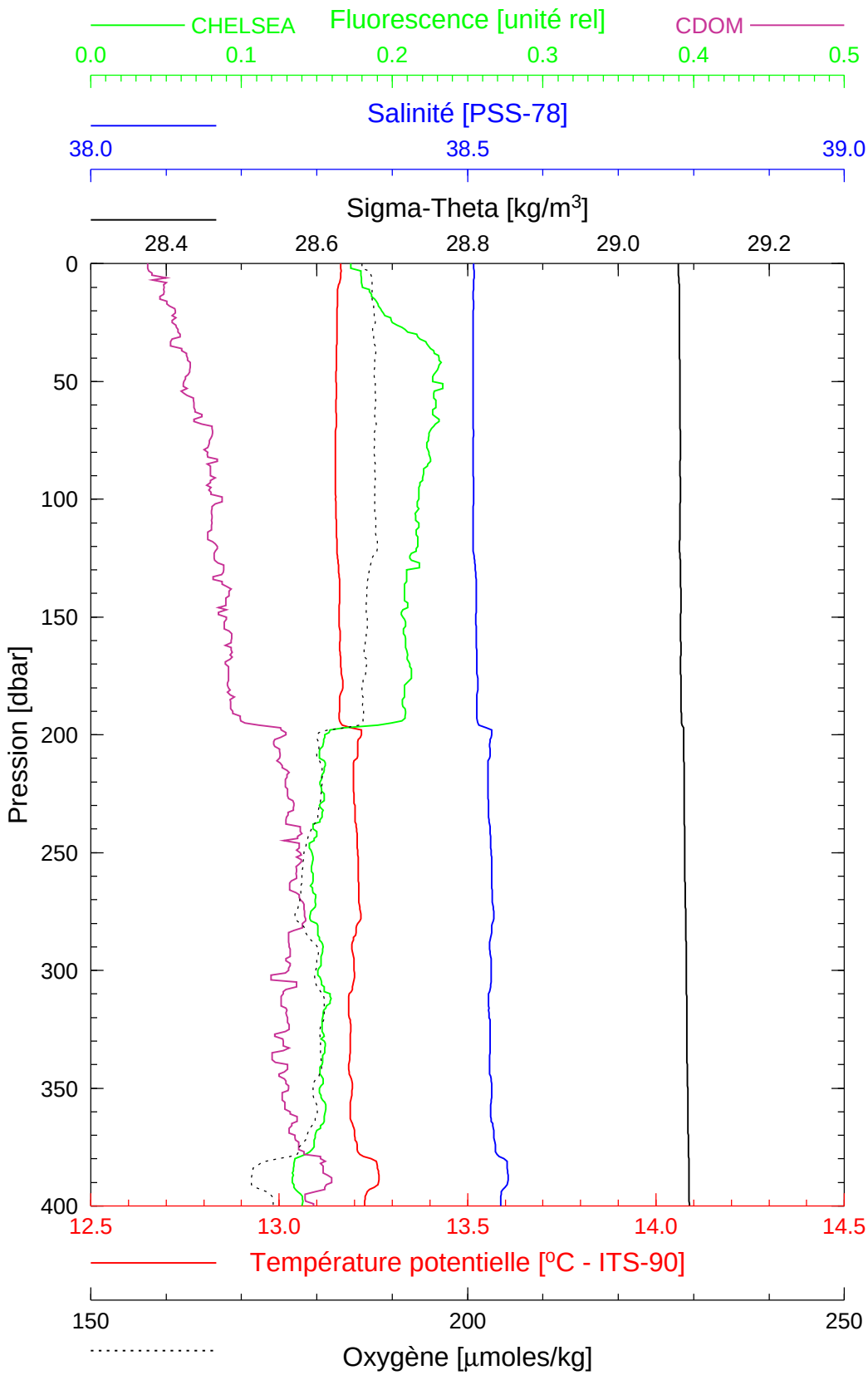


Date *24/02/2005* *Latitude* *43º22.097 N*

Heure déb *12h 29min [TU]* *Longitude* *07º54.271 E*

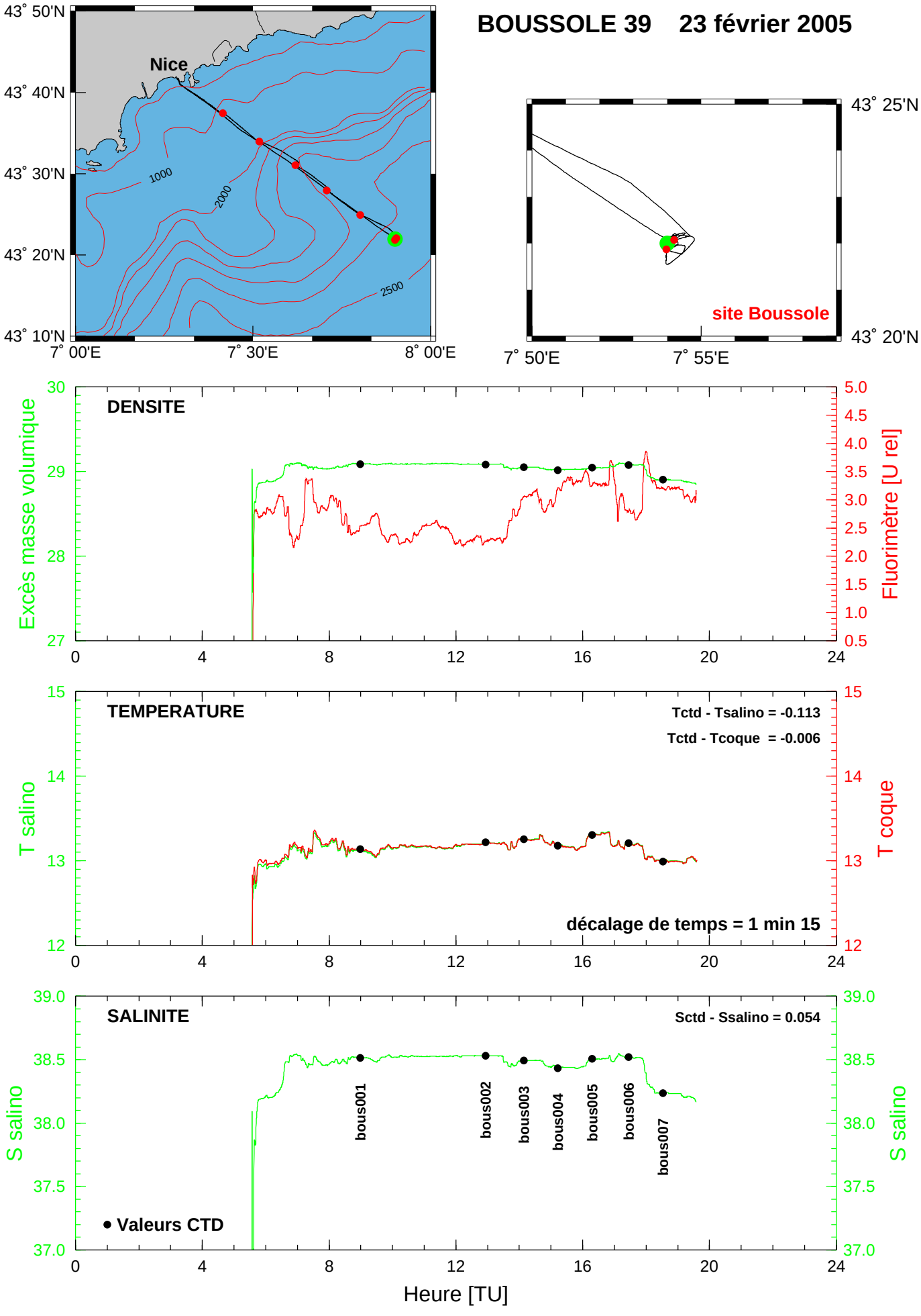
Boussole 39 **25/02/2005** **BOUS050225_01**

BOUS009



Date *25/02/2005* *Latitude* *43º22.674 N*

Heure déb *12h 10min [TU]* *Longitude* *07º53.795 E*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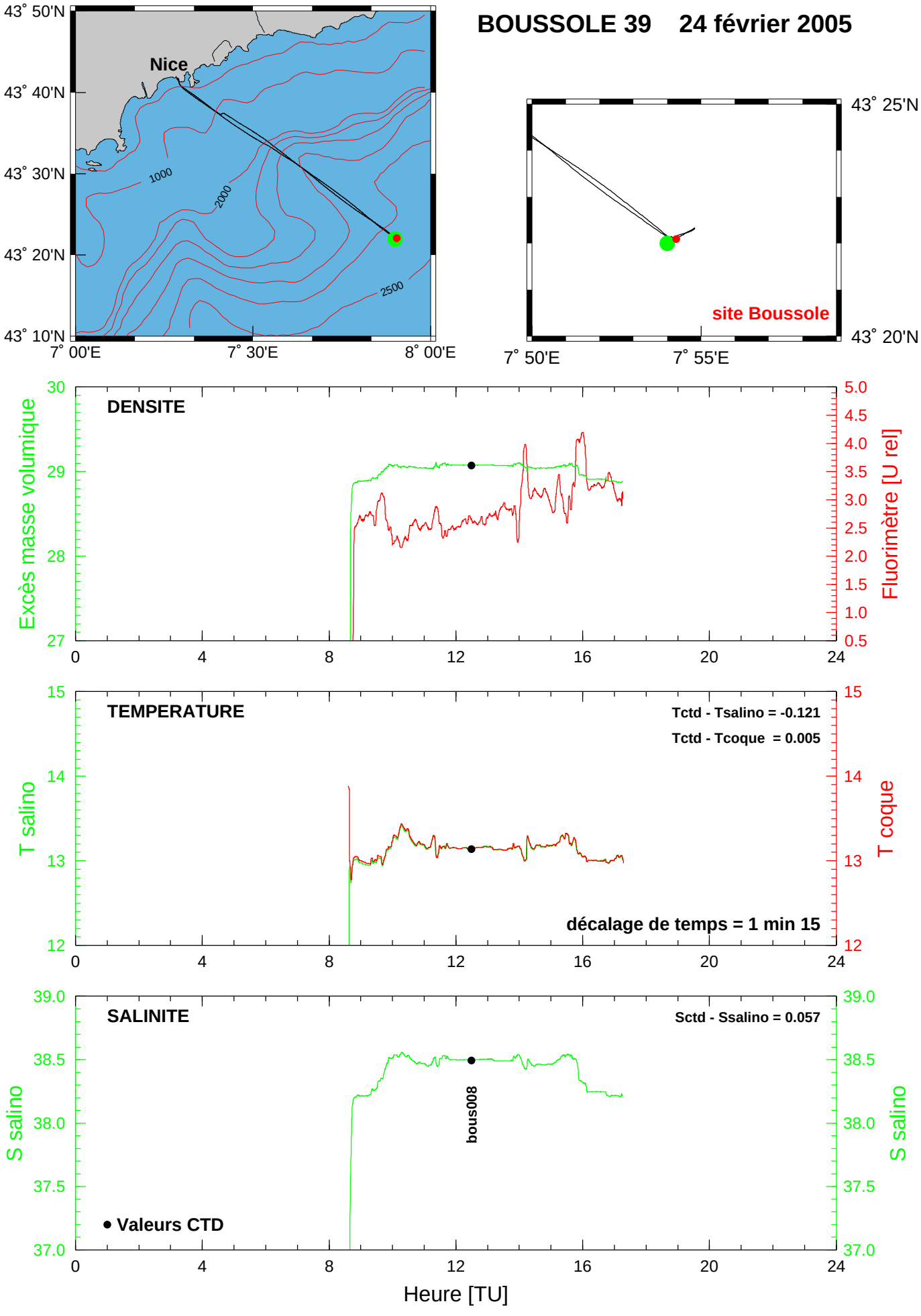
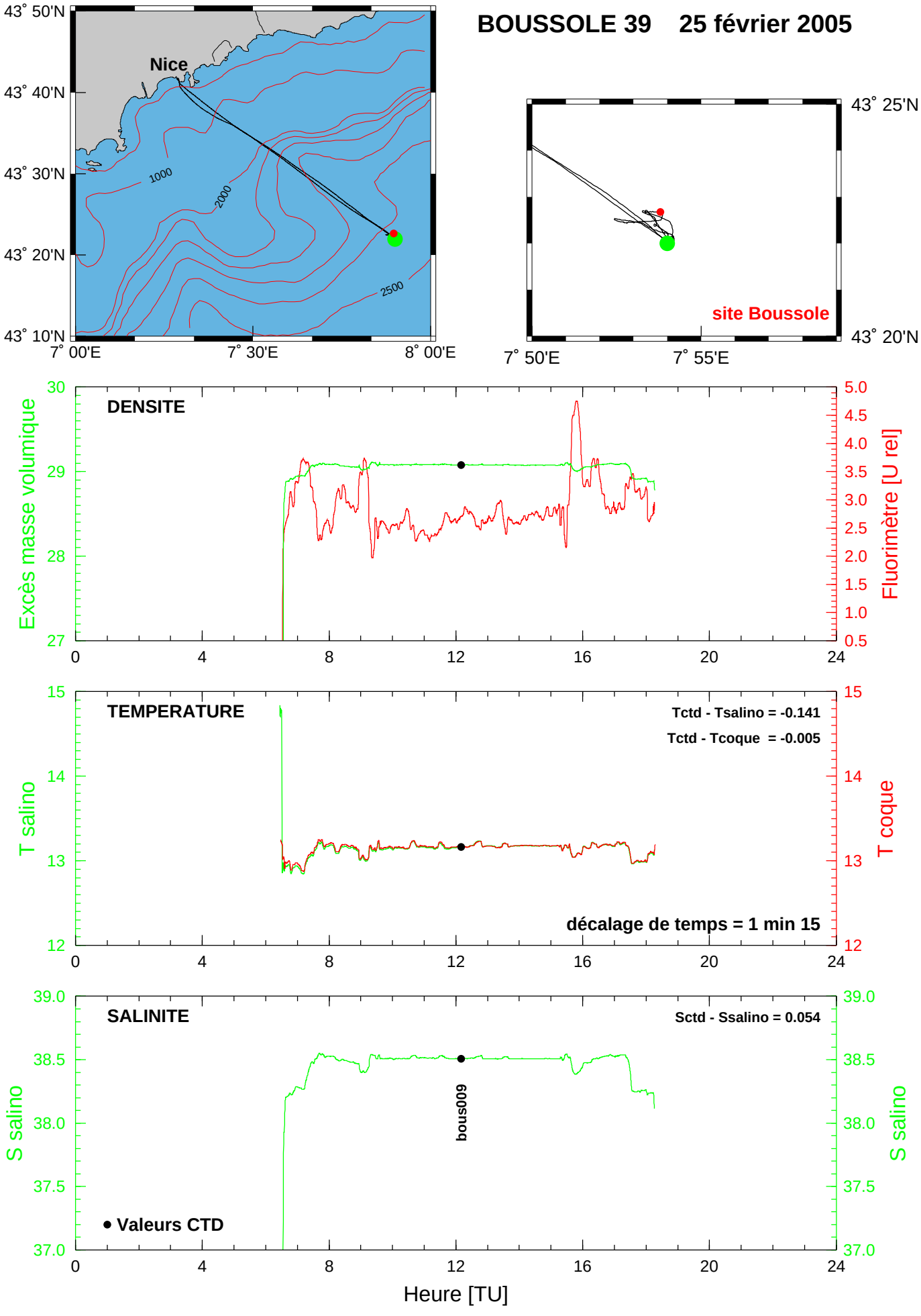
Nice
43° 50'N
43° 40'N
43° 30'N
43° 20'N
43° 10'N
7° 00'E
7° 30'E
8° 00'E
1000
2000
2500
43° 25'N
43° 20'N
7° 50'E
7° 55'E
site Boussole
DENSITE
Excès masse volumique
Fluorimètre [U rel]
TEMPERATURE
Tctd - Tsalino = -0.113
Tctd - Tcoque = -0.006
T salino
T coque
décalage de temps = 1 min 15
SALINITE
Sctd - Ssalino = 0.054
S salino
bous001
bous002
bous003
bous004
bous005
bous006
bous007
• Valeurs CTD
Heure [TU]


BOUSSOLE 39 24 février 2005
Nice
43° 50'N
43° 40'N
43° 30'N
43° 20'N
43° 10'N
7° 00'E
7° 30'E
8° 00'E
1000
2000
2500
43° 25'N
43° 20'N
7° 50'E
7° 55'E
site Boussole
DENSITE
Excès masse volumique
Fluorimètre [U rel]
TEMPERATURE
Tctd - Tsalino = -0.121
Tctd - Tcoque = 0.005
T salino
T coque
décalage de temps = 1 min 15
SALINITE
Sctd - Ssalino = 0.057
bous008
S salino
• Valeurs CTD
Heure [TU]


BOUSSOLE 39 25 février 2005
Nice
43° 50'N
43° 40'N
43° 30'N
43° 20'N
43° 10'N
7° 00'E
7° 30'E
8° 00'E
1000
2000
2500
43° 25'N
43° 20'N
7° 50'E
7° 55'E
site Boussole
DENSITE
Excès masse volumique
Fluorimètre [U rel]
TEMPERATURE
Tctd - Tsalino = -0.141
Tctd - Tcoque = -0.005
T salino
T coque
décalage de temps = 1 min 15
SALINITE
Sctd - Ssalino = 0.054
bous009
S salino
• Valeurs CTD
Heure [TU]