

BOUSSOLE Monthly Cruise Report

Cruise 40

March 24 – 27, 2005

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

Vessel: R/V Téthys II

(Captain: Dany Deneuve)

Science Personnel: Guislain Bécu, Dominique Tailliez, Edouard Leymarie, Nicolas Duval, 3 divers

Others Personnel: Stéphane Bourreau (cameraman) and 1 trainee accompanying the divers

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



Fig 1. Cameraman (Stéphane Bourreau – JRM productions) on R/V Téthys-II (seen from the buoy).

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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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 particulate 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 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 CNRS divers (David Luquet from LOV and Jean de Vaugelas and 1 colleague from Université de Nice) will be onboard on 25 March 2005 to take some pictures, clean and check the buoy structure under the sea surface.

Edouard Leymarie will be present on 25 March to keep on training with all the operations.

Nicolas Duval, trainee at LOV with David Antoine, will be onboard on 25 March.

Stéphane Bourreau, cameraman working at "JRM productions" will take some video sequences at quay on 24 March and onboard at Sea on 25 March 2005.

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 to CISCO" cable was exchanged by SAMAR divers on 19 March 2005, and since then, the buoy communicates again). In particular, the ARGOS beacon will be exchanged, as there are no ARGOS messages any more since 02 January 2005.

Cruise Summary

The weather for the 24 March was really too bad. The ship made a U-turn when arrived at the end of Cap Ferrat as the swell was too important.

The others days, the weather was rather good, apart the fact that the sky was quite always milky and full of cirrus and fog (especially on 26 March). PAR sensor showed nevertheless that the irradiance conditions were stable enough to perform some SPMR/SMSR and CIMEL measurements.

CTD profiles were still realized with Bigelow AC9+ (s/n 147), before sending it to WETLABS for a calibration (it left on 04 April 2005 from LOV).

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.

The Ultrath path operation was again realized on 25 March. Even if Hervé Claustre and Fanny Tièche recommended to leave directly to the port of Nice when this operation is finished (to preserve the samples), the 5 transect CTD profiles were still realized, as "theyr.net" forecasted very bad weather for the next days (all the operations planned for the campaign were realized, while little bit tricky when 9 persons are onboard).

Thursday 24 March 2005

Weather conditions prevented departure.

Friday 25 March 2005

Quite all the morning was dedicated to the diving operation, with some CIMEL measurements from time to time. Communication with the buoy was also established while the divers were at Sea. As the acquisition schedule of the buoy was set as to begin at 0015 and finish at 2345 (UTC), the communication was established at 1015 (UTC). 3 SPMR profiles were realized at midday, as well as another CIMEL measurement and a Secchi disk measurement. 1 CTD profile was realized in the beginning of afternoon, followed by the Ultrapath filtration a 5 CTD profiles on the Transect to port of Nice.

Saturday 26 March 2005

The atmospheric conditions were too poor to be realized some SPMR measurements, so only 2 CTD profiles were realized. Surprisingly, the Communication via CISCO bridge didn't work, Guislain Bécu had to connect the Laptop directly to the buoy to get the data.

As the eco-BB3 stopper was forgotten on the instrument the previous day, 2 CTD profiles were again realized at stations 2 and 4.

Sunday 27 March 2005

With the winter to summer time change, the ship left port of Nice at 0530 UTC which was 0730 local and no more 0630. 1 CTD profile were performed with sampling at 10 and 5 m. Surprisingly again, the CISCO connection with the buoy did work this day, so last data were retrieved. Finally, 3 SPMR/SMSR profiles were realized before the lunch and the departure to port of Nice.

Cruise Report

24 March 2005 (UTC)

Bad weather prevented departure. Stéphane Bourreau (cameraman) recorded some video sequences and performed (at quay) some interviews during instruments installation.

25 March 2005*

0530 Departure from port of Nice.
0850 Arrival at BOUSSOLE site. No buoy communication at 0900.
0910 Divers at sea to take pictures, clean sensors and check system health beneath the surface.
1015 While divers at sea, buoy data retrieval via CISCO connection and CIMEL measurements 1, 2 and 3 (0925, 1007 and 1011 respectively).
1050 SPMR/SMSR profiles 1, 2 and 3.
1125 CIMEL measurement 4.
1140 CIMEL measurement 5.
1150 Secchi disk measurement 1
1230 CTD profile 1 (400m) with water sampling and filtration (including for Ultrapath) at 200, 100, 80, 70, 60, 50, 40, 30, 20, 10 and 5 m (end of Ultrapath filtration at 1315)
1340 ARGOS beacon exchanged (until 1400)
1400 Transect station 1 (43°25'N 7°48'E).
1435 CTD profile 2 (400m). Transect Station 2 (43°28'N 7°42'E).
1532 CTD profile 3 (400m). Transect Station 3 (43°31'N 7°37'E).
1627 CTD profile 4 (400m). Transect Station 4 (43°34'N 7°31'E).
1724 CTD profile 5 (400m). Transect Station 5 (43°37'N 7°25'E).
1823 CTD profile 6 (400m).
2000 Arrival at port of Nice.

(*) Stéphane Bourreau recorded about 90 minutes of video sequences (of all operation types) during the day.

26 March 2005

0530 Departure from port of Nice.
0902 CTD profile 7 with water sampling at 200, 100, 80, 70, 60, 50, 40, 30, 20, 10 and 5 m.

0915 Communication with buoy via CISCO failed, but the ship derived too much during the CTD profile.
 1015 Communication with buoy via CISCO failed again, whereas the ship was close enough to the buoy...
 No other operation was attempted during this time, as the ship was turning continuously around the buoy (currents were too important to stay close to the buoy with the motor disconnected), especially that there is too much wind to operate SPMR profiler (whitecaps).
 1238 CTD profile 8 (400m) with water sampling at 10 and 5 m (triplicate).
 1315 always no buoy CISCO communication established...
 1335 Direct connection to the buoy, data retrieval successful at 1415.
 1425 Transect station 2 (43°28'N 7°42'E).
 1531 CTD profile 9 (400m). Transect Station 4 (43°34'N 7°31'E).
 1656 CTD profile 10 (400m). Departure to port of Nice.
 1830 Arrival at port of Nice.

27 March 2005

0530 Departure from port of Nice. Local time is now 0730 since it changed during the night.
 0850 Arrival at BOUSSOLE site.
 0903 CTD profile 11 (400m) with water sampling at 10 and 5 m (triplicate).
 0915 Communication with buoy via CISCO bridge successful (!).
 0950 SPMR/SMSR profiles 4, 5 and 6.
 1030 Departure to port of Nice during the lunch.
 1400 Arrival to port of Nice.

Calculated Swath paths for MERIS Sensor (ESOV Software)

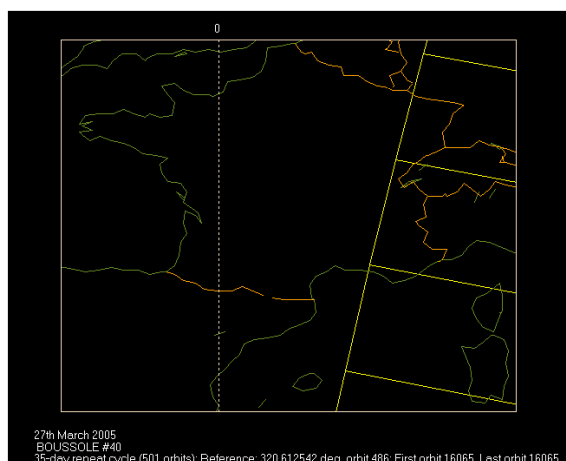
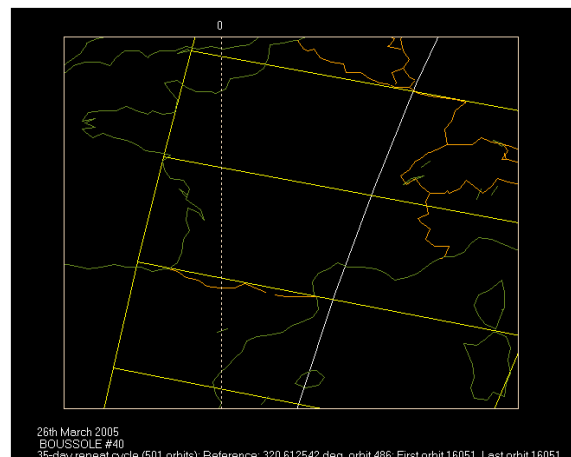
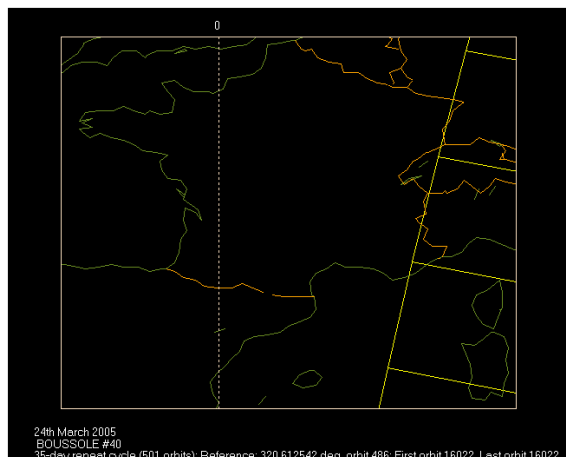
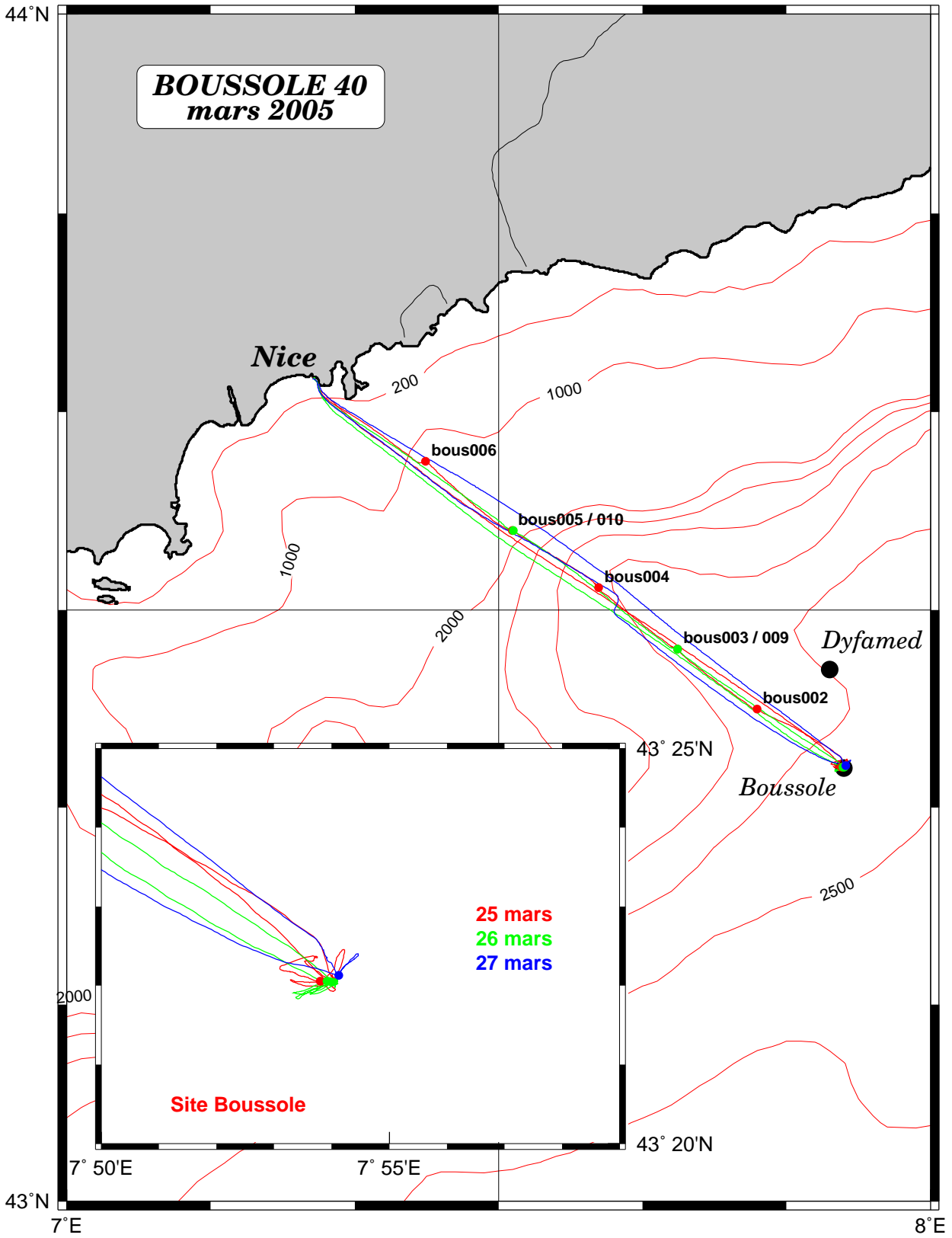


Figure 2. Calculated swath paths for MERIS (Esov software) above BOUSSOLE site for 24, 25 and 26 March 2005.

Appendix

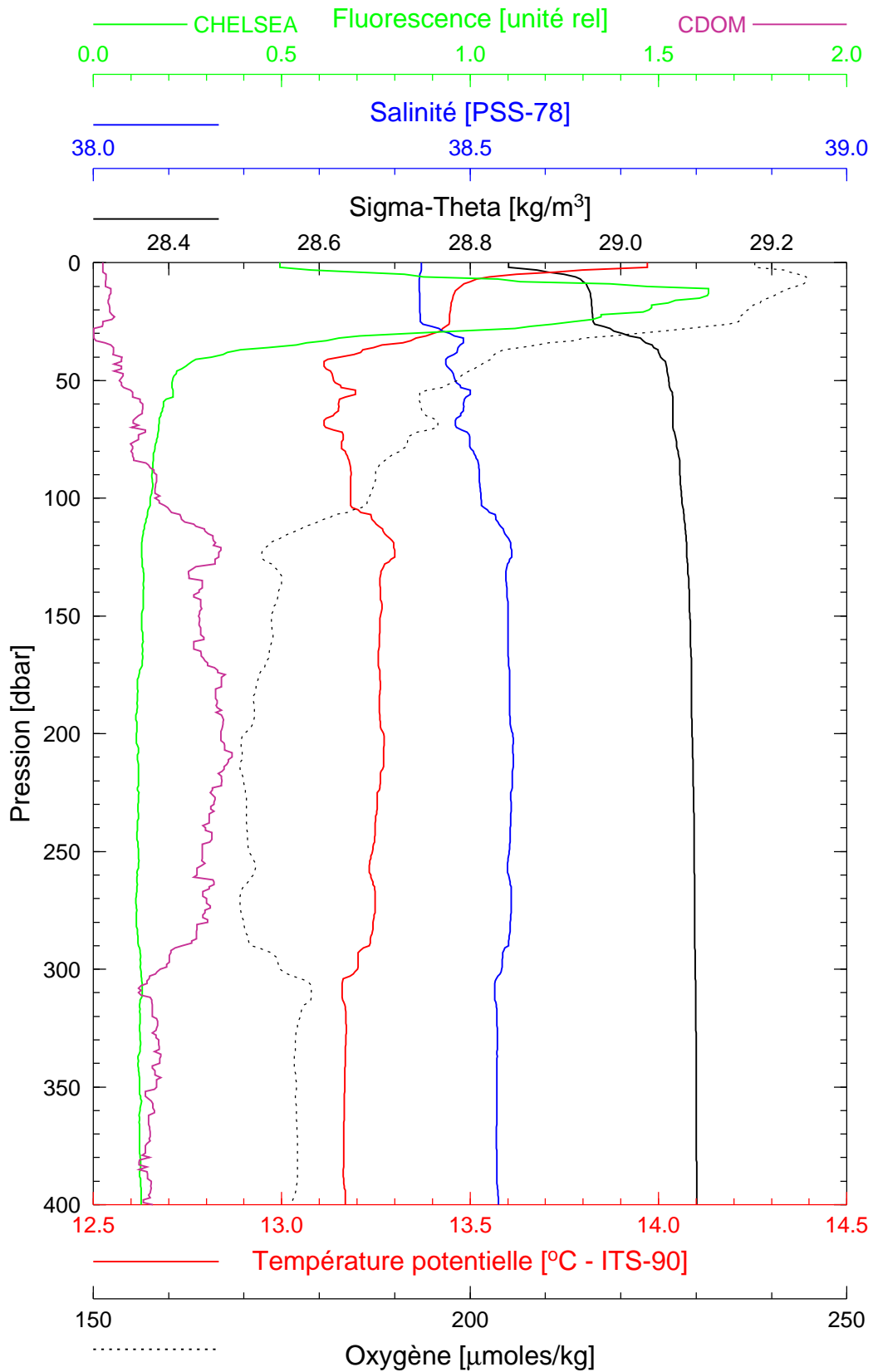


Boussole 40

25/03/2005

BOUS050325_01

BOUS001



Date 25/03/2005
Heure déb 12h 30min [TU]

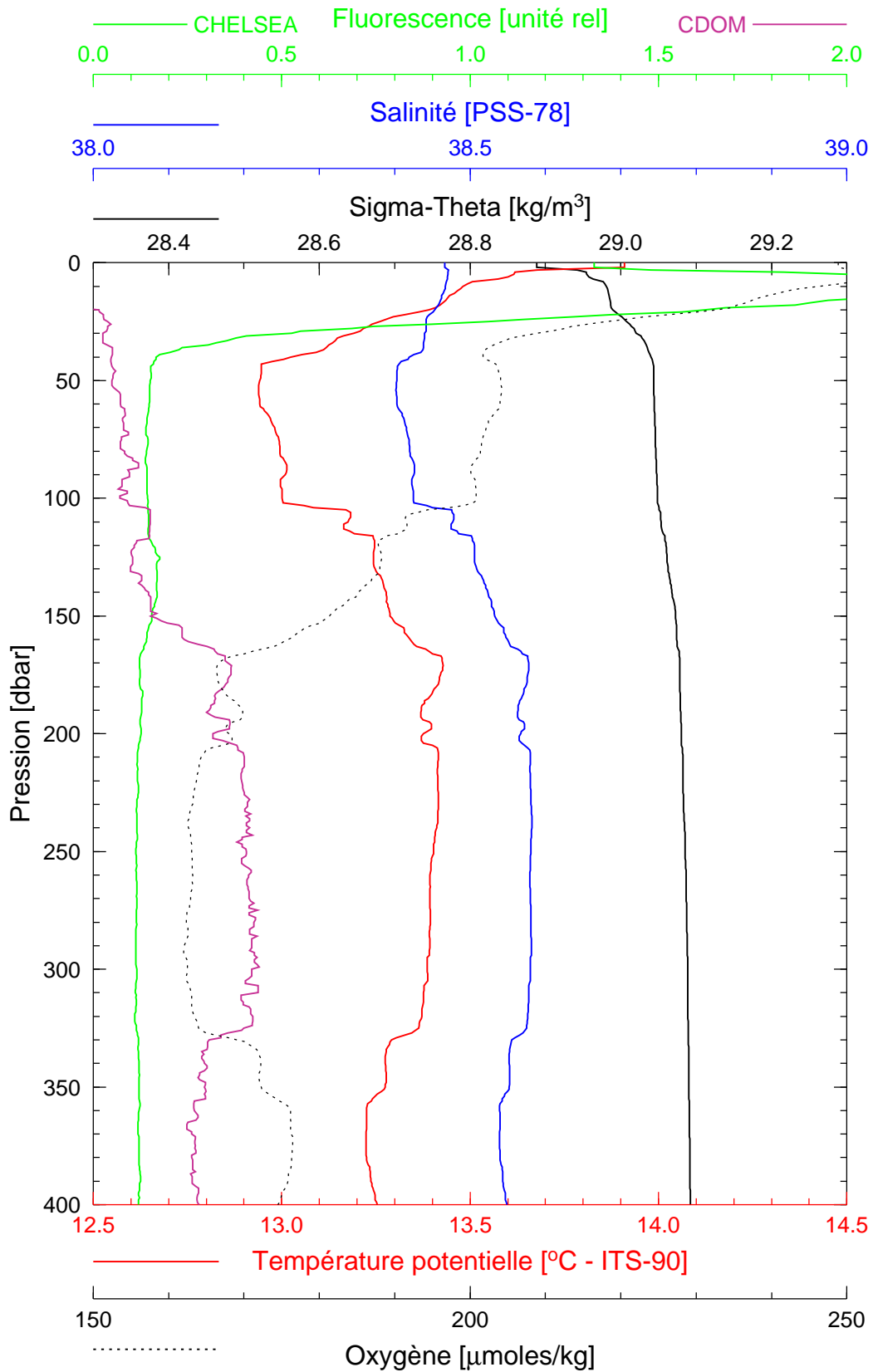
Latitude 43°22.056 N
Longitude 07°53.802 E

Boussole 40

25/03/2005

BOUS050325_02

BOUS002



Date 25/03/2005
Heure déb 14h 35min [TU]

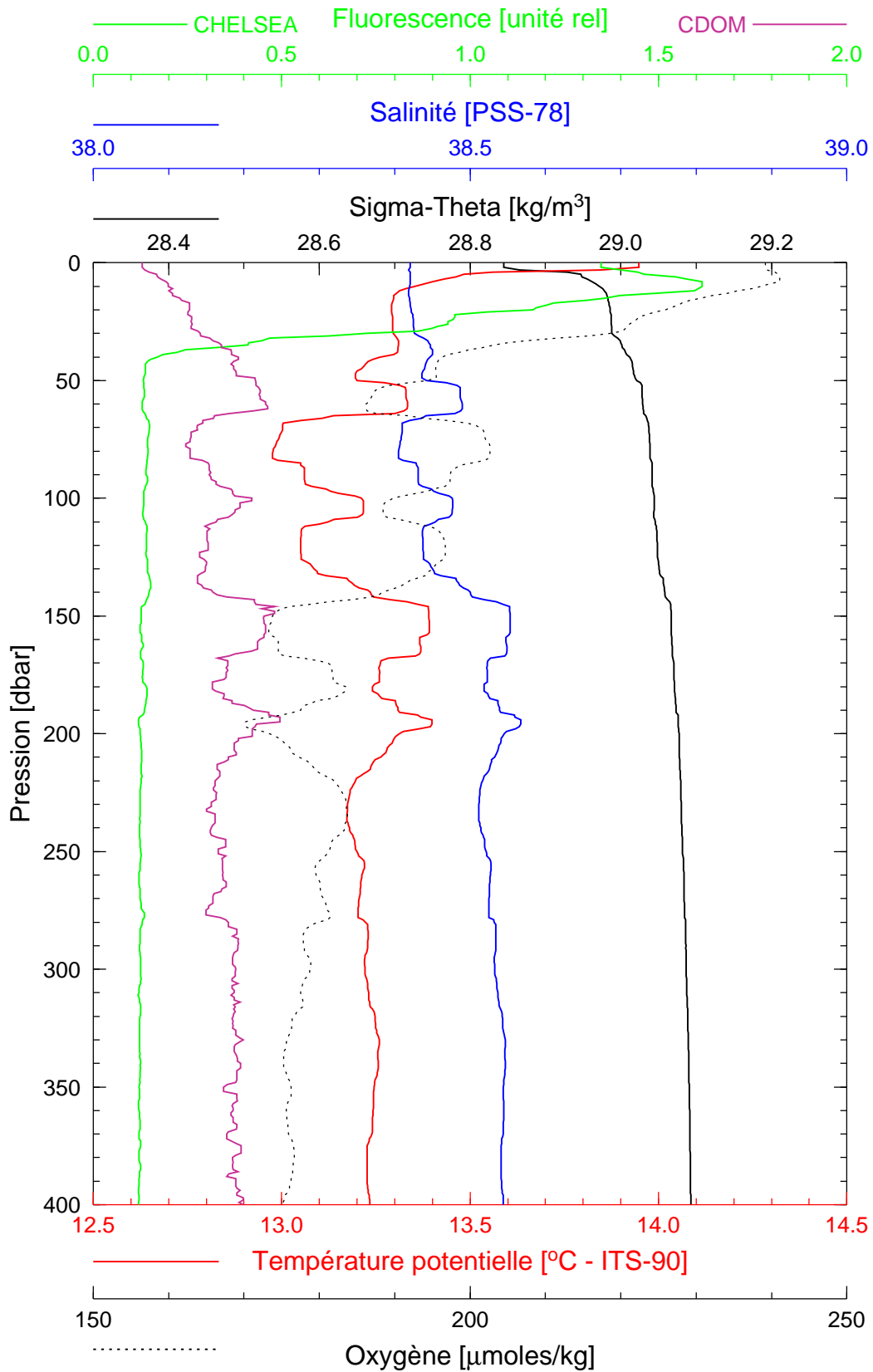
Latitude 43°24.996 N
Longitude 07°47.969 E

Boussole 40

25/03/2005

BOUS050325_03

BOUS003



Date 25/03/2005
Heure déb 15h 32min [TU]

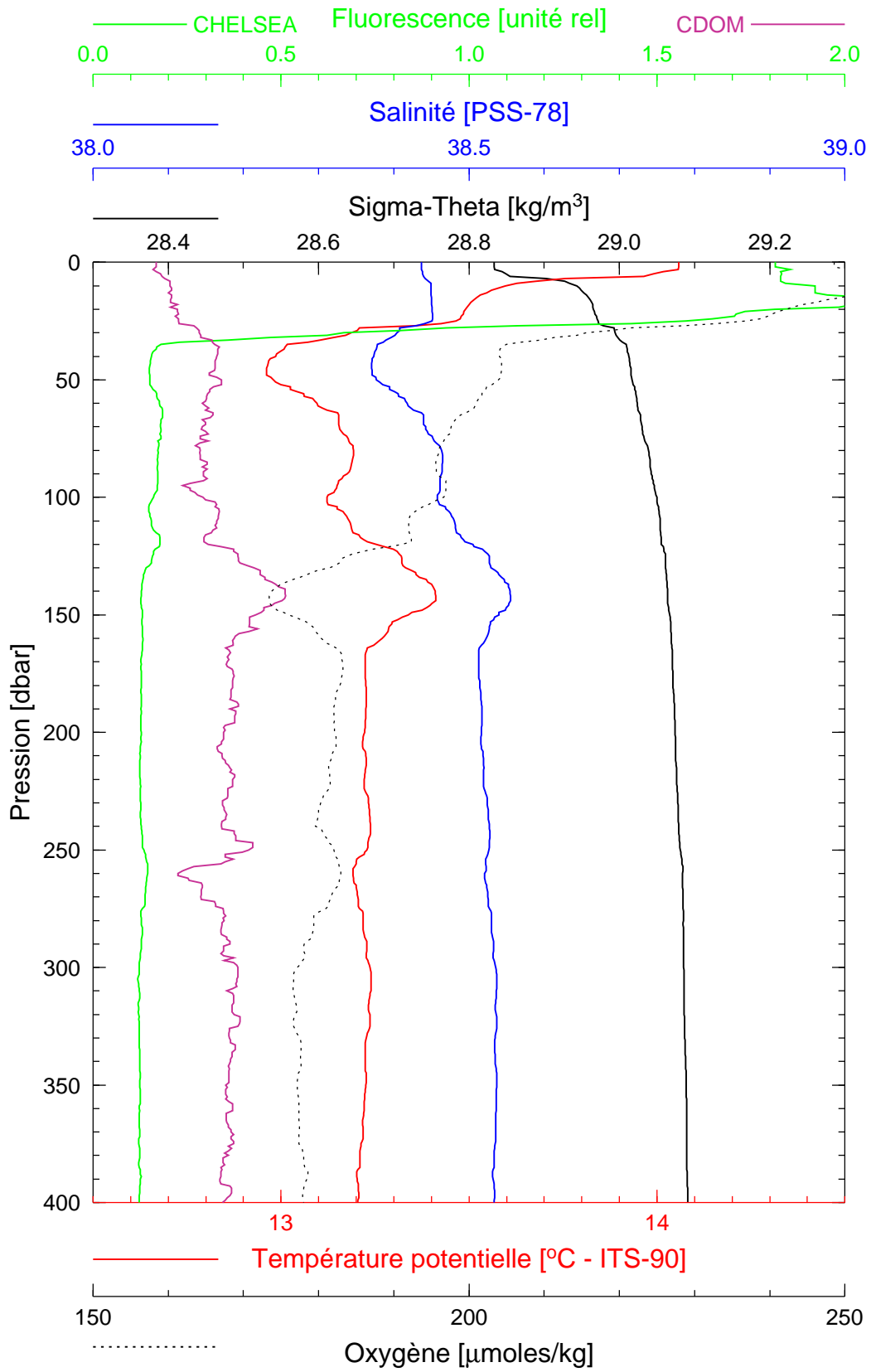
Latitude 43°28.032 N
Longitude 07°42.450 E

Boussole 40

25/03/2005

BOUS050325_04

BOUS004



Date 25/03/2005
Heure déb 16h 27min [TU]

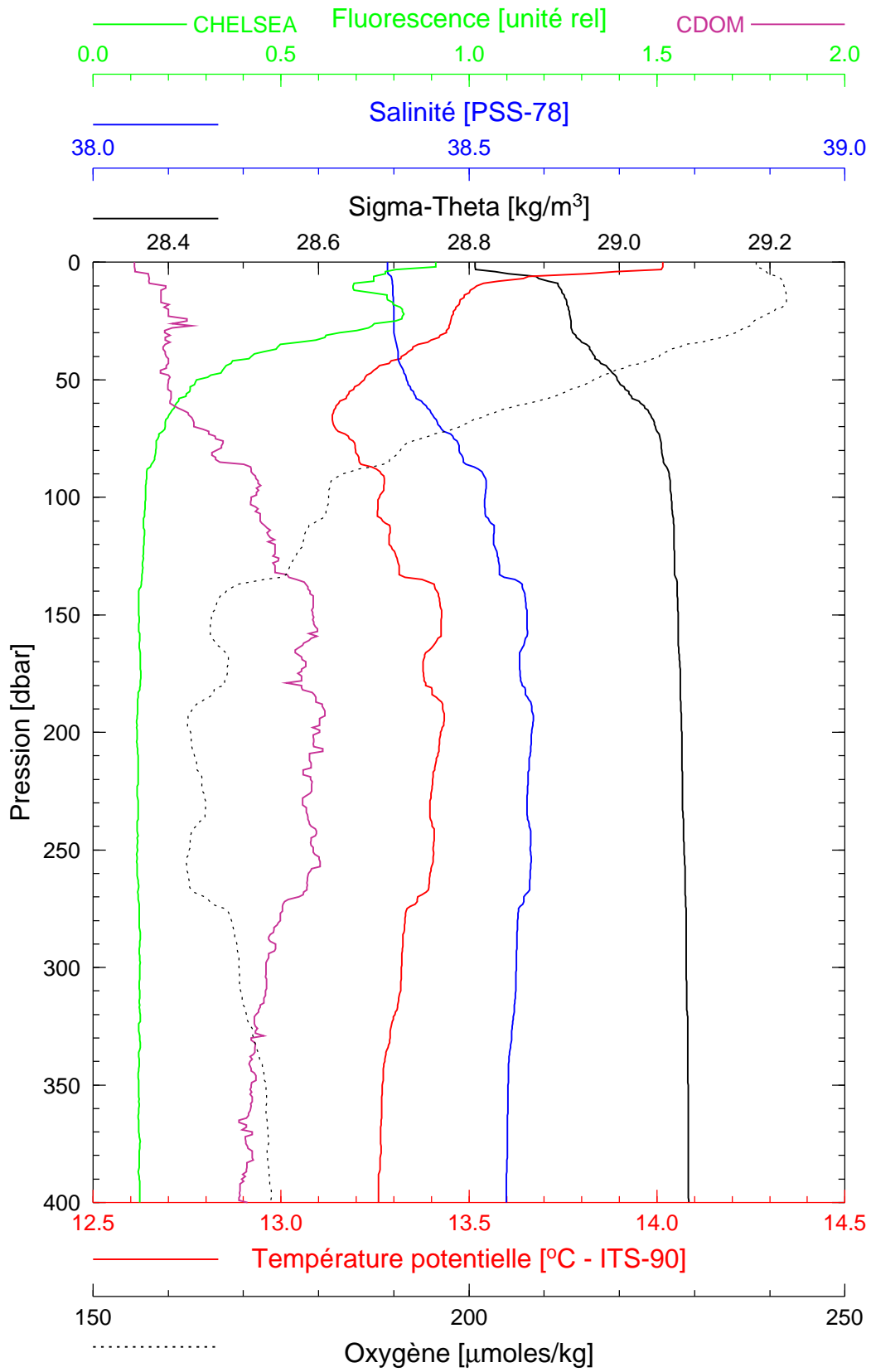
Latitude 43°31.129 N
Longitude 07°36.933 E

Boussole 40

25/03/2005

BOUS050325_05

BOUS005



Date 25/03/2005
Heure déb 17h 24min [TU]

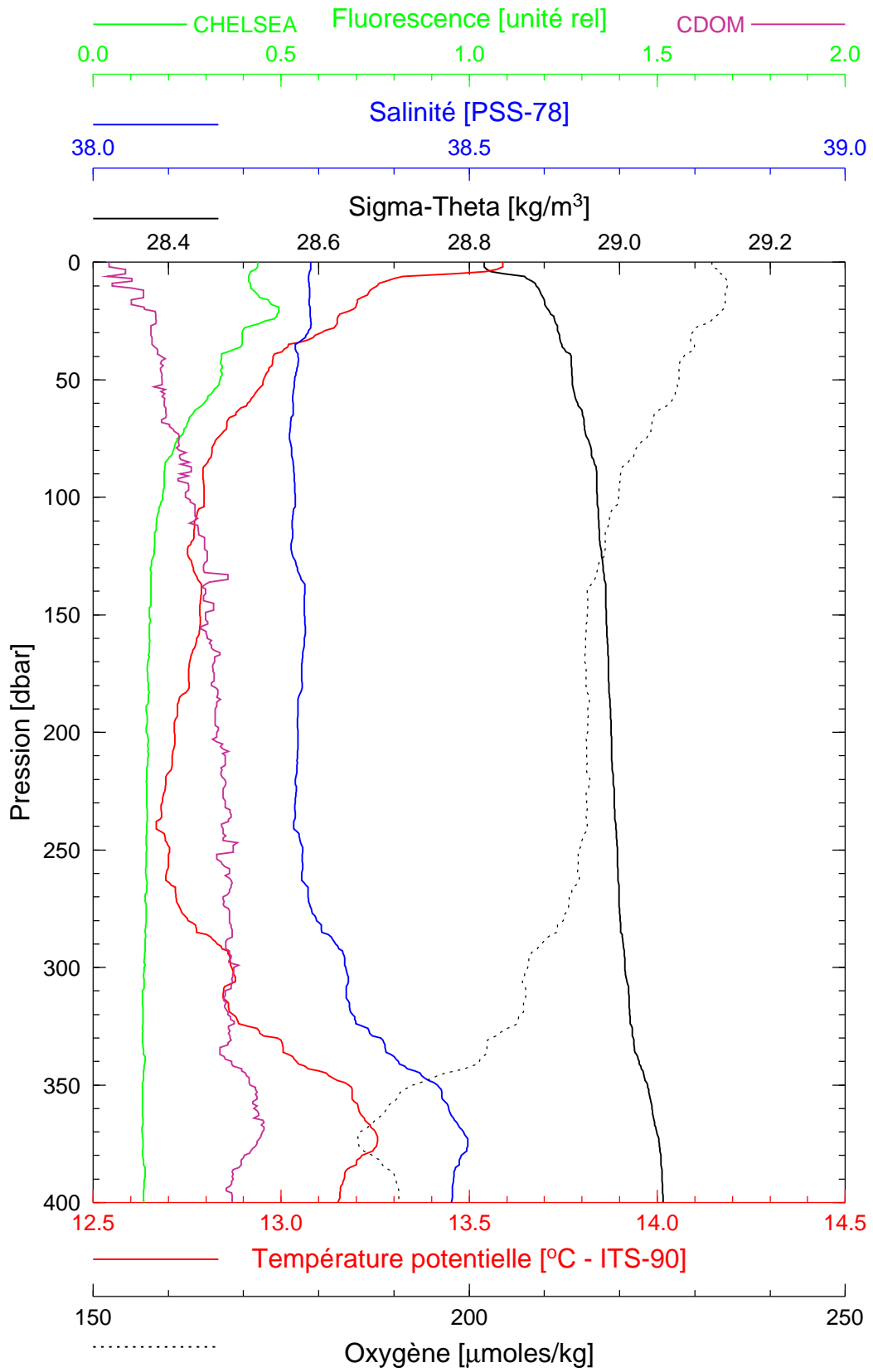
Latitude 43°34.023 N
Longitude 07°30.944 E

Boussole 40

25/03/2005

BOUS050325_06

BOUS006



Date 25/03/2005
Heure déb 18h 23min [TU]

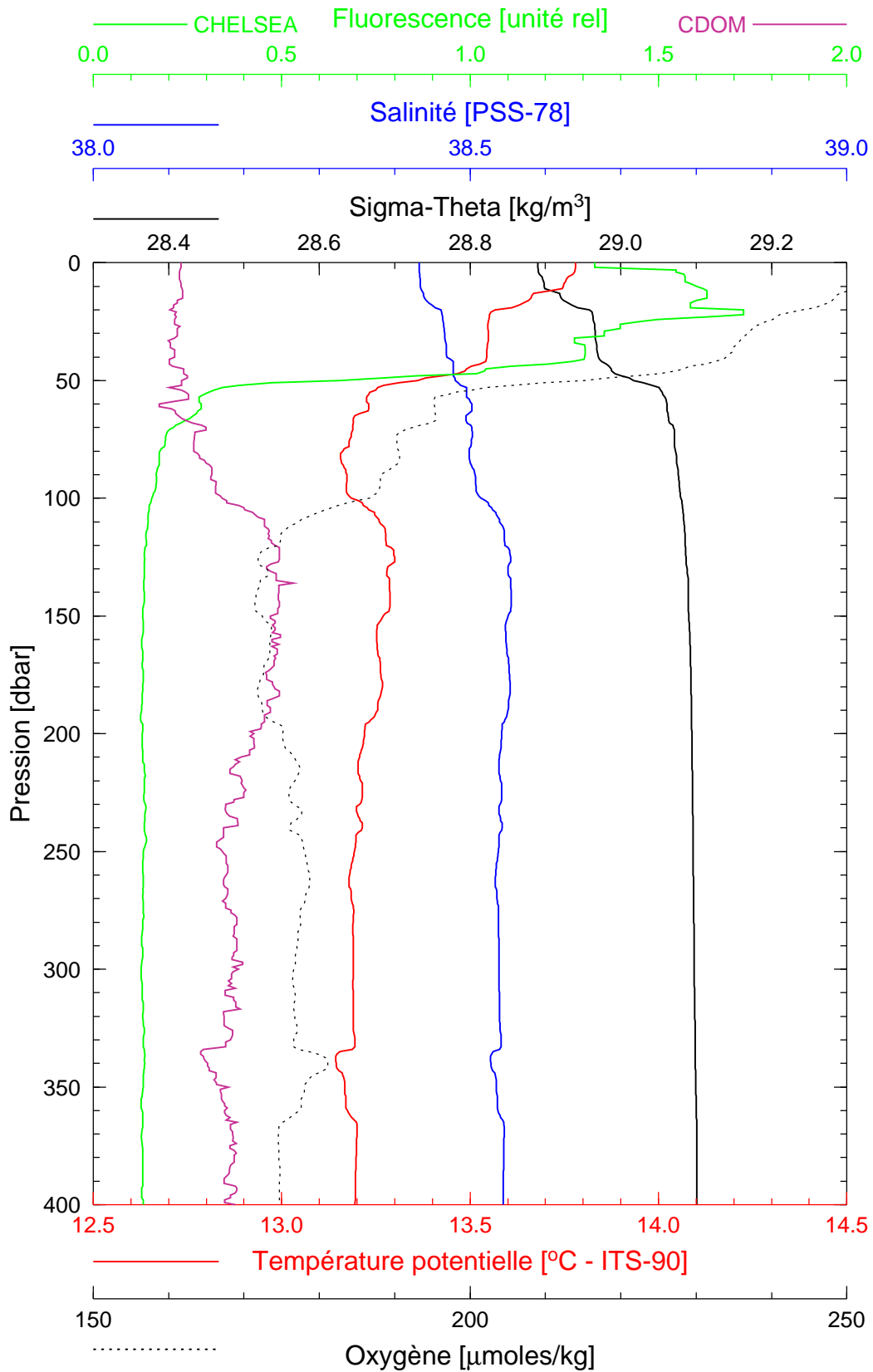
Latitude 43°37.523 N
Longitude 07°24.941 E

Boussole 40

26/03/2005

BOUS050326_01

BOUS007



Date 26/03/2005
Heure déb 09h 02min [TU]

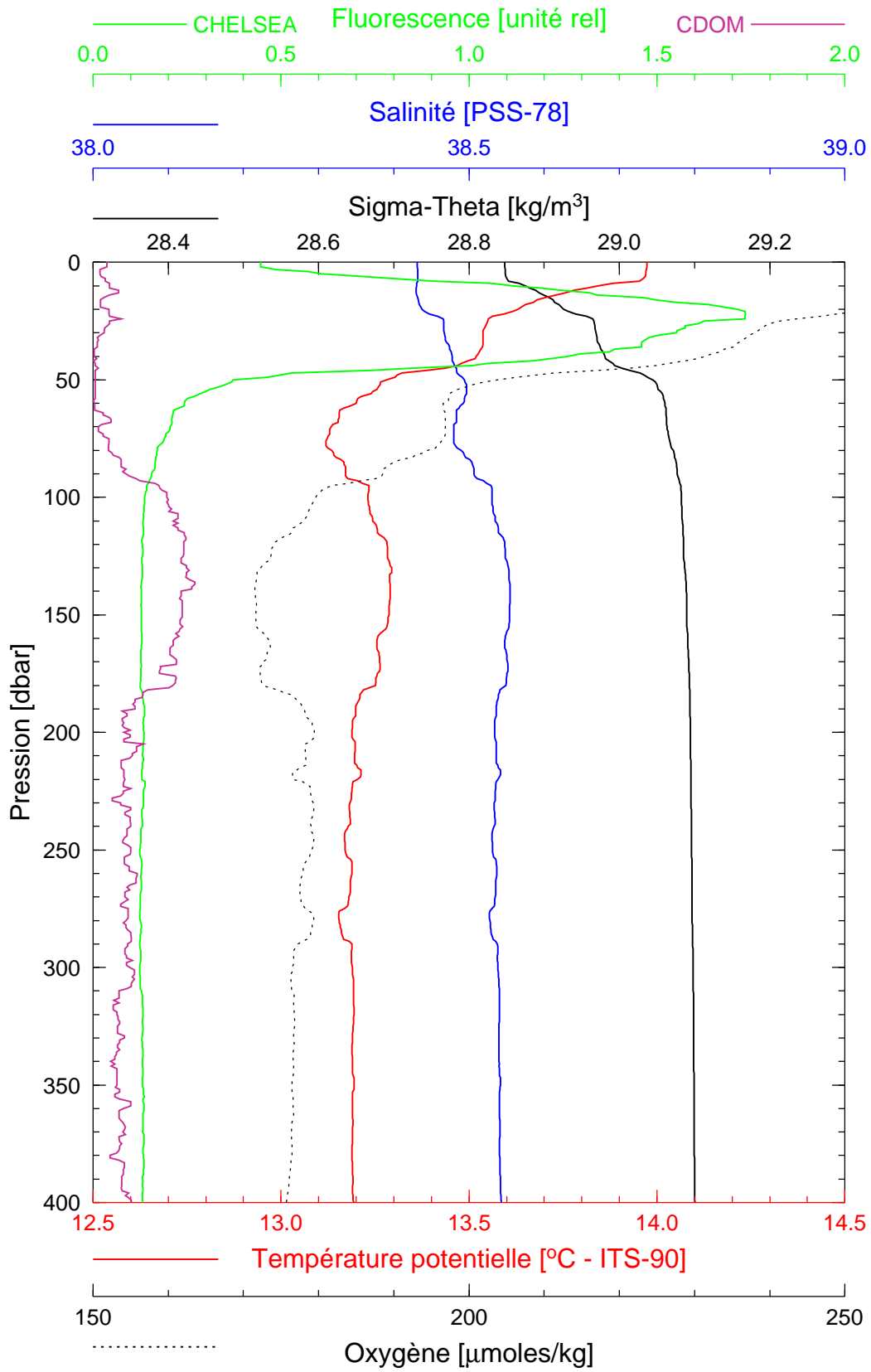
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Longitude 07°53.924 E

Boussole 40

26/03/2005

BOUS050326_02

BOUS008



Date 26/03/2005
Heure déb 12h 36min [TU]

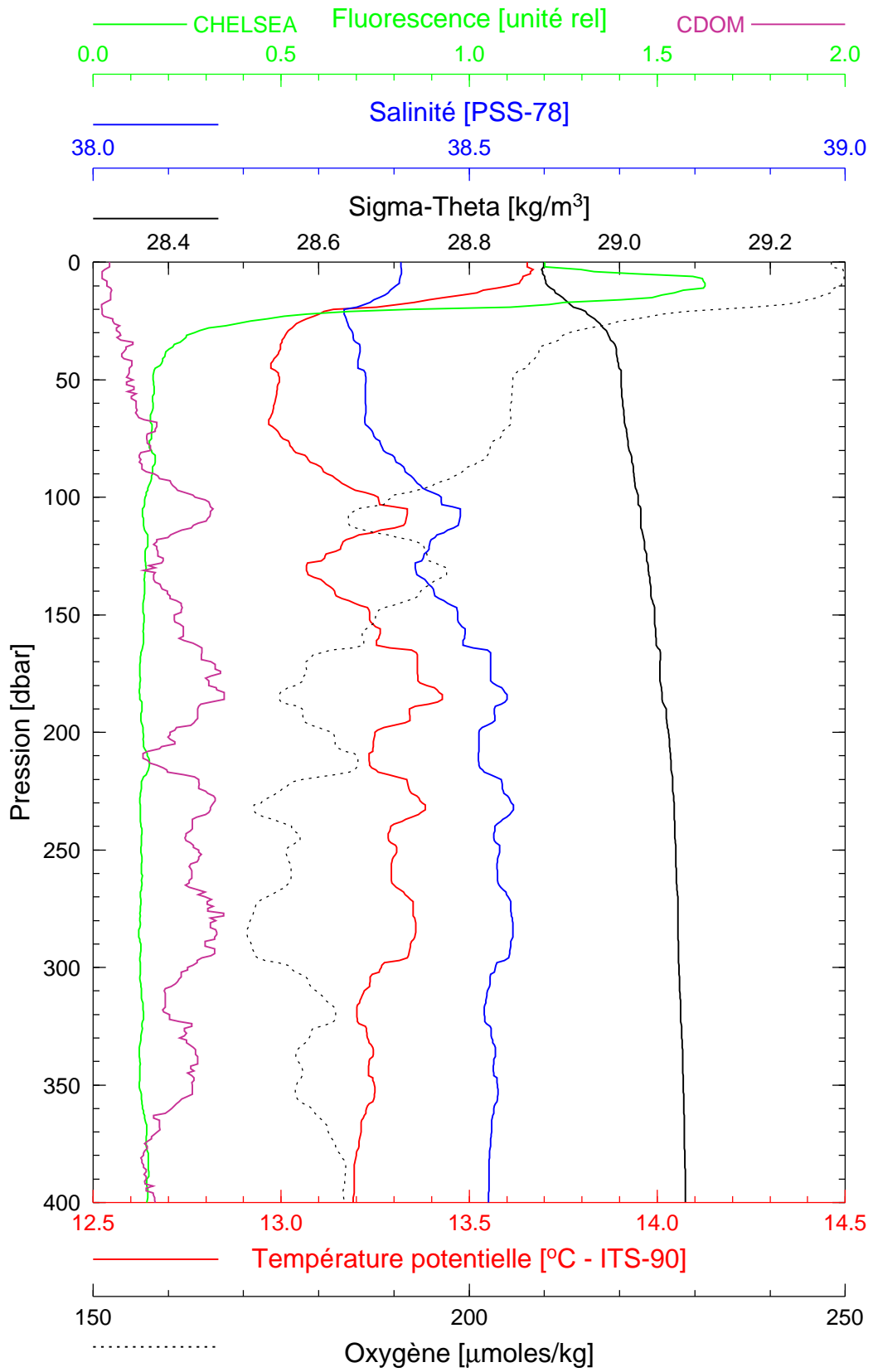
Latitude 43°22.045 N
Longitude 07°54.006 E

Boussole 40

26/03/2005

BOUS050326_03

BOUS009



Date 26/03/2005
Heure déb 15h 31min [TU]

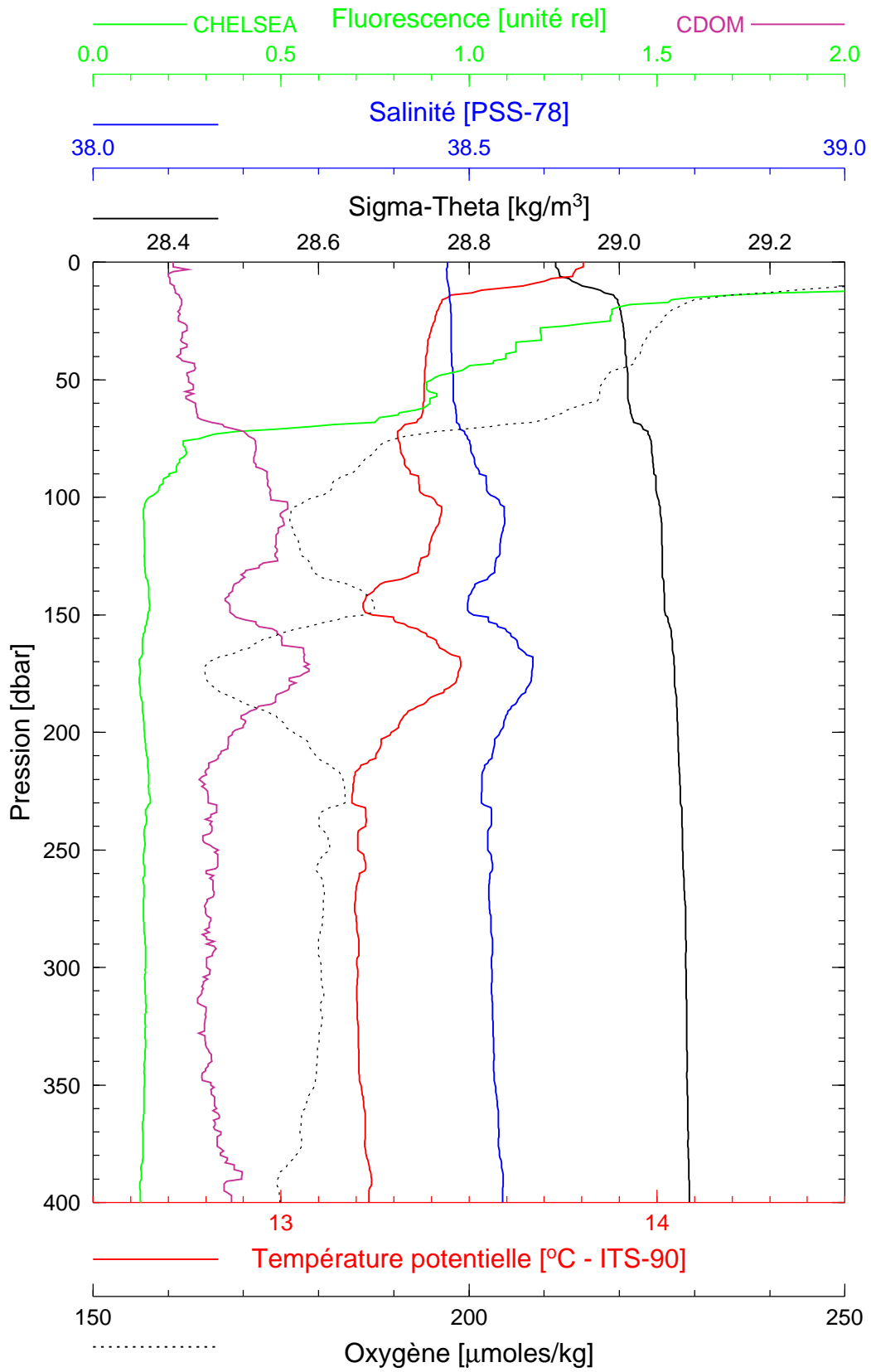
Latitude 43°28.030 N
Longitude 07°42.423 E

Boussole 40

26/03/2005

BOUS050326_04

BOUS010



Date 26/03/2005
Heure déb 16h 56min [TU]

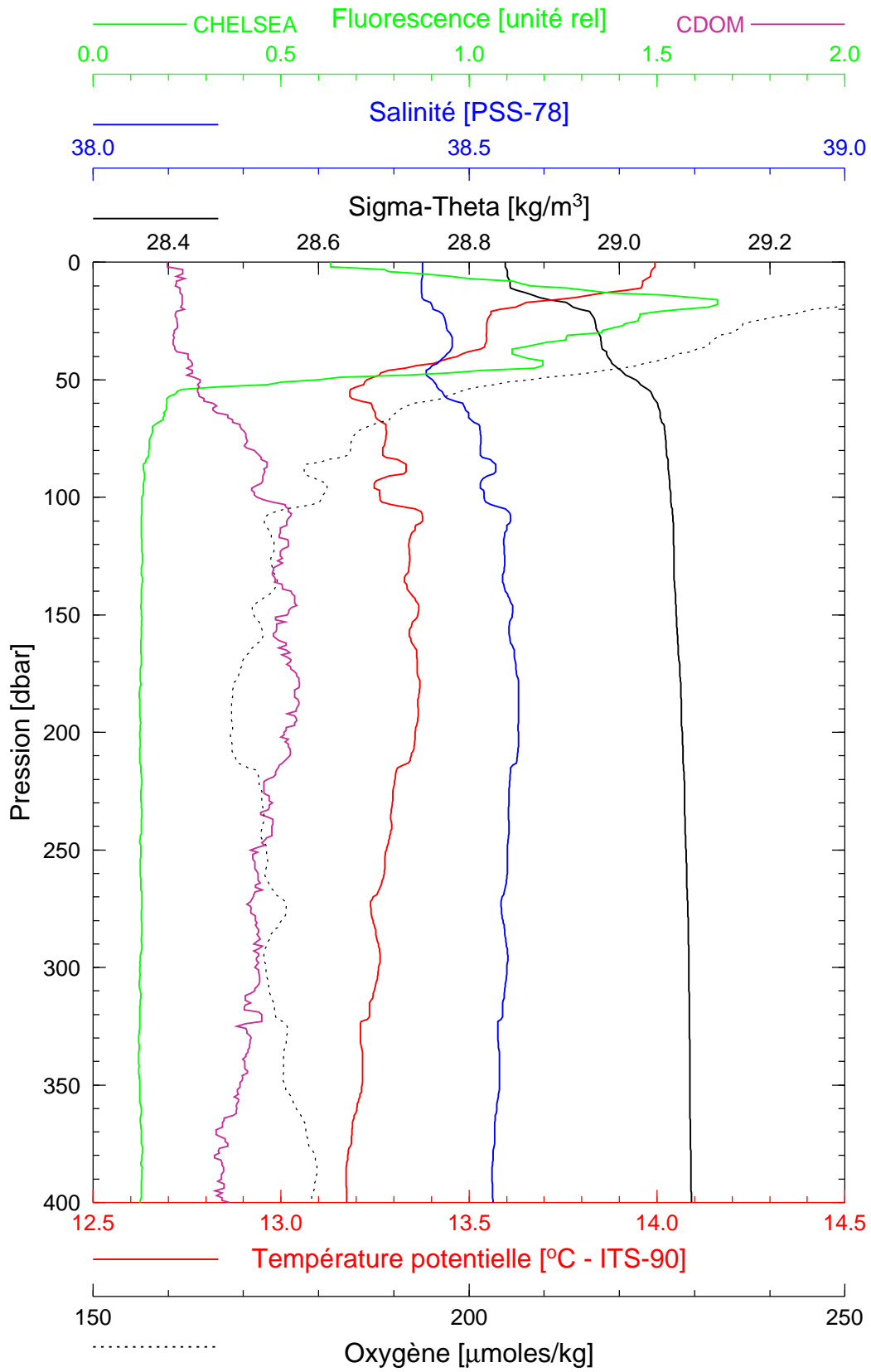
Latitude 43°34.031 N
Longitude 07°31.029 E

Boussole 40

27/03/2005

BOUS050327_01

BOUS011



Date 27/03/2005
Heure déb 09h 03min [TU]

Latitude 43°22.130 N
Longitude 07°54.126 E