

BOUSSOLE Monthly Cruise Report

Cruise 121

March 07 - 10, 2012

Duty Chief: Emilie Diamond (diamond@obs-vlfr.fr)

Vessel: R/V Téthys II

(Captain: Rémy Lafond)

Science Personnel: Emilie Diamond and Grigor Obolensky.

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



Water sample filters at 5, 10, 20, 30, 40, 50, 60, 70, 80, 150 and 400 m for POC analysis.

BOUSSOLE project

ESA/ESRIN contract N° 13226/10/I-NB

March 14, 2012



Foreword

This report is part of the technical report series that is being established by the BOUSSOLE project.

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European Space Agency



Centre National d'Études Spatiales, France

CENTRE NATIONAL D'ÉTUDES SPATIALES



National Aeronautics and Space Administration, USA



Centre National de la Recherche Scientifique, France



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Cruise Objectives

Routine operations

Multiple Biospherical's C-OPS (Compact Optical Profiling System) radiometric profiles are to occur on 0-150 m at the BOUSSOLE site within about 3 hours of satellite overhead passes (of MERIS in particular) 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 C-OPS 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. CTD deployments are required at the start and the end of the C-OPS 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, AC9 (from July 2002) and Eco-BB3 (from June 2003), seawater samples are to be collected, filtered and stored into liquid nitrogen for HPLC pigment and particle absorption spectrophotometric filter analysis in the lab. Three replicates samples are to be collected at surface for total suspended matter weighting in the lab. From December 2011, hyperspectral absorption measurements are to be performed during the CTD deployments using a new "IOP package" including a Hobilabs hyperspectral absorption-meter (a-sphere), a backscattering meter (Hydroscat-6) and a spectral transmissometer (Gamma-4).

For one day of each cruise, in addition to a depth profile from the CTD, seawater samples are to be collected and filtered for colored dissolved organic matter (from June 2005) and particulate organic carbon (from October 2011) analysis in the lab. Small quantities of seawater are to be fixed with glutaraldehyde for cytometric analysis (from December 2011).

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 six fixed locations on-route from BOUSSOLE (see map in appendix). The time of the day of this transect should be similar for each cruise, if possible to minimise the influence of diurnal variability.

For one day of each cruise, three divers will check the underwater state of the buoy structure and instrumentation, take some pictures for archiving, clean the sensor optical surfaces, and then take again some pictures after cleaning. Divers will also put a neoprene cap on the HS4 and on the transmissometers for acquiring three dark measurements (started in April 2009).

Further details about these operations and the protocols are to be found in:

Antoine, D. M. Chami, H. Claustre, F. D'Ortenzio, A. Morel, G. Bécu, B. Gentili, F. Louis, J. Ras, E. Roussier, A.J. Scott, D. Tailliez, S. B. Hooker, P. Guevel, J.-F. Desté, C. Dempsey and D. Adams. 2006, BOUSSOLE: a joint CNRS-INSU, ESA, CNES and NASA Ocean Color Calibration And Validation Activity. NASA Technical memorandum N° 2006 - 214147, 61 pp.

http://www.obs-vlfr.fr/Boussole/html/publications/pubs/BOUSSOLE_TM_214147.pdf

Additional operations

No additional operations.

Cruise Summary

Only the first cruise day was used, because of the bad weather during the rest of the cruise. The first day, weather conditions were not optimal the morning and much better during the afternoon and the night. A CTD cast with sampling at the BOUSSOLE site and the transect were performed.

Wednesday 07 March 2012

The first day, weather conditions were not optimal the morning (H1/3 1.5 to 2m) but the sea slaked off gradually during the afternoon (H1/3 2 to 1.2m). When arrived at the BOUSSOLE site, the sky was blue but it was too late to perform optical profiles. 1 CTD cast with water sampling and 1 Secchi disk were performed. Then the CTD transect was performed.

Thursday 08 March 2012

Bad weather prevented departure from the Nice harbour.

Friday 09 March 2012

Bad weather prevented departure from the Nice harbour.

Saturday 10 March 2012

The last day, when arrived at the BOUSSOLE site, weather conditions were worse than forecasted and prevented working. Only a CISCO connection with the buoy was attempt but failed.

Cruise Report

Wednesday 07 March 2012 (UTC)

People on board: Emilie Diamond and Grigor Obolensky.

1210 Departure from the Nice harbour.
1535 Arrival at the BOUSSOLE site.
1545 CTD 01, 400 m with water sampling at 400, 150, 80, 70, 60, 50, 40, 30, 20, 10 and 5 m for HPLC, a_p, TSM, POC, CDOM and cytometry.
1630 Secchi disk 01 (15 m).
1635 Departure to the first transect station.
1725 CTD 02, 400 m, station 01 (43°25'N 07°48'E).
1825 CTD 03, 400 m, station 02 (43°28'N 07°42'E).
1920 CTD 04, 400 m, station 03 (43°31'N 07°37'E).
2020 CTD 05, 400 m, station 04 (43°34'N 07°31'E).
2115 CTD 06, 400 m, station 05 (43°37'N 07°25'E).
2205 CTD 07, 400 m, station 06 (43°39'N 07°21'E).
2230 Departure to the Nice harbour.
2255 Arrival at the Nice harbour.

Thursday 08 March 2012

Bad weather prevented departure from the Nice harbour.

Friday 09 March 2012

Bad weather prevented departure from the Nice harbour.

Saturday 10 March 2012 (UTC)

People on board: Emilie Diamond and Grigor Obolensky.

0630 Departure from the Nice harbour.
0945 Arrival at the BOUSSOLE site.
1000 CISCO connection with the buoy: unsuccessful.
1015 Departure to the Nice harbour.
1320 Arrival at the Nice harbour.

Problems identified during the cruise

- The first day, bad weather prevented the work at the BOUSSOLE site until the end of the afternoon.
- The three last days, the bad weather prevented the departure from the Nice harbour or the work at the BOUSSOLE site.
- Data from the Wet Labs CDOM fluorometer were still corrupted in spite of the cleaning of the instrument and of the cable connectors.

Calculated Swath paths for the MERIS Sensor (Esov NG Software)

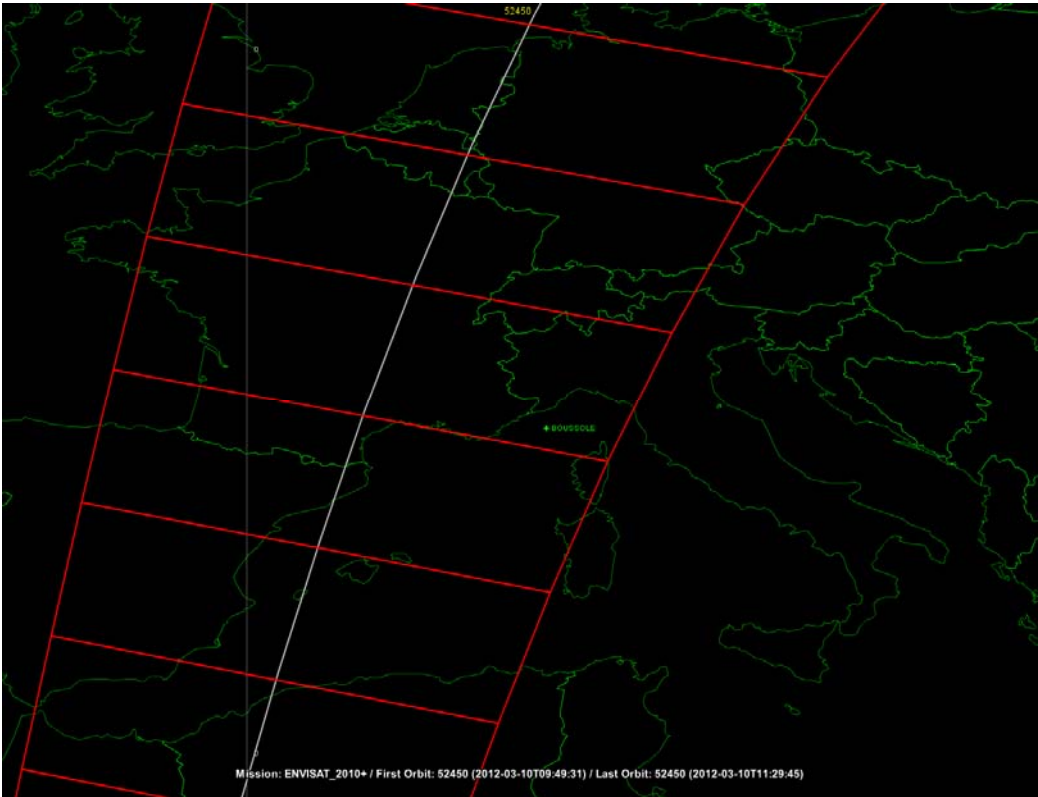
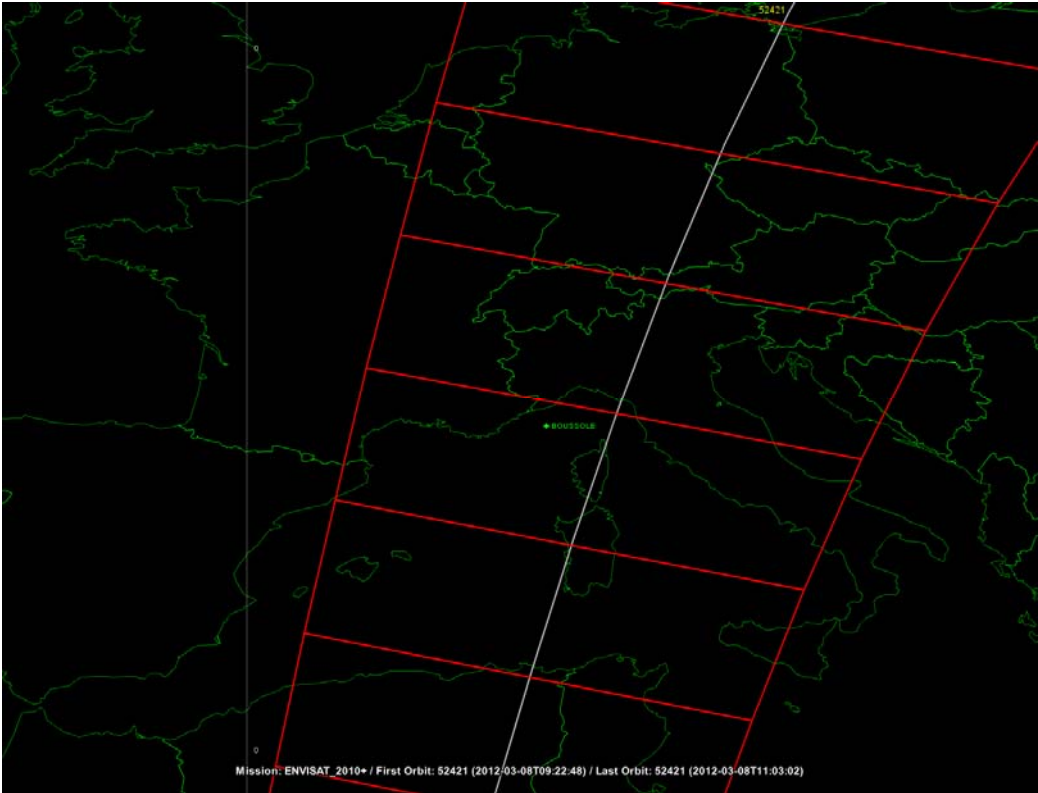
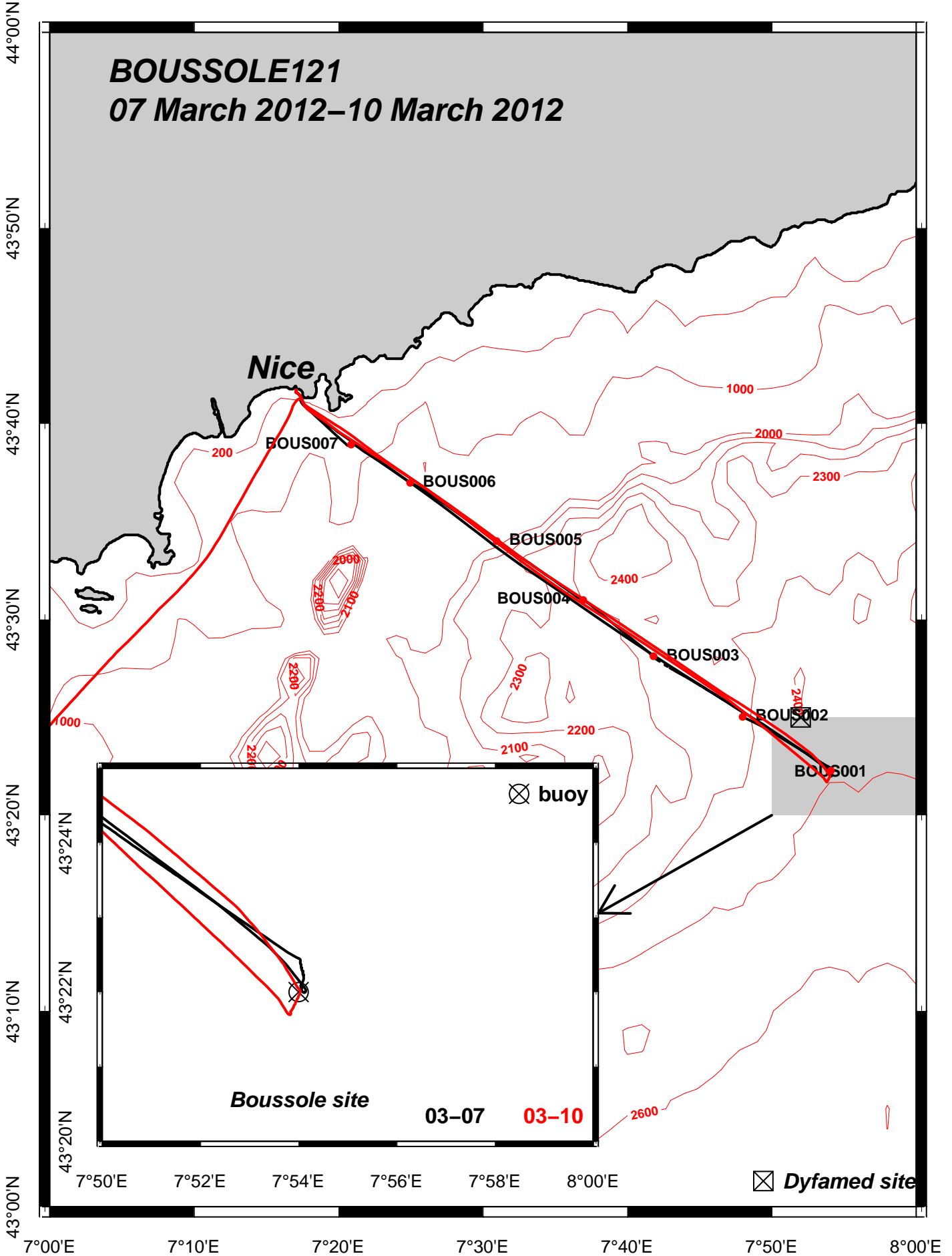


Figure 1. Calculated swath path for MERIS (Esov NG software) above the BOUSSOLE site for the 08th and 10th of March 2012.

Appendices

BOUSSOLE121

07 March 2012–10 March 2012

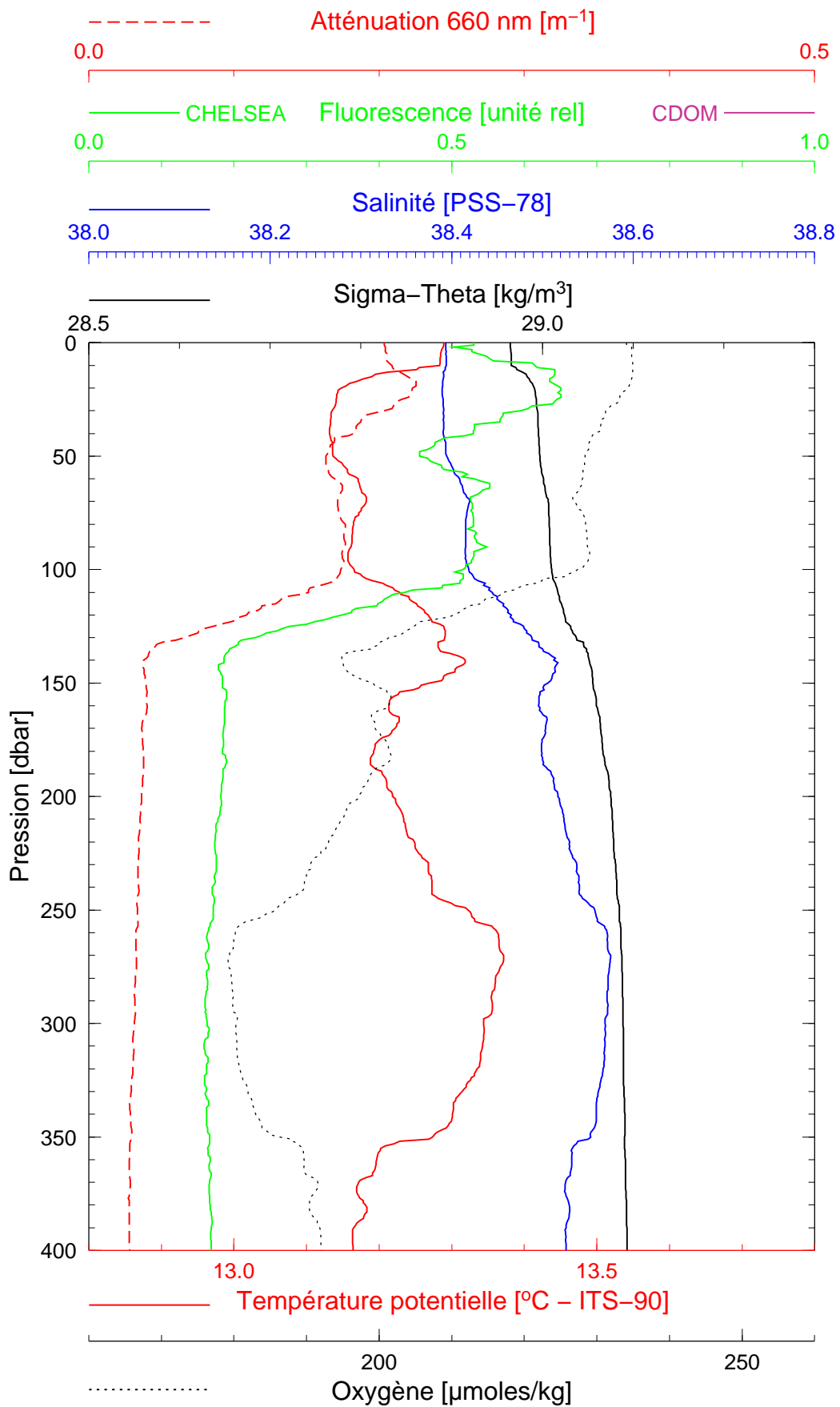


BOUSSOLE 121

07/03/2012

BOUS120307_01

BOUS001



Date 07/03/2012
Heure déb 15h 49min [TU]

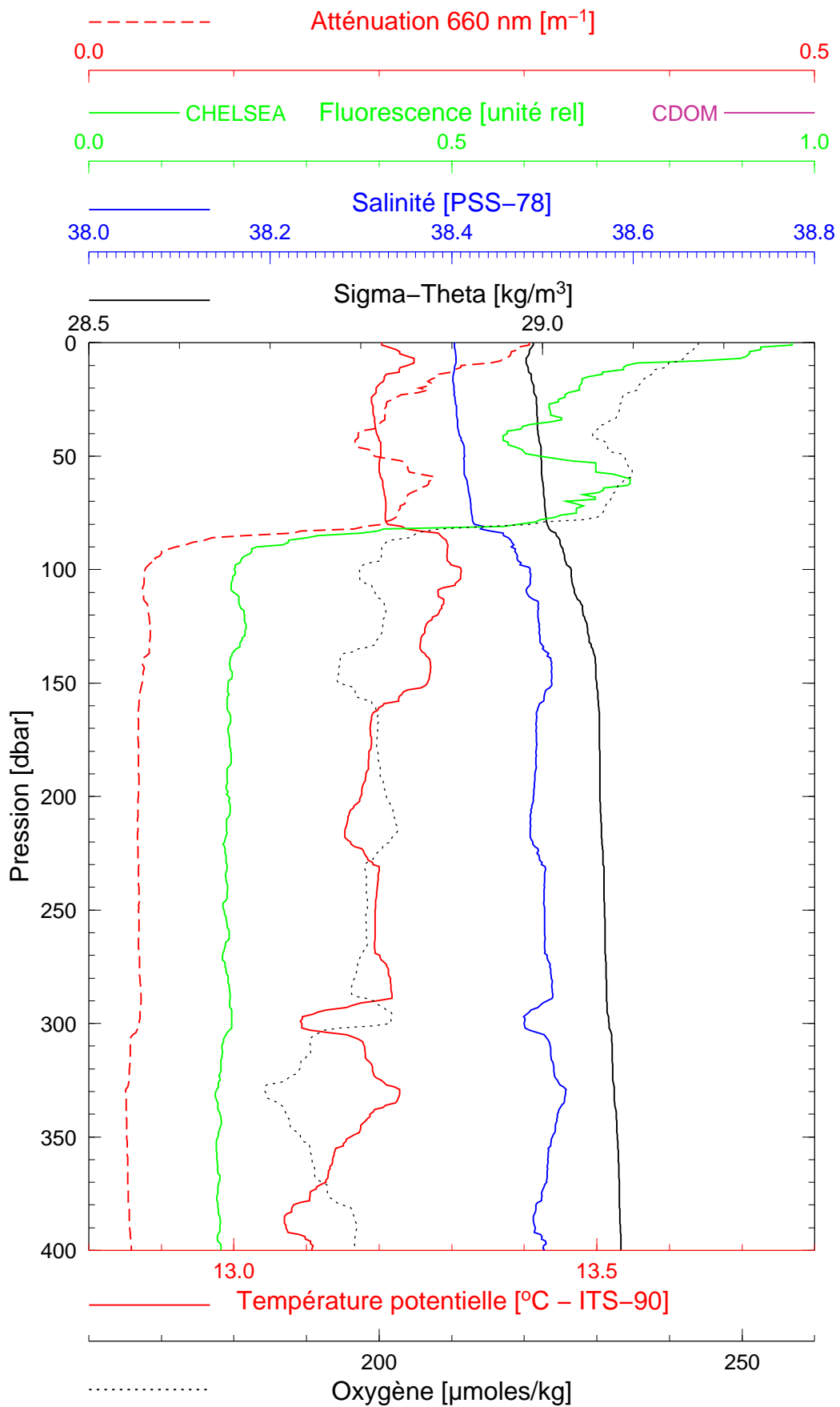
Latitude 43°22.276 N
Longitude 07°54.089 E

BOUSSOLE 121

07/03/2012

BOUS120307_02

BOUS002



Date 07/03/2012
Heure déb 17h 28min [TU]

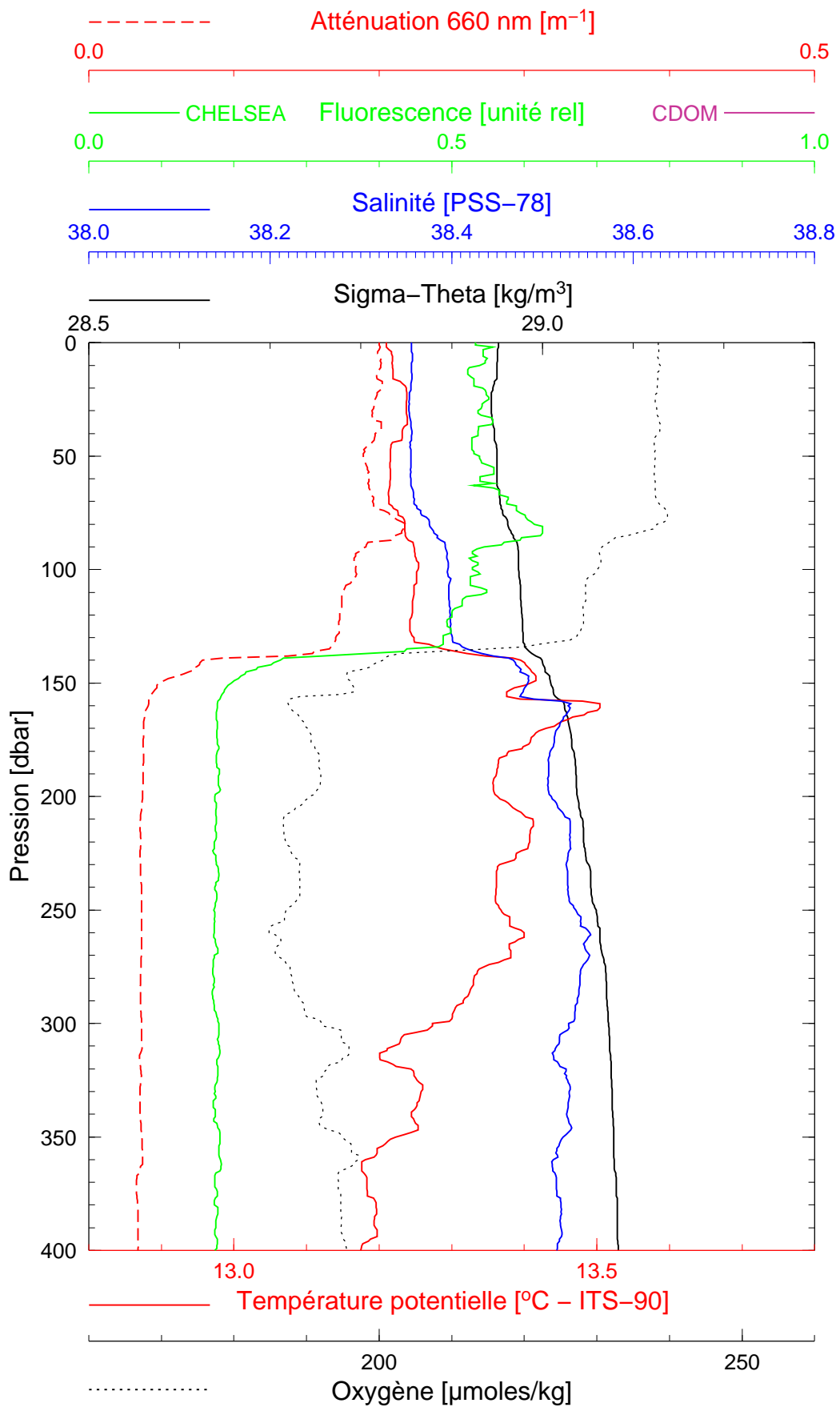
Latitude 43°25.027 N
Longitude 07°47.981 E

BOUSSOLE 121

07/03/2012

BOUS120307_03

BOUS003



Date 07/03/2012
Heure déb 18h 29min [TU]

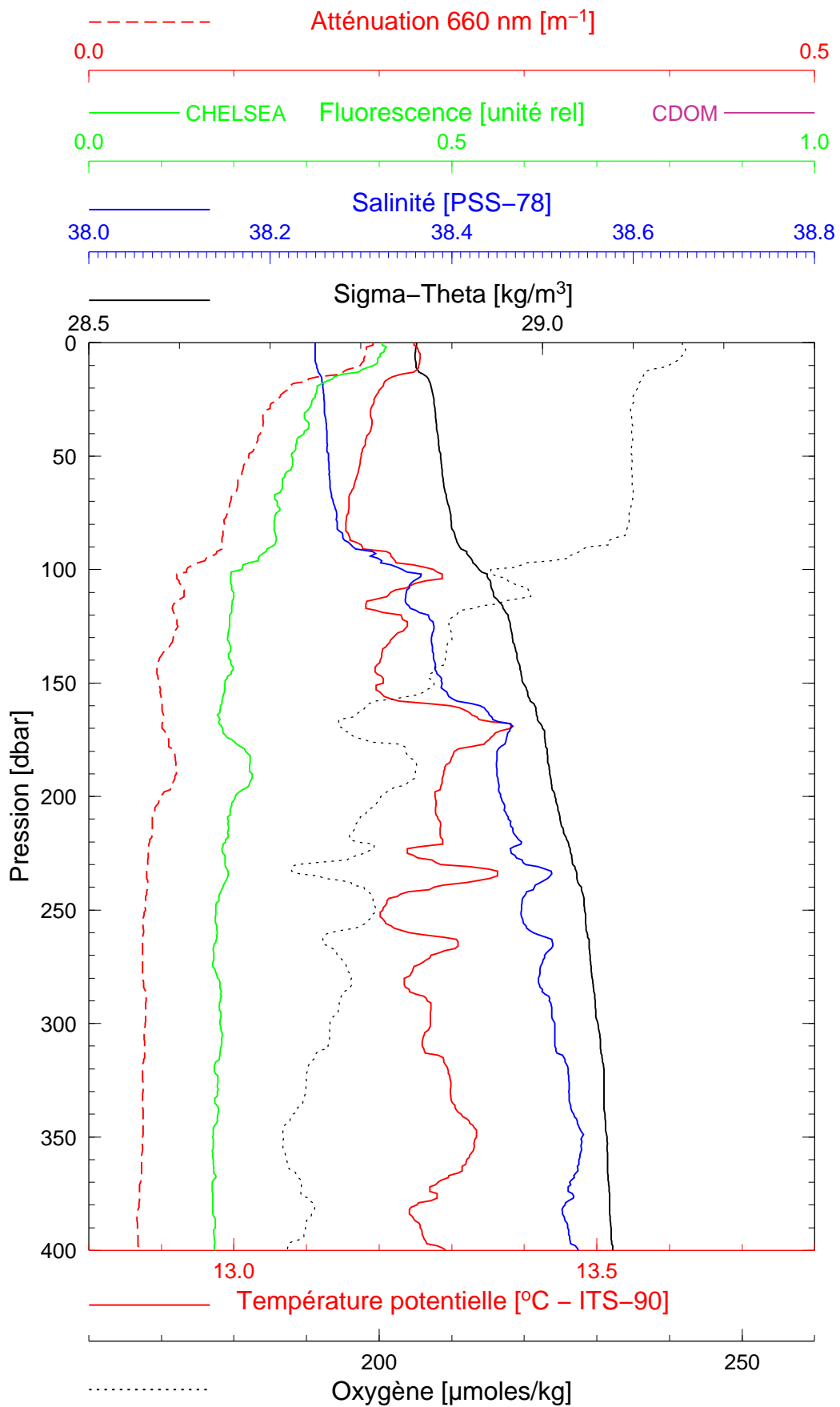
Latitude 43°28.123 N
Longitude 07°41.811 E

BOUSSOLE 121

07/03/2012

BOUS120307_04

BOUS004



Date 07/03/2012
Heure déb 19h 22min [TU]

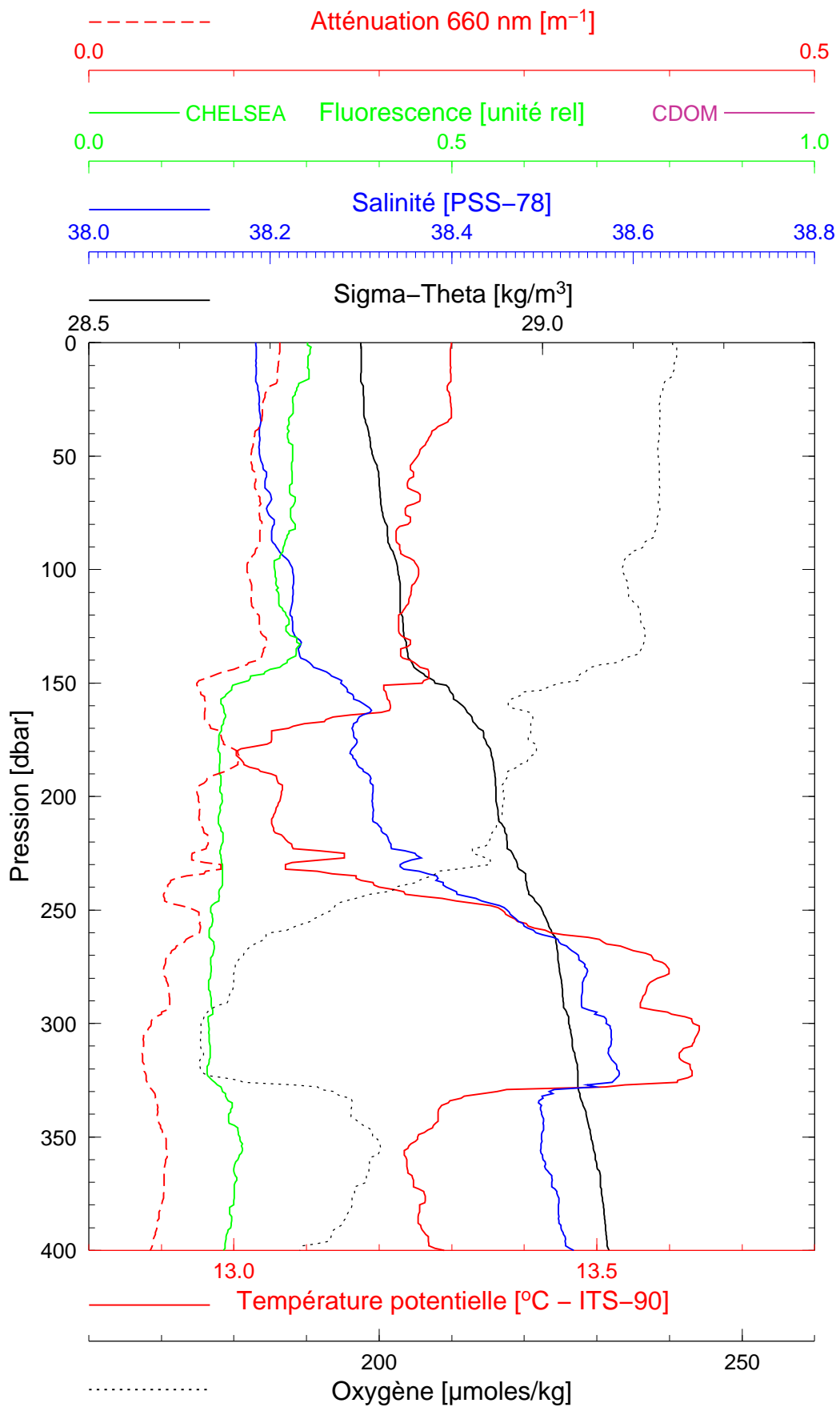
Latitude 43°30.996 N
Longitude 07°36.941 E

BOUSSOLE 121

07/03/2012

BOUS120307_05

BOUS005



Date 07/03/2012

Latitude 43°34.010 N

Heure déb 20h 20min [TU]

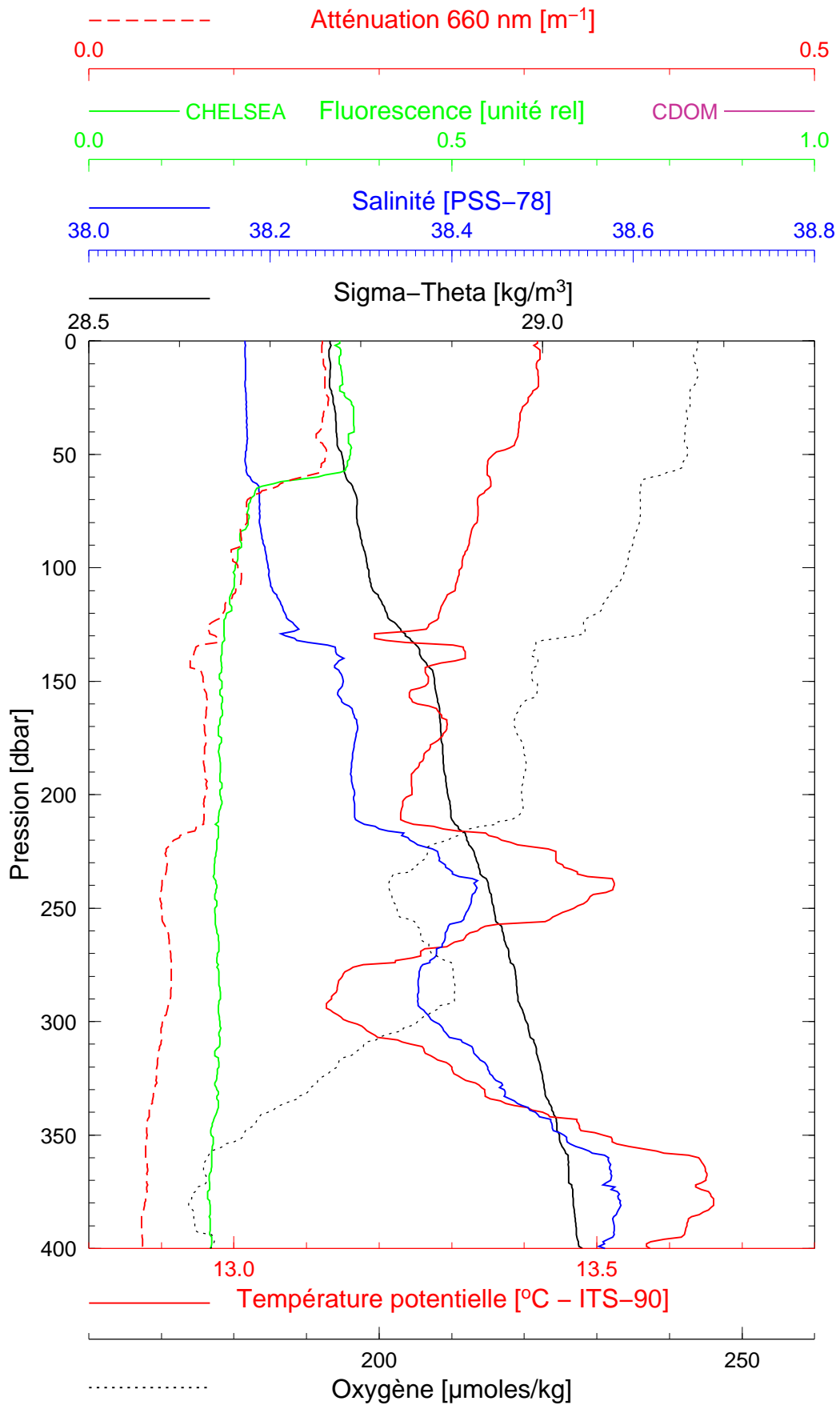
Longitude 07°30.942 E

BOUSSOLE 121

07/03/2012

BOUS120307_06

BOUS006



Date 07/03/2012
Heure déb 21h 18min [TU]

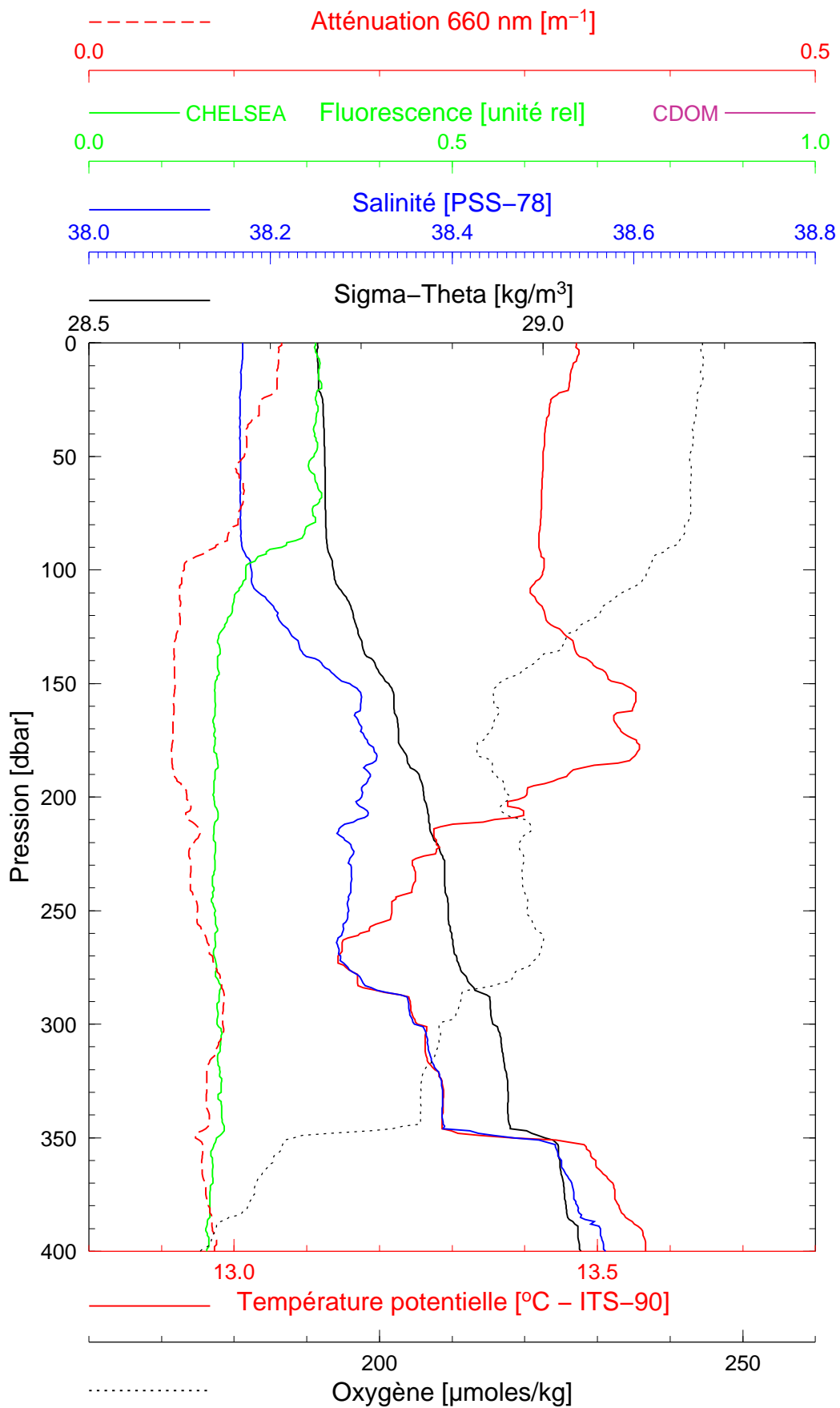
Latitude 43°36.984 N
Longitude 07°24.957 E

BOUSOLE 121

07/03/2012

BOUS120307_07

BOUS007



Date 07/03/2012
Heure déb 22h 06min [TU]

Latitude 43°38.937 N
Longitude 07°20.874 E