

BOUSSOLE Monthly Cruise Report

Cruise 43

June 27 – 29, 2005

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

Vessel: R/V Téthys II

(Captain: Alain Stépahn)

Science Personnel: Guislain Bécu, Dominique Tailliez, David Antoine, Nicolas Duval, Cyril Autourde and 3 divers (David Luquet, Laurent Giletta and Fabrice Javel)

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

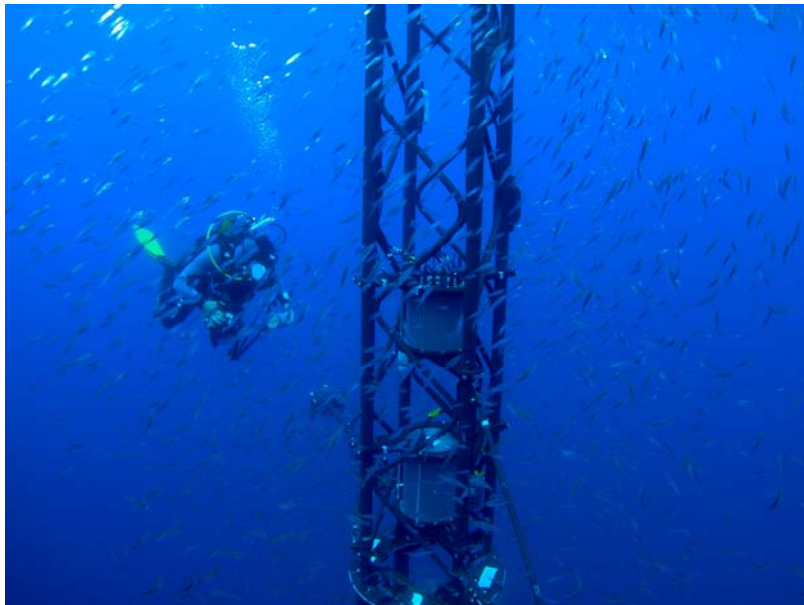


Fig 1. Diver David Luquet is taking some buoy pictures.

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 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 CNRS divers (David Luquet, Laurent Giletta and Fabrice Javel) will be onboard on 28 June 2005 to take some pictures/movies and clean and check the buoy structure under the sea surface.

David Antoine will be present on 29 June.

Nicoals Duval and Cyril Autourde, 2 trianees at the lab will be onboard on 27 June..

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.

Cruise Summary

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.

One the first day, gas-oil and food refill prevented an early departure (sailors arrived on the previous day - a Sunday - on the ship, so that they couldn't do that before the BOUSSOLE mission).

Sea conditions were excellent for the 3 days, optics conditions were very good for the first day, but were fair for the last 2 days (heterogeneous clouds).

2 CTD profiles were realized at "point B" and "point C" in Villefranche bay for the station "zoologique" people.

Monday 27 June 2005

After gas-oil and food refill, departure was at 10:30 am local time, and arrival at BOUSSOLE site was at 01:45 pm. 3 SPMR profiles, 9 CIMEL measurements and 7 CTD (including radial transect) were performed.

When released from the pyramid floating system, the SPMR tilt reached 20° between 30 and 80 m for unexplained reasons for at least 2 profiles. A profile was then realized without pyramid system, and this time the tilt didn't exceed 2°.

On the last transect station, CTD pump stopped (perhaps due to some zooplankton in the circuit).

Tuesday 28 June 2005

Divers exchanged the damaged CLC with the CLC that was recovered on the previous buoy ("buoy II"), Guislain Becu exchanged the Junction Box (in case the damaged CLC burned it) also with the one that was recovered on the previous buoy, and symbolically cleaned up the sensors, as these one were still very clean (buoy was exchanged 8 days before).

Sky conditions were poor on the morning, and fair in the afternoon, so that only 2 CTD profiles were performed at BOUSSOLE site and a 3rd at station 5 in addition to a second dive operation, to try to take some great angle mid-air/mid-water pictures of the ship next to the CTD or next to the buoy. Unfortunately, the Sky conditions (strong haze) were too diffuse so that it dazzled the sensor and the sea appeared black.

Wednesday 29 June 2005

Sky conditions were a little better, especially with some blue sky periods, so that some SPMR profiles were tried with the pyramid floating system. The SPMR was deployed in stand-by mode 50 meters behind the ship, until a blue sky period happened, where data were logged (in surface and along the water column). 3 Profiles and 2 surface-mode measurements were performed.

2 Secchi disk and a last CTD profile were realized before leaving for Nice.

Cruise Report

27 June 2005 (UTC)

0845 Departure from port of Nice.
0855 CTD 1 at point B.
1145 arrival to BOUSSOLE site.
1212 CIMEL measurement 1.
1220 CTD 2 with water sampling at 200, 100, 80, 70, 60, 50, 40, 30, 20, 10 and 5 meters.
1232 CIMEL measurement 2.
1252 CIMEL measurement 3.
1312 CIMEL measurement 4.
1330 SPMR/SMSR profiles 1, 2, 3 and 4.
1332 CIMEL measurement 5.
1352 CIMEL measurement 6.
1412 CIMEL measurement 7.
1453 CIMEL measurement 8.
1503 CTD 3 at station 1 (43°25'N 07°48'E).
1550 CIMEL measurement 9 at station 2 (43°28'N 07°42'E).
1558 CTD 4 at station 2 (43°28'N 07°42'E).
1658 CTD 5 at station 3 (43°31'N 07°37'E).
1757 CTD 6 at station 4 (43°34'N 07°31'E).
1058 CTD 7 at station 5 (43°37'N 07°25'E).
2020 Arrival at port of Nice.

28 June 2005

0500 Departure from port of nice.
0510 CTD 8 at point C
0820 Arrival at BOUSSOLE site.
0830 Diving operation 1 (exchange CLC)
1100 Junction Box exchange.
1120 Diving operation 2 (pictures).
1210 CTD 9 with water sampling at 5 and 10 meters (triplicates).
1510 CTD 10 at station 5 (43°37'N 07°25'E).

29 June 2005

0430 Departure from port of Nice.
0750 Arrival at BOUSSOLE site.
0816 CTD 11 with water sampling at 5 and 10 meters (triplicates).

- 1036 CIMEL measurement 10.
- 1042 SPMR/SMSR 5, 6, 7, 8 and 9 with pyramid floating system (3 profiles and 2 surface measurements).
- 1056 CIMEL measurement 11.
- 1121 CIMEL measurement 12.
- 1150 Secchi disk measurement 1.
- 1220 CTD 12 with water sampling at 200, 100, 80, 70, 60, 50, 40, 30, 20, 10 and 5 meters (for HPLC, UltraPath)
- 1300 Buoy connection to update the DACNet schedule (no dark frame as it doesn't work).
- 1310 Departure for port of Nice.
- 1640 Arrival at port of Nice.

Calculated Swath paths for MERIS Sensor (ESOV Software)

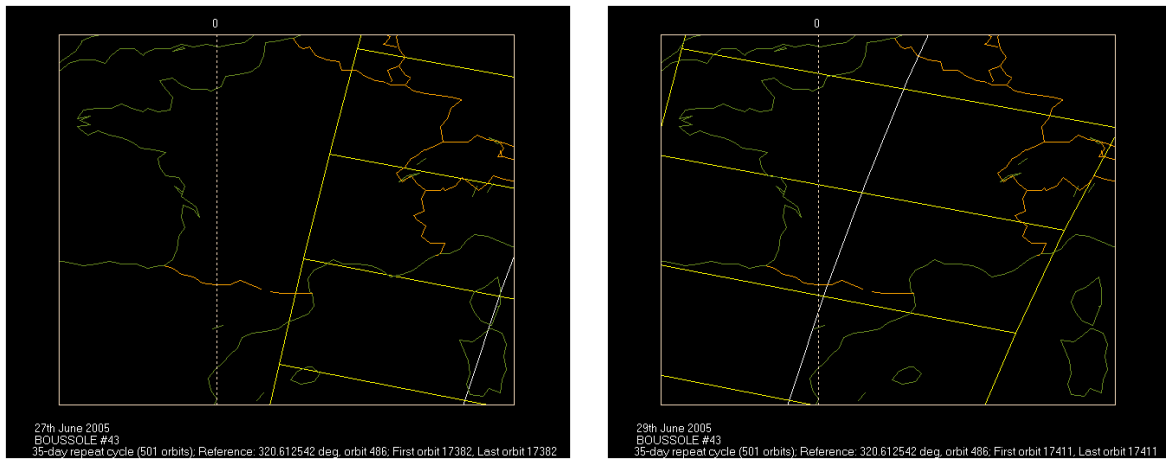
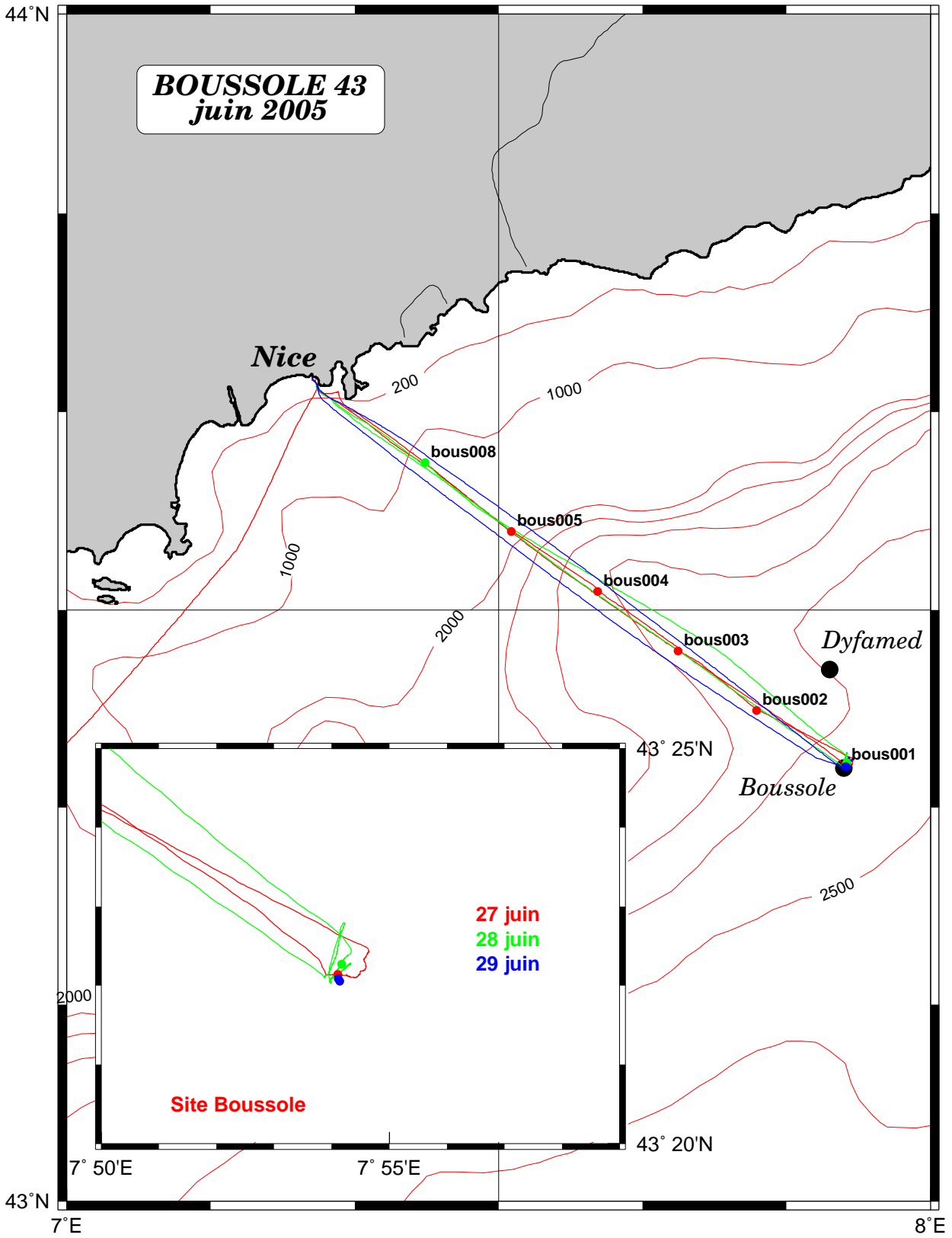


Figure 3. Calculated swath paths for MERIS (Esov software) above BOUSSOLE site for 27 and 29 June 2005.

Appendix

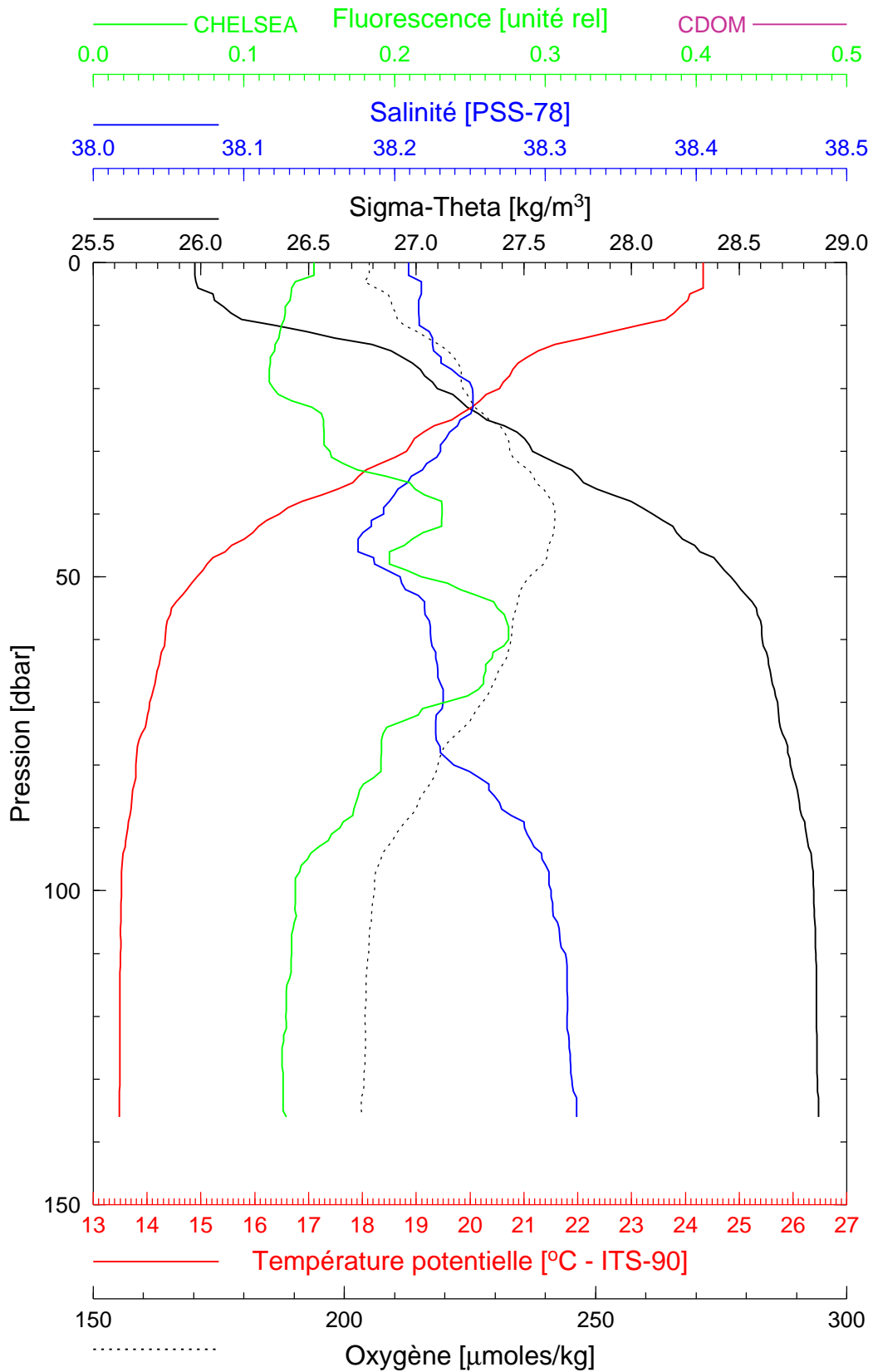


Boussole 43

27/06/2005

BOUS050627_01

point B+



Date 27/06/2005
Heure déb 08h 35min [TU]

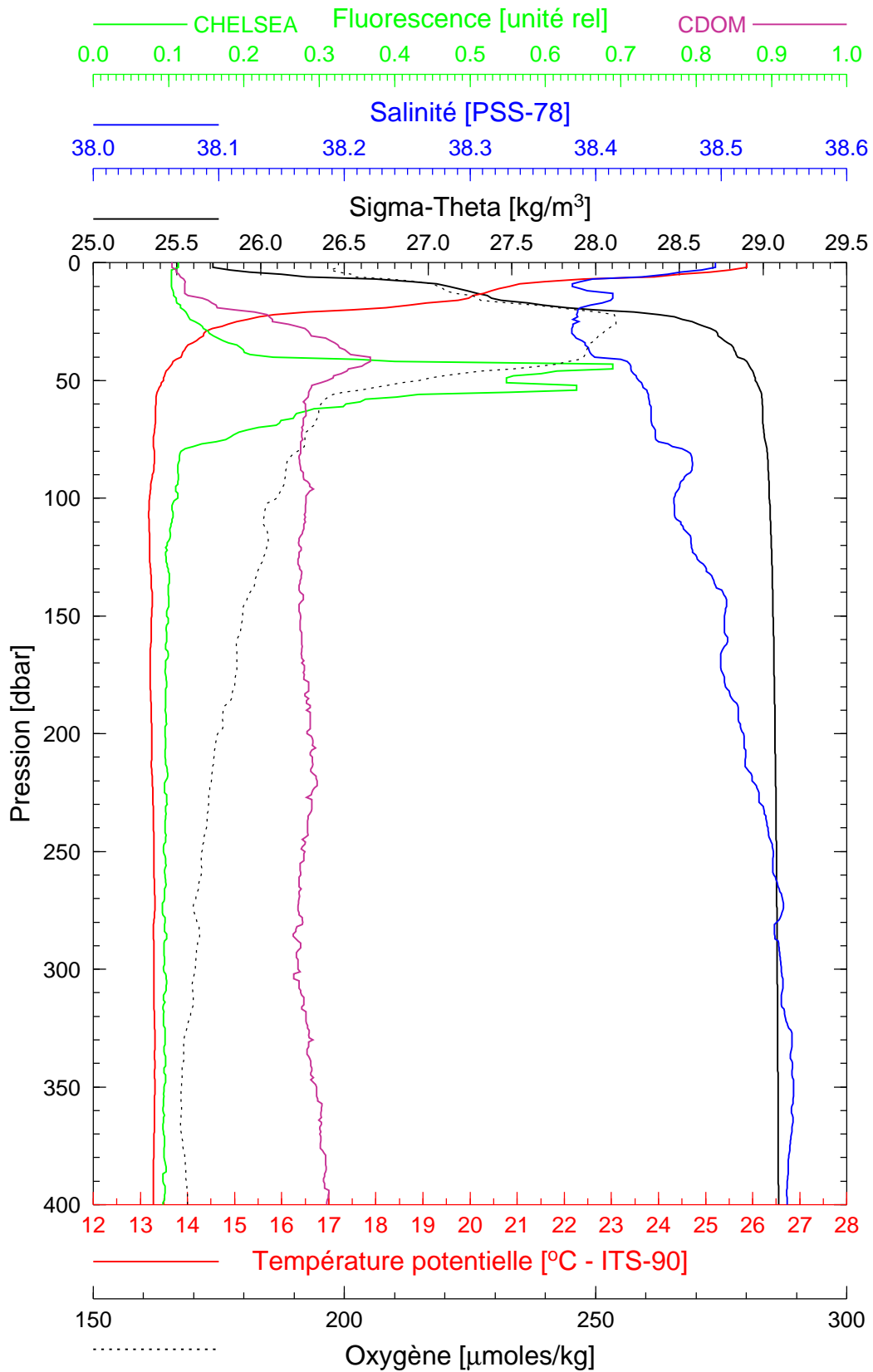
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Boussole 43

27/06/2005

BOUS050627_02

BOUS001



Date 27/06/2005
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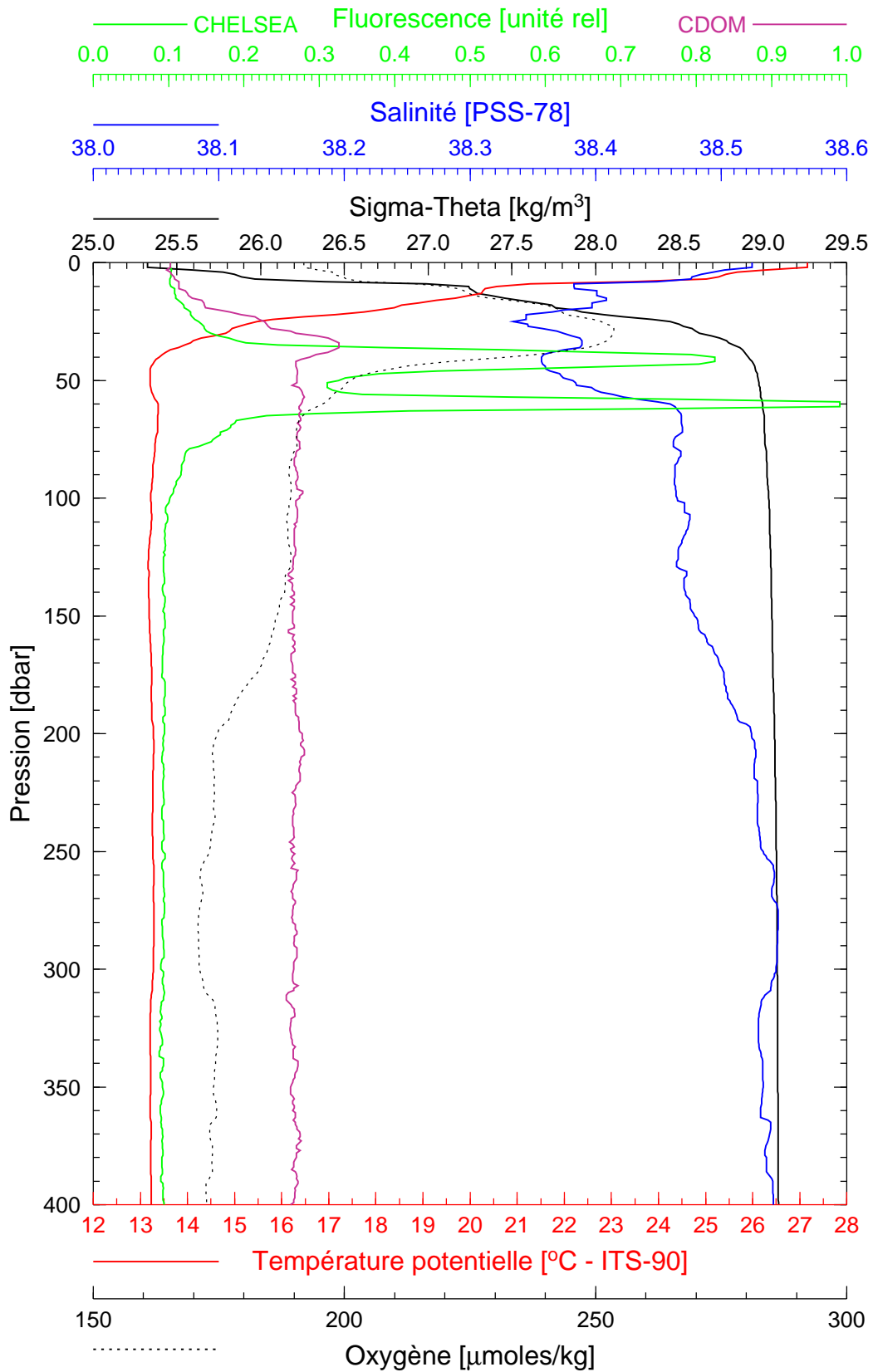
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Boussole 43

27/06/2005

BOUS050627_03

BOUS002



Date 27/06/2005
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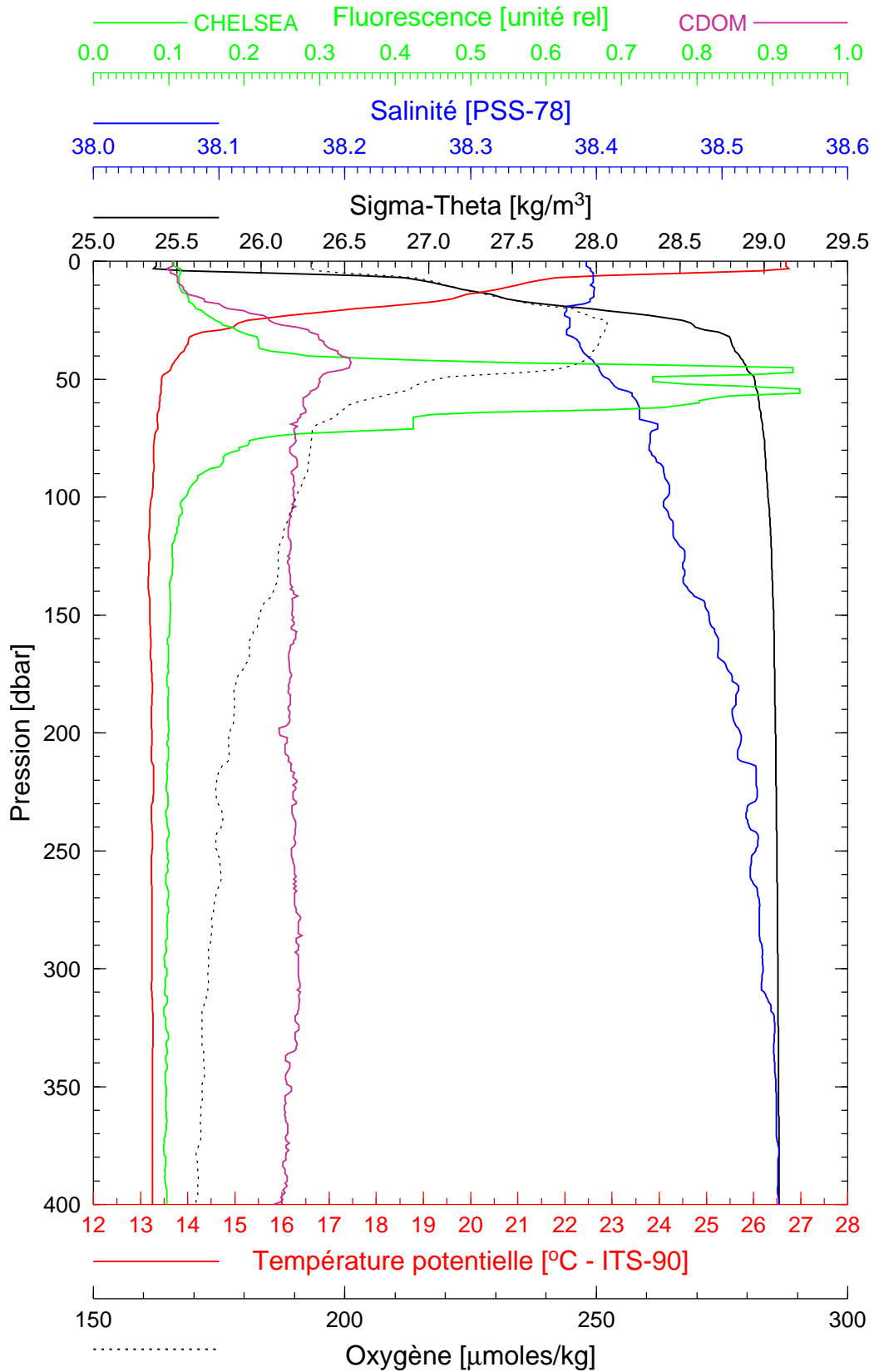
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Boussole 43

27/06/2005

BOUS050627_04

BOUS003



Date 27/06/2005
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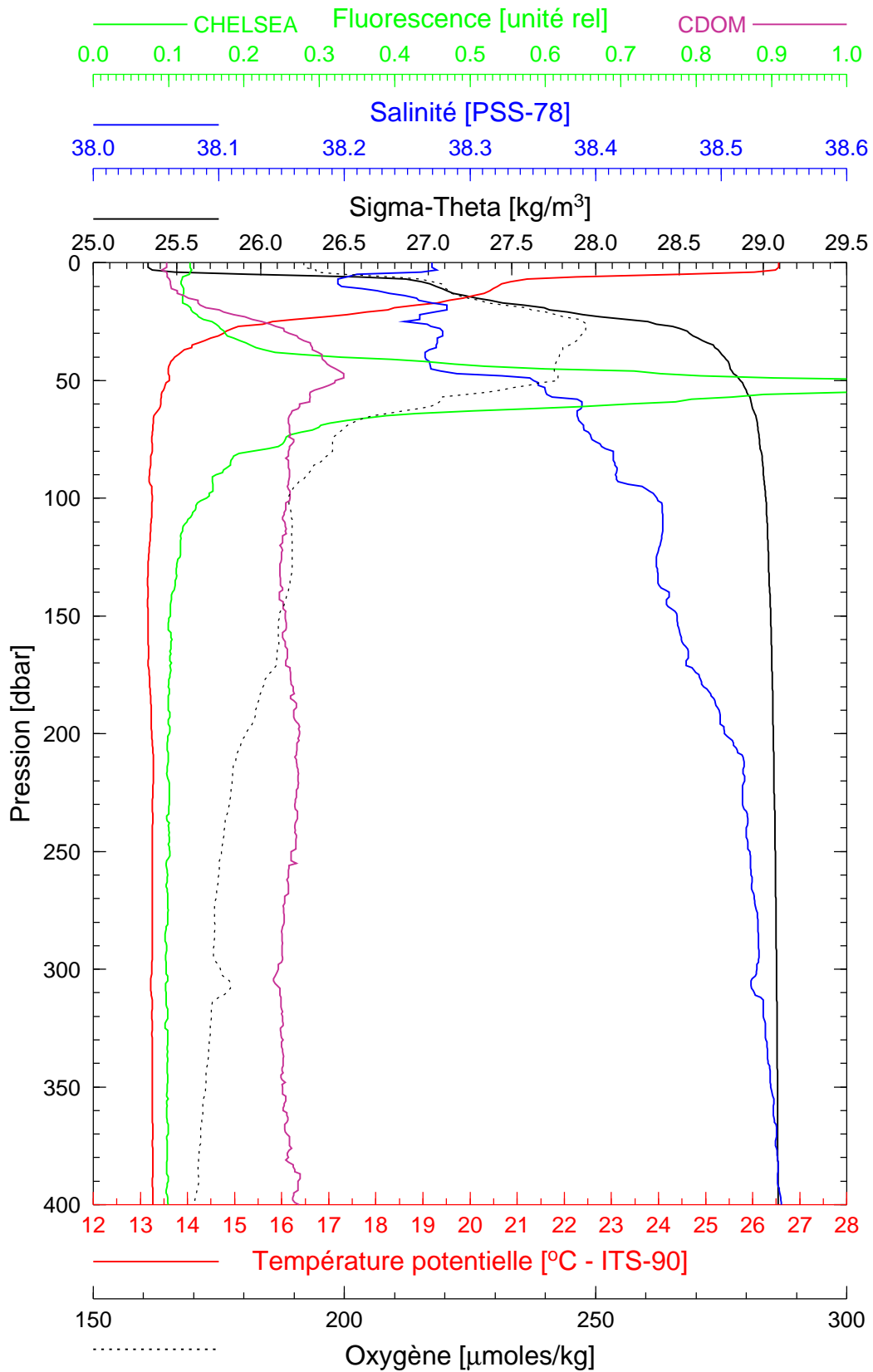
Latitude 43°27.928 N
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Boussole 43

27/06/2005

BOUS050627_05

BOUS004



Date 27/06/2005
Heure déb 16h 58min [TU]

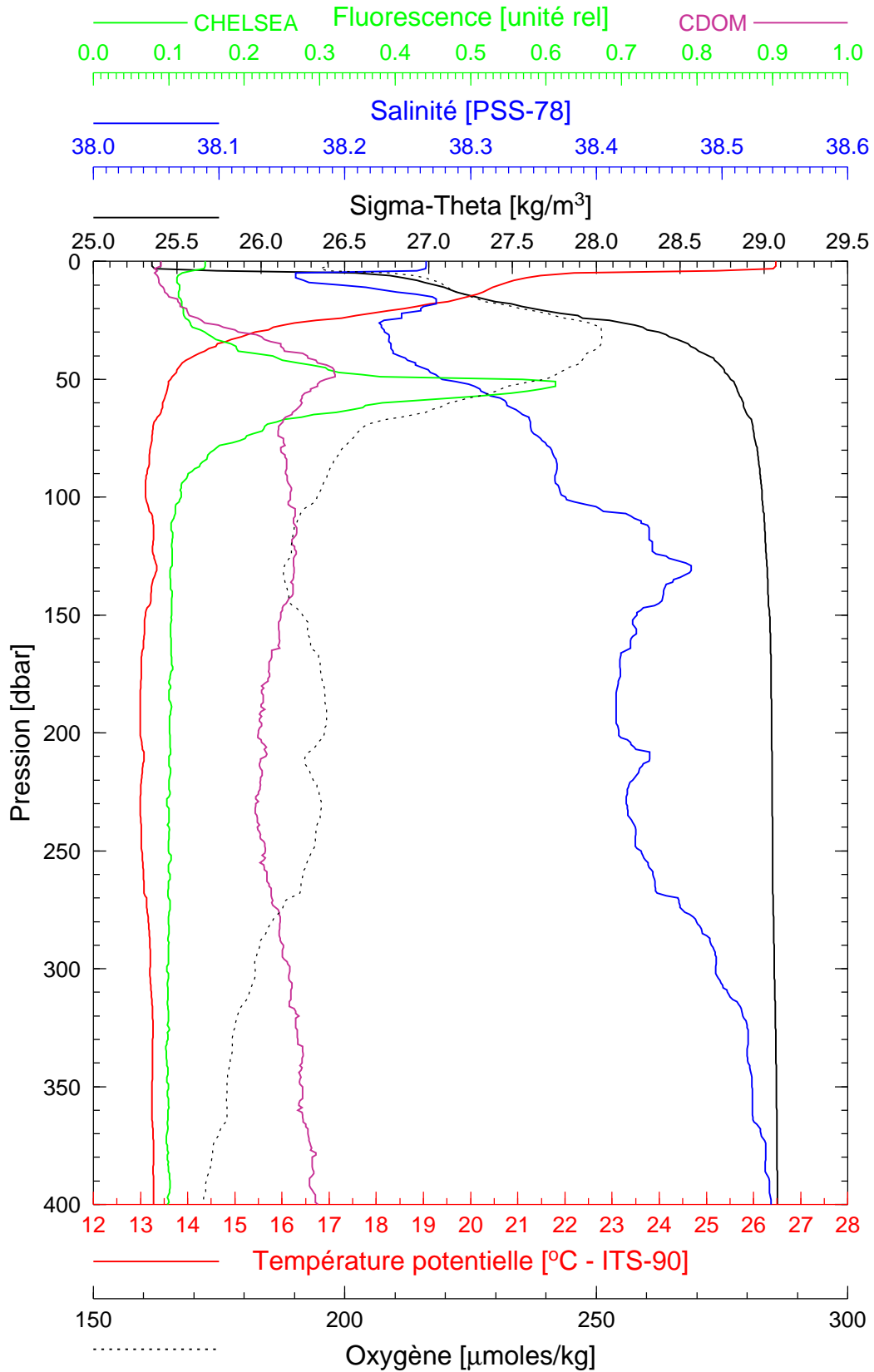
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Boussole 43

27/06/2005

BOUS050627_06

BOUS005



Date 27/06/2005
Heure déb 17h 57min [TU]

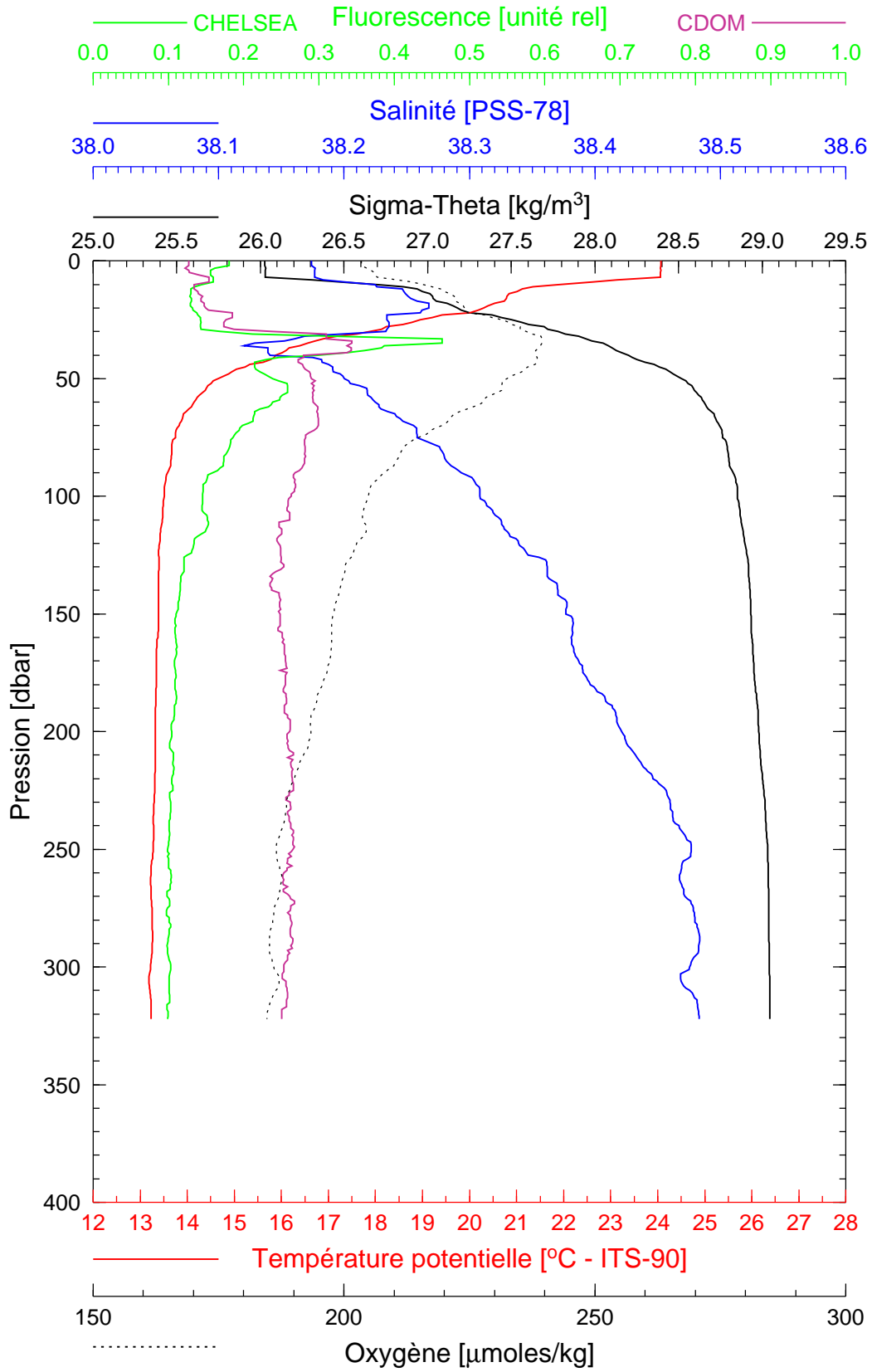
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Boussole 43

28/06/2005

BOUS050628_01

point C



Date 28/06/2005
Heure déb 05h 09min [TU]

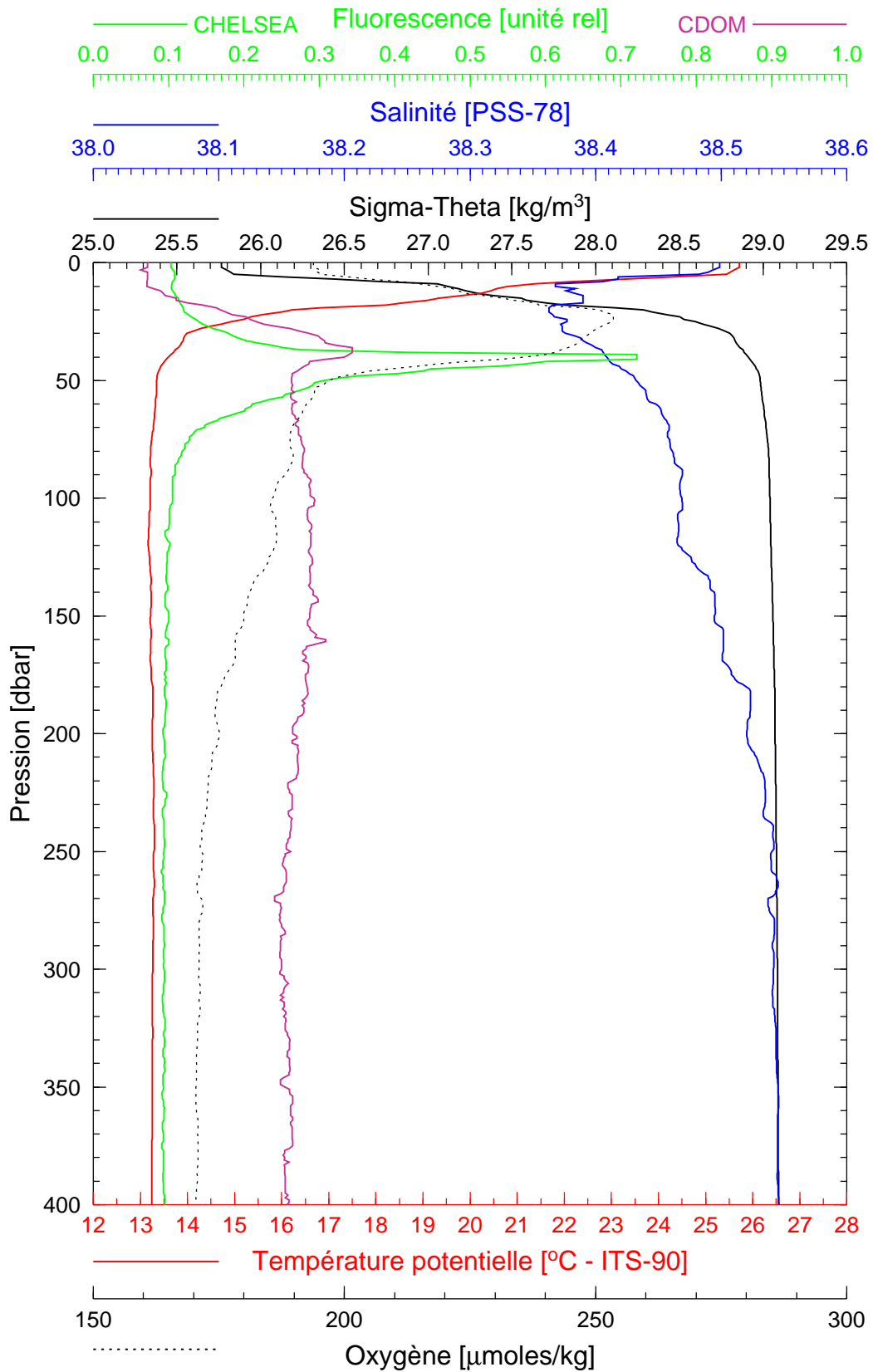
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Boussole 43

28/06/2005

BOUS050628_02

BOUS007



Date 28/06/2005
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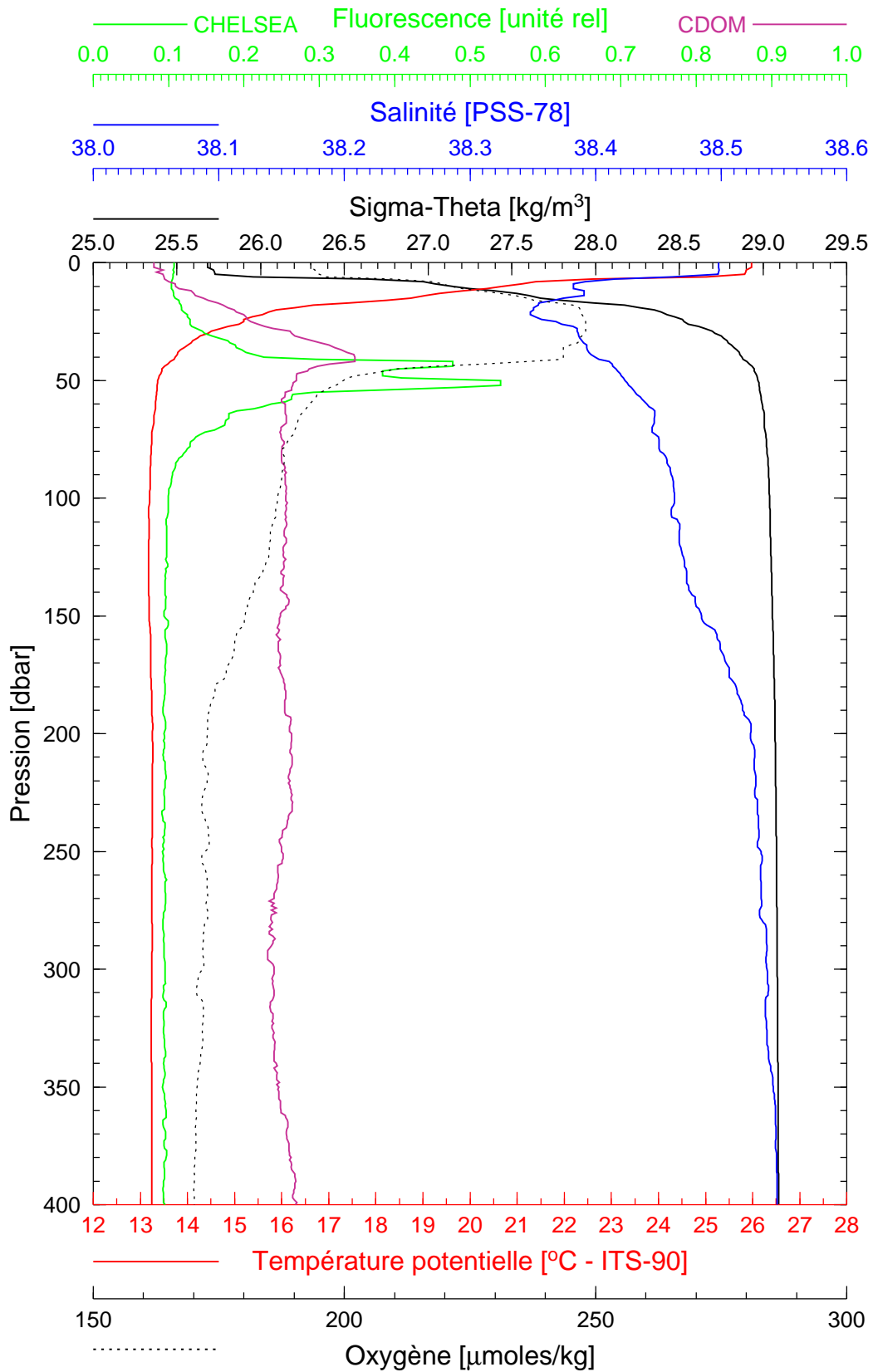
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Boussole 43

29/06/2005

BOUS050629_01

BOUS009



Date 29/06/2005
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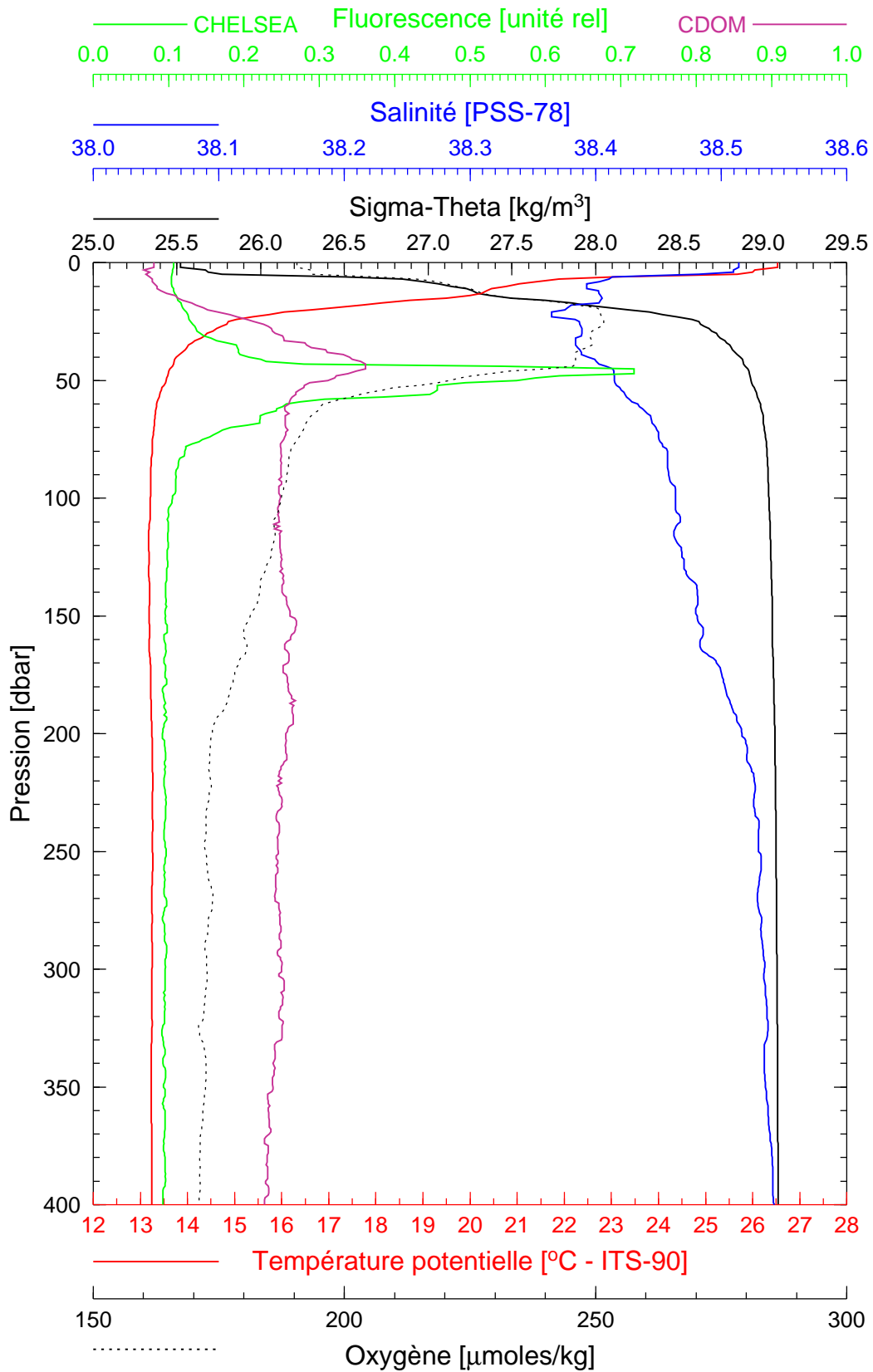
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Boussole 43

29/06/2005

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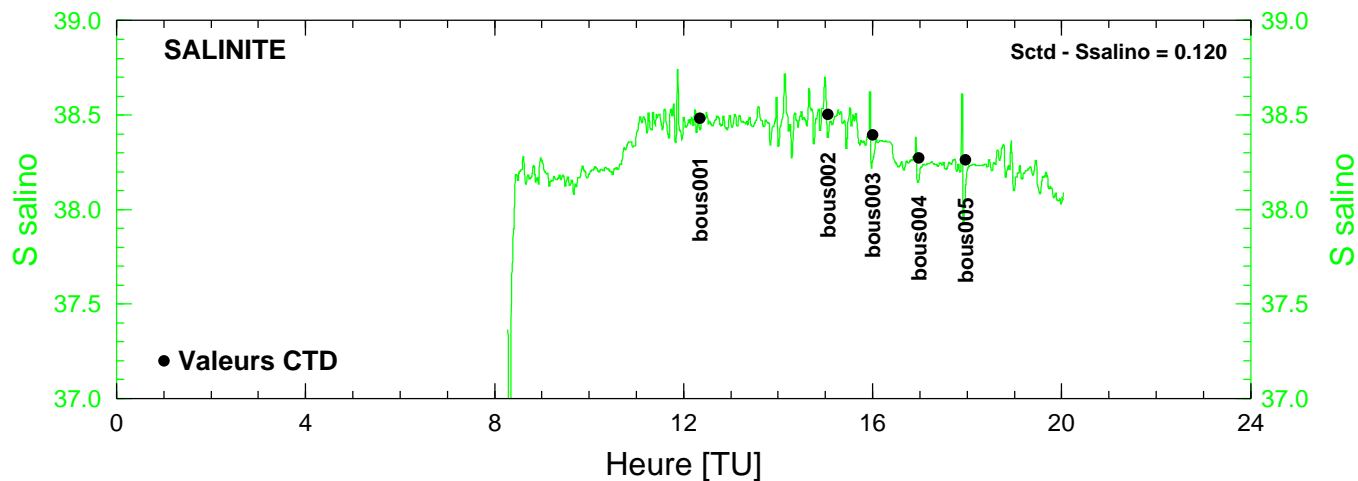
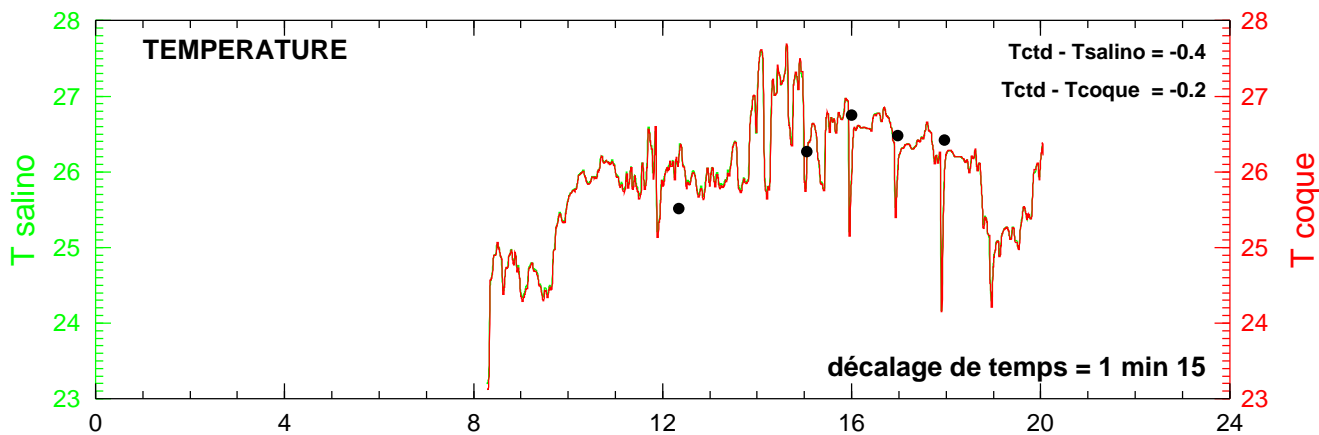
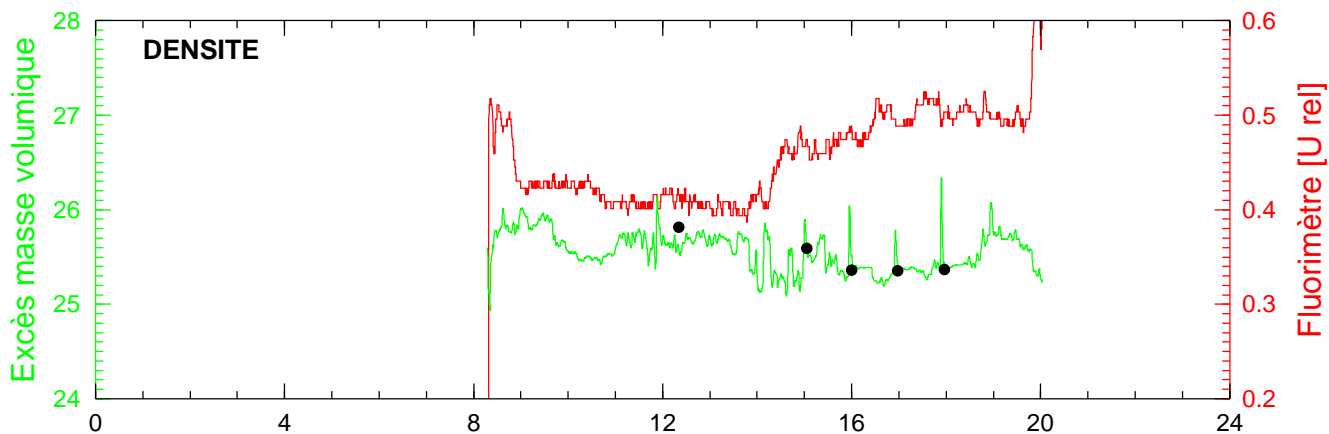
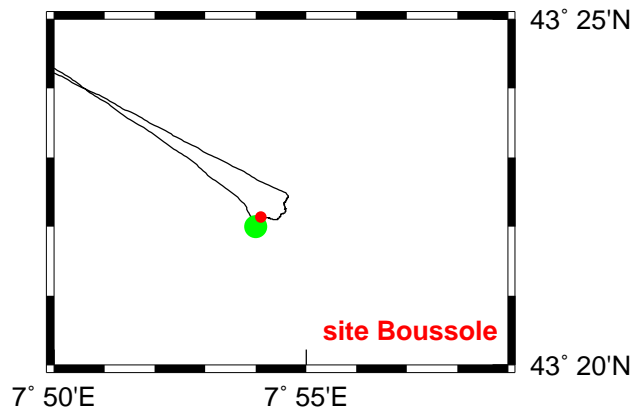
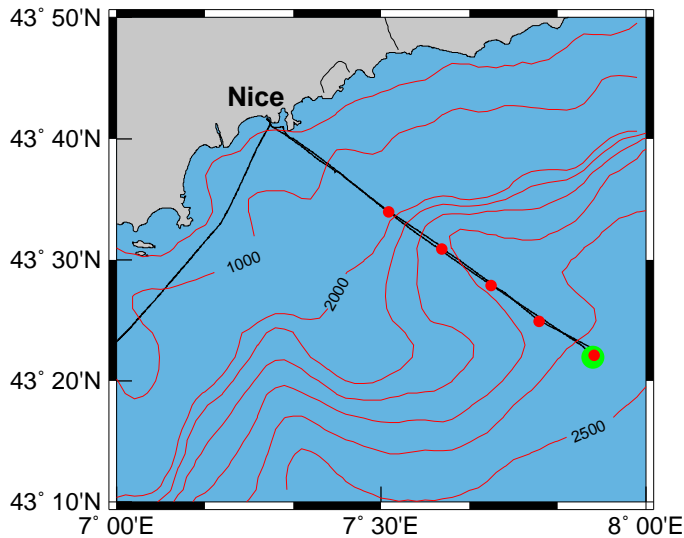
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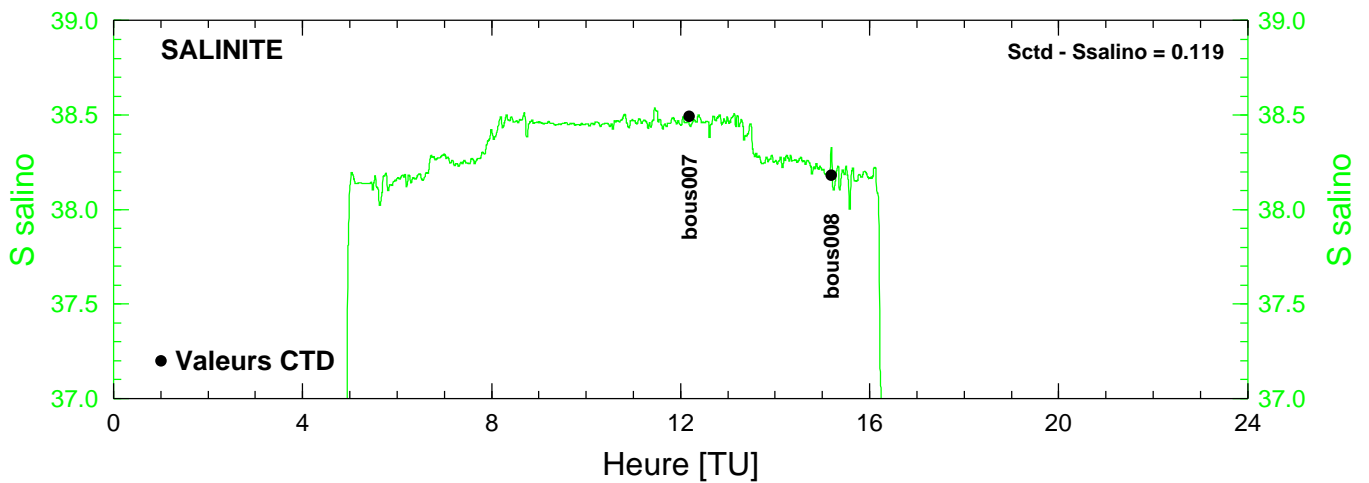
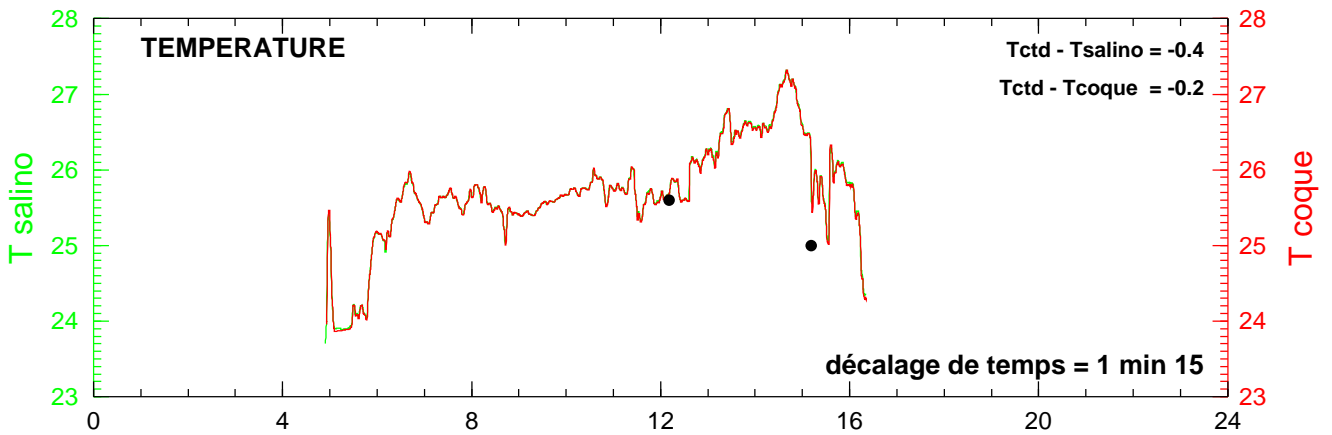
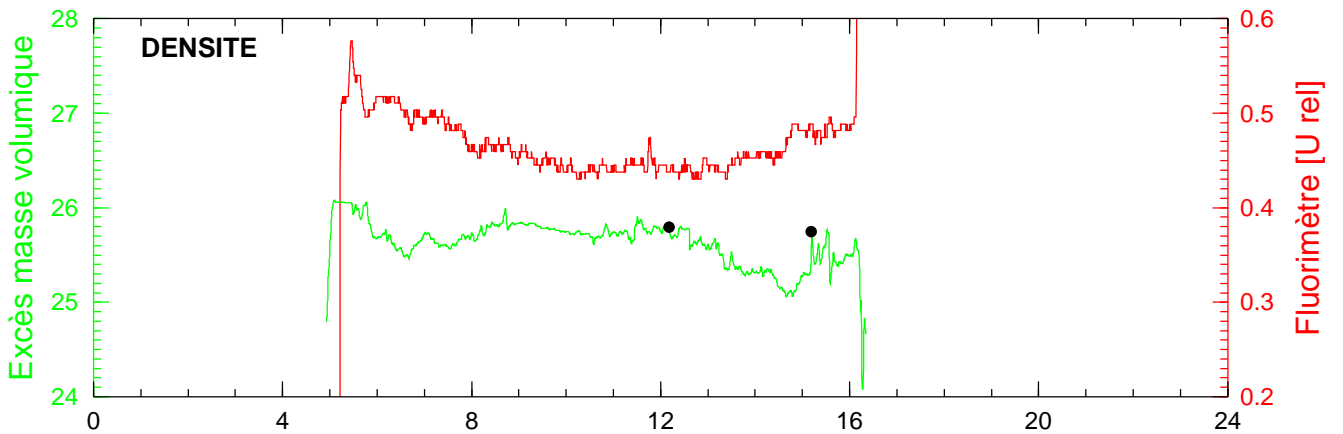
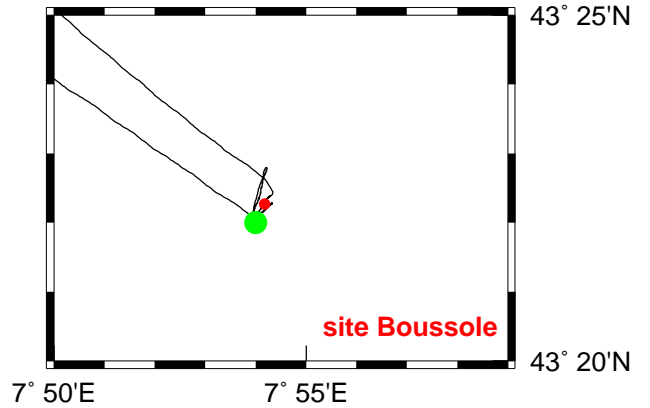
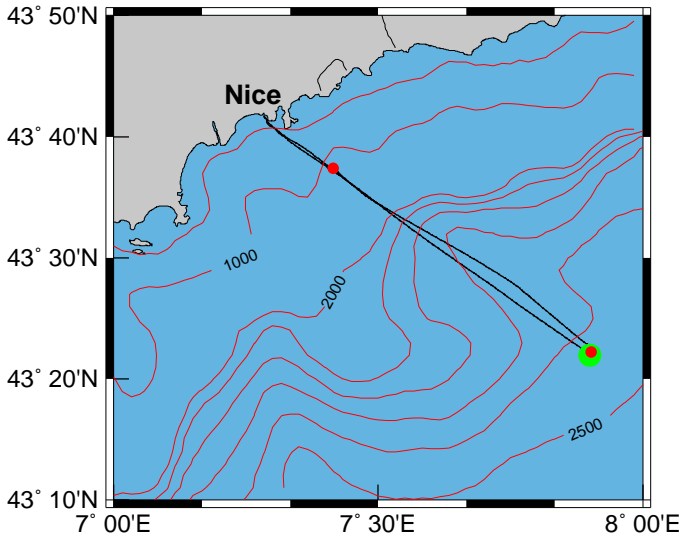
Date 29/06/2005
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Latitude 43°22.086 N
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BOUSSOLE 43 27 juin 2005



BOUSSOLE 43 28 juin 2005



BOUSSOLE 43 29 juin 2005

