

# BOUSSOLE Monthly Cruise Report

## Cruise 52

April 03 - 06, 2006

Duty Chief: Guislain Bécu (guislain.becu@obs-vlfr.fr)

Vessel: R/V Téthys II

(Captain: Rémi Lafond)

Science Personnel: Guislain Bécu, Dominique Tailliez, Fanny Tièche, Nordine Souaïdia, David McKee, 3 divers (David Luquet, Laurent Gilletta, Pierre-Alain Manoni)

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



Fig 1. Very turbid waters, compared to the previous mission (3 weeks earlier).

## BOUSSOLE project

ESA/ESRIN contract N° 17286/03/I-OL

Deliverable from WP#400/200

April 12, 2006



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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 N<sub>2</sub> for HPLC pigment and particule absorption spectrophotometric filter analysis in the lab. A gimbed PAR sensor positioned on the foredeck and operated from the CTD computer serves as a light field stability indicator during SPMR profiling.

For one day of 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.

3 divers (David Luquet, Laurent Giletta and Pierre-Alain Manoni) will be onboard on 5 April 2006 to take some pictures and clean and check the buoy structure under the sea surface.

Nordine Souaïdia, PhD. Student between Miami University and LOV will still be onboard during 2 cruise days to deploy the Polrads radiances camera.

David McKee from University of Glasgow will be onboard on Thursday 5<sup>th</sup> April as a visitor.

## Cruise Summary

The weather was rather favourable during the cruise for an April month. A long wavelength swell was still present quite all the days.

Sailors were on strike (against CPE – a French law managing working contracts) on Tuesday 4<sup>th</sup> April (till Wednesday 5<sup>th</sup> April at 08:00 am).

There were only 3 weeks between BOUSSOLE cruise #51 and this #52, but visibility of the water had radically changed, from about 40 meters in mid-March to about 9 meters on 3<sup>rd</sup> April. The Spring bloom has begun...

### Monday 03 April 2006

Departure was a little bit delayed as the ship and the truck were not available on Sunday 2 April. Departure was at 0840 local time after having installed most of the instruments onboard. 4 SPMR/SMSR profiles as well as 8 CTD profiles were realized, among these 6 were realized on the transect between BOUSSOLE site and Port of Nice. 5 CIMEL atmospheric measurements and 1 Secchi disk measurement were also performed, revealing a 9 meters visibility.

Polrads radiances camera were successfully deployed.

### Tuesday 04 April 2006

Stayed in port of Nice, as Sailors were on strike.

## Wednesday 05 April 2006

Divers went at Sea to clean sensors and take some pictures. They found a major difference between this day and 3 weeks earlier regarding visibility. From surface they had some difficulties to see the buoy 4 meters arms. Guislain Becu went on the buoy head to clean the MVD detectors windows as well as to clean the ARGOS beacon contact, as this beacon stopped emit daily messages on 14<sup>th</sup> March.

1 CTD profile, 7 SPMR/SMSR profiles, 2 CIMEL atmospheric measurements as well as 3 x 100 meters plankton net profiles were realized this day.

## Thursday 06 April 2006

2 CTD profiles, 2 CIMEL measurements and 3 SPMR profiles were performed, in addition to the Polrads deployment.

## Cruise Report

### 03 April 2006 (UTC)

0640 Departure from port of Nice.  
1014 CTD 01 at buoy, with water sampling at 200, 100, 80, 70, 60, 50, 40, 30, 20, 10 and 5 meters for HPLC/Ap, CDOM, flux cytometry and Kishino measurements.  
1125 CIMEL 01.  
1220 SPMR profiles 1, 2, 3 and 4.  
1320 Polrads deployment 1.  
1321 CIMEL 02.  
1330 Secchi disk 1 (9 m).  
1412 CIMEL 03.  
1413 CTD 02 at buoy with water sampling at 5 and 10 meters for triplicate HPLC/Ap and dry weights.  
1520 CIMEL 04 and 05 at station 1 (43°25'N 07°48'E).  
1524 CTD 03 at station 1 (43°25'N 07°48'E).  
1628 CTD 04 at station 2 (43°28'N 07°42'E).  
1727 CTD 05 at station 3 (43°31'N 07°37'E).  
1829 CTD 06 at station 4 (43°34'N 07°31'E).  
1934 CTD 07 at station 5 (43°37'N 07°25'E).  
2026 CTD 08 at station 6 (43°39'N 07°21'E).  
2120 Arrival to port of Nice.

### 04 April 2006

Stayed in port of Nice, as sailors were on strike.

### 05 April 2006

0605 Departure from port of Nice.  
0945 Divers at Sea.  
1110 Guislain Bécu on buoy head to clean MVD sensors surfaces and ARGOS beacon electronic contact.  
1157 CTD 09 at buoy with water sampling at 200, 100, 80, 70, 60, 50, 40, 30, 20, 10 and 5 meters for HPLC/Ap and dry weights.  
1250 3 x 100 plankton net profiles.  
1325 SPMR profiles 5, 6, 7 and 8.  
1415 Buoy data upload.  
1422 CIMEL 06.  
1431 CIMEL 07.  
1443 SPMR profiles 9, 10 and 11.  
1830 Arrival at port of Nice.

## 06 April 2006

0650 Departure for port of Nice.  
0824 CTD 10 with water sampling at 5 and 10 meters for triplicate filtrations for HPLC/Ap.  
0832 CIMEL 08.  
0925 Polrads deployment 2.  
0932 CIMEL 09.  
1130 SPMR profiles 12, 13 and 14.  
1211 CTD 11 with water sampling at 5 and 10 meters for triplicate HPLC/Ap and dry weights.  
1600 Arrival at port of Nice.

## Calculated Swath paths for MERIS Sensor (ESOV Software)

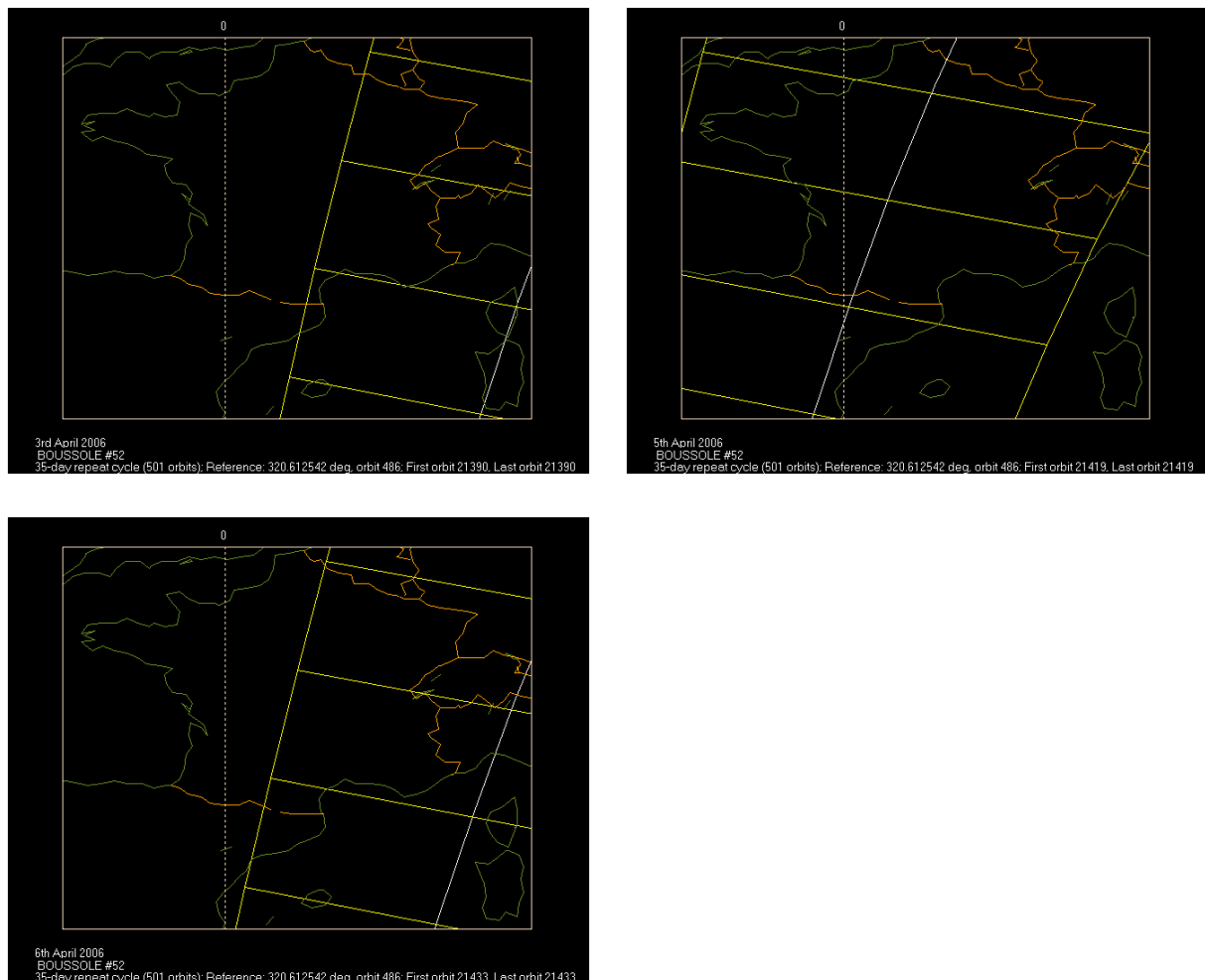
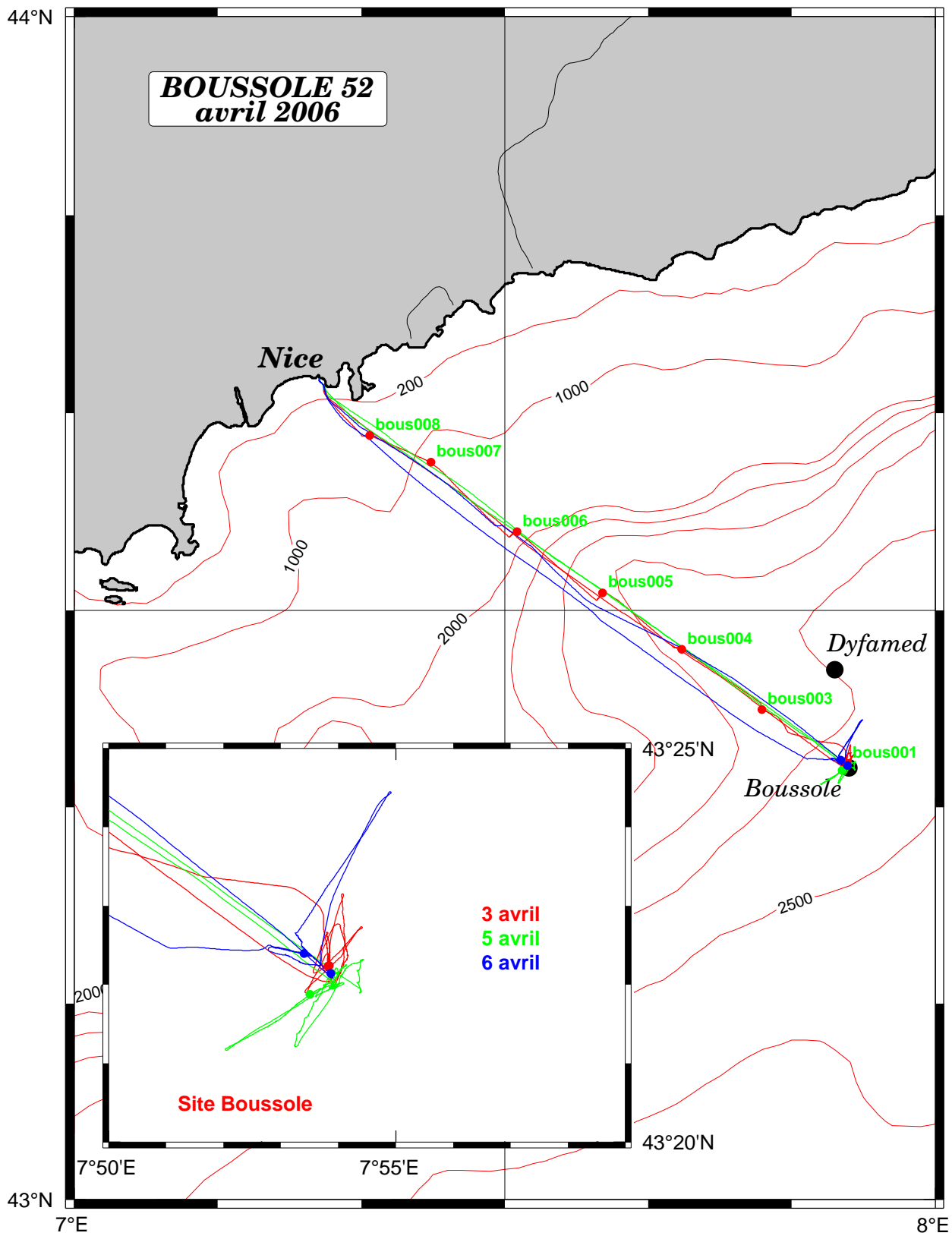


Figure 3. Calculated swath paths for MERIS (Esov software) above BOUSSOLE site for 03, 05 and 06 April 2006.

# Appendix

Cruise Summary Table for Bousole 52

Date	Black names (file ext.: ".raw")	Profile names (file extension: ".raw")	CTD notes / satellite overpass	Start Time GMT (hour.min)	Duration (min:sec)	Depth max (meter)	Latitude (N) (Degree) (Minute)	Longitude (Degree) (Minute)	Other sensors (Their case#/Finish)	Sky	Clouds	Quantity #/S	Weather Wind speed	Wind dir.	Aim. Pressure	Humidity	Visibility	T air	T water	Sea	Sea Swell height	White horses	
03/04/2006				08:14	23:00	400	43 22.240	7 53.946		blue	some/far	2	3 kn	148	1016.7	79	very good	14.4	13.7	calm w swell	1.0 m		
		bou030406Bback1	CTDBOUS001	11:22	03:00	0	43 22.000	7 54.000	CIMEL 01	blue	some/far	2	7 kn	145	1015.6	88	very good	13.9		calm w swell	1.0 m		
				12:21	04:52	205	43 22.378	7 54.097		blue	far Cu	1	7 kn	145	1015.6	88	very good	13.9		calm w swell	1.0 m		
				12:44	04:22	205	43 22.620	7 54.109		blue	far Cu	1	7 kn	145	1015.6	88	very good	13.9		calm w swell	1.0 m		
				12:54	04:38	205	43 22.838	7 54.092		blue	far Cu	1	10 kn	145	1015.6	88	very good	13.9		calm w swell	1.0 m		
				13:09	03:00																		
				13:21	02:00																		
				14:10	02:00																		
				14:13	23:00	400	43 22.237	7 53.918	CIMEL 02 CIMEL 03	blue	some/far	2	8 kn	118	1014.1	84	very good	14.8	14.1	calm w swell	1.0 m	rate	
				14:19	03:00	0	43 22.982	7 57.834	CIMEL 04 CIMEL 05	blue	no	0	0		1013.3	79	very good	15.3	14.2	calm w swell	1.0 m	no	
			15:22	02:00	0	43 24.982	7 47.884		blue	some/far	2	10 kn	110	1013.2	79	very good	15.3	14.2	calm w swell	1.0 m	some		
			15:24	24:00	400	43 22.000	7 54.000	Secchi disk 1	blue	some/far	2	12 kn	61	1013.0	90	good	14.1	14.1	choppy	0.8 m	no		
			15:30	05:00	9	43 28.040	7 42.332		blue	some/far	2	12 kn	61	1013.0	90	good	14.1	14.1	choppy	0.8 m	no		
			16:28	26:00	400	43 30.683	7 36.813		blue	Cu	2	12 kn	55	1013.4	86	good	14.7	13.9	calm	0.5 m	some		
			17:27	25:00	400	43 33.983	7 30.843		covered	heter.	4	9 kn	51	1014.1	91	good	13.3	13.5	calm	0.4 m	some		
			18:29	26:00	400	43 37.514	7 24.874		covered	heter.	8	7 kn	45	1014.9	89	good	13.1	13.4	calm	0.4 m	no		
			19:34	26:00	400	43 38.870	7 20.578		covered	heter.	8	7 kn	76	1015.1	90	good	13.2	13.3	calm	0.4 m	no		
			20:26	26:00	400	43 21.880	7 53.933		covered	heter.	6	18 kn	39	1003.2	89	very good	13.6	13.7	choppy	1.0 m	yes		
			11:57	23:00	400	43 21.880	7 53.933		covered	heter.	6	18 kn	39	1003.2	89	very good	13.6	13.7	choppy	1.0 m	yes		
			13:26	03:00	0	43 21.981	7 53.774		covered	homo.	7	11 kn	43	1002.9	91	good	14.8		calm	0.7 m	rate		
			13:26	04:11	180	43 21.819	7 53.644		covered	homo.	7	11 kn	43	1002.9	91	good	14.8		calm	0.7 m	rate		
			13:36	04:09	180	43 21.616	7 53.480		covered	homo.	7	11 kn	43	1002.9	91	good	14.8		calm	0.7 m	rate		
			13:47	04:14	180	43 21.378	7 53.275		covered	homo.	7	11 kn	43	1002.9	91	good	14.8		calm	0.7 m	rate		
			13:57	04:06	180	43 21.378	7 53.275		covered	homo.	7	11 kn	43	1002.9	91	good	14.8		calm	0.7 m	rate		
			14:10	03:00																			
			14:24	05:00																			
			14:31	01:00																			
			14:37	03:00																			
			14:43	03:43	180	43 22.325	7 54.434		slight covered	homo.	3	2 kn	85	1002.8	90	good	14.3		calm	0.6 m	no		
			14:51	04:42	180	43 22.280	7 54.324		slight covered	homo.	3	2 kn	85	1002.8	90	good	14.3		calm	0.6 m	no		
			15:01	04:02	180	43 22.046	7 54.269		slight covered	homo.	3	2 kn	85	1002.8	90	good	14.3		calm	0.6 m	no		
			15:16	03:00																			
			08:24	30:00	400	43 22.142	7 53.871			far Cu	2	5 kn	256	1004.9	71	very good	13.2	13.8	choppy	1.0 m	Yes		
			08:32	03:00																			
			08:32	03:00	400	43 22.000	7 54.000			blue	no	0	5 kn	256	1005.0	71	excellent			calm	0.6 m	no	
			08:25	40:00	0	43 22.000	7 54.000			blue	no	0	5 kn	256	1005.0	71	excellent			calm	0.6 m	no	
			08:25	02:00						blue	no	0	5 kn	256	1005.5	71	excellent			swell	1.0 m	no	
			09:32	02:00						blue	no	0	5 kn	256	1005.5	71	excellent			swell	1.0 m	no	
			11:17	03:00						covered	Cu + homo.	6	2 kn	221	1005.8	70	excellent	13.2		swell	1.0 m	no	
			11:31	03:15	150	43 22.285	7 53.928			covered	Cu + homo.	6	2 kn	221	1005.8	70	excellent	13.2		swell	1.0 m	no	
			11:39	03:10	150	43 22.280	7 53.921			covered	Cu + homo.	6	2 kn	221	1005.8	70	excellent	13.2		swell	1.0 m	no	
			11:39	03:10	150	43 22.388	7 53.729			covered	Cu + homo.	6	2 kn	221	1005.8	70	excellent	13.2		swell	1.0 m	no	
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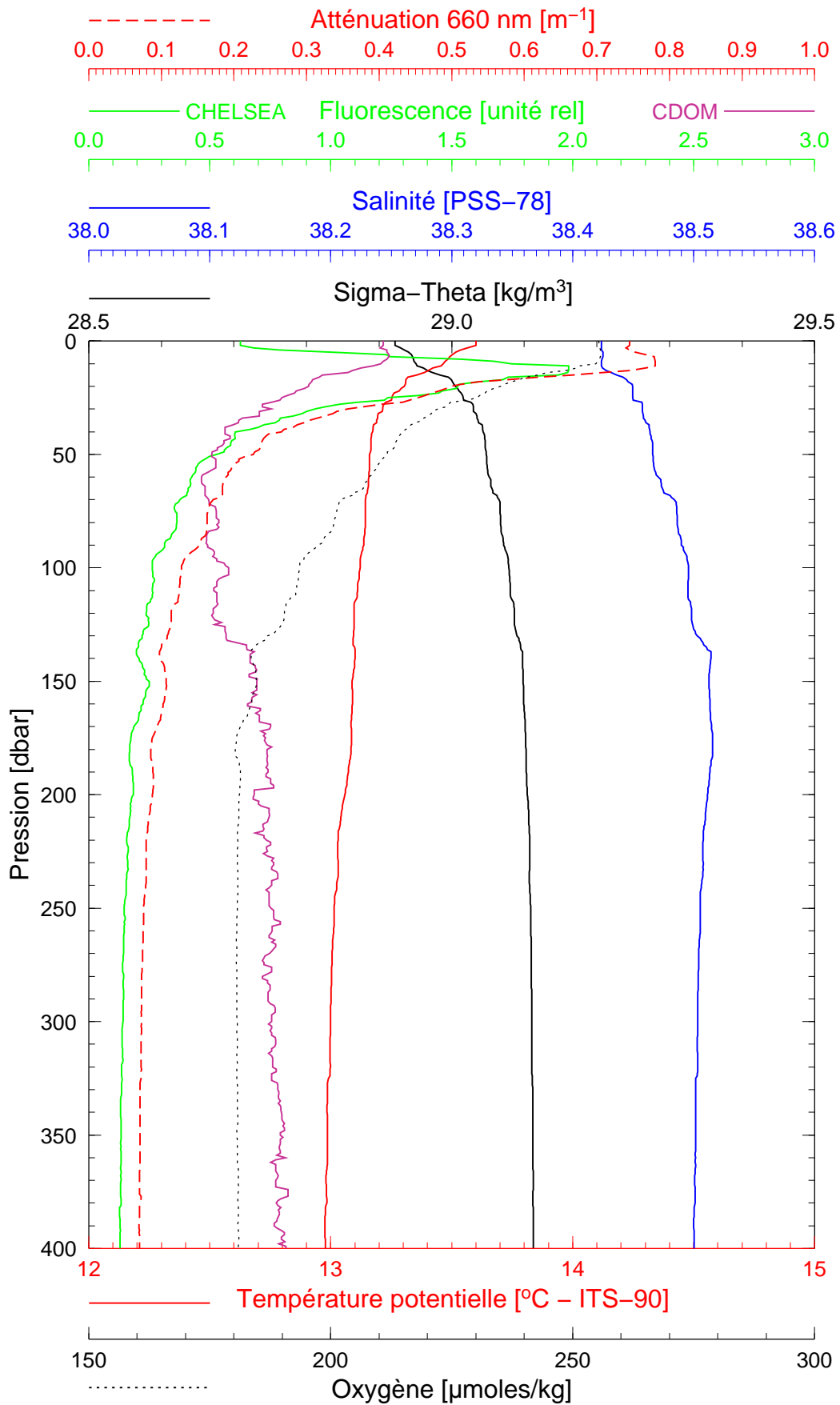


Boussole 52

03/04/2006

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BOUS001



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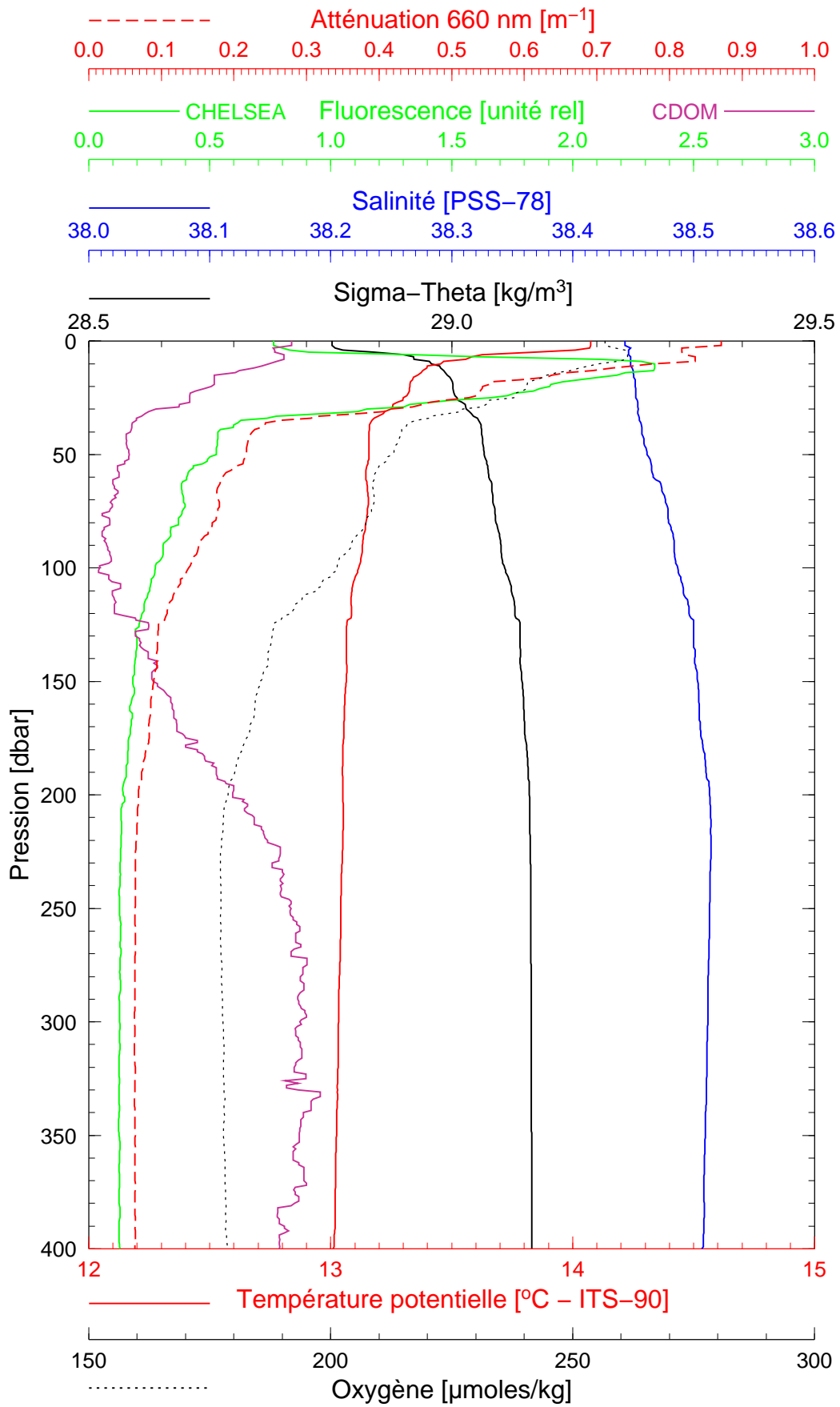
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Boussole 52

03/04/2006

BOUS060403\_02

BOUS002



Date 03/04/2006  
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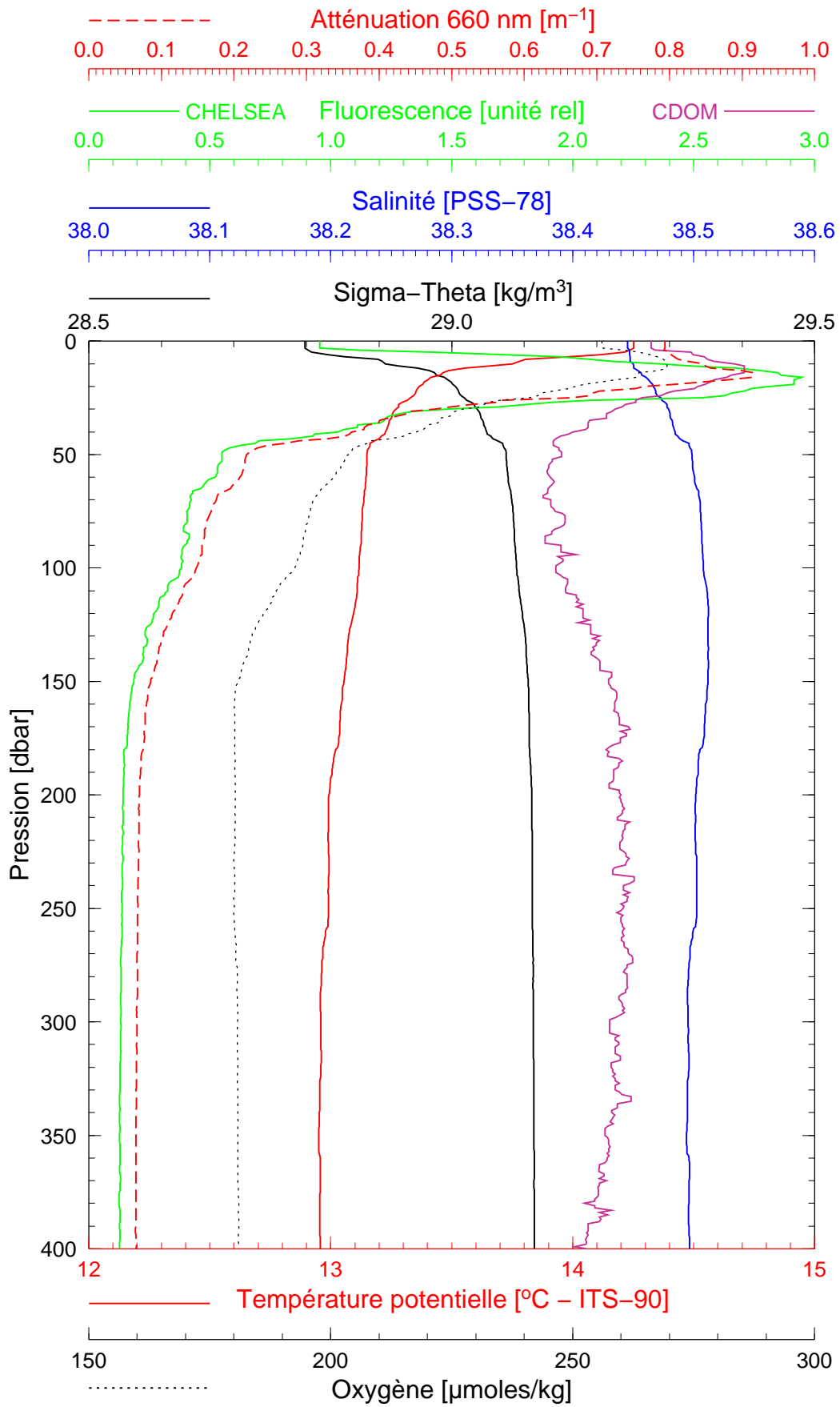
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Boussole 52

03/04/2006

BOUS060403\_03

BOUS003



Date 03/04/2006  
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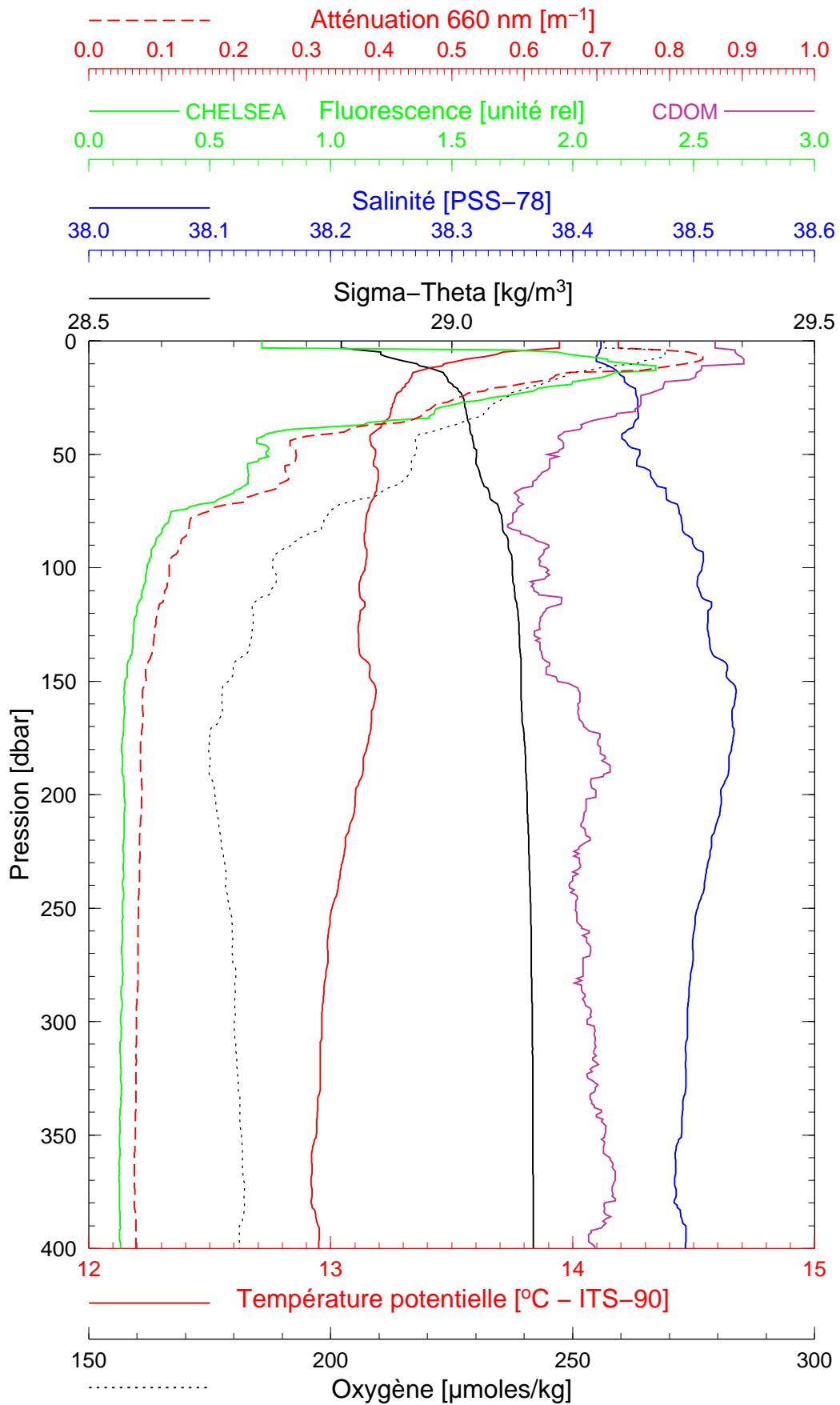
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03/04/2006

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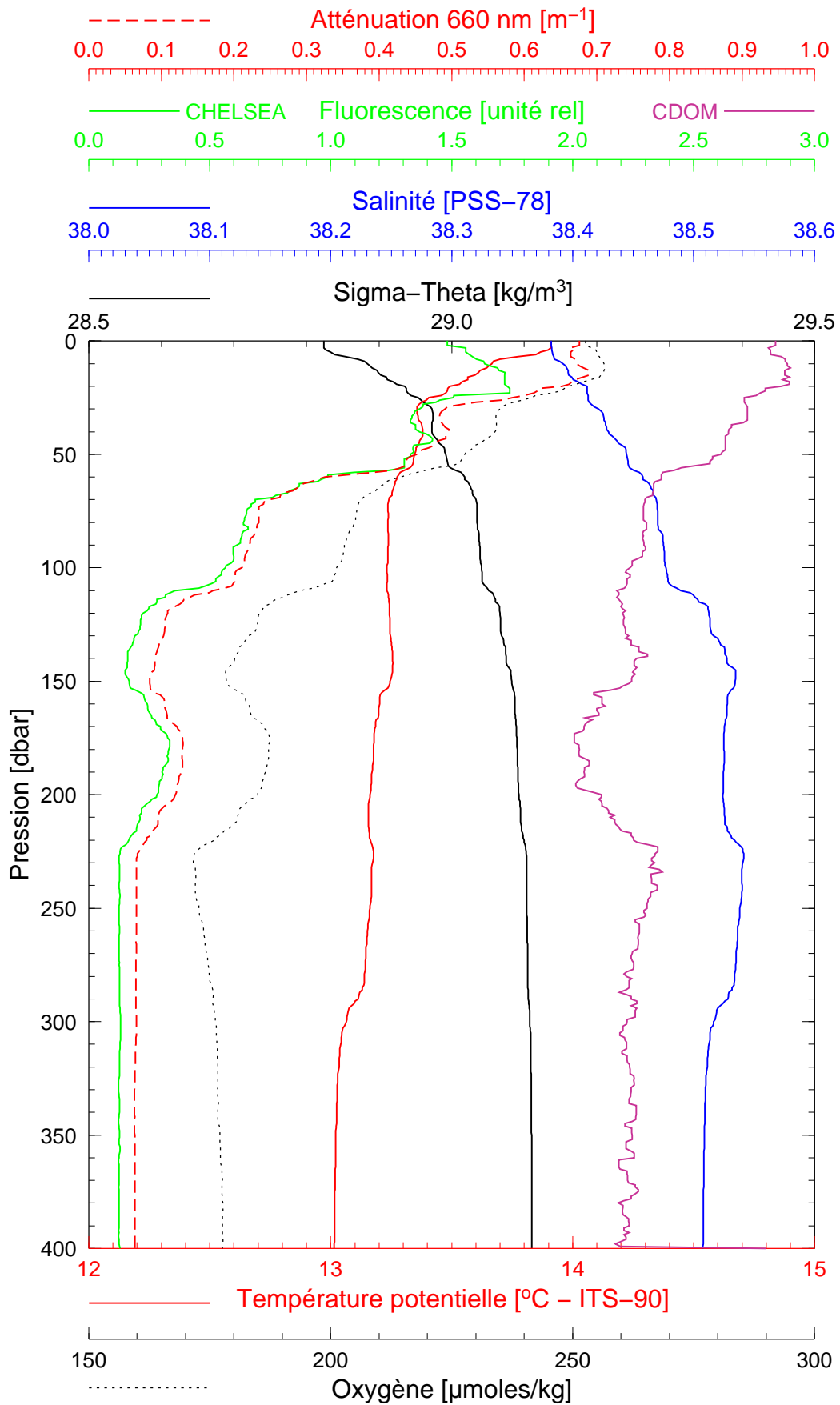
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Boussole 52

03/04/2006

BOUS060403\_05

BOUS005



Date 03/04/2006  
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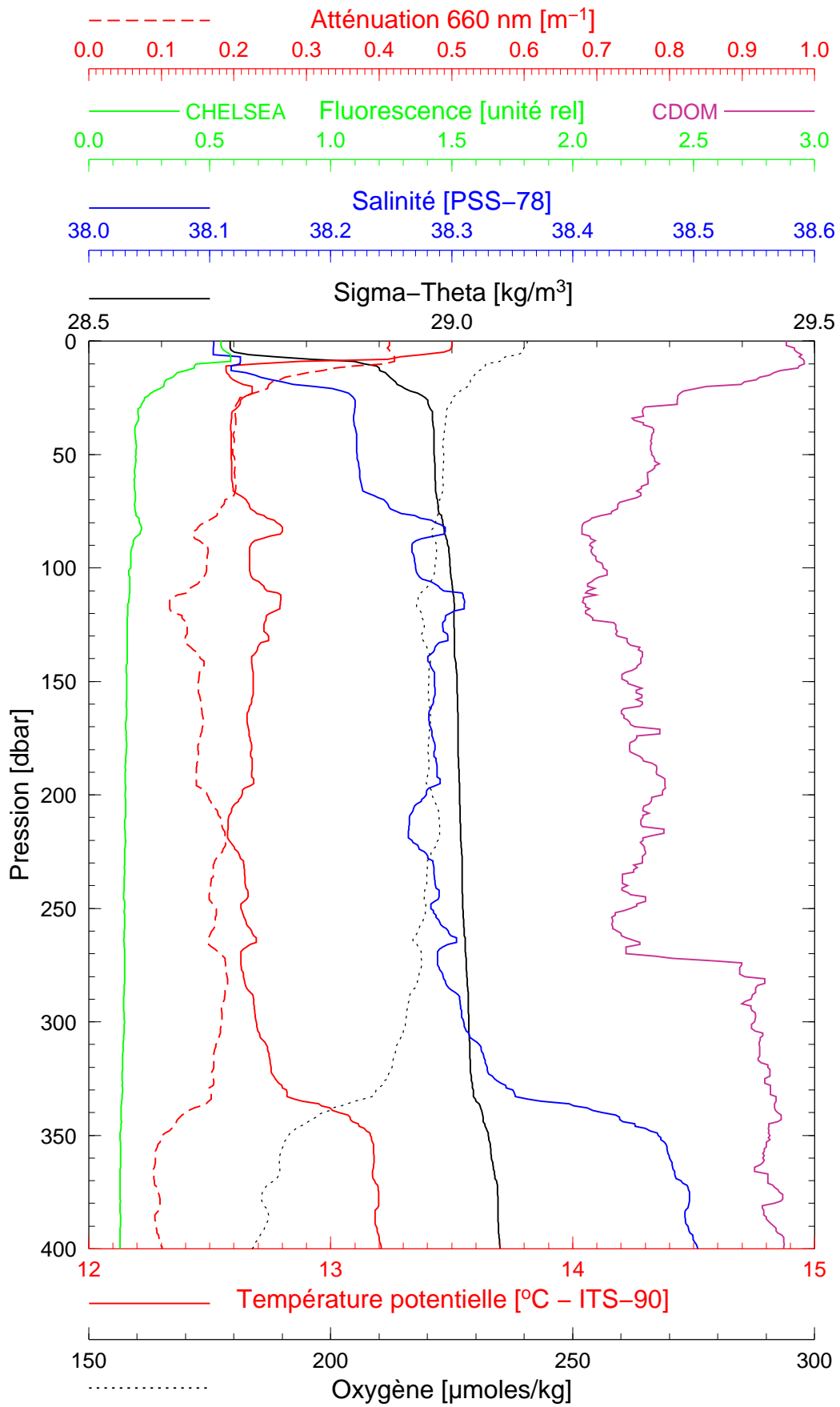
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Boussole 52

03/04/2006

BOUS060403\_06

BOUS006



Date 03/04/2006  
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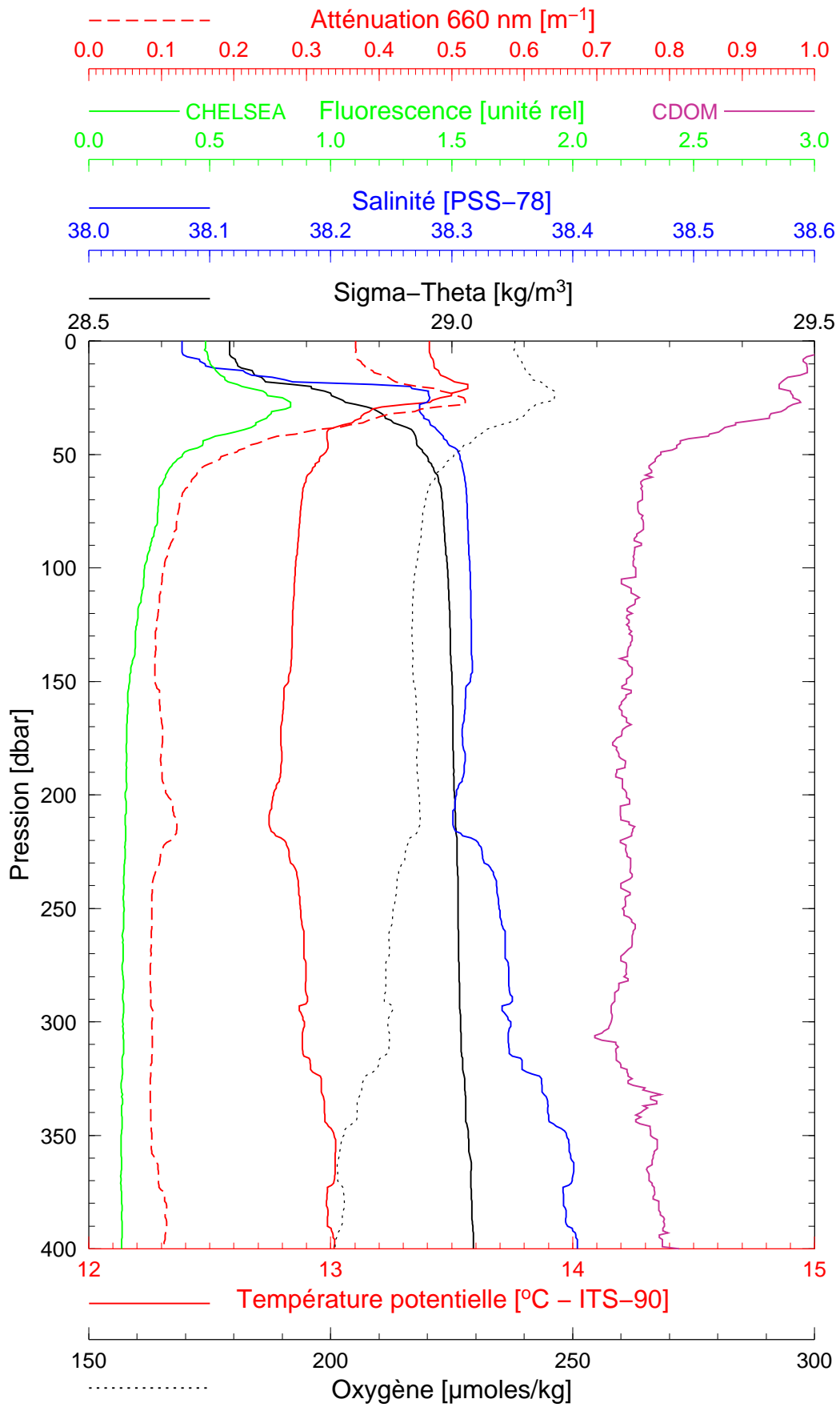
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Boussole 52

03/04/2006

BOUS060403\_07

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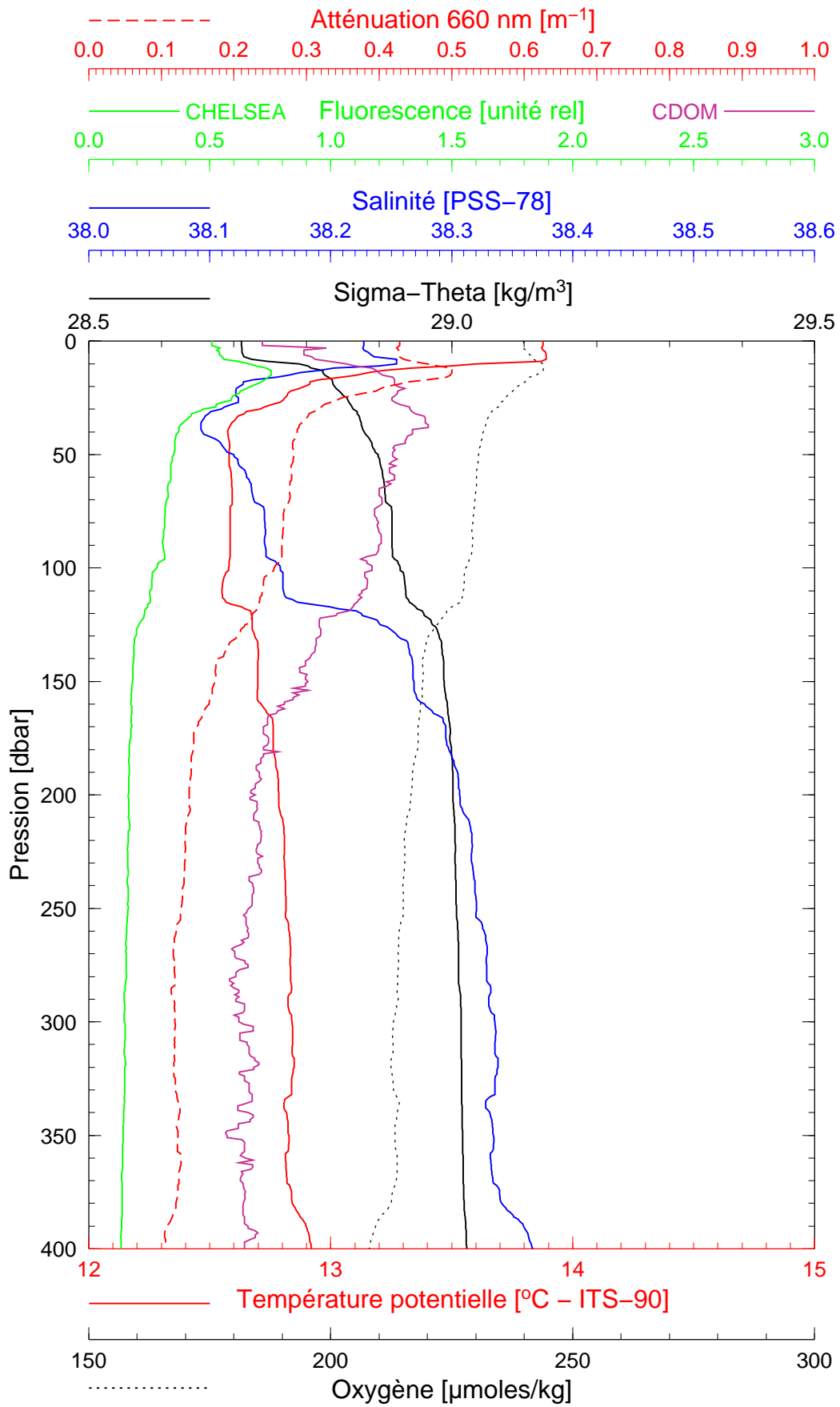
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Boussole 52

03/04/2006

BOUS060403\_08

BOUS008



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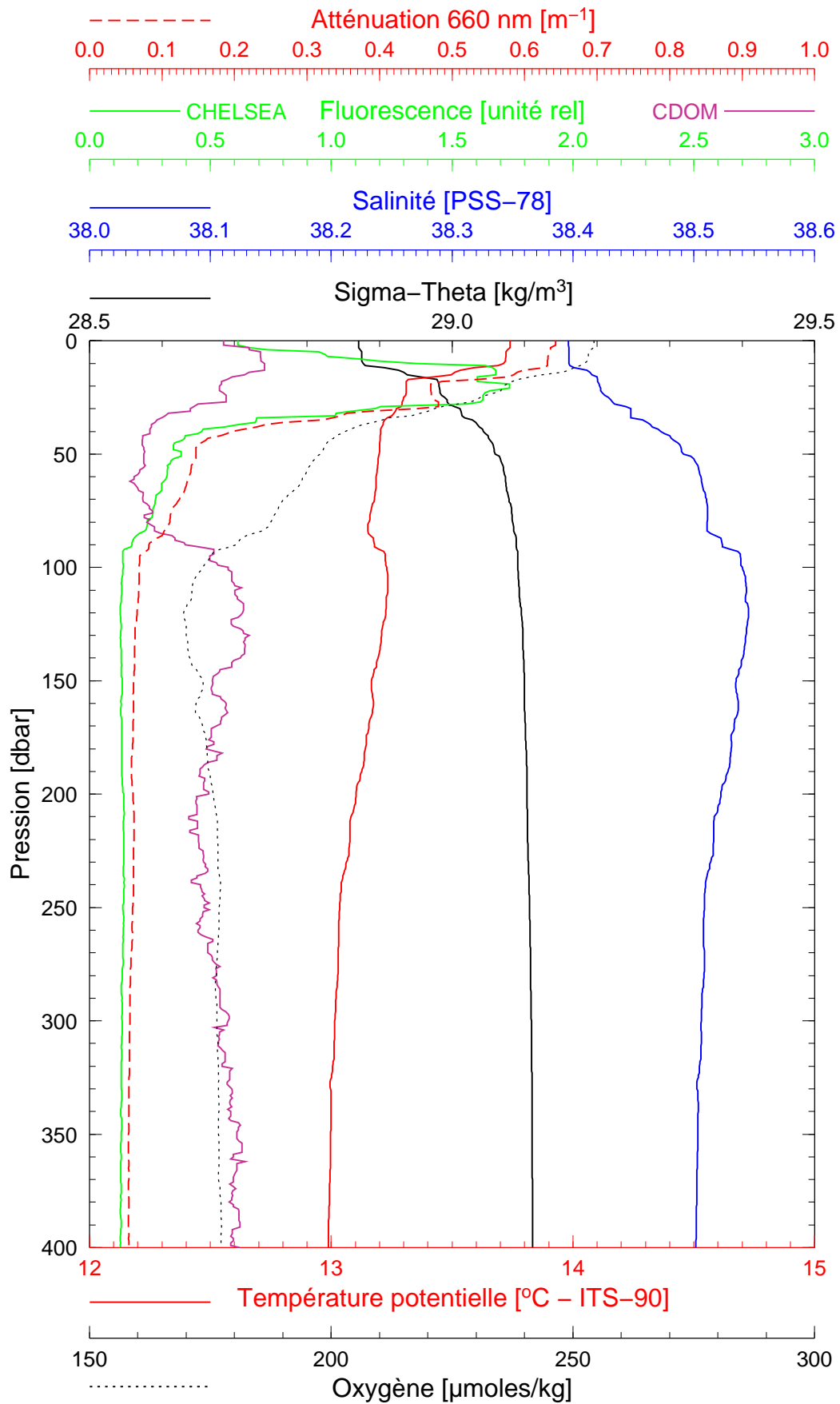


Boussole 52

05/04/2006

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BOUS009



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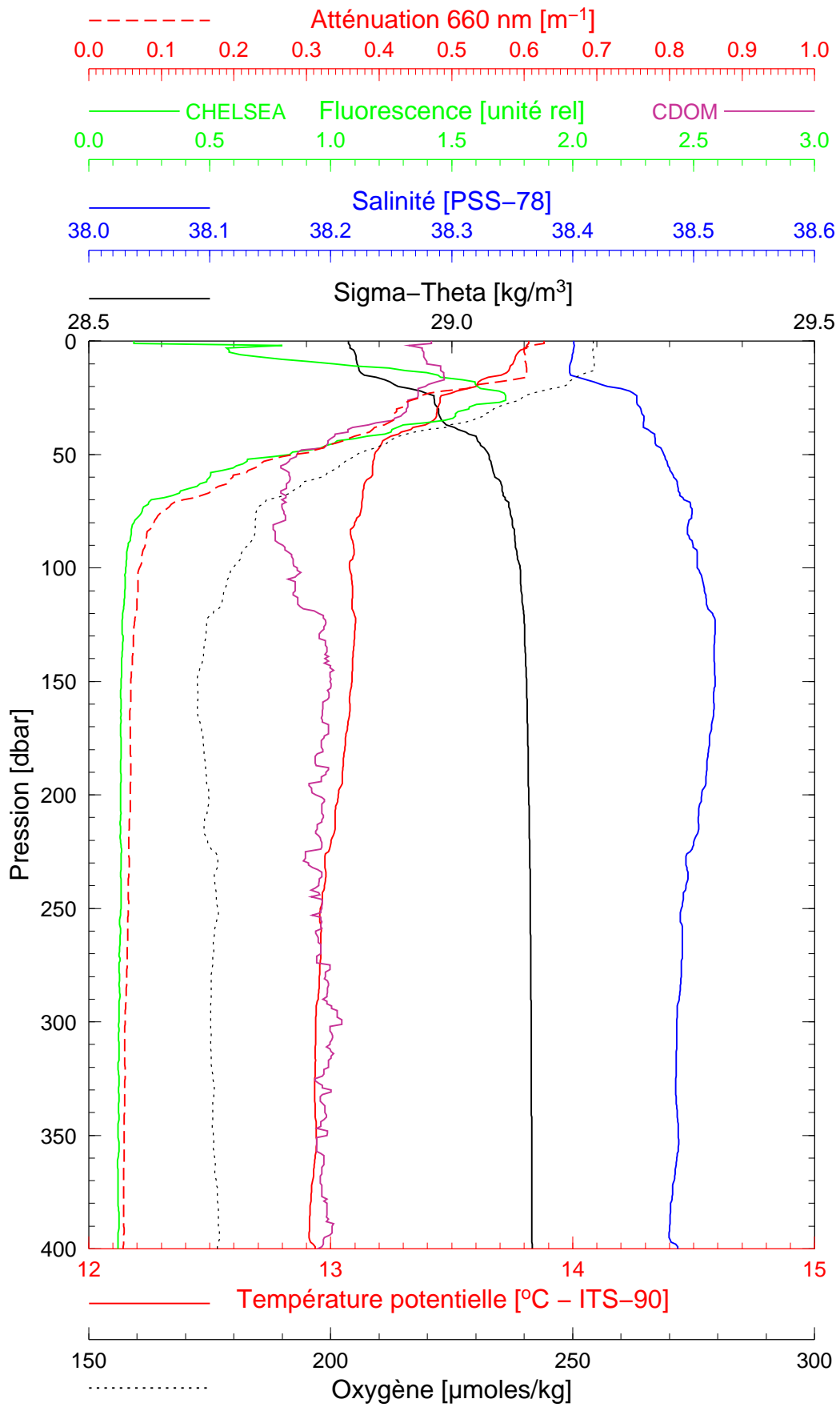
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Boussole 52

06/04/2006

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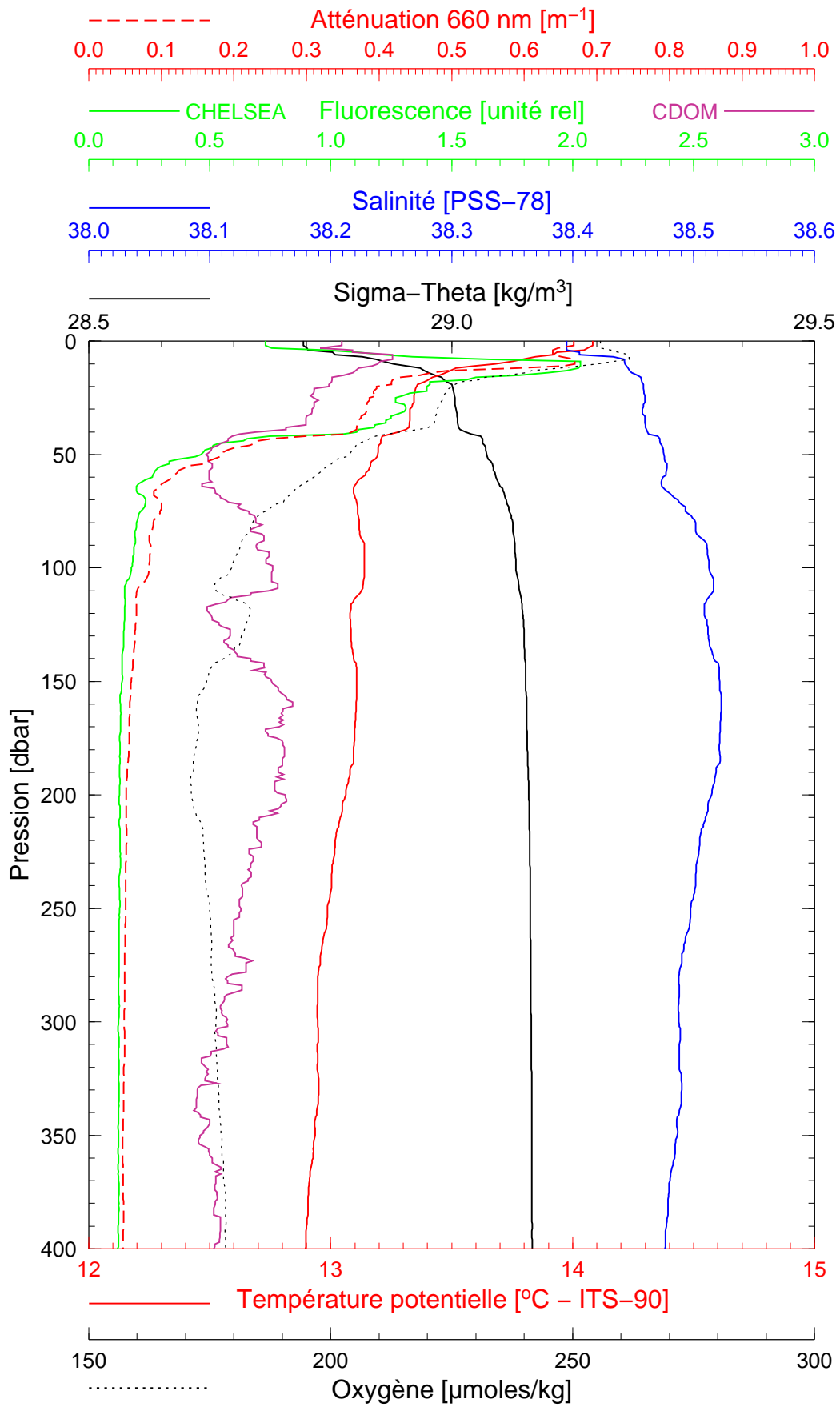
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Boussole 52

06/04/2006

BOUS060406\_02

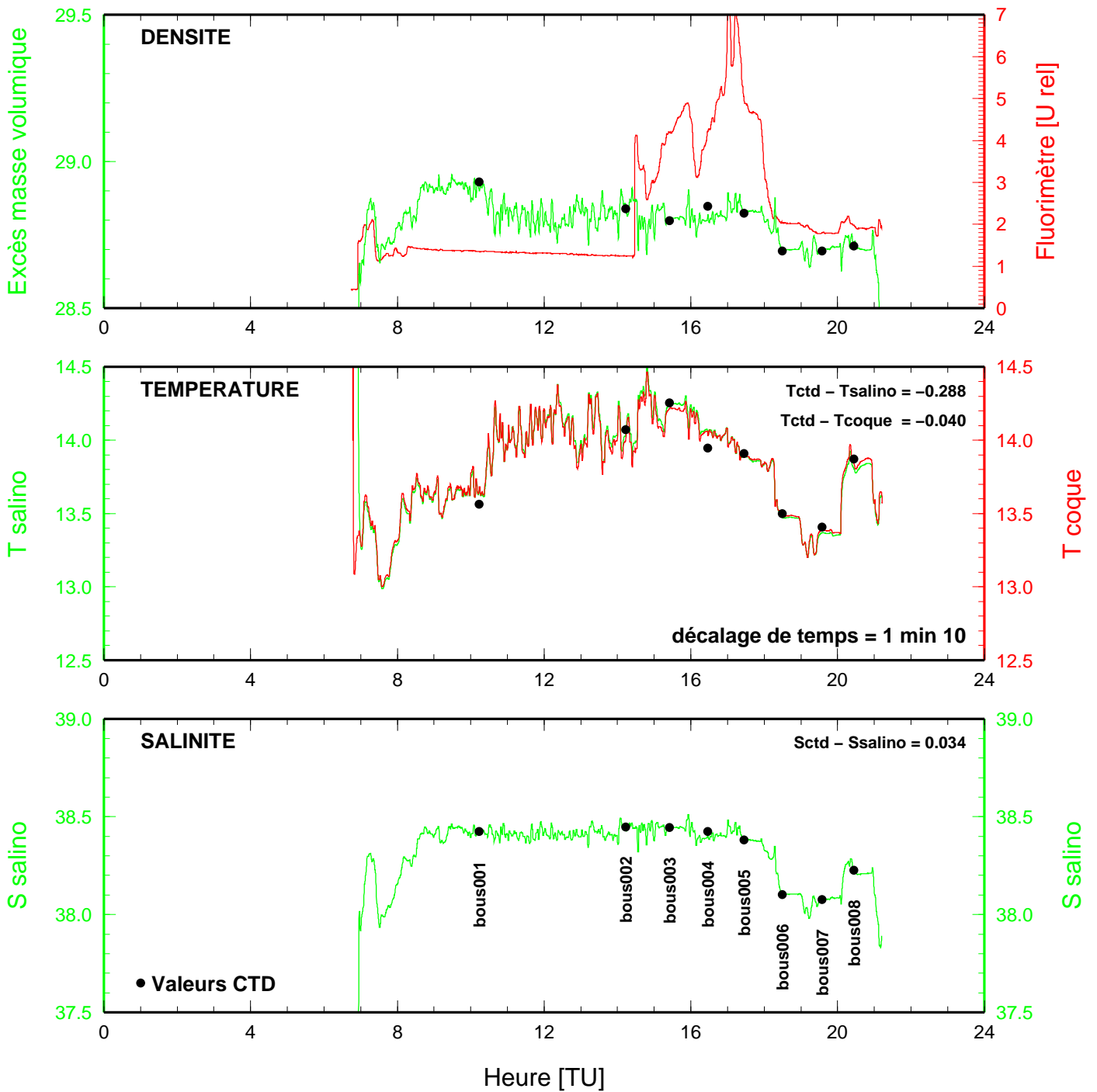
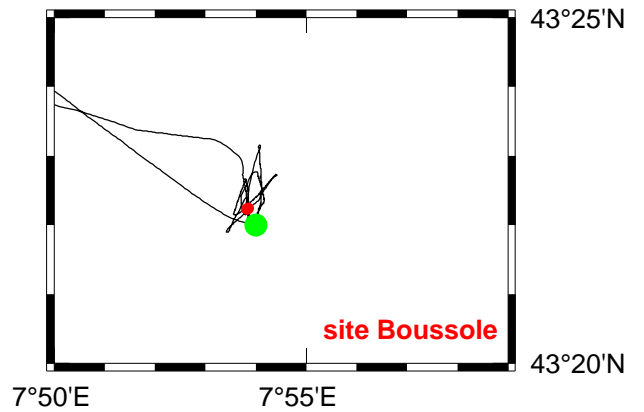
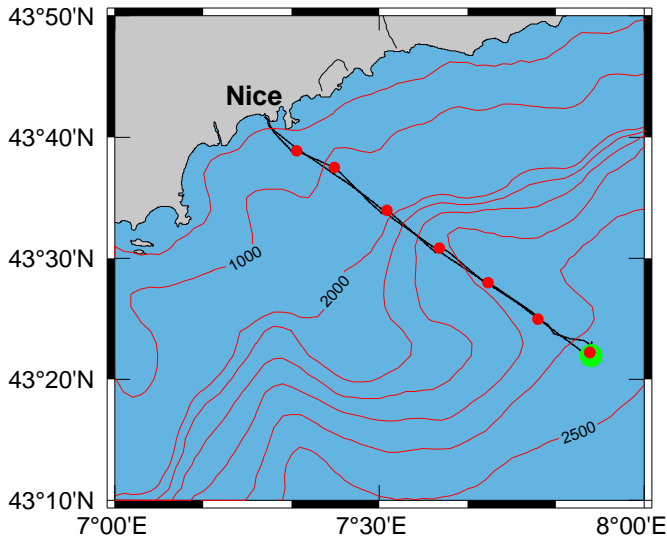
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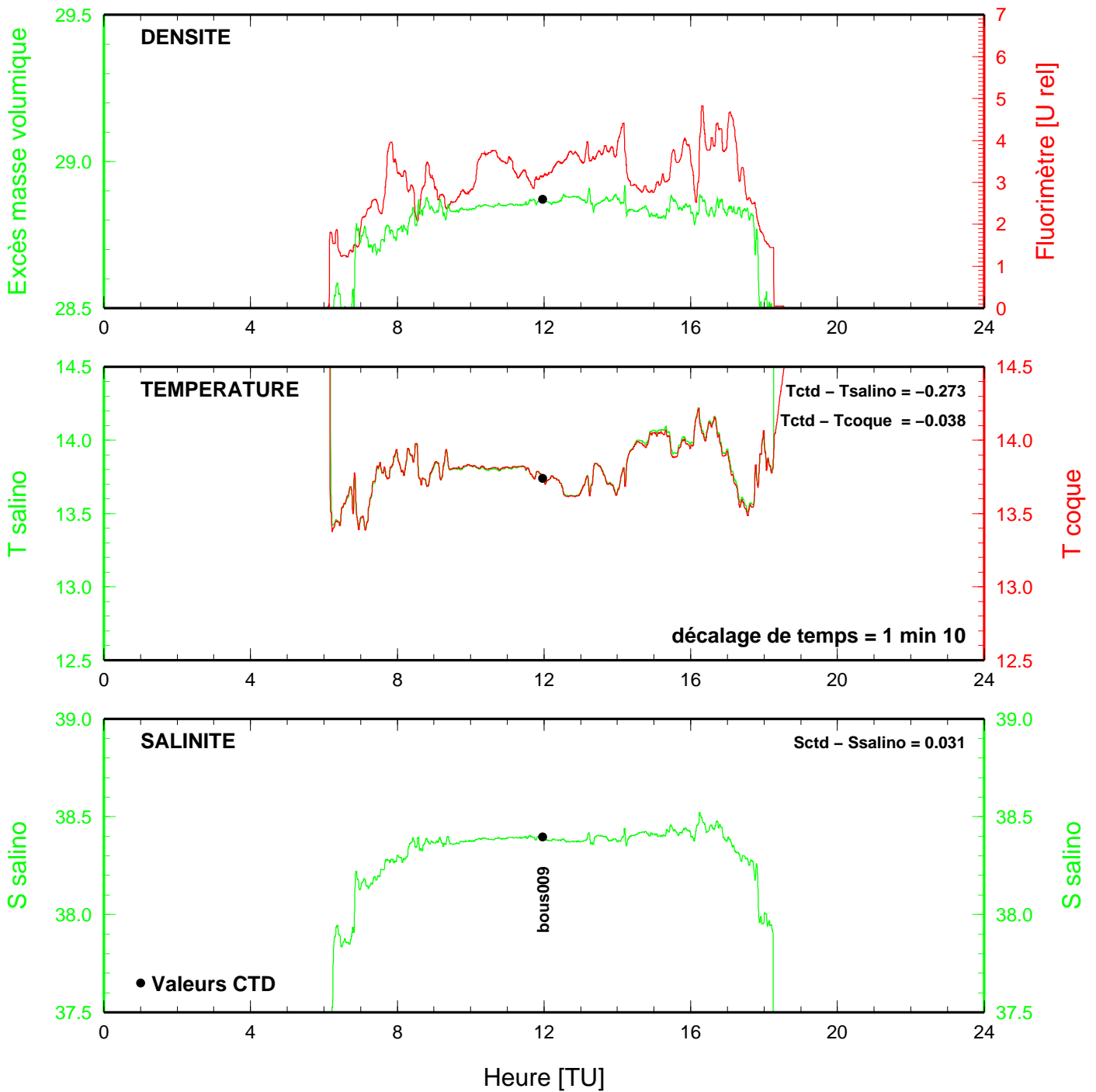
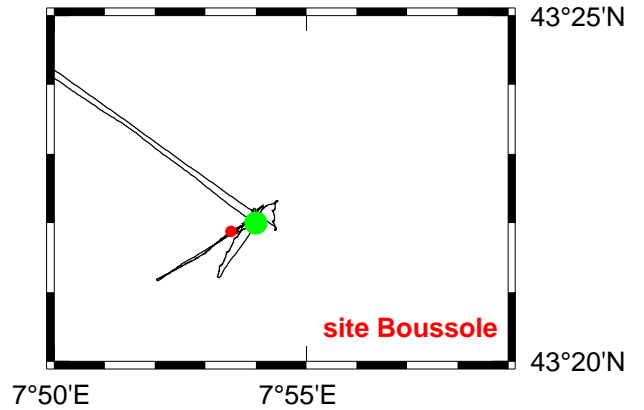
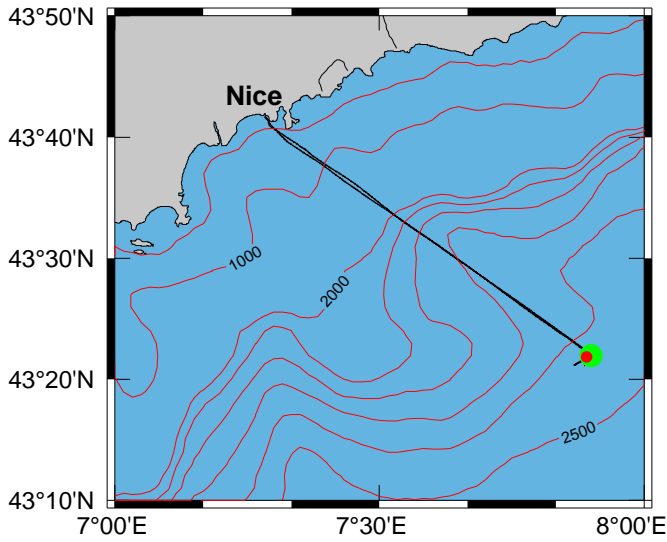
Date 06/04/2006  
Heure déb 12h 11min [TU]

Latitude 43°22.398 N  
Longitude 07°53.401 E

**BOUSSOLE 52 03 avril 2006**



# BOUSSOLE 52 05 avril 2006



# BOUSSOLE 52 06 avril 2006

