

BOUSSOLE Monthly Cruise Report

Cruise 38

January 31 – February 4, 2005

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Vessel: R/V Téthys II

(Captain: Alain Stépahn)

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

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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

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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 N₂ for HPLC pigment and particule absorption spectrophotometric filter analysis in the lab. A gimble 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

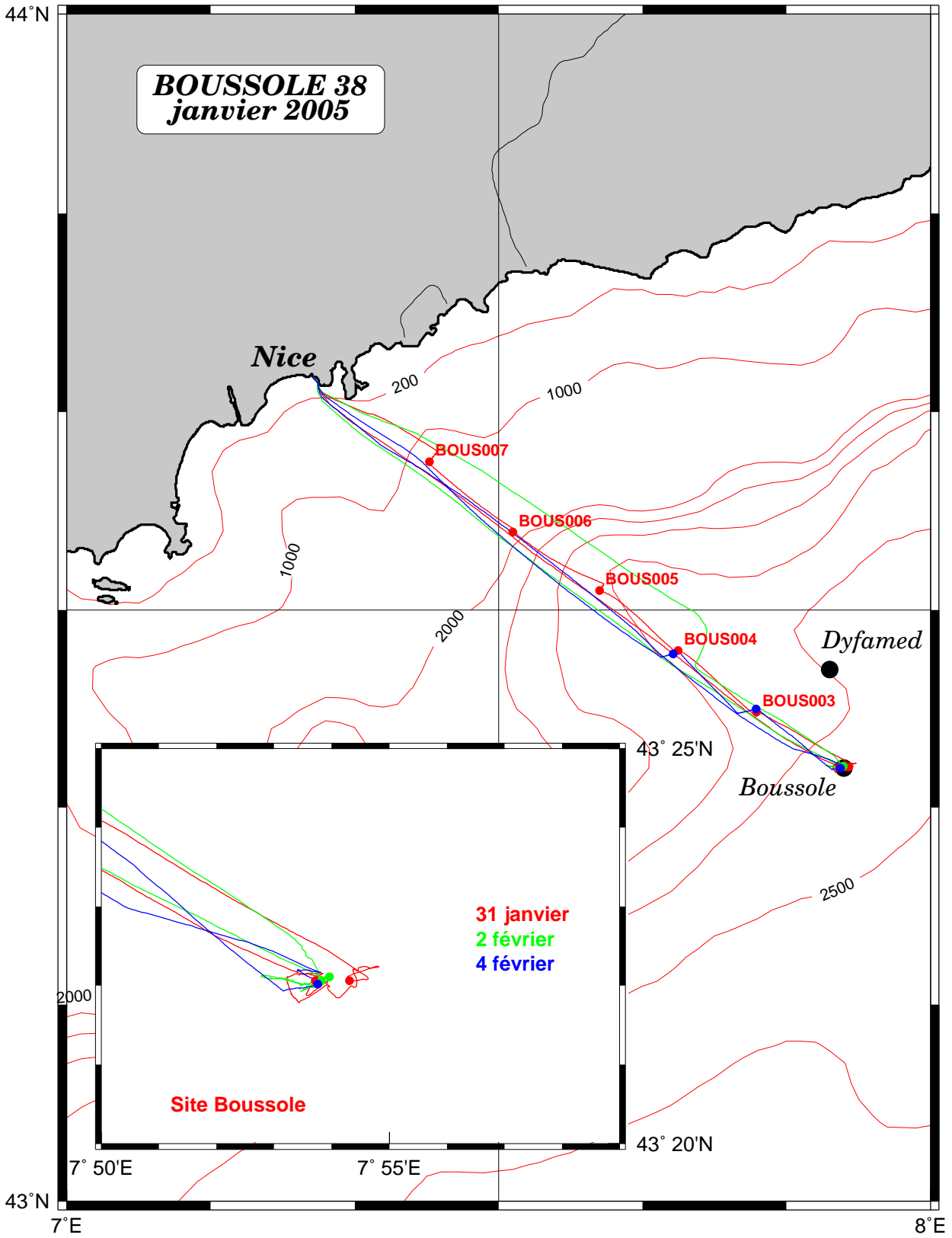
01 February 2005

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

Date	Black names (file ext. ".raw")	Profile names (file extension: ".raw")	CTD noleaves/ satellite overpass	Start Time GMT (hour:min)	Duration (min:sec)	Depth max (meter)	Latitude (N) (Degree)	Longitude (Minute)	Other sensors	Their cast	Start/Finish	Sky	Clouds	Quantity (#B)	Weather	Wind speed	Wind dir.	Atm. Pressure	Humidity	Visibility	T air	T water	Sea	Swell height	Sea	White horses
	bou310105black1	bou310105A	C1DBOUS001	09:37	03:00	400	43	22:063				rather clear	far	1	2 kn	266	266	1023.8	38	excellent	10.9	13.2	calm	0.7 m		no
		bou310106A		09:37	03:00	180	43	22:000				mainly blue	lightly milky	0	3 kn	266	266	1023.9	40	very good	10.4		calm	1 m		no
		bou310106B		10:07	05:00	200	43	22:000				mainly blue	lightly milky	0	3 kn	266	266	1023.9	40	very good	10.4		calm	1 m		no
		bou310106C		10:19	04:30	180	43	22:000				mainly blue	lightly milky	0	3 kn	266	266	1023.9	40	very good	10.4		calm	1 m		no
	bou310105black2			10:32	03:00		43	22:000	CIMEL 1	Tau atmos	10:55	mainly blue	light cirrus	0												
	bou310105black3	bou310105D		11:56	03:00	180	43	22:014				mainly blue	milky	0	8 kn	71	71	1024.2	52	excellent	10.3		calm	1 m	SW	rare
#####		bou310106E		12:22	04:45	200	43	22:203				mainly blue	milky	0	8 kn	71	71	1023.2	52	excellent	10.3		calm	1 m	SW	rare
#####		bou310105F		12:35	04:45	200	43	22:243				mainly blue	milky	0	8 kn	71	71	1023.2	52	excellent	10.3		calm	1 m	SW	rare
	bou310105black4		C1DBOUS002	13:07	03:00	400	43	22:062				blue	no	0	10 kn	59		1022.6	52	excellent	10.1	13.1	calm	0.7 m		rate
			C1DBOUS003	14:11	23:00	400	43	24:854	CIMEL 2	Tau atmos	13:09	blue	no	0	14 kn	53		1022.3	57	very good	10.1	13.4	choppy	0.9 m		some
			C1DBOUS004	15:12	26:00	400	43	27:969	CIMEL 3	Tau atmos	14:20	dark	no	0	15 kn	50		1021.7	63	dark	10.3	13.5	choppy	1 m		some
			C1DBOUS005	16:12	23:00	400	43	31:001				dark	no	0	20 kn	64		1021.2	59	dark	11.0	16.5	choppy	1 m		some
			C1DBOUS006	17:12	25:00	400	43	33:950				night	night	night	20 kn	46		1020.6	57	night	10.5	13.5	choppy	1 m		some
			C1DBOUS007	18:15	25:00	400	43	37:488				night	night	night	20 kn	69		1019.9	57	night	11.0	13.5	choppy	1 m		some
#####															P5-F6											yes
	bou211104black1	bou20206A	C1DBOUS008	09:00	34:00	400	43	22:059				blue	no	0	4 kn	102		1024.4	36	excellent	11.7	13.2	choppy	1.2 m		no
		bou211104B		09:27	03:00																					
		bou211104C		09:43	04:20							blue	no	0	1 kn	231		1024.7	34	excellent	12.4		calm	1.5 m		no
		bou211104D		09:57	04:45	190	43	22:060				blue	no	0	1 kn	231		1024.7	34	excellent	12.4		calm	1.5 m		no
		bou211104E		10:08	05:30	220	43	22:087				blue	no	0	1 kn	231		1024.7	34	excellent	12.4		calm	1.5 m		no
	bou211104black2		C1DBOUS009	10:30	03:00		43	22:000	CIMEL 4	Tau atmos	10:35	cirrus coming	ci	0	2 kn	341		1024.0	33	excellent	11.8	13.2	calm	0.7 m		no
#####				11:30	24:00	400	43	22:110				cirrus coming	ci	1												
				11:59	03:00		43	22:000	CIMEL 5	Tau atmos	11:48	far cirrus	no	0												
	bou211104black3	bou20206E		12:08	04:50	190	43	22:313				blue	no	0	5 kn	49		1023.3	37	excellent	11.6		calm	1.3 m		no
		bou211104F		12:19	04:50	180	43	22:369				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				blue	no	0	5 kn	49		1023.3	37	excellent	11.6		calm	1.3 m		no
				12:55	03:00		43	22:000	CIMEL 7	Tau atmos	13:02	blue	no	0												
#####							43	27:460	CIMEL 8	Tau atmos	13:29	far cirrus	no	0												
#####																										
#####			C1DBOUS010	09:25	22:00	400	43	22:018				cloudy	cu	7	12 kn	261		1022.9	64	good	12.1	13.1	choppy	1.5 m		some
#####			C1DBOUS011	09:30	24:00	400	43	22:019				cloudy	cu	7	19 kn	261		1022.9	64	good	11.9	13.2	choppy	1.8 m		some
#####			C1DBOUS012	11:30	30:00	400	43	27:791				cloudy	cu	3	19 kn	248		1022.6	56	good	11.1	13.4	choppy	1.8 m		some

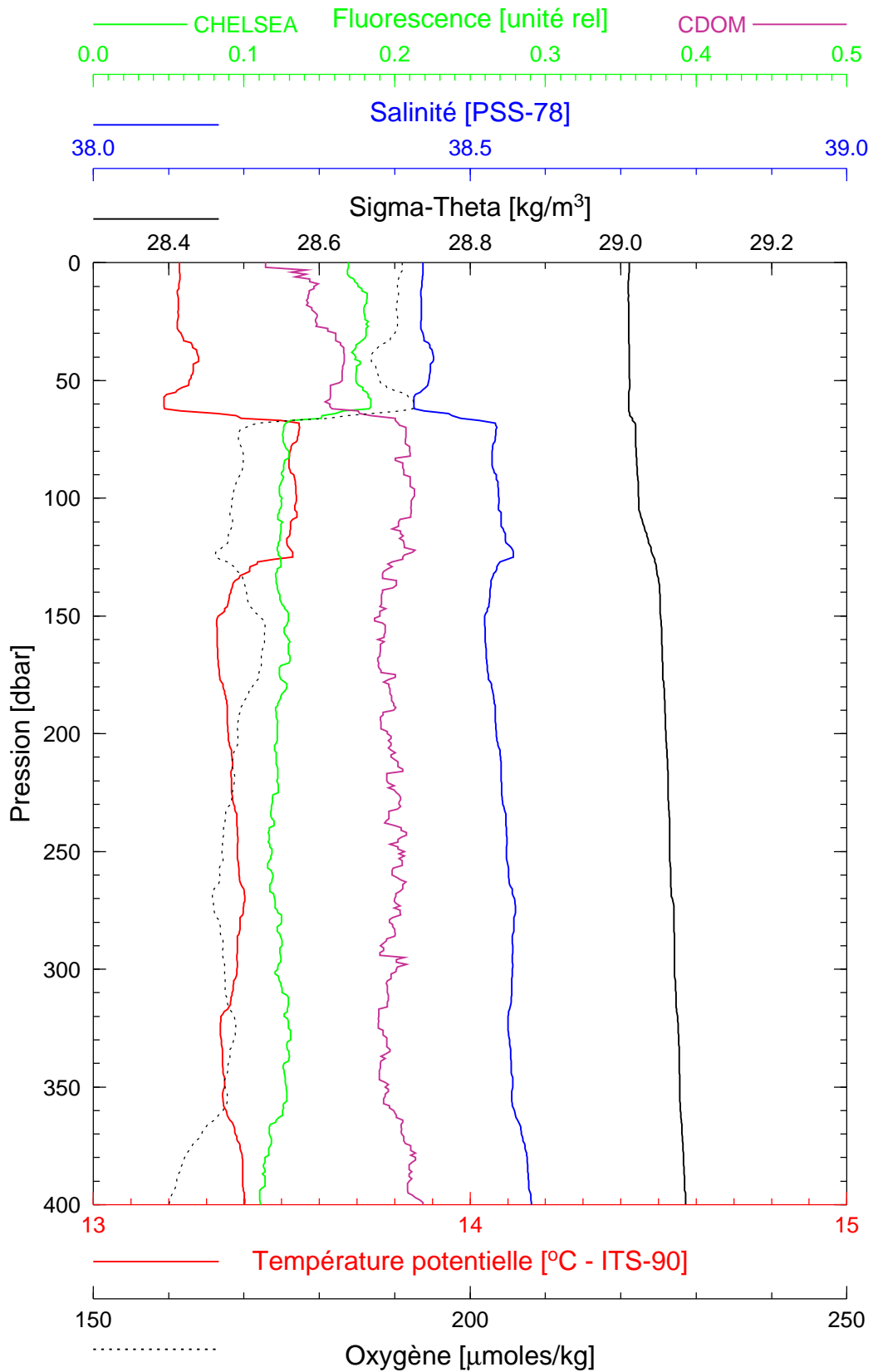


Boussole 38

31/01/2005

BOUS050131_01

BOUS001



Date 31/01/2005
Heure déb 09h 03min [TU]

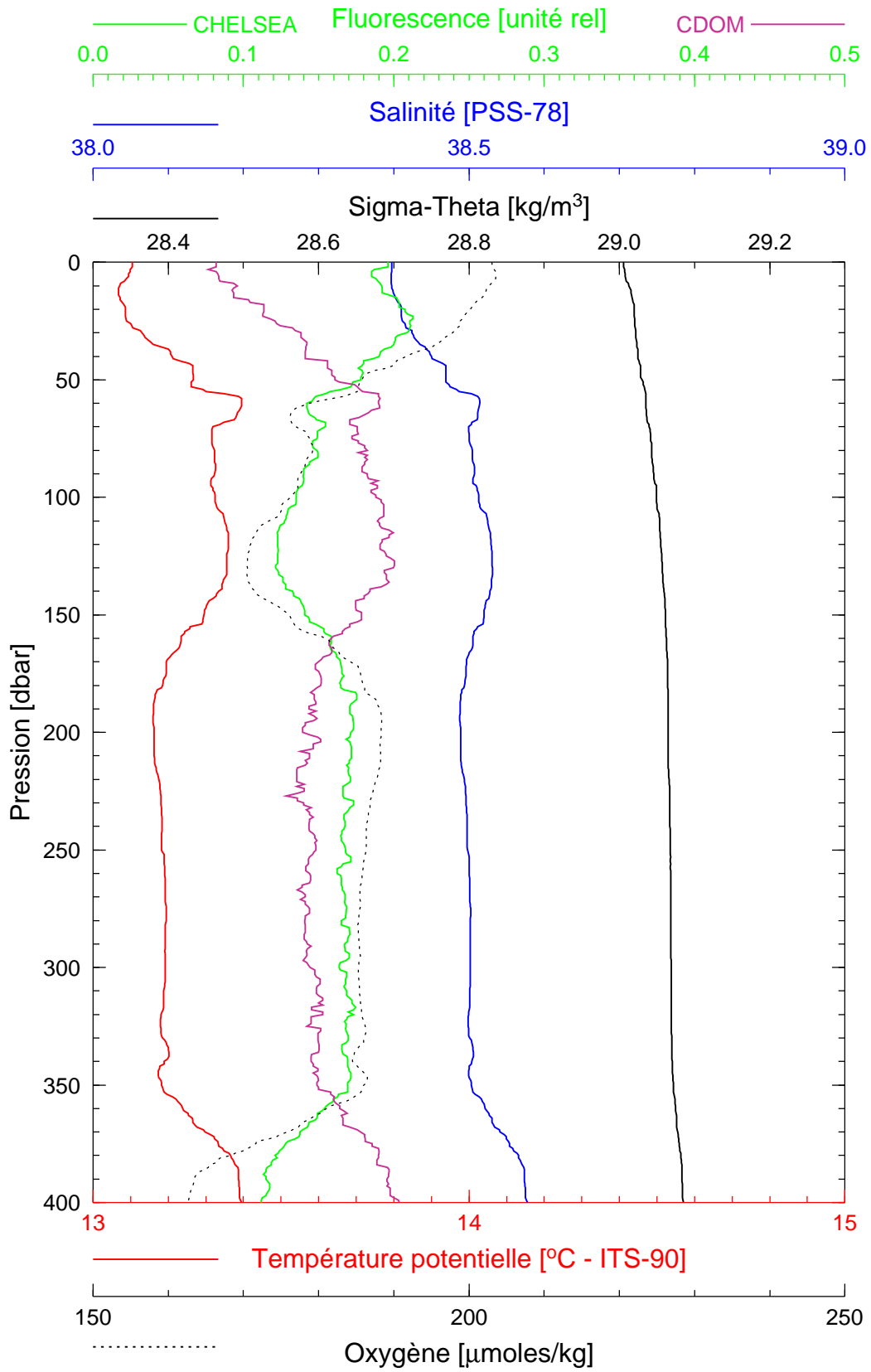
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Boussole 38

31/01/2005

BOUS050131_02

BOUS002



Date 31/01/2005
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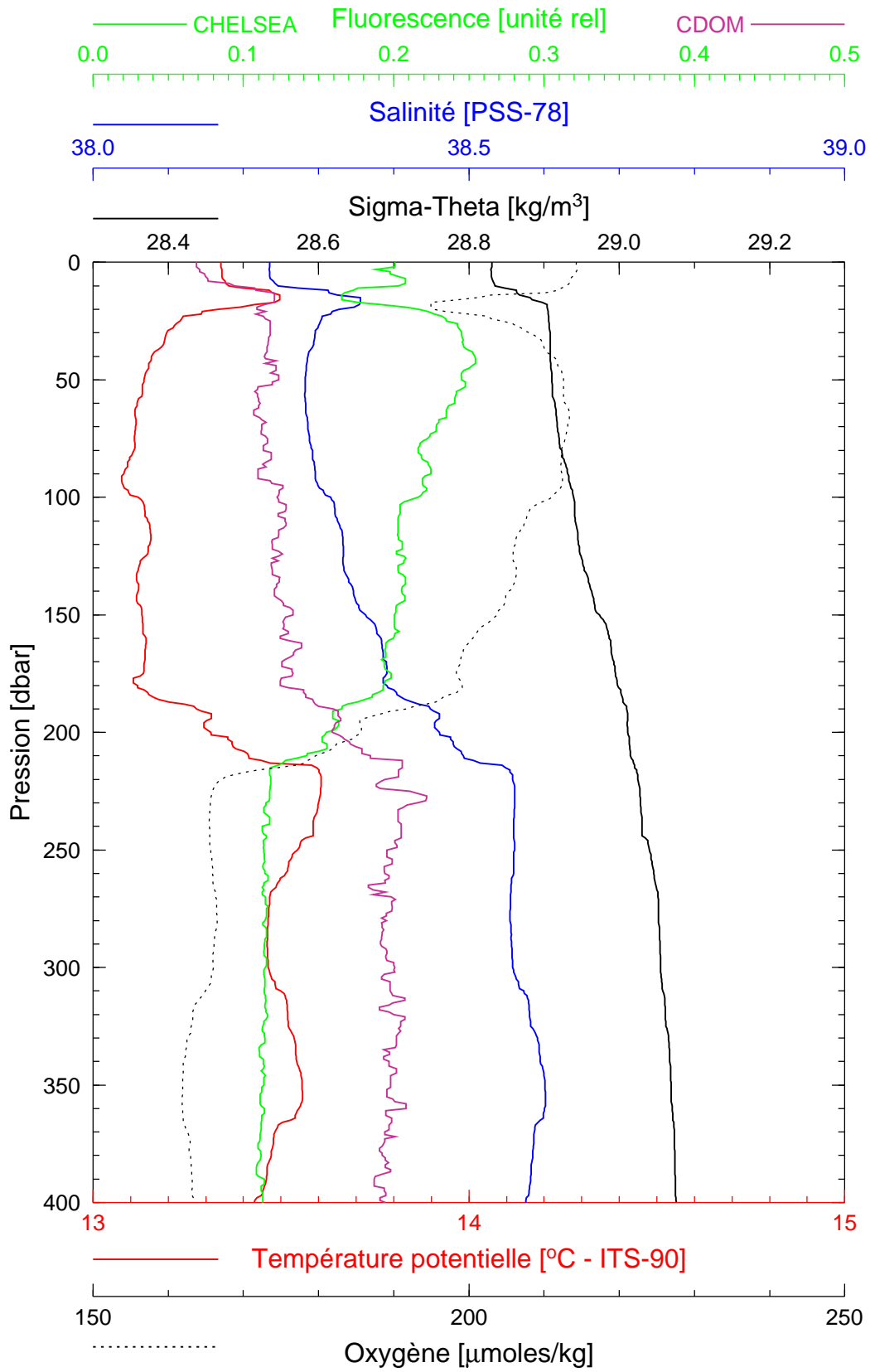
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Boussole 38

31/01/2005

BOUS050131_03

BOUS003



Date 31/01/2005
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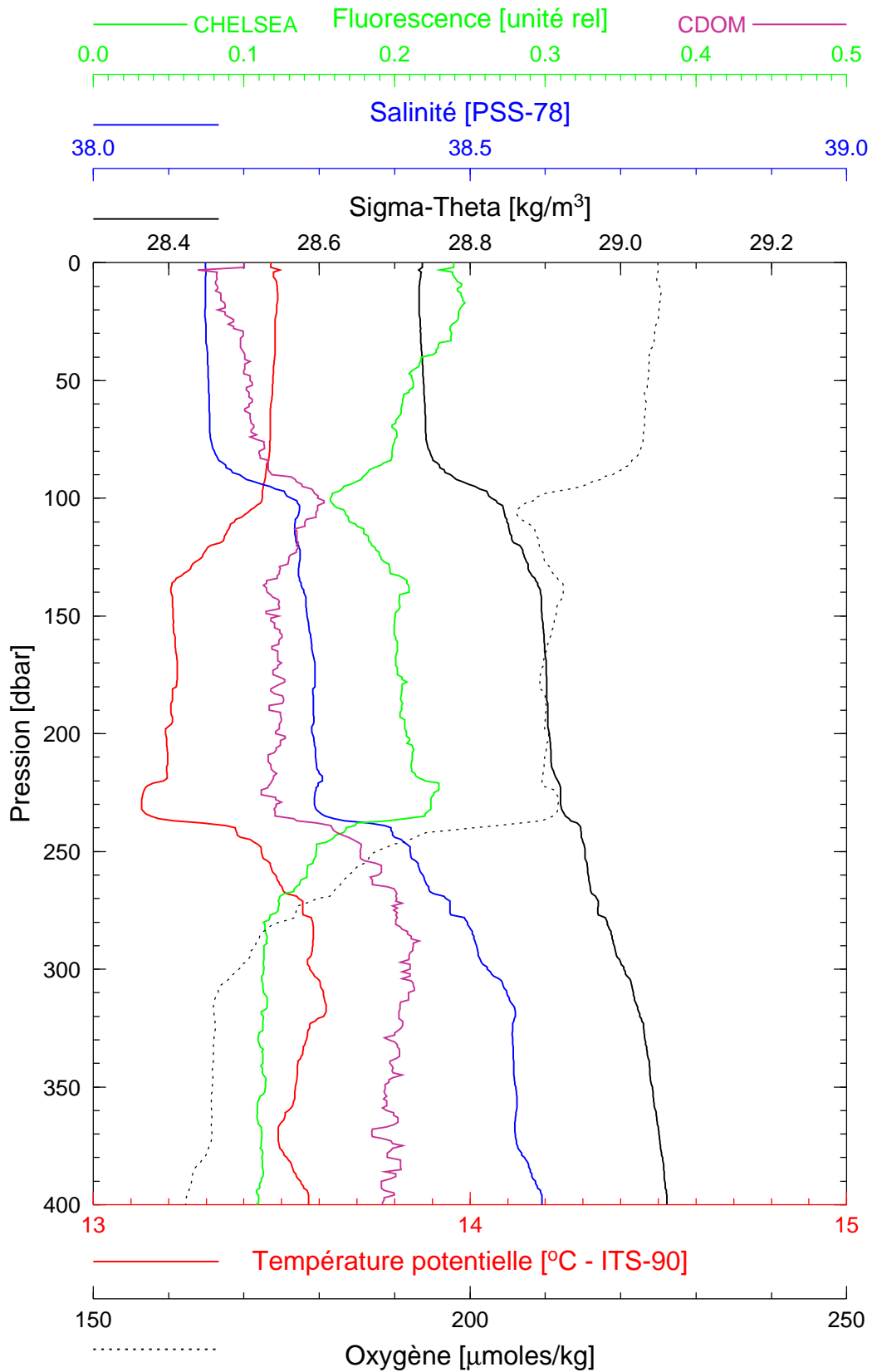
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Longitude 07°47.933 E

Boussole 38

31/01/2005

BOUS050131_04

BOUS004



Date 31/01/2005
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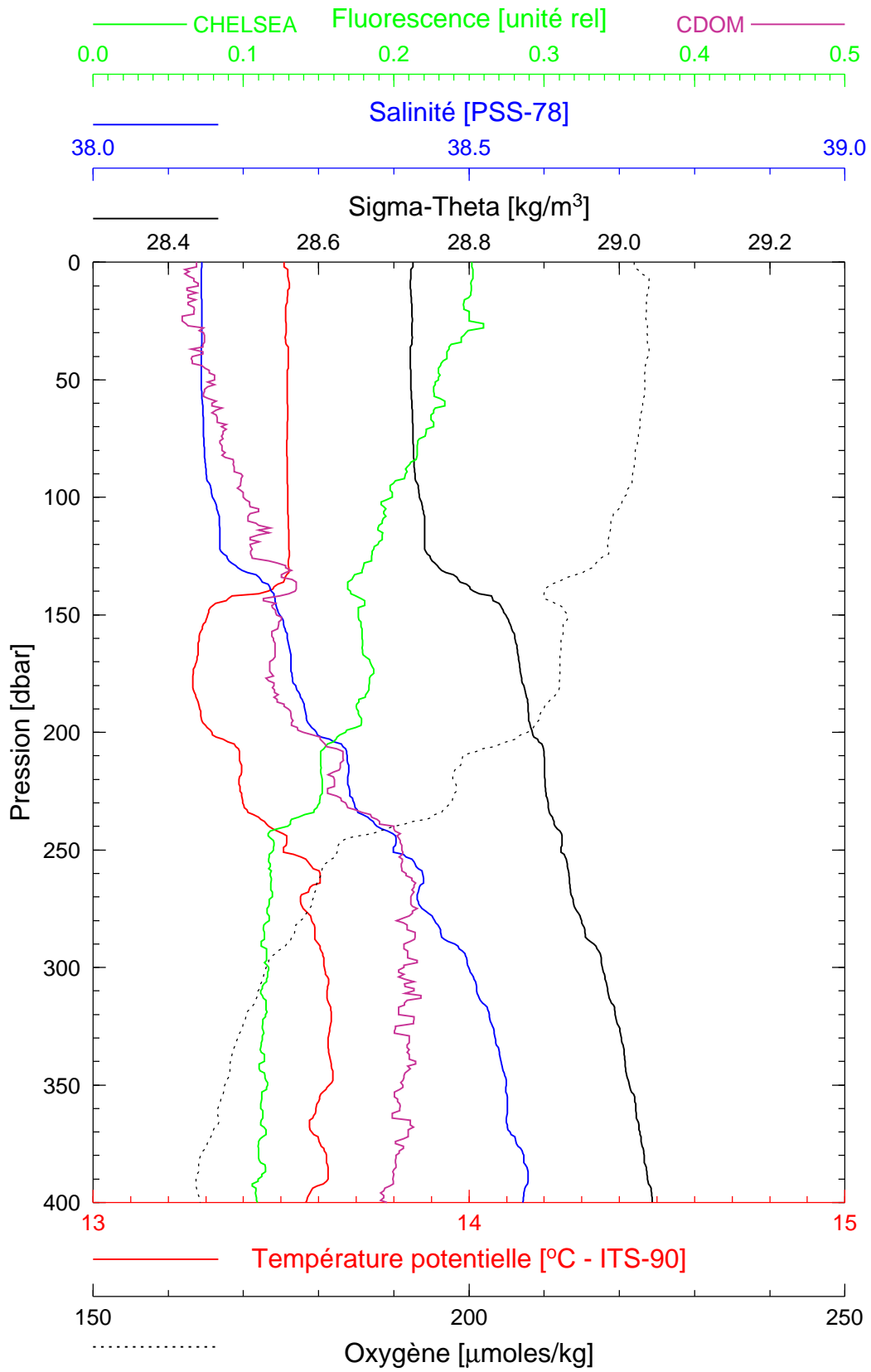
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Boussole 38

31/01/2005

BOUS050131_05

BOUS005



Date 31/01/2005
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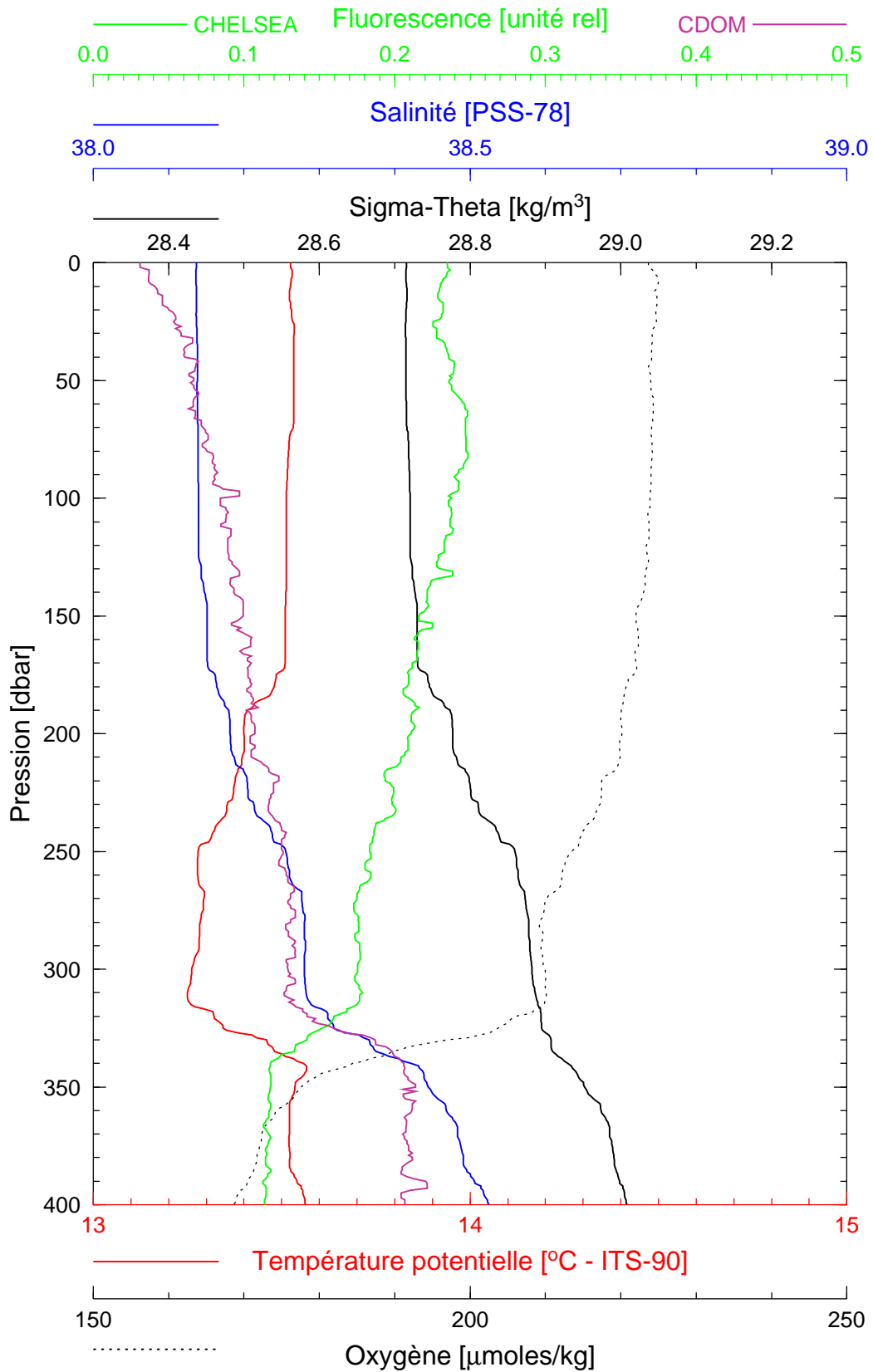
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Longitude 07°37.027 E

Boussole 38

31/01/2005

BOUS050131_06

BOUS006



Date 31/01/2005
Heure déb 17h 12min [TU]

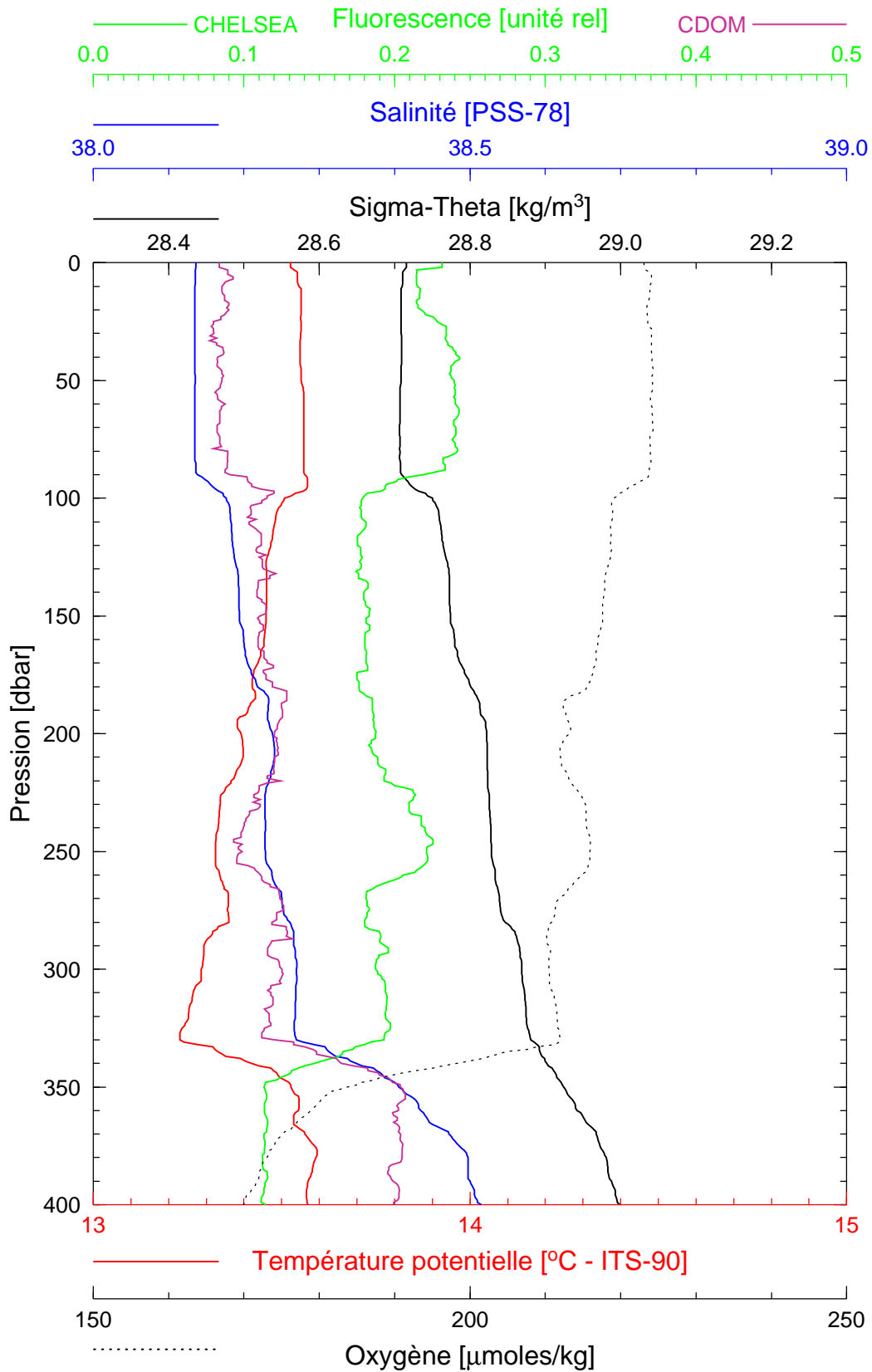
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Boussole 38

31/01/2005

BOUS050131_07

BOUS007



Date 31/01/2005
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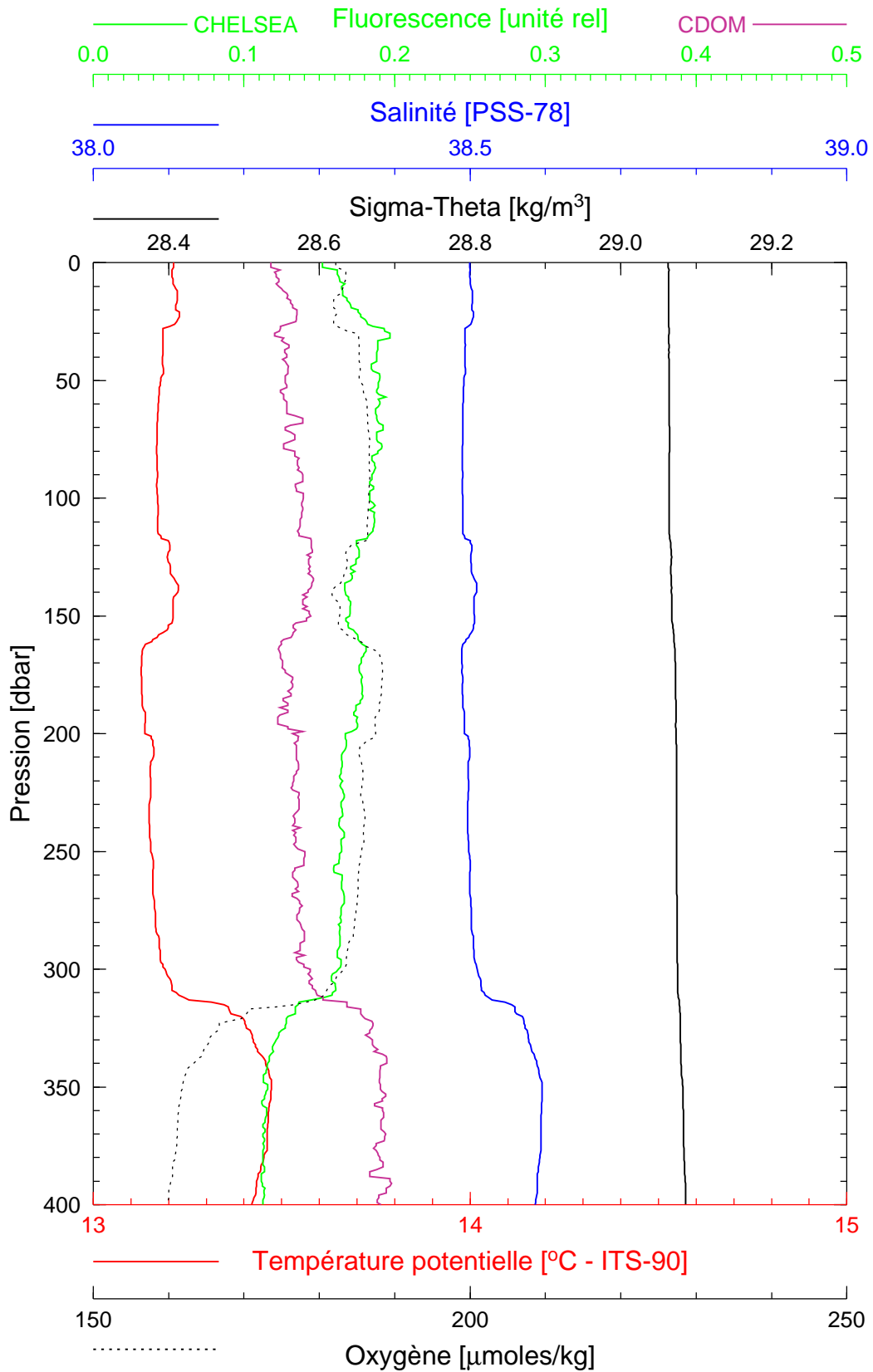
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Boussole 38

02/02/2005

BOUS050202_01

BOUS008



Date 02/02/2005
Heure déb 09h 00min [TU]

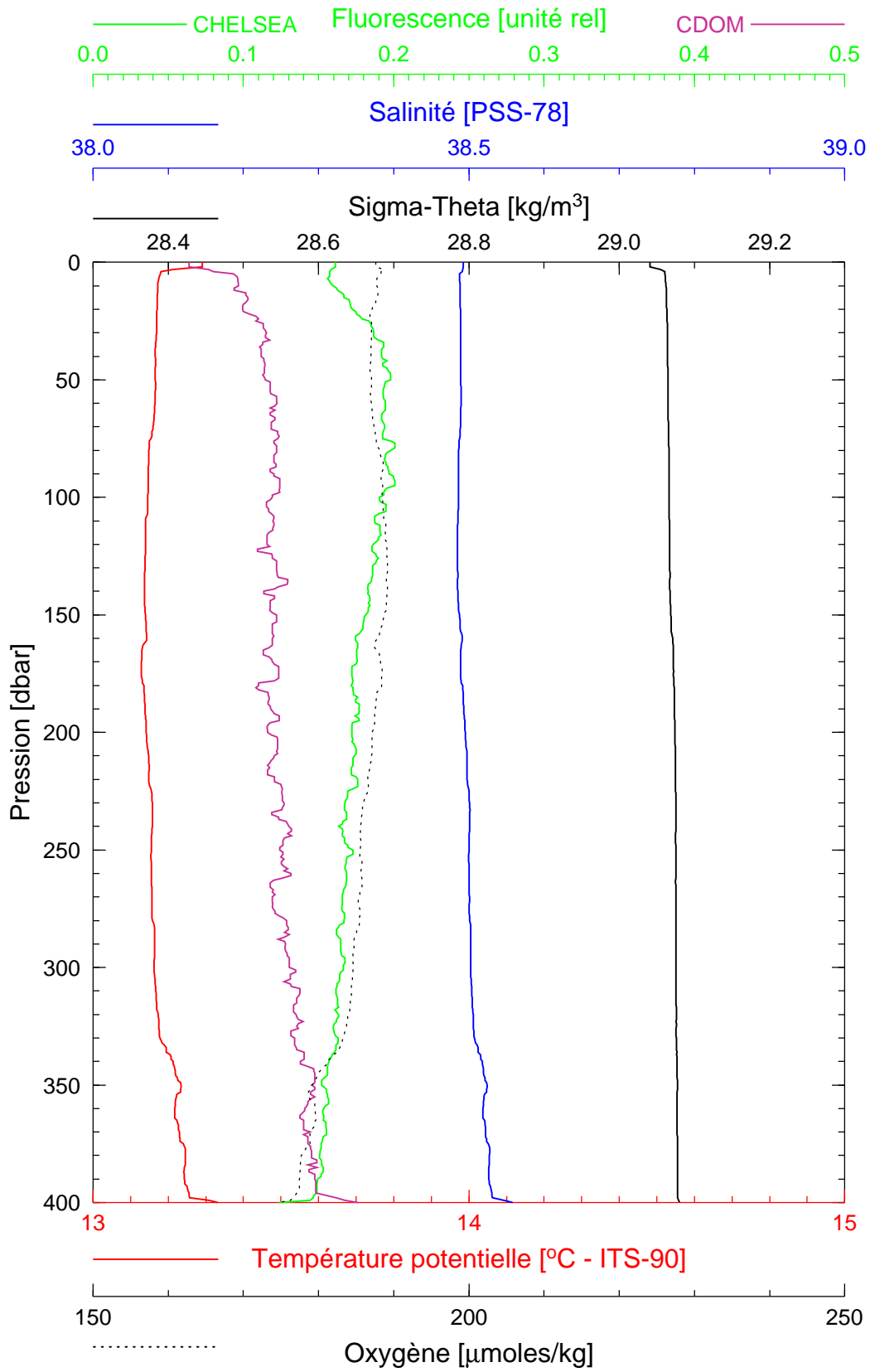
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Longitude 07°53.821 E

Boussole 38

02/02/2005

BOUS050202_02

BOUS009



Date 02/02/2005
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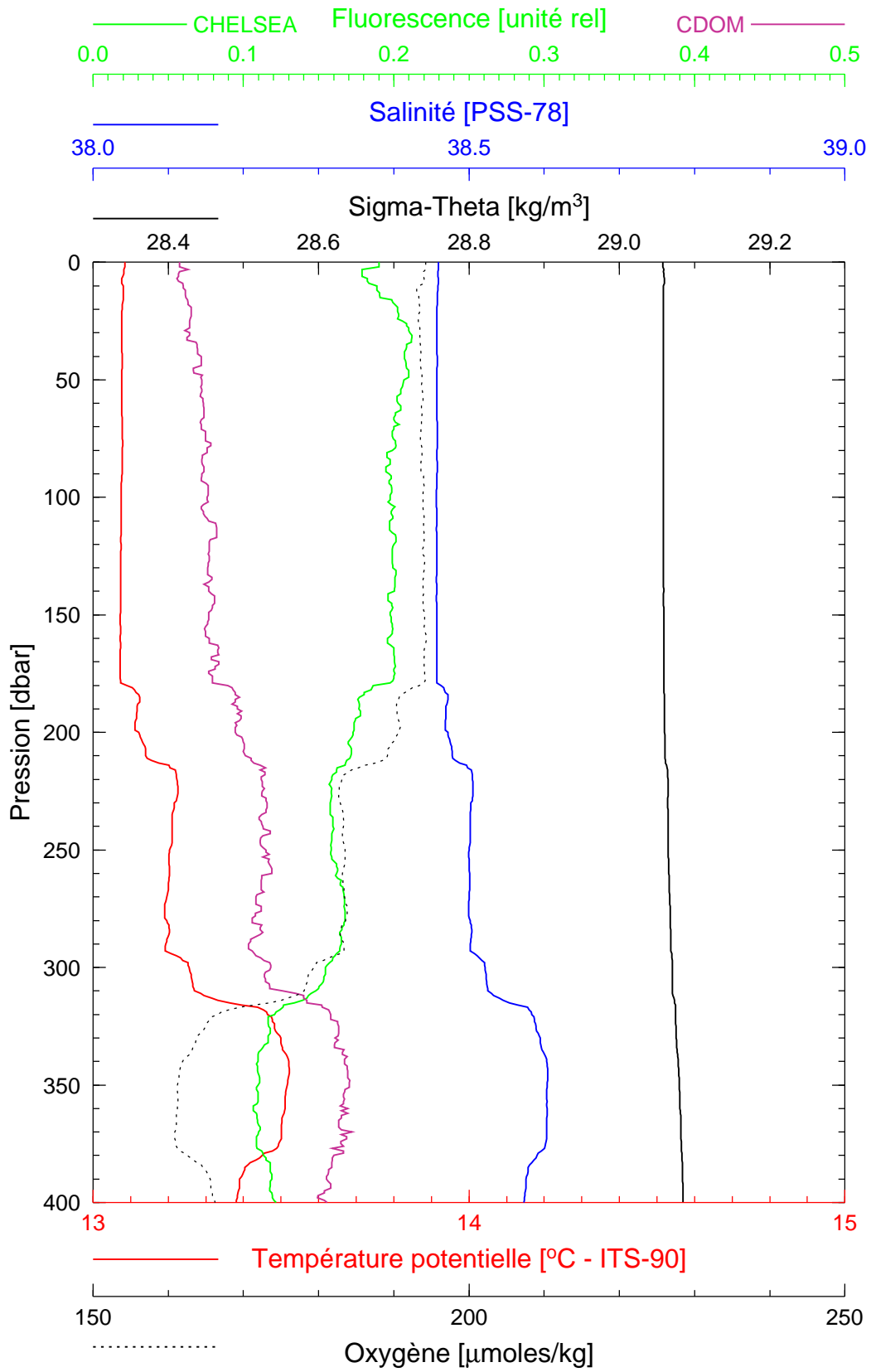
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Boussole 38

04/02/2005

BOUS050204_01

BOUS010



Date 04/02/2005
Heure déb 09h 25min [TU]

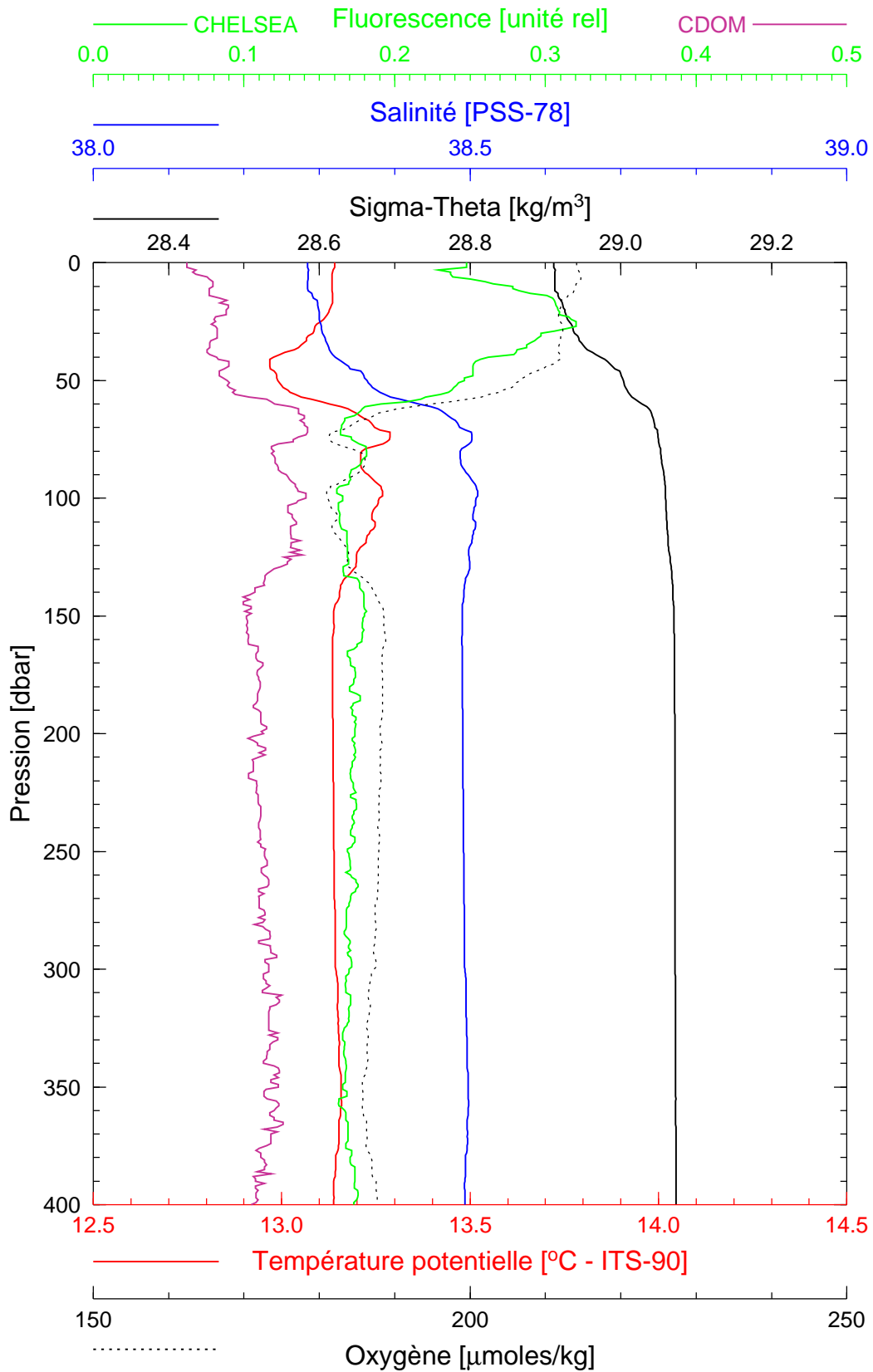
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Boussole 38

04/02/2005

BOUS050204_02

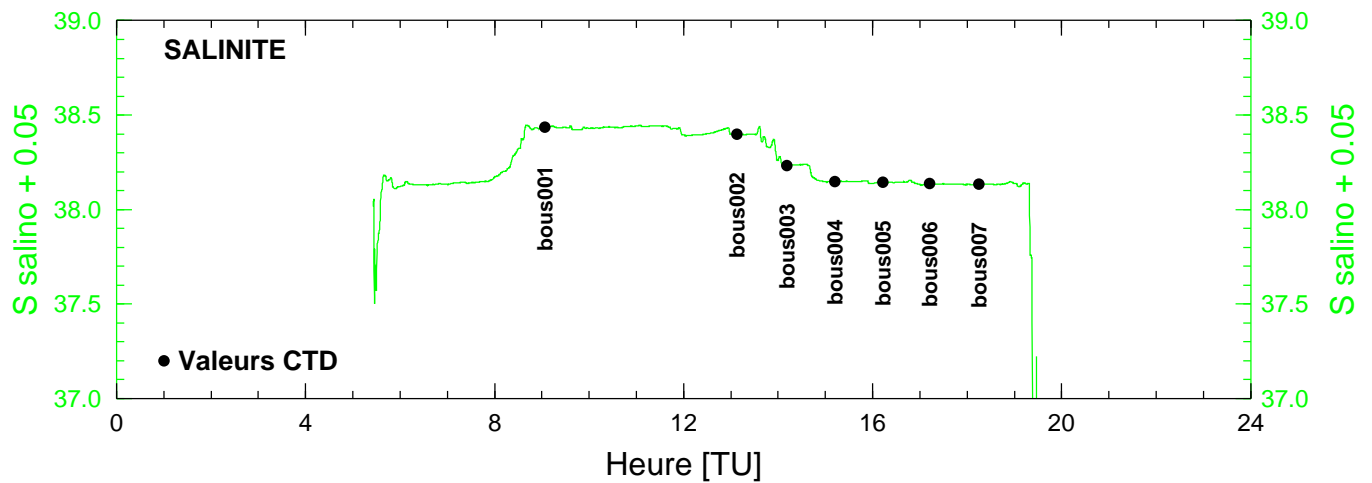
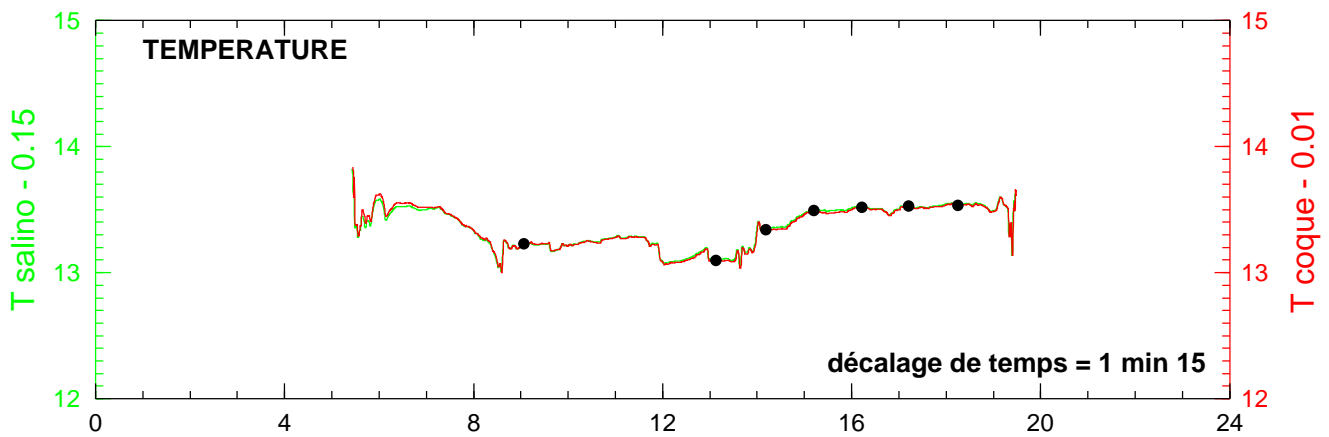
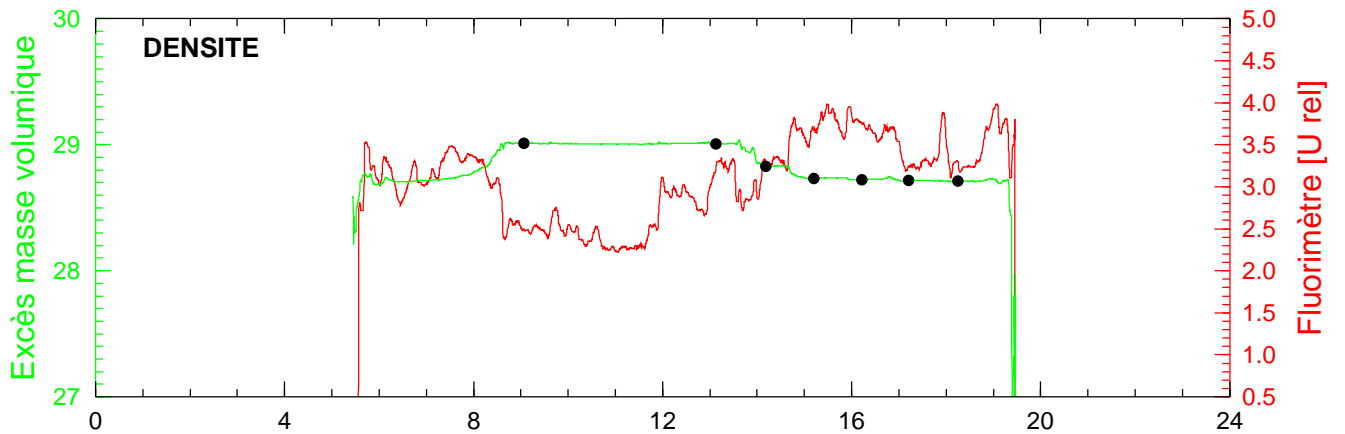
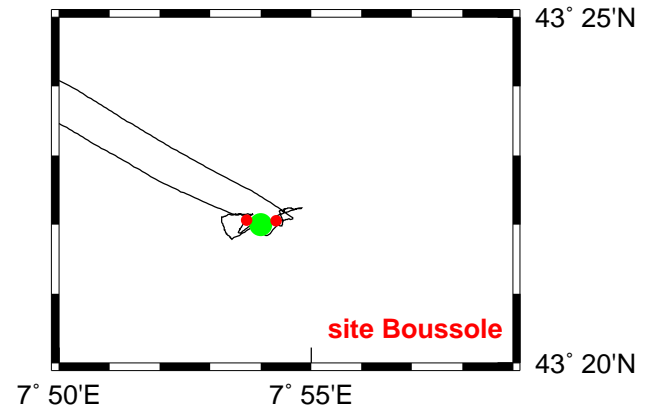
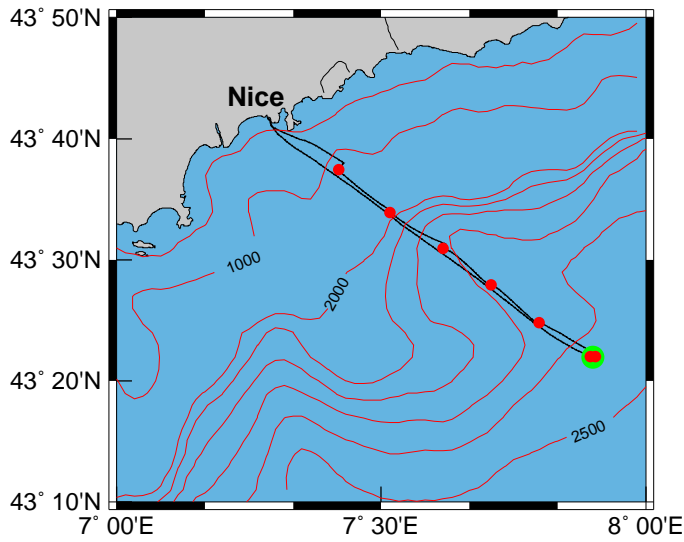
BOUS011



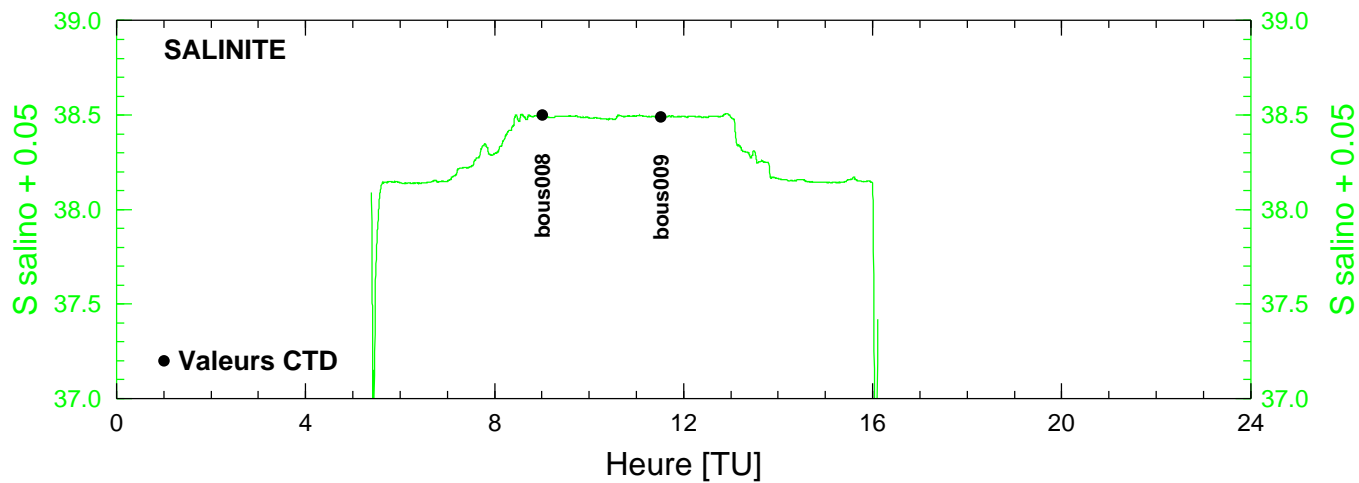
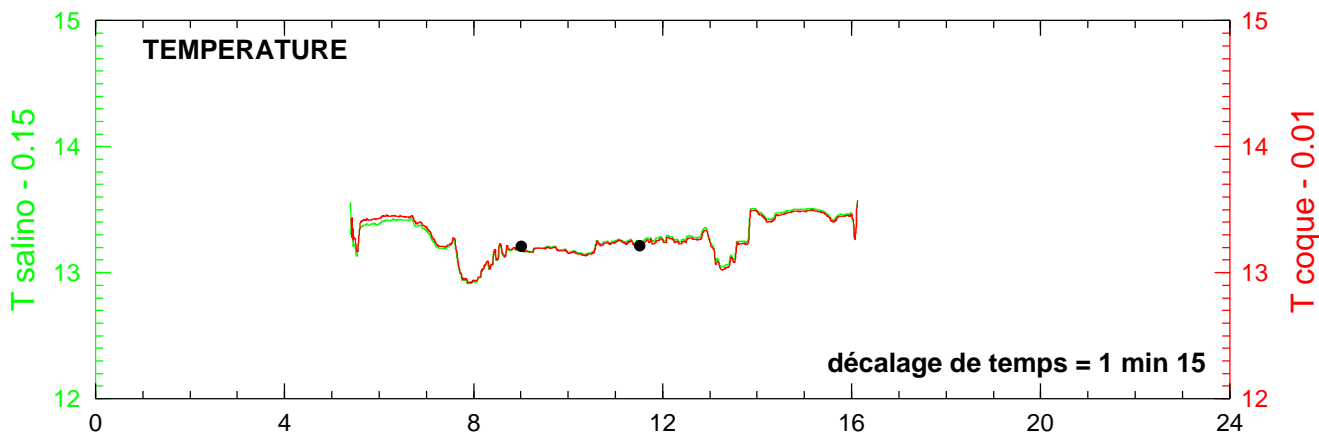
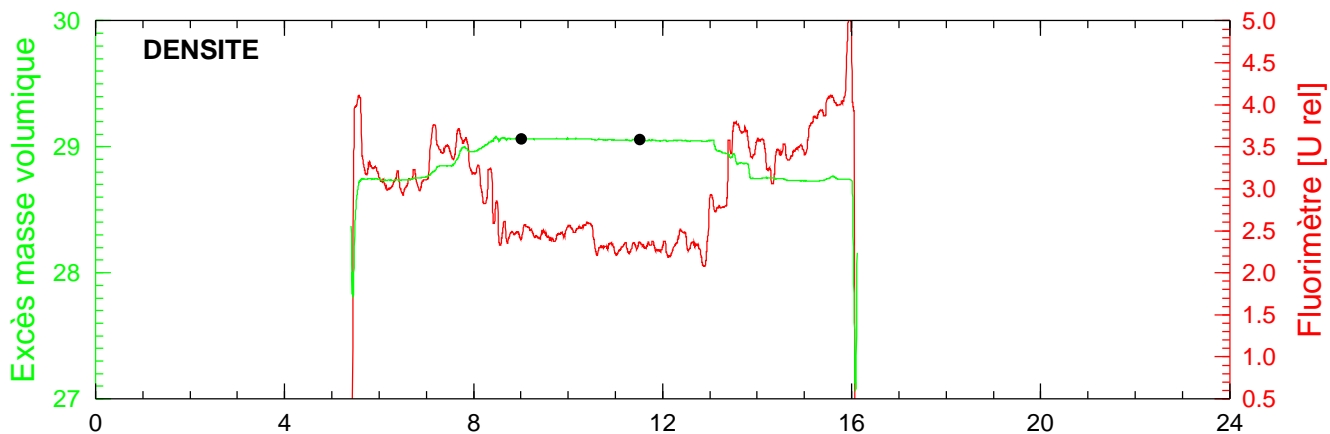
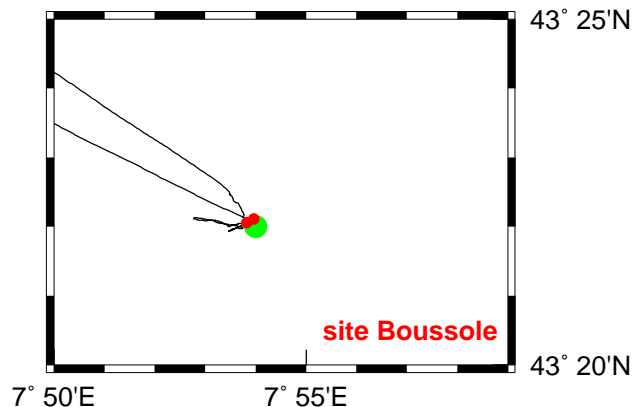
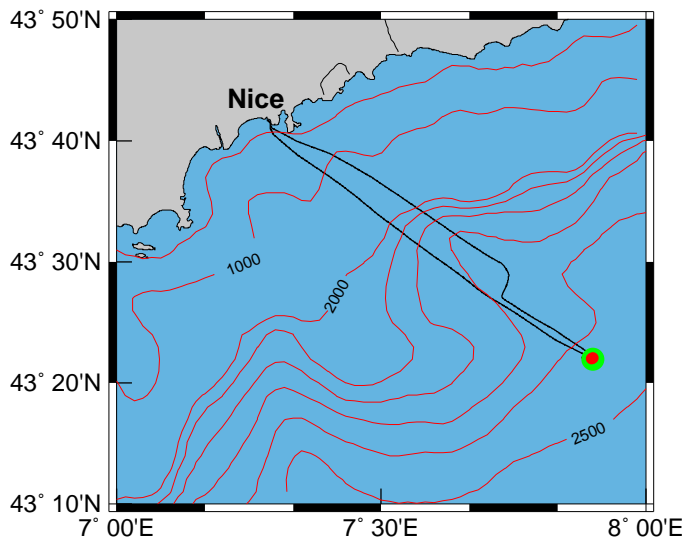
Date 04/02/2005
Heure déb 10h 30min [TU]

Latitude 43°25.005 N
Longitude 07°47.899 E

BOUSSOLE 38 31 janvier 2005



BOUSSOLE 38 02 février 2005



BOUSSOLE 38 04 février 2005

