BOUSSOLE Monthly Cruise Report

Cruise 38
January 31 – February 4, 2005

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

Science Personnel: Guislain Bécu, Dominique Tailliez, Edouard Leymarie.

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

Fig 1. Sea state on 4th February 2005.

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.

Edouard Leymarie will be aboard on Wednesday 02 February 2005 to begin practicing with all at-sea operations.

Other activities will also be performed on the buoy to try to retrieve the data (the buoy doesn't communicate anymore since 02 January 2005), if this time the Sea conditions allow to climb on it.

Cruise Summary

V/R Tethys-II Christmas technical maintenance was longer than expected. An agreement between DT-INSU (Jean-Claude Naudin), Station Marine d'Endoume (Jean-Claude Romano) and LOV (Guislain Bécu and Jacques Chiaverini) established that the BOUSSOLE campaign took place during the Monday 31 January 2005 - Friday 04 February 2005 period instead of Thursday 27 January 2005 – Sunday 30 January 2005, as normally planned. Note that:

1- DYFAMED team used R/V Tethys-II on Thursday 03 February 2005,
2- R/V Tethys-II was available on Saturday 29 and Sunday 30 January 2005, but Beaufort 6 winds prevented departure from Port of Nice.

CTD profiles were still realized with Bigelow AC9+ (s/n 147) and the new CDOM and eco-BB3.

Filtrations were very long, even quite too long for the samples to stay "fresh". 2 stoppers were forgotten in place (the 2 stopper that prevent to lose the O-rings between the 2 halves of the filtration unit).

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.

Monday 31 January 2005

The atmospheric conditions were fairly good; winds were about Beaufort force 2 or 3, with a swell of about 1 meter, regularly decreasing to about 70 cm at the end of day. 2 CTD profiles were realized at the BOUSSOLE site, and 5 profiles were realized en route (transect stations). 6 SPMR/SMSR profiles were realized; shortcuts in the SPMR to Deck Unit cable occurred more and more, and there was always no GPS signal from the ship navigation system (the lab PC was furthermore out of order, so that position was not easily accessible). 2 CIMEL measurements were also realized.
Some whitecaps appeared from the first transect station.
As so far no intervention on the buoy was achieved, no communication occurred.

Tuesday 01 February 2005
Weather conditions prevented departure.

Wednesday 02 February 2005
2 CTD profiles and 7 SPMR/SMSR (1 was bugged due to a shortcut) optical profiles were realized. 4 CIMEL optical thickness measurements were realized at BOUSSOLE site (1 in the chimney fume!) and 1 was realized en route (at 30 minutes sailing from BOUSSOLE site). Afterwards clouds in the sky prevented other CIMEL measurements.
At about 1300 UTC, the winds amplified and the sea conditions became too bad to stay at site, so that the ship left to Port of Nice.

Thursday 03 February 2005
This day was utilized by DYFAMED team.

Friday 04 February 2005
DYFAMED borrowed the CTD on the previous day, so that Dominique Tailliez re-connected CDOM and eco-BB3 to the CTD (DYFAMED realized more than 400 m depth CTD profiles, so that CDOM and eco-BB3 have to be removed).
Weather was far too bad to realize SPMR/SMSR profiles, so that a transect was begun, as there was enough time. Unfortunately, at station 2 the wind and the swell increased, and the CTD cable strength reached 800 kg and prevented to finish the transect.

Cruise Report

31 January 2005 (UTC)
0530 Departure from Port of Nice
0900 Arrival at BOUSSOLE site, communication with buoy did not work, as expected (no buoy intervention since it has stopped on 02 January 2005).
0903 CTD profile 1 (400 m) with water sampling at 200, 100, 70, 60, 50, 40, 30, 20, 10 and 5 m depth.
0955 SPMR/SMSR optical profiles 1, 2 and 3 (several shortcuts, no GPS from ship nav. System, lab PC out of order)
1055 CIMEL atmospheric optical thickness measurement 1
1200 SPMR/SMSR optical profiles 4, 5 and 6
1307 CTD profile 2 (400 m) with water sampling at 10 and 5 m (triplicate)
1310 CIMEL atmospheric optical thickness measurement 2
1315 Departure from BOUSSOLE, Transect station 1 (43°25’N 7°48’E).
1411 CTD profile 3 (400m). Some white caps begin to appear. Transect Station 2 (43°28’N 7°42’E).
1420 CIMEL atmospheric optical thickness measurement 3
1512 CTD profile 4 (400m). Transect Station 3 (43°31’N 7°37’E).
1612 CTD profile 5 (400m). Transect Station 4 (43°34’N 7°31’E).
1712 CTD profile 6 (400m). Transect Station 5 (43°37’N 7°25’E).
1815 CTD profile 7 (400m). Departure to port of Nice.
1900 Arrival at Port of Nice

01 February 2005
Bad weather prevented departure.

02 February 2005
0520 Departure from Port of Nice
0845 Arrival at BOUSSOLE site
0900 CTD profile 8 (400 m) with water sampling at 200, 100, 80, 70, 60, 50, 40, 30, 20, 10 and 5 m.
0945 SPMR/SMSR optical profiles 7 (bugged due shortcut), 8, 9, and 10
1035 CIMEL atmospheric optical thickness measurement 4
1130 CTD profile 9 (400 m) with water sampling at 10 and 5 m (triplicate)
1150 CIMEL atmospheric optical thickness measurements 5 and 6

1208 SPMR/SMSR optical profiles 11, 12 and 13
1302 CIMEL atmospheric optical thickness measurement 7
1330 Sea conditions too bad to stay at BOUSSOLE site, departure to Port of Nice
1330 en route CIMEL atmospheric optical thickness measurement 8
1700 Arrival at Port of Nice

03 February 2005

This day was utilized for DYFAMED campaign.

04 February 2005

0530 Departure from port of Nice
0900 Arrival at BOUSSOLE Site
0925 CTD profile 10 with sea water sampling at 200, 100, 80, 70, 60, 50, 40, 30, 20, 10 and 5 m. Transect station 1 (43°25'N 7°48'E).
1030 CTD profile 11 (400 m, station 1). Transect Station 2 (43°28'N 7°42'E).
1130 CTD profile 12 (400 m, station 2).
1200 Sea conditions worsened - departure to Port of Nice.
1426 Arrival in Port of Nice

Calculated Swath paths for MERIS Sensor (ESOV Software)

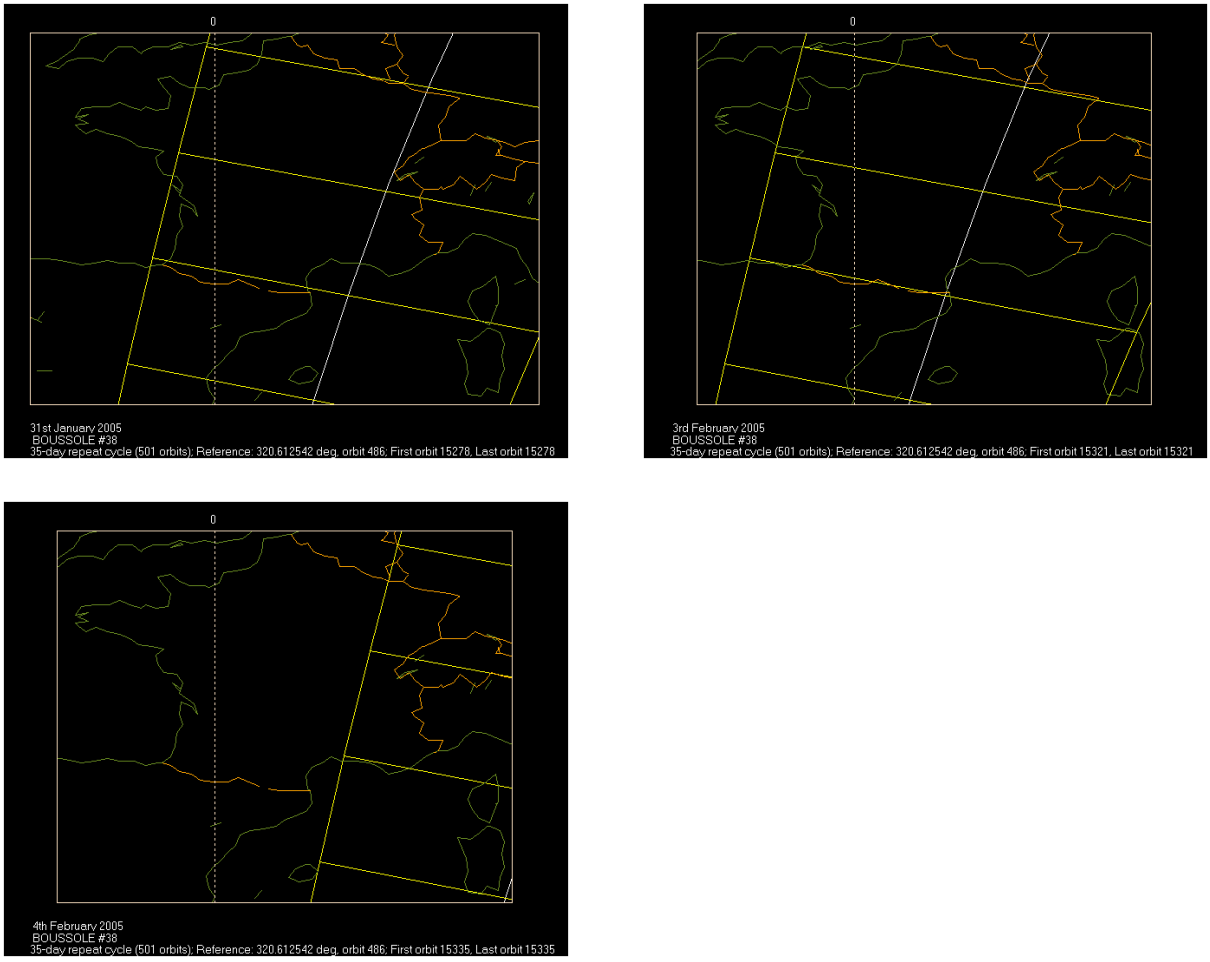
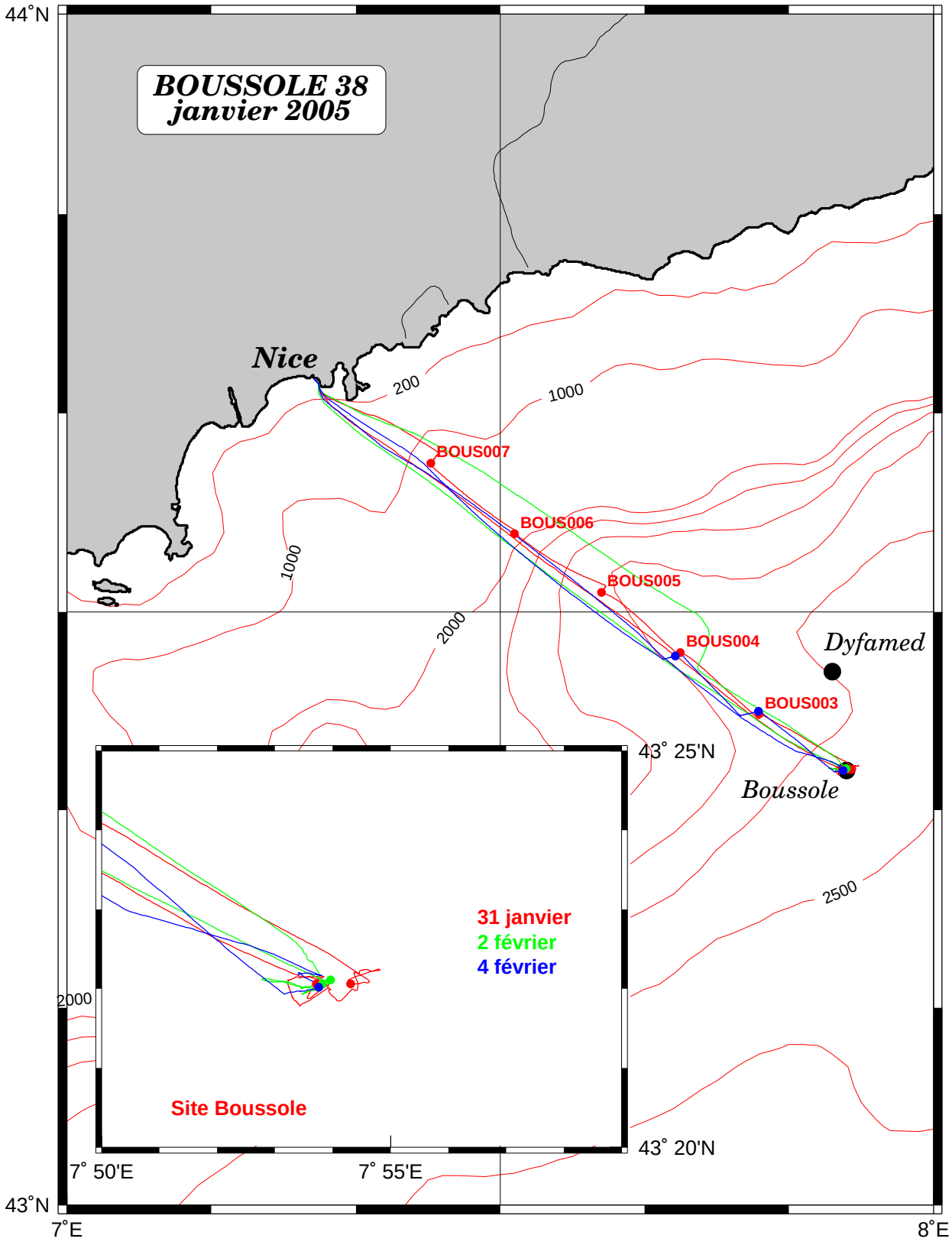


Fig 2. Calculated swath for MERIS (Esov software) above BOUSSOLE site for 31 Jan, 03 and 04 Feb 2005.

Appendix

Cruise Summary Table for Boussole 38

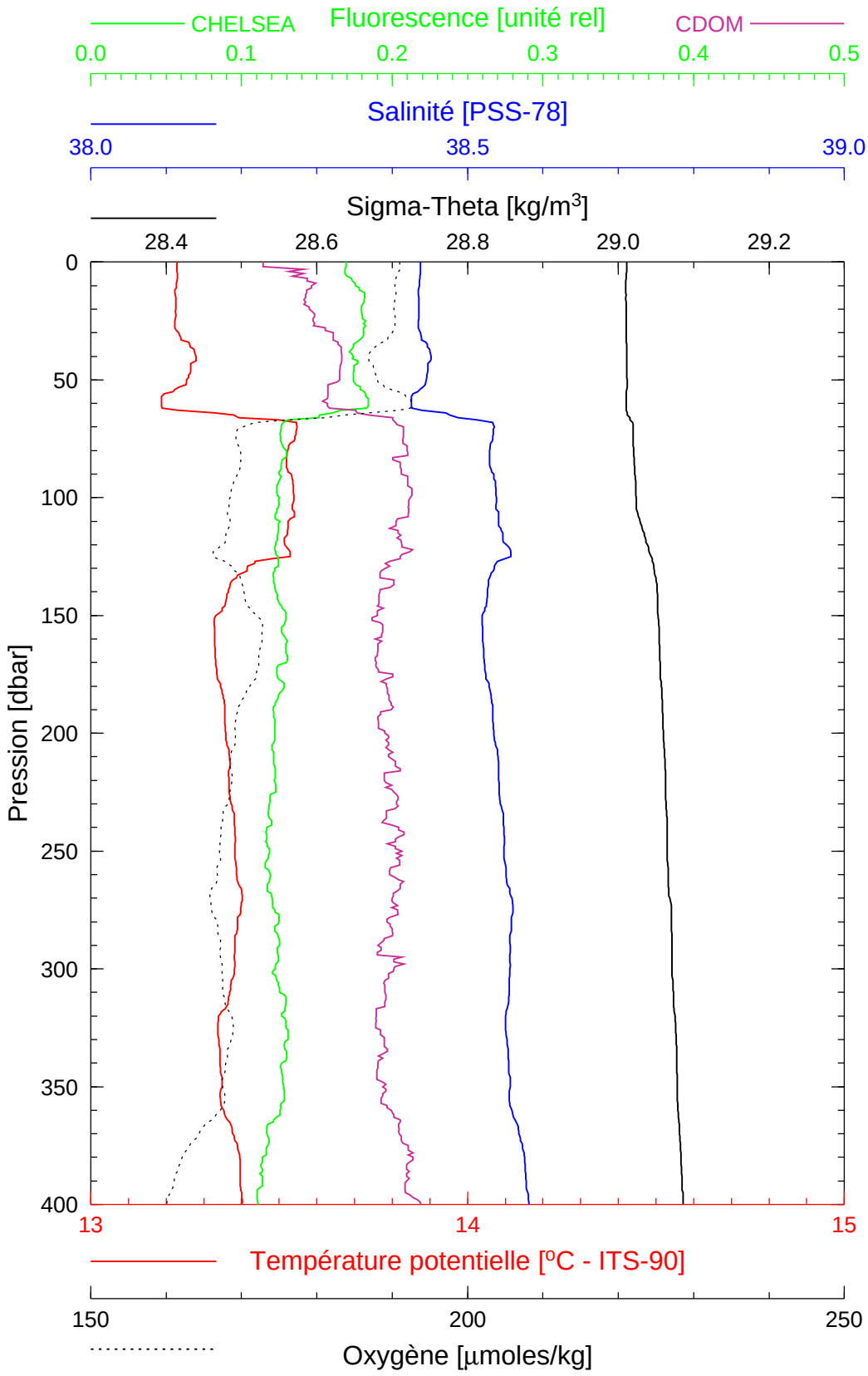
Date	Black names	Profile names	CTD notées /	Start Time	Duration	Depth max	Latitude (N)		longitude		Other sensors	Their cast	Start/Finish				Weather							Sea		
	(file ext: ".raw")	(file extension: ".raw")	satellite overpass	GMT (hour.min)	(min.sec)	(meter)	(Degree)	(Minute)	(Degree)	(Minute)				Sky	Clouds	Quantity (#/8)	Wind speed	Wind dir.	Atm. Pressure	humidity	Visibility	T air	T water	Sea	Swell height	Swell dir.	White horses
			CTDBOUS001	09:03	30:00	400	43	22.063	7	53.440				rather clear	far	1	2 kn	266	1023.8	38	excellent	10.9	13.2	calm	0,7 m		no
	bou310105black1			09:37	03:00																					
		bou310105A		09:55	04:30	180	43	22.000	7	54.000				mainly blue	lightly milky	0	3 kn	266	1023.9	40	very good	10.4		calm	1 m		no
		bou310105B		10:07	05:00	200	43	22.000	7	54.000				mainly blue	lightly milky	0	3 kn	266	1023.9	40	very good	10.4		calm	1 m		no
		bou310105C		10:19	04:30	180	43	22.000	7	54.000				mainly blue	lightly milky	0	3 kn	266	1023.9	40	very good	10.4		calm	1 m		no
	bou310105black2			10:32	03:00																					
							43	22.000	7	54.000	CIMEL 1	Tau atmos	10:55	mainly blue	light cirrus	0										
	bou310105black3			11:56	03:00																					
		bou310105D		12:04	04:31	180	43	22.014	7	54.433				mainly blue	milky	0	8 kn	71	1023.2	52	excellent	10.3		calm	1 m	SW	rare
##########		bou310105E		12:22	04:45	200	43	22.203	7	54.465				mainly blue	milky	0	8 kn	71	1023.2	52	excellent	10.3		calm	1 m	SW	rare
		bou310105F		12:35	04:45	200	43	22.243	7	54.576				mainly blue	milky	0	8 kn	71	1023.2	52	excellent	10.3		calm	1 m	SW	rare
	bou310105black4			13:02	03:00																					
			CTDBOUS002	13:07	24:00	400	43	22.062	7	54.311				blue	no	0	10 kn	59	1022.6	52	excellent	10.1	13.1	calm	0,7 m		rare
							43	25.000	7	48.000	CIMEL 2	Tau atmos	13:09	blue	no	0										
			CTDBOUS003	14:11	23:00	400	43	24.854	7	47.933				blue	no	0	14 kn	53	1022.3	57	very good	10.1	13.4	choppy	0,9 m		some
							43	22.000	7	54.000	CIMEL 3	Tau atmos	14:20	blue	no	0										
			CTDBOUS004	15:12	26:00	400	43	27.969	7	42.475				dark	-	-	15 kn	50	1021.7	63	dark	10.3	13.5	choppy	1 m		some
			CTDBOUS005	16:12	23:00	400	43	31.001	7	37.027				dark	-	-	20kn	64	1021.2	59	dark	11.0	16.5	choppy	1 m		some
			CTDBOUS006	17:12	25:00	400	43	33.950	7	31.000				night	night	night	20kn	46	1020.6	57	night	10.5	13.5	choppy	1 m		some
			CTDBOUS007	18:15	25:00	400	43	37.488	7	25.181				night	night	night	20kn	69	1019.9	57	night	11.0	13.5	choppy	1 m		some
##########	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	F5-F6	-	-	-	-	-	-	-	1,5 m	-	yes
			CTDBOUS008	09:00	34:00	400	43	22.059	7	53.821				blue	no	0	4 kn	102	1024.4	36	excellent	11.7	13.2	choppy	1,2 m		no
	bou211104black1			09:27	03:00																					
		bou020205A		09:43	00:20																					
		bou211104B		09:44	04:45	190	43	22.060	7	53.337				blue	no	0	1 kn	231	1024.7	34	excellent	12.4		calm	1,5 m		no
		bou211104C		09:57	04:45	190	43	22.091	7	53.136				blue	no	0	1 kn	231	1024.7	34	excellent	12.4		calm	1,5 m		no
		bou211104D		10:08	05:30	220	43	22.087	7	52.986				blue	no	0	1 kn	231	1024.7	34	excellent	12.4		calm	1,5 m		no
	bou211104black2			10:30	03:00																					
							43	22.000	7	54.000	CIMEL 4	Tau atmos	10:35	cirrus coming	ci	0										
##########			CTDBOUS009	11:30	24:00	400	43	22.110	7	53.963				cirrus coming	ci	1	2 kn	341	1024.0	33	excellent	11.8	13.2	calm	0,7 m		no
							43	22.000	7	54.000	CIMEL 5	Tau atmos	11:48	far cirrus	no	0										
							43	22.000	7	54.000	CIMEL 6	Tau atmos	11:51	ci ?	no	0										
	bou211104black3			11:59	03:00																					
		bou020205E		12:08	04:50	190	43	22.313	7	53.673				blue	no	0	5 kn	49	1023.3	37	excellent	11.6		calm	1,3 m		no
		bou211104F		12:19	04:50	190	43	22.369	7	53.572				blue	no	0	5 kn	49	1023.3	37	excellent	11.6		calm	1,3 m		no
		bou211104G		12:30	05:00	180	43	33.438	7	53.530				blue	no	0	5 kn	49	1023.3	37	excellent	11.6		calm	1,3 m		no
	bou211104black4			12:55	03:00																					
							43	22.000	7	54.000	CIMEL 7	Tau atmos	13:02	blue	no	0										
							43	27.460	7	43.829	CIMEL 8	Tau atmos	13:29	far cirrus	no	0										
##########	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			CTDBOUS010	09:25	22:00	400	43	22.018	7	53.755				cloudy	cu	7	12 kn	261	1027.9	64	good	12.1	13.1	choppy	1,3 m		some
##########			CTDBOUS011	10:30	27:00	400	43	25.005	7	47.899				cloudy	cu	7	19 kn	237	1027.7	57	good	11.5	13.2	choppy	1,3 m		some
			CTDBOUS012	11:30	30:00	400	43	27.791	7	42.128				cloudy	cu	3	19 kn	248	1027.6	56	good	11.4	13.4	choppy	1,6 m		some



GMT 2005 Feb 10 18:04:08

Boussole 38 **31/01/2005** **BOUS050131_01**

BOUS001

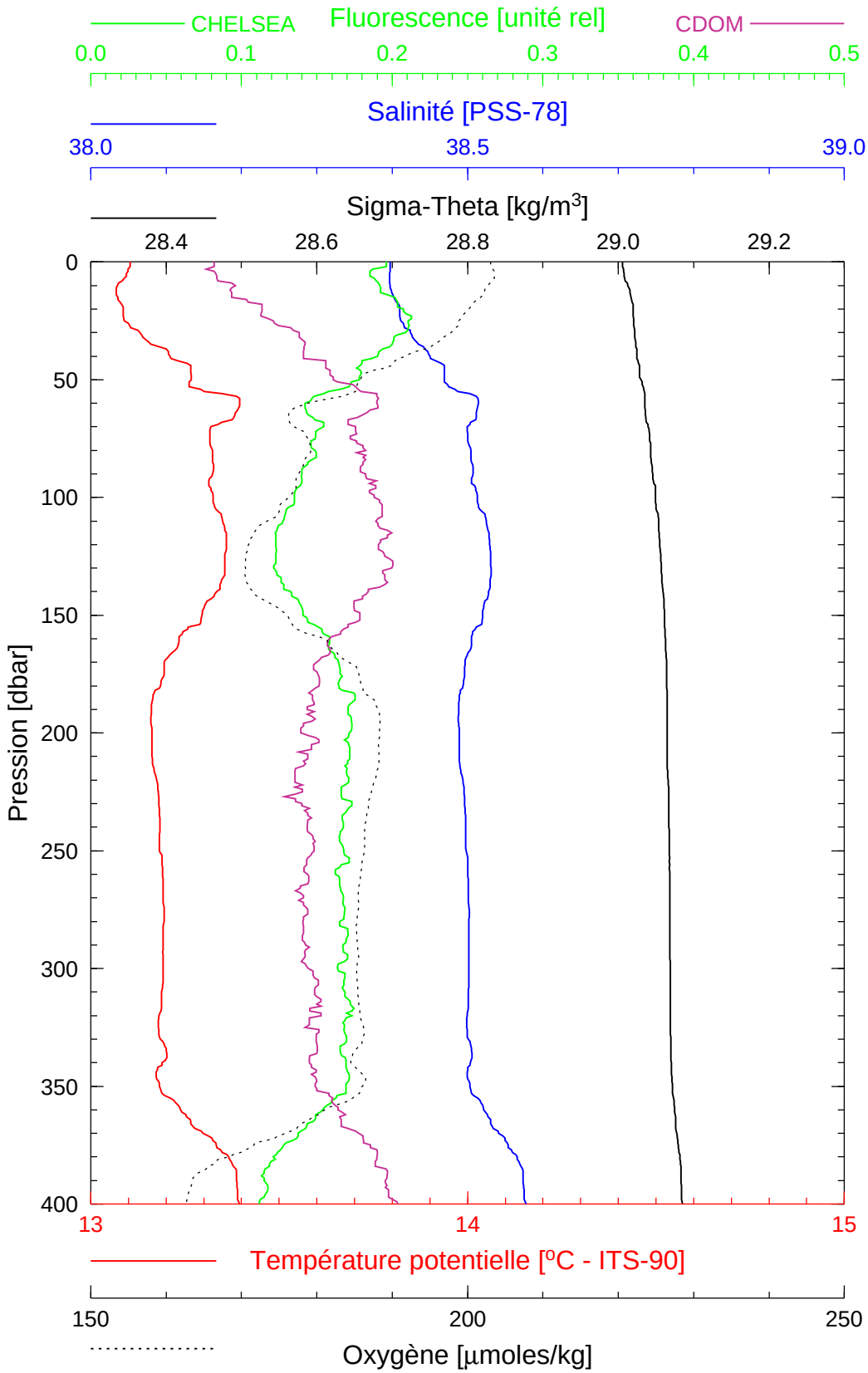


Date *31/01/2005* *Latitude* *43º22.063 N*

Heure déb *09h 03min [TU]* *Longitude* *07º53.717 E*

Boussole 38 **31/01/2005** **BOUS050131_02**

BOUS002

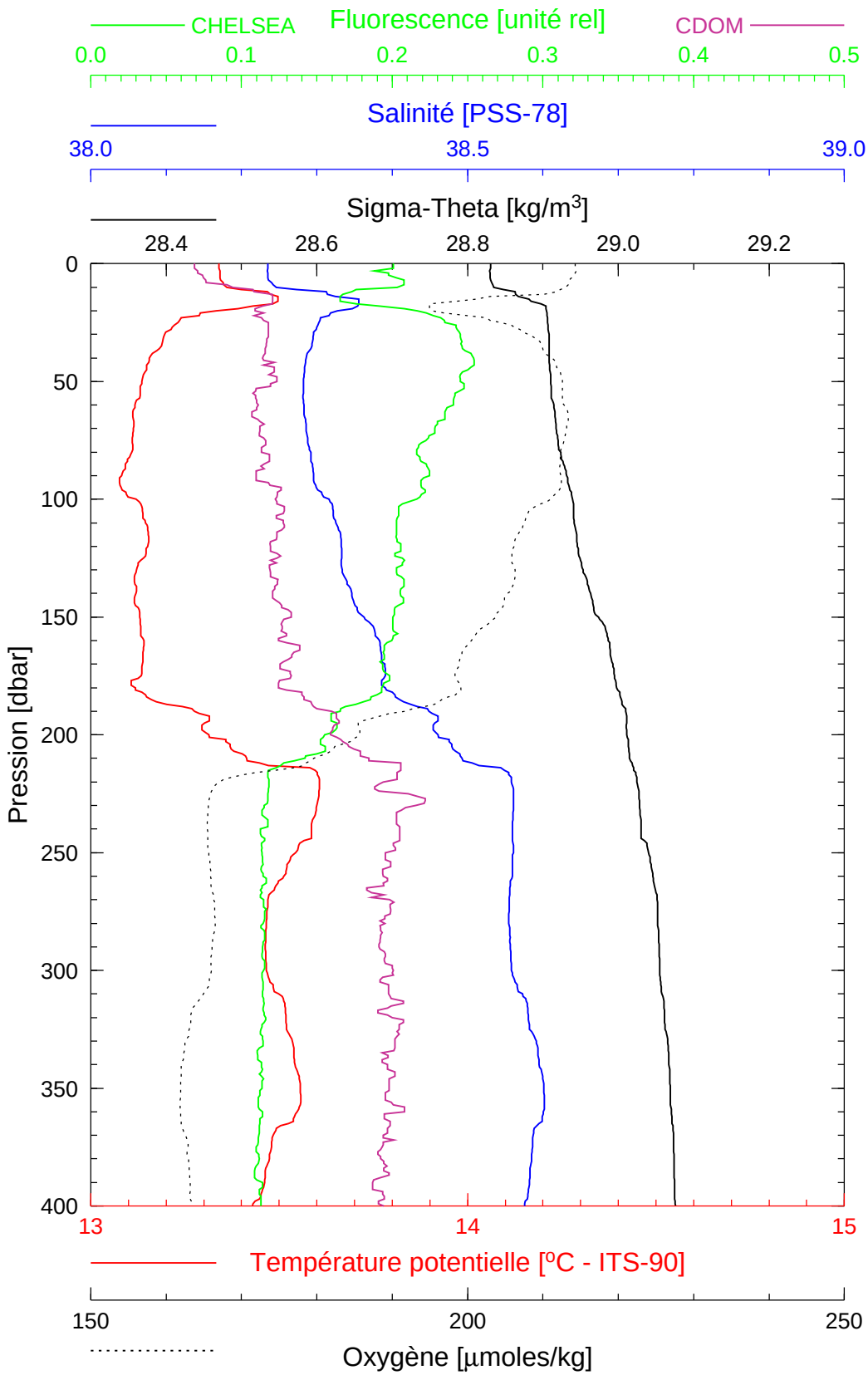


Date *31/01/2005* *Latitude* *43º22.062 N*

Heure déb *13h 07min [TU]* *Longitude* *07º54.311 E*

Boussole 38 **31/01/2005** **BOUS050131_03**

BOUS003

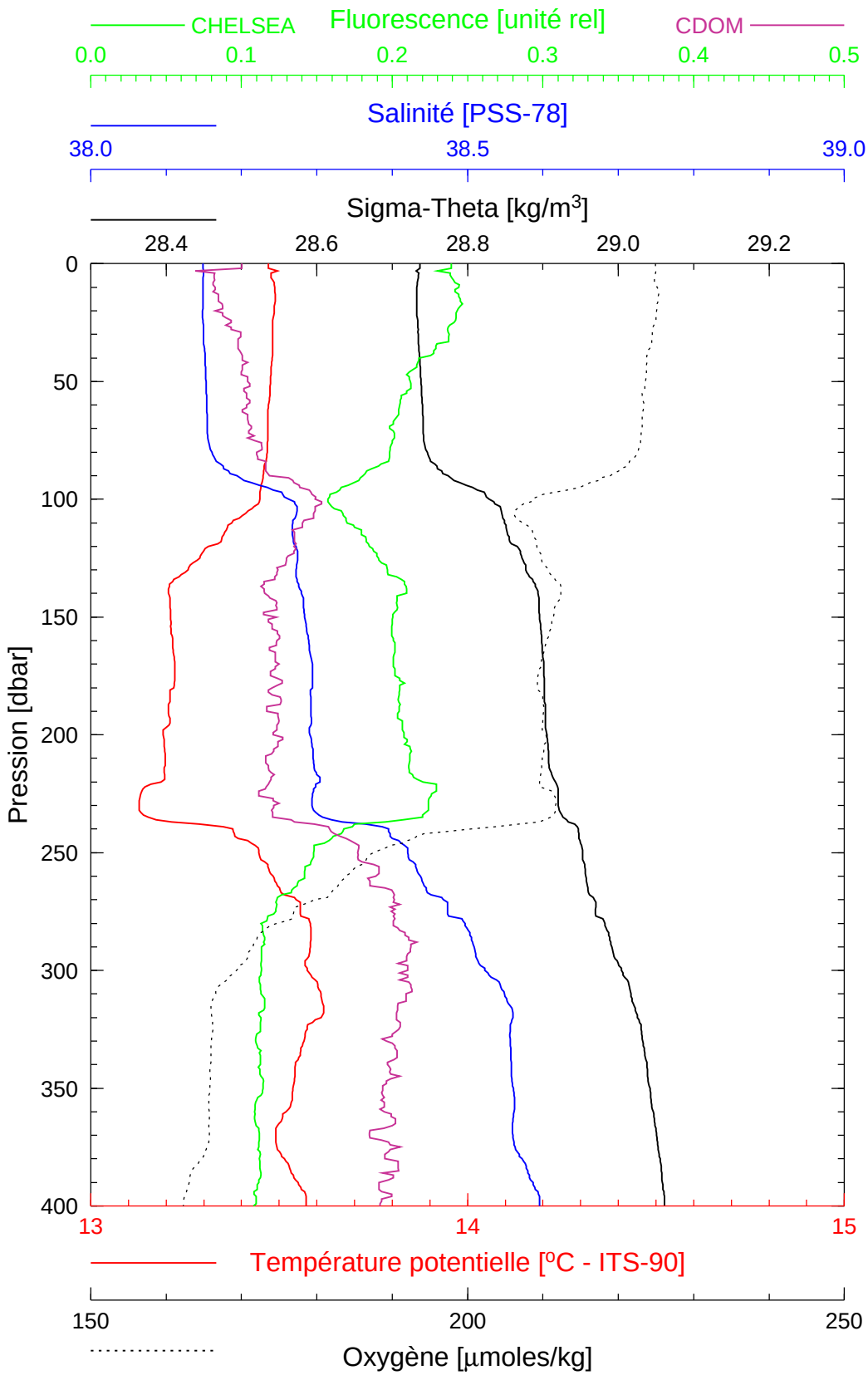


Date *31/01/2005* *Latitude* *43º24.854 N*

Heure déb *14h 11min [TU]* *Longitude* *07º47.933 E*

Boussole 38 **31/01/2005** **BOUS050131_04**

BOUS004

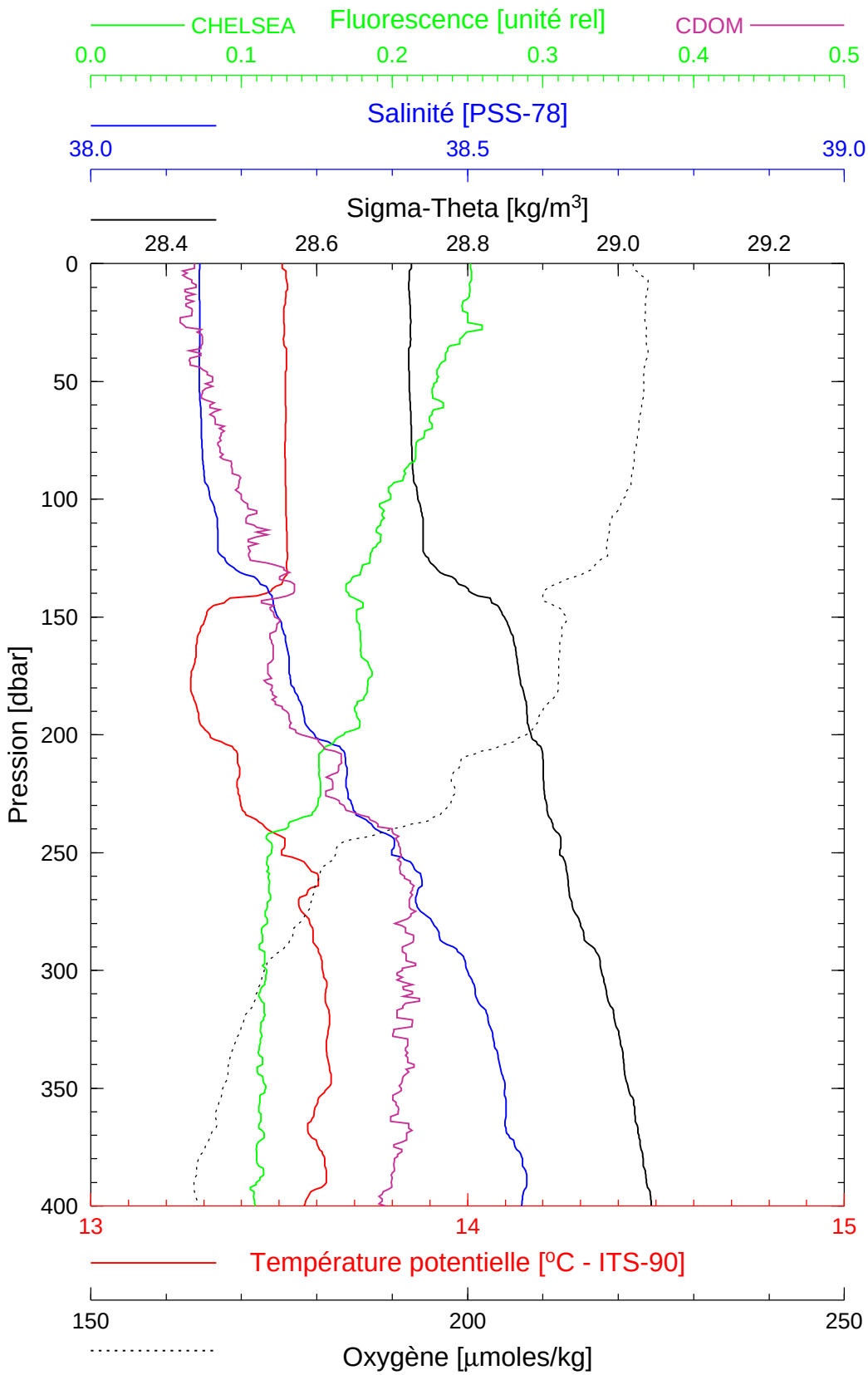


Date *31/01/2005* *Latitude* *43º27.969 N*

Heure déb *15h 12min [TU]* *Longitude* *07º42.475 E*

Boussole 38 **31/01/2005** **BOUS050131_05**

BOUS005

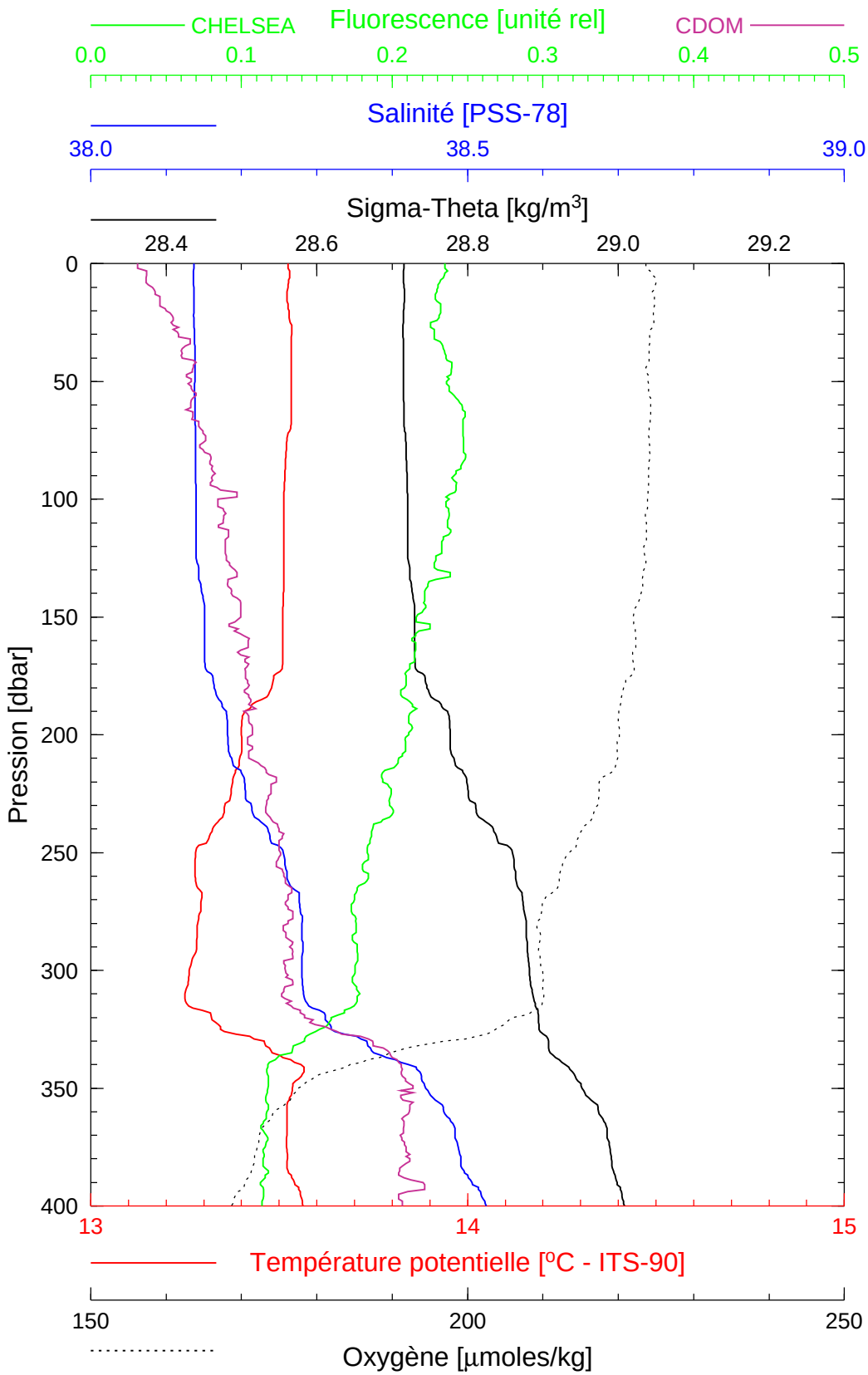


Date *31/01/2005* *Latitude* *43º31.001 N*

Heure déb *16h 12min [TU]* *Longitude* *07º37.027 E*

Boussole 38 **31/01/2005** **BOUS050131_06**

BOUS006

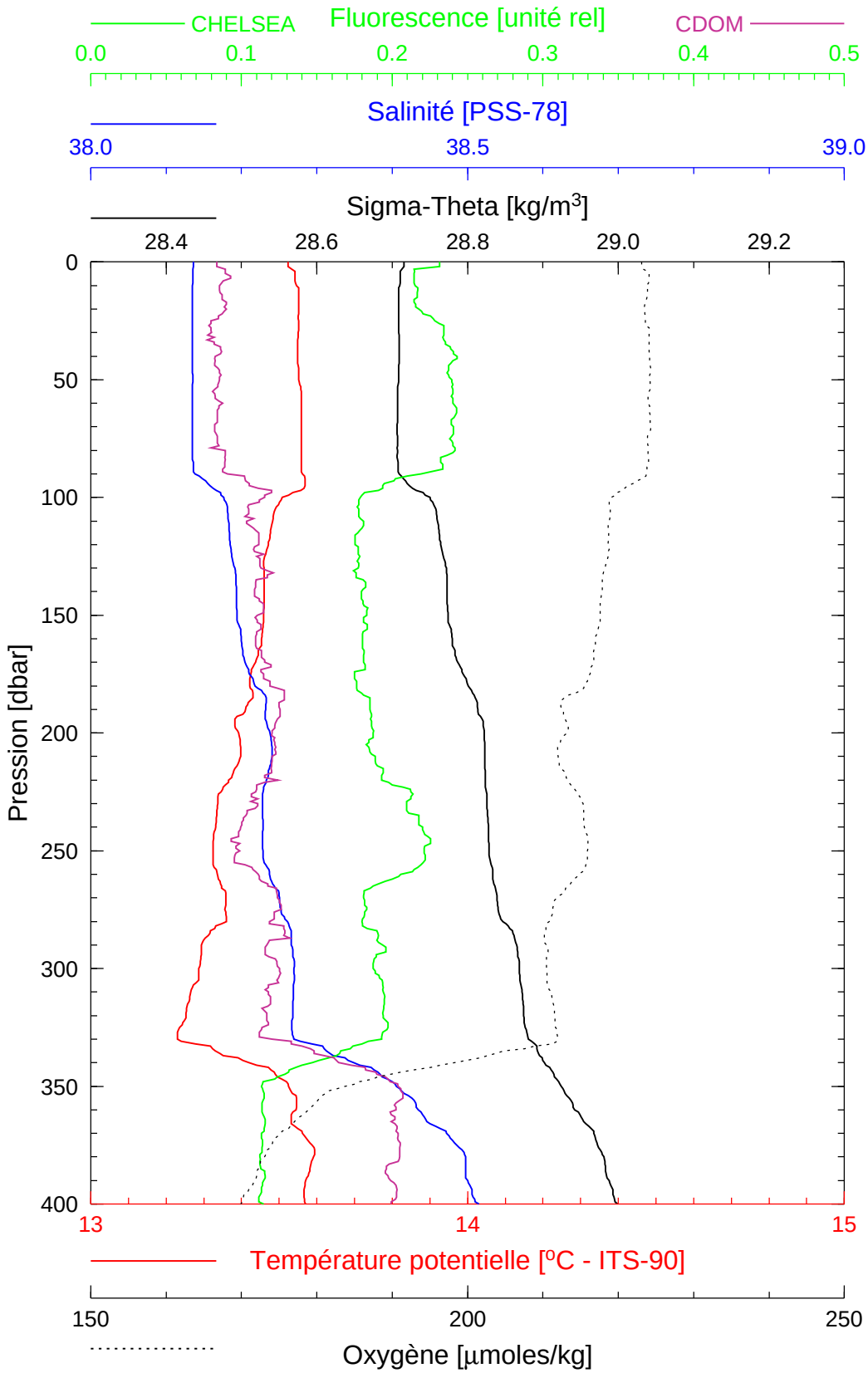


Date *31/01/2005* *Latitude* *43º33.950 N*

Heure déb *17h 12min [TU]* *Longitude* *07º31.000 E*

Boussole 38 **31/01/2005** **BOUS050131_07**

BOUS007

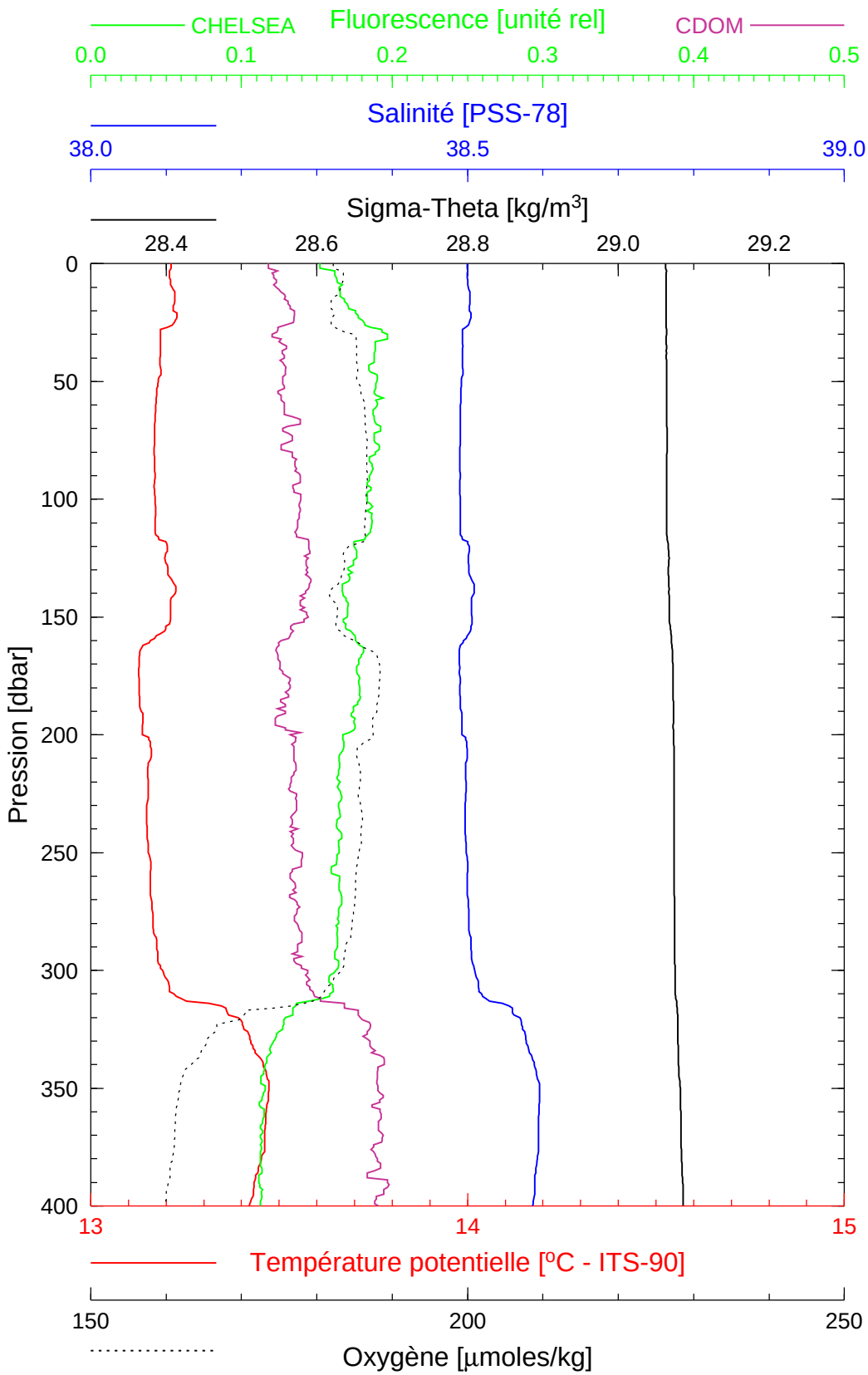


Date *31/01/2005* *Latitude* *43º37.488 N*

Heure déb *18h 15min [TU]* *Longitude* *07º25.181 E*

Boussole 38 **02/02/2005** **BOUS050202_01**

BOUS008

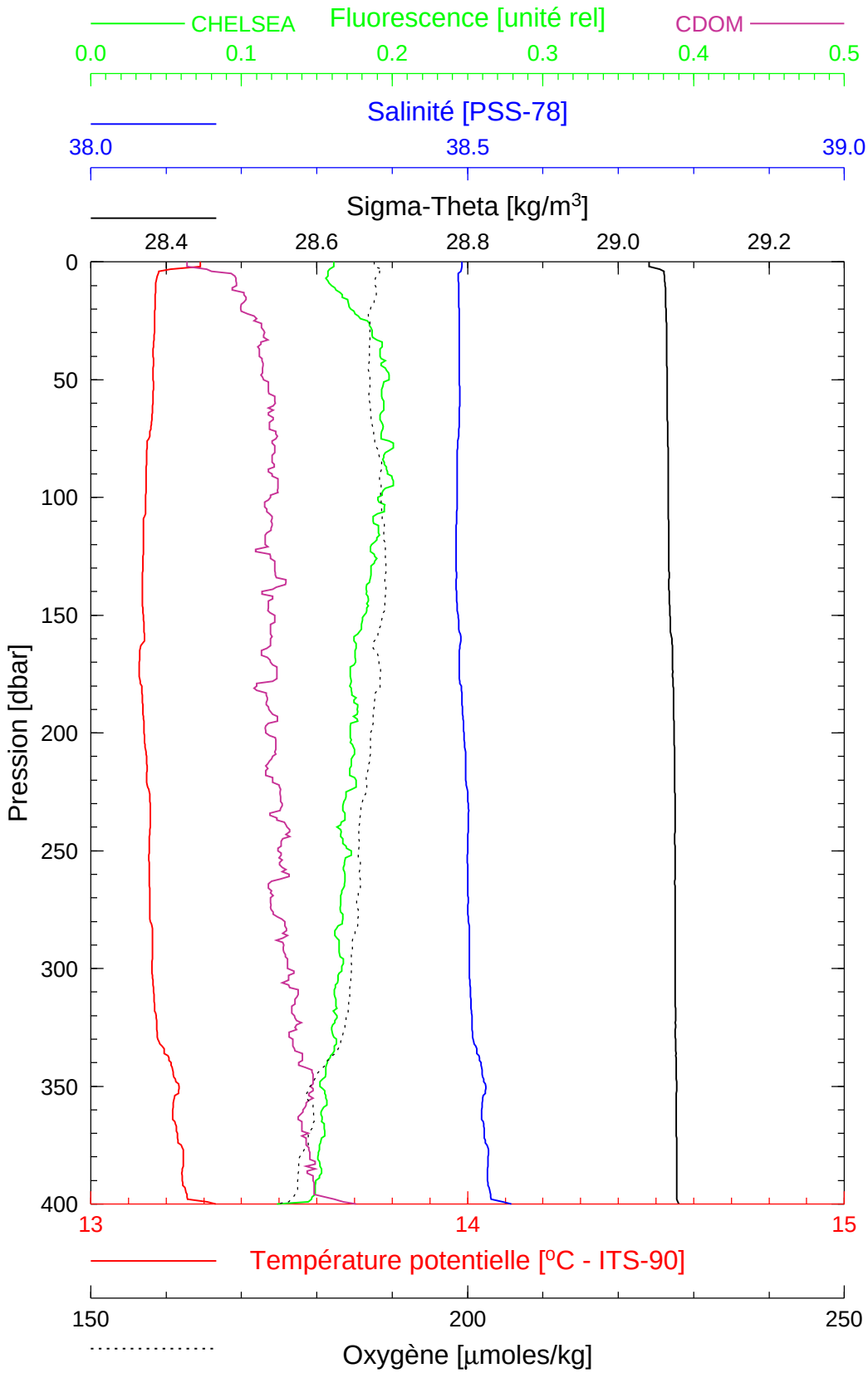


Date *02/02/2005* *Latitude* *43º22.059 N*

Heure déb *09h 00min [TU]* *Longitude* *07º53.821 E*

Boussole 38 **02/02/2005** **BOUS050202_02**

BOUS009

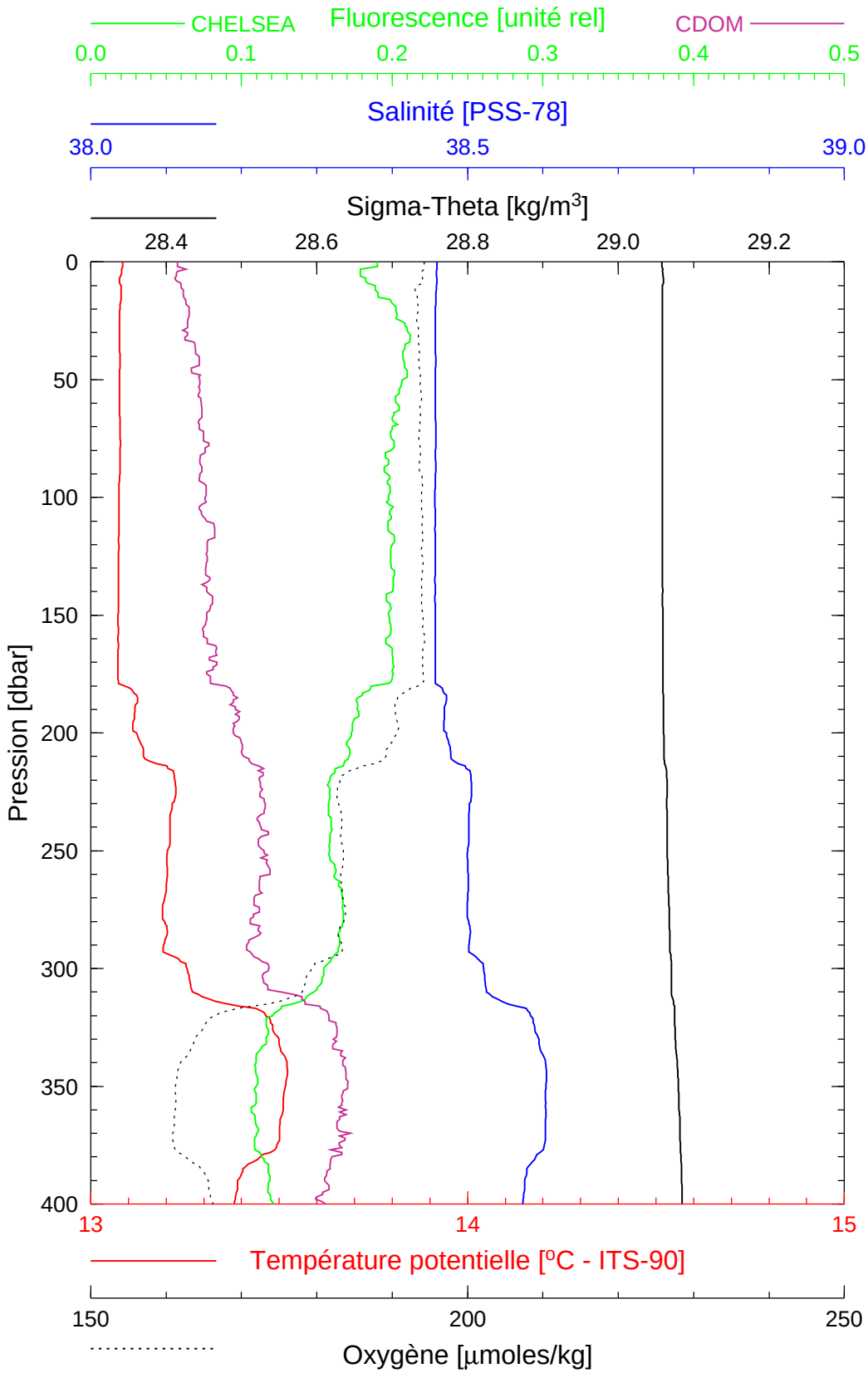


Date *02/02/2005* *Latitude* *43º22.110 N*

Heure déb *11h 30min [TU]* *Longitude* *07º53.963 E*

Boussole 38 **04/02/2005** **BOUS050204_01**

BOUS010

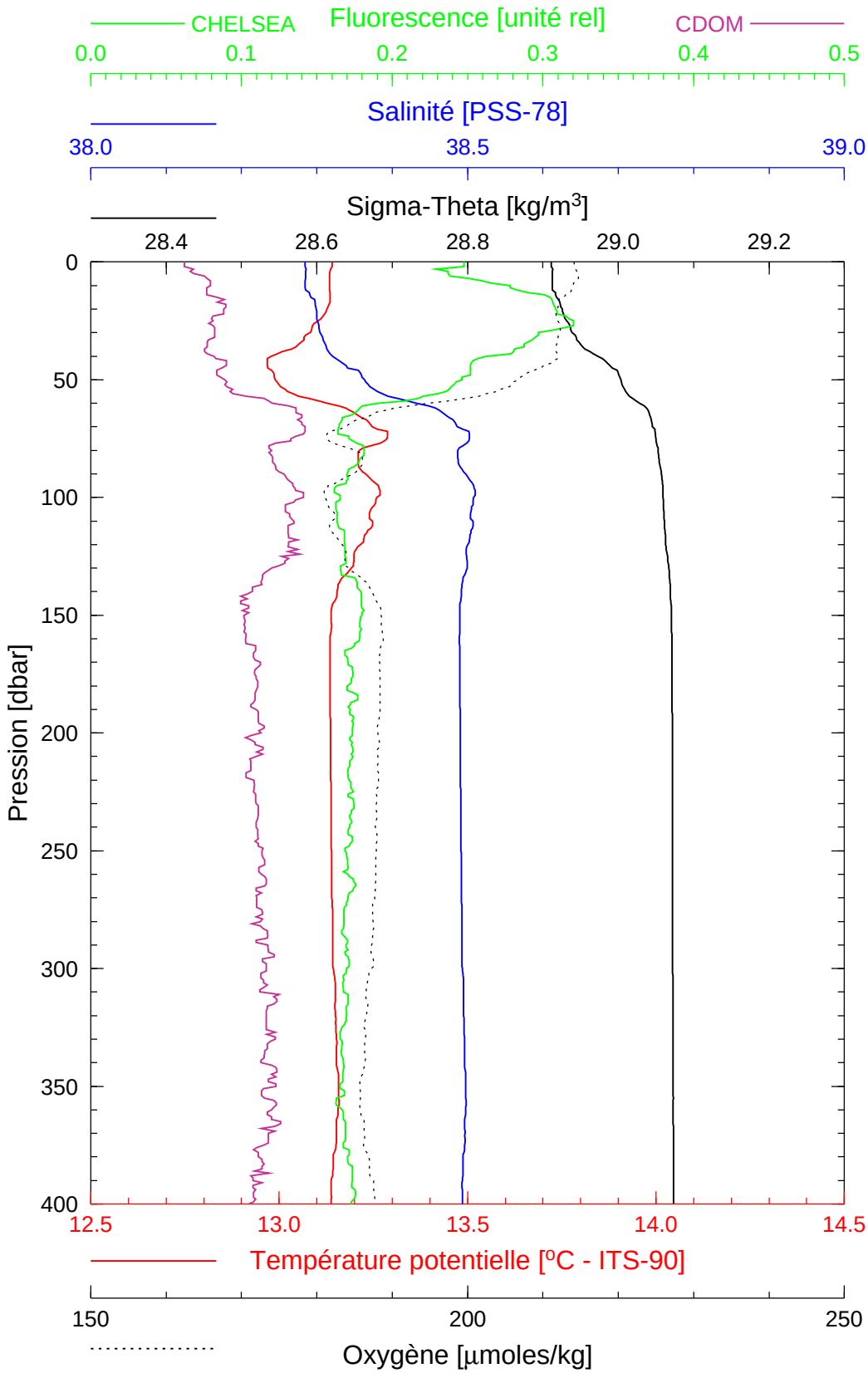


Date *04/02/2005* *Latitude* *43°22.018 N*

Heure déb *09h 25min [TU]* *Longitude* *07°53.755 E*

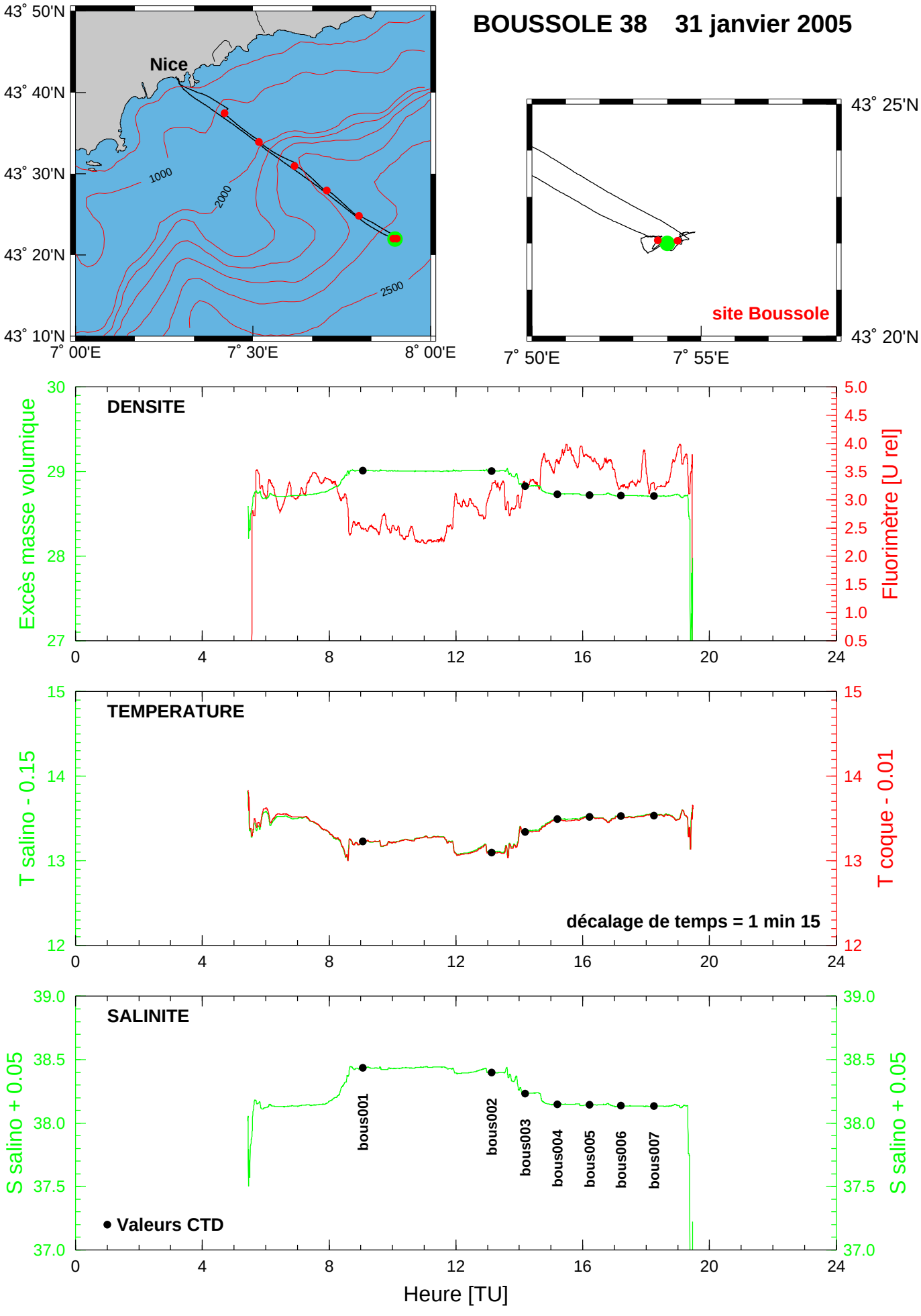
Boussole 38 **04/02/2005** **BOUS050204_02**

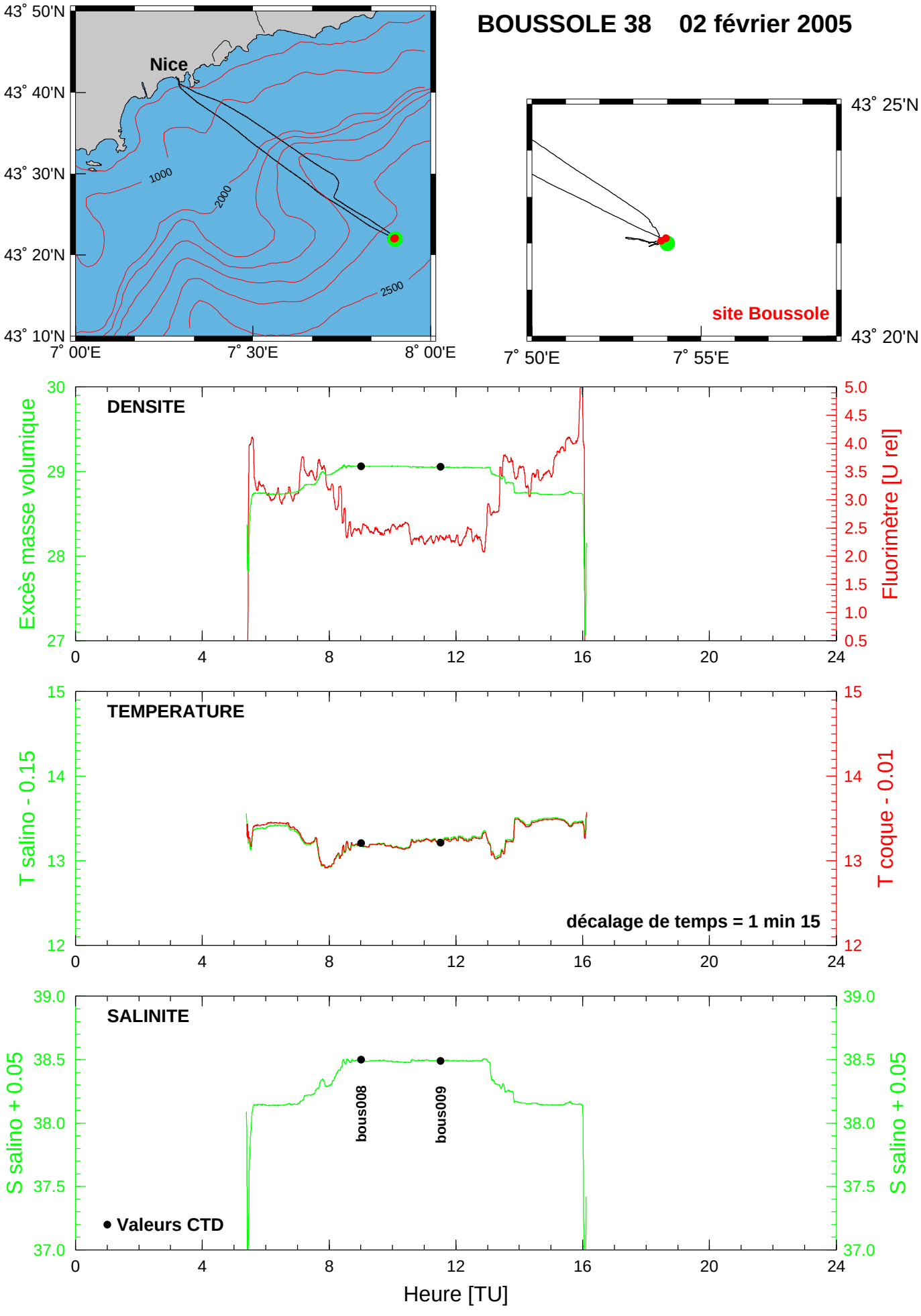
BOUS011

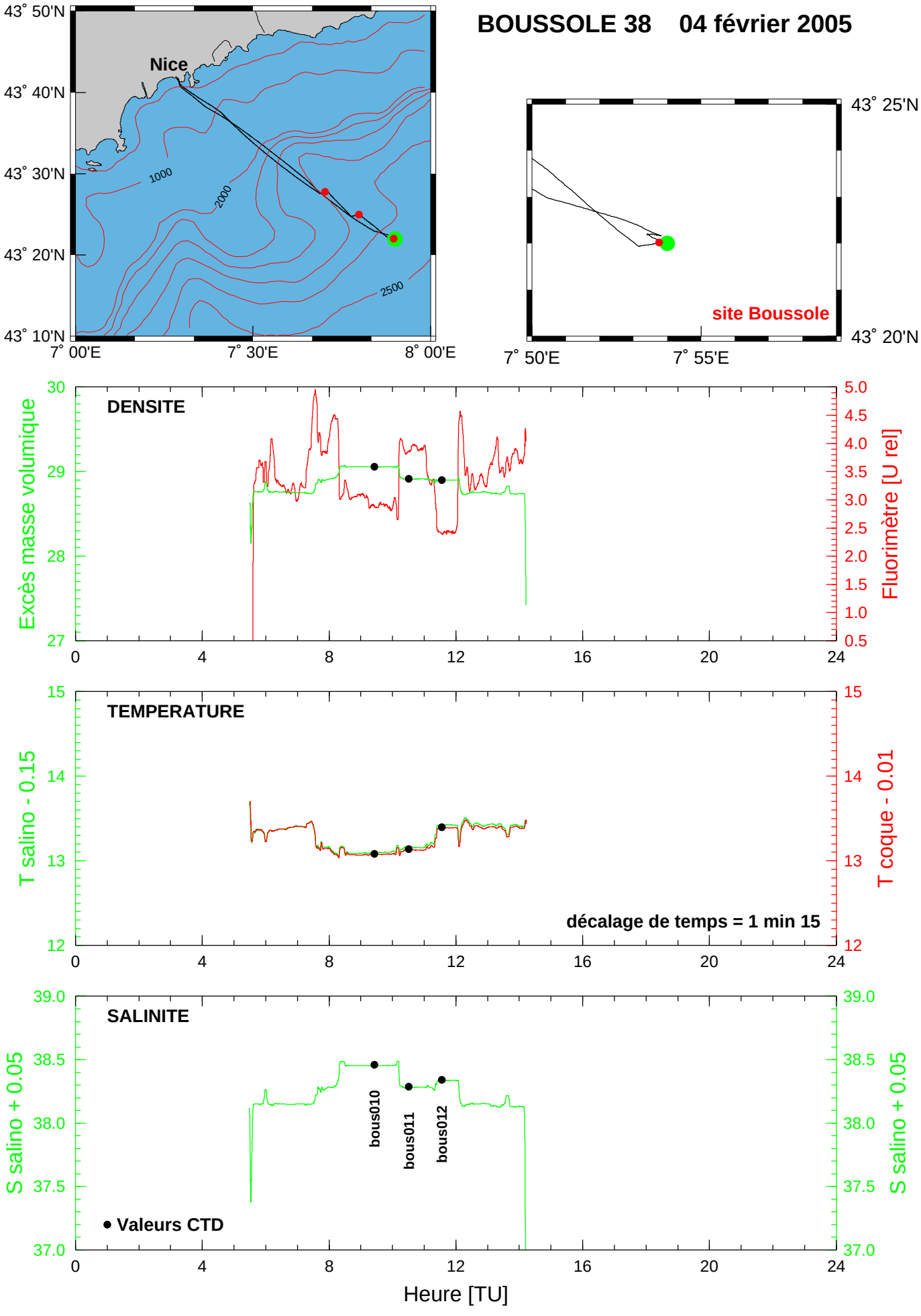


Date *04/02/2005* *Latitude* *43º25.005 N*

Heure déb *10h 30min [TU]* *Longitude* *07º47.899 E*


BOUSSOLE 38 31 janvier 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
T salino - 0.15
T coque - 0.01
décalage de temps = 1 min 15
SALINITE
S salino + 0.05
bous001
bous002
bous003
bous004
bous005
bous006
bous007
• Valeurs CTD
Heure [TU]


BOUSSOLE 38 02 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
T salino - 0.15
T coque - 0.01
décalage de temps = 1 min 15
SALINITE
S salino + 0.05
bous008
bous009
• Valeurs CTD
Heure [TU]


BOUSSOLE 38 04 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
T salino - 0.15
T coque - 0.01
décalage de temps = 1 min 15
SALINITE
S salino + 0.05
bous010
bous011
bous012
• Valeurs CTD
Heure [TU]