

# BOUSSOLE Monthly Cruise Report

**Cruise 140**

**October 19 - 22, 2013**

Duty Chief: Melek Golbol ([golbol@obs-vlfr.fr](mailto:golbol@obs-vlfr.fr))

Vessel: R/V Téthys II  
(Captain: Renaud Le Bourhis)

Science Personnel: Melek Golbol, Léo Lacour and Vincent Taillandier.

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



Deployment of the CTD Rosette at the BOUSSOLE site from the deck of the R/V Téthys II.

**BOUSSOLE project**

**ESA/ESRIN contract N° 13226/10/I-NB**

*November 06, 2013*



## 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'Études Spatiales, France

CENTRE NATIONAL D'ÉTUDES SPATIALES



National Aeronautics and Space Administration, USA



Centre National de la Recherche Scientifique, France



Université Pierre & Marie Curie, France



Observatoire Océanologique de Villefranche/mer, France

## Contents

1. Cruise Objectives
2. Cruise Summary
3. Cruise Report
4. Problems identified during the cruise

## Appendices

## Cruise Objectives

### Routine operations

Multiple Biospherical's C-OPS (Compact Optical Profiling System) radiometric profiles are performed at the BOUSSOLE site 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. The CTD package also includes a Chl fluorometer. Additional instrumentation for measurement of inherent optical properties has been added from December 2011. The package includes a hyperspectral absorption meter (Hobilabs a-sphere), a multispectral backscattering meter (Hobilabs Hydrosat-6) and a multispectral beam transmissometer (Hobilabs Gamma-4). Seawater samples are to be collected, filtered and stored into liquid nitrogen for subsequent 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.

Operations that have to be performed in each cruise include:

- Collection and filtration of seawater samples for colored dissolved organic matter (from June 2005) and particulate organic carbon (from October 2011) analyses in the lab. Small quantities of seawater are to be fixed with glutaraldehyde for cytometric analysis (from December 2011).
- One CTD transect is performed between the BOUSSOLE site and the Port of Nice. This transect consists of six fixed stations on-route from BOUSSOLE (see map in appendix). Whenever feasible, this transect should be performed at a similar time for each cruise, in order to minimise the influence of possible diurnal variability.
- Divers check the underwater state of the buoy structure and instrumentation, take pictures for archiving, clean the sensor optical surfaces, and then take again some pictures after cleaning. Divers also put a neoprene cap on the backscattering meter and on the transmissometers for acquiring dark measurements (started in April 2009).

Further details about these operations and the data collection and processing 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](http://www.obs-vlfr.fr/Boussole/html/publications/pubs/BOUSSOLE_TM_214147.pdf)

### Additional operations

A profiling float was deployed at the BOUSSOLE site during this cruise for testing by the Marine Optics and Remote Sensing Lab - Laboratoire d'Océanographie de Villefranche. It was the first operational deployment of this new profiling float NKE Provor CTS5. This new Provor will serve as a basis for ProVal and ProIce profiling floats. For this testing phase, it is equipped only with a CTD.

## Cruise Summary

The first day was used for retrieving data from the buoy, deploying a profiling float, 1 CTD cast with water sampling at the BOUSSOLE site, optical profiles and the CTD transect. The second day was used for optical profiles and 1 CTD cast with water sampling at the BOUSSOLE site. The last two days, restrictions from the port authorities prevented departure from the Nice harbour.

### Saturday 19 October 2013

The first day, the sea state was slight with a moderate breeze. The sky was blue and the visibility was good. When arrived at the BOUSSOLE site, a direct connection with the buoy was established for data retrieval. The ARGOS and CISCO connectors on the top of the buoy were cleaned. In the meantime, a profiling float was

deployed at the BOUSSOLE site. Next, 1 CTD cast with water sampling and three C-OPS profiles were performed at the BOUSSOLE site. Then, the CTD transect was performed.

## Sunday 20 October 2013

The second day, the sea state was slightly rough with a fresh breeze. The sky was overcast and the visibility was medium. Three C-OPS profiles and 1 CTD cast with water sampling were performed at the BOUSSOLE site. The weather conditions were not optimal to perform other optical profiles and Secchi disk ( $H\ 1/3 > 1\text{m}$ , wind speed  $>17\text{ kt}$ , white caps and cloudy sky).

## Monday 21 October 2013

Restrictions from the port authorities prevented departure from the Nice harbour. We were not allowed working in Zonex 23, 26 and 28.

## Tuesday 22 October 2013

Restrictions from the port authorities prevented departure from the Nice harbour. We were not allowed working in Zonex 23, 26 and 28.

## Cruise Report

### Saturday 19 October 2013 (UTC)

People on board: Melek Golbol, Léo Lacour and Vincent Taillandier.

0520 Departure from the Nice harbour.  
0845 Arrival at the BOUSSOLE site.  
0855 Deployment of a profiling float at the BOUSSOLE site.  
0900 Direct connection with the buoy and data retrieval. Cleaning of the ARGOS and CISCO connectors on the top of the buoy.  
0905 CTD 01, 400 m with water sampling at 400, 200, 150, 80, 70, 60, 50, 40, 30, 20, 10 and 5 m for HPLC,  $a_p$ , TSM, POC and Cytometry.  
1020 C-OPS 01, 02, 03.  
1155 CTD 02, 400 m, station 01 (43°25'N 07°48'E).  
1255 CTD 03, 400 m, station 02 (43°28'N 07°42'E).  
1345 CTD 04, 400 m, station 03 (43°31'N 07°37'E).  
1440 CTD 05, 400 m, station 04 (43°34'N 07°31'E).  
1535 CTD 06, 400 m, station 05 (43°37'N 07°25'E).  
1630 CTD 07, 400 m, station 06 (43°39'N 07°21'E), dark HS6.  
1655 Departure to the Nice harbour.  
1720 Arrival at the Nice harbour.

### Sunday 20 October 2013 (UTC)

People on board: Melek Golbol and Vincent Taillandier.

0455 Departure from the Nice harbour.  
0815 Arrival at the BOUSSOLE site.  
0830 C-OPS 04, 05, 06.  
0920 CTD 08, 400 m, with water sampling at 200, 150, 80, 70, 60, 50, 40, 30, 20, 10 and 5 m for HPLC,  $a_p$ , TSM.  
1000 Bad weather: no optical profiles, no Secchi disk.  
Departure to the Nice harbour.  
1350 Arrival at the Nice Harbour.

## Monday 21 October 2013

Restrictions from the port authorities prevented departure from the Nice harbour. We were not allowed working in Zonex 23, 26 and 28.

Friday 22 October 2013

Restrictions from the port authorities prevented departure from the Nice harbour. We were not allowed working in Zonex 23, 26 and 28.

### **Problems identified during the cruise**

- The last two days, restrictions from the port authorities prevented departure from the Nice harbour (We were not allowed working in Zonex 23, 26 and 28).

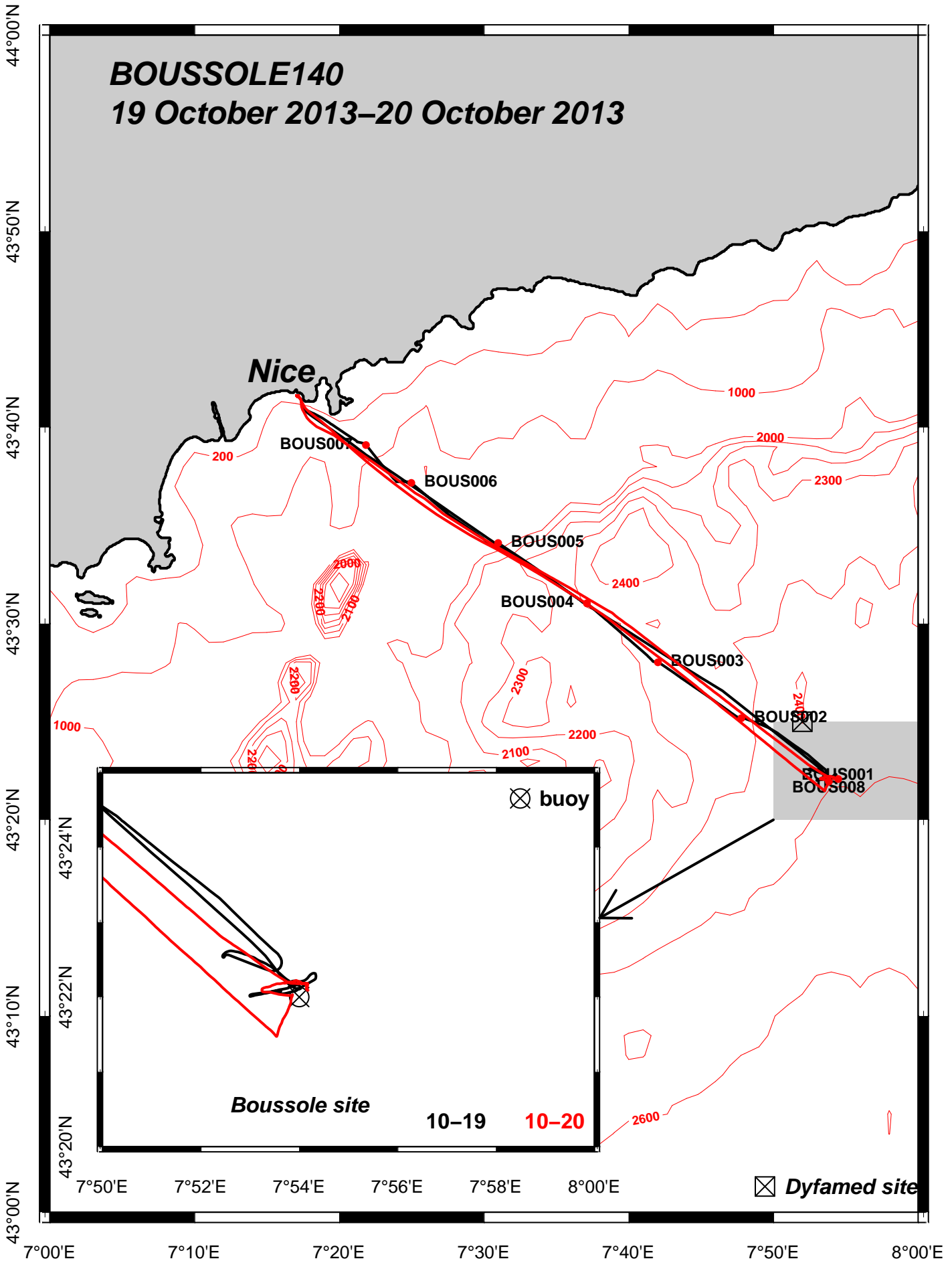
## **Appendices**





# BOUSSOLE140

19 October 2013–20 October 2013

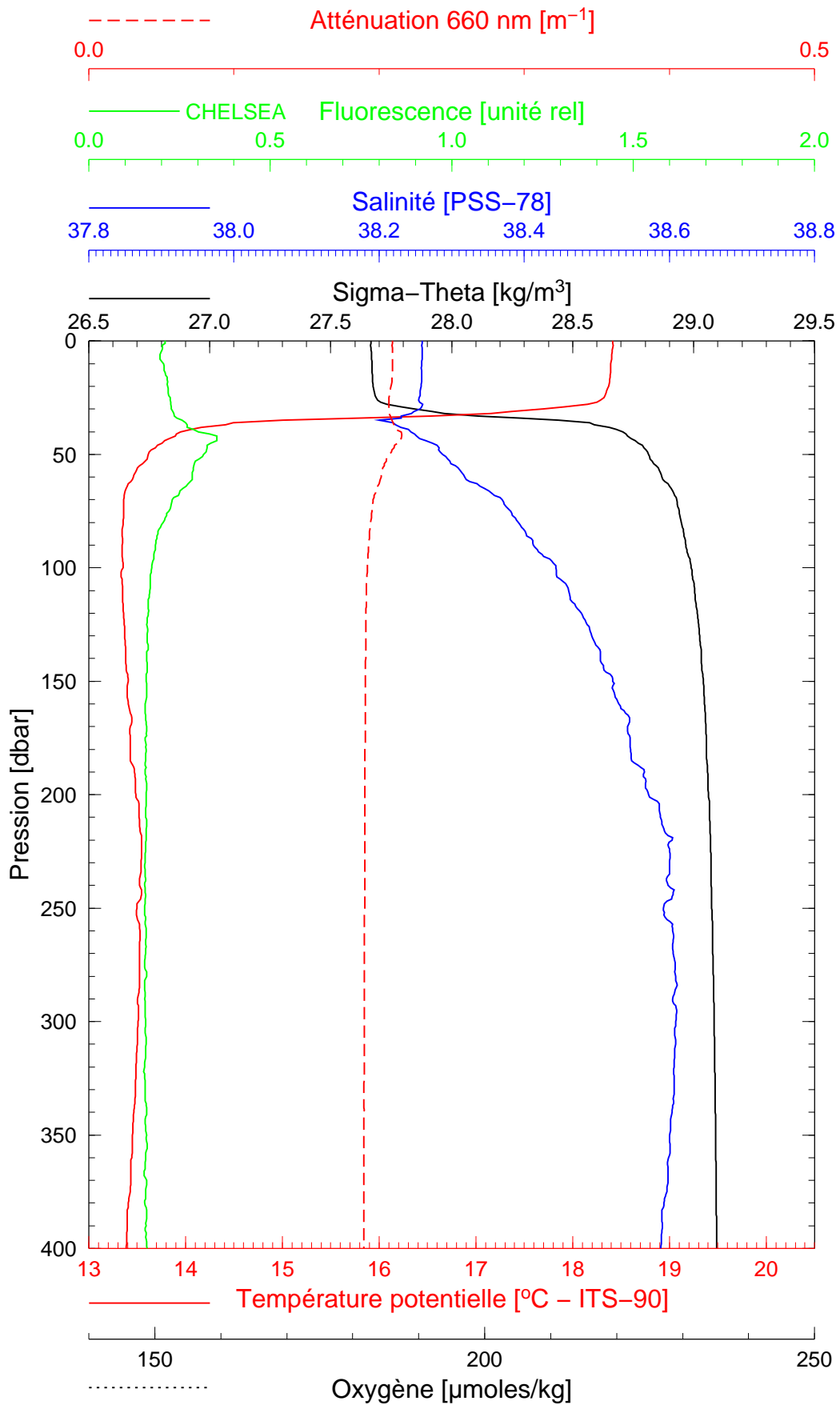


BOUSSOLE 140

19/10/2013

BOUS131019\_01

BOUS001



Date 19/10/2013

Latitude  $43^{\circ}22.080 N$

Heure déb 09h 03min [TU]

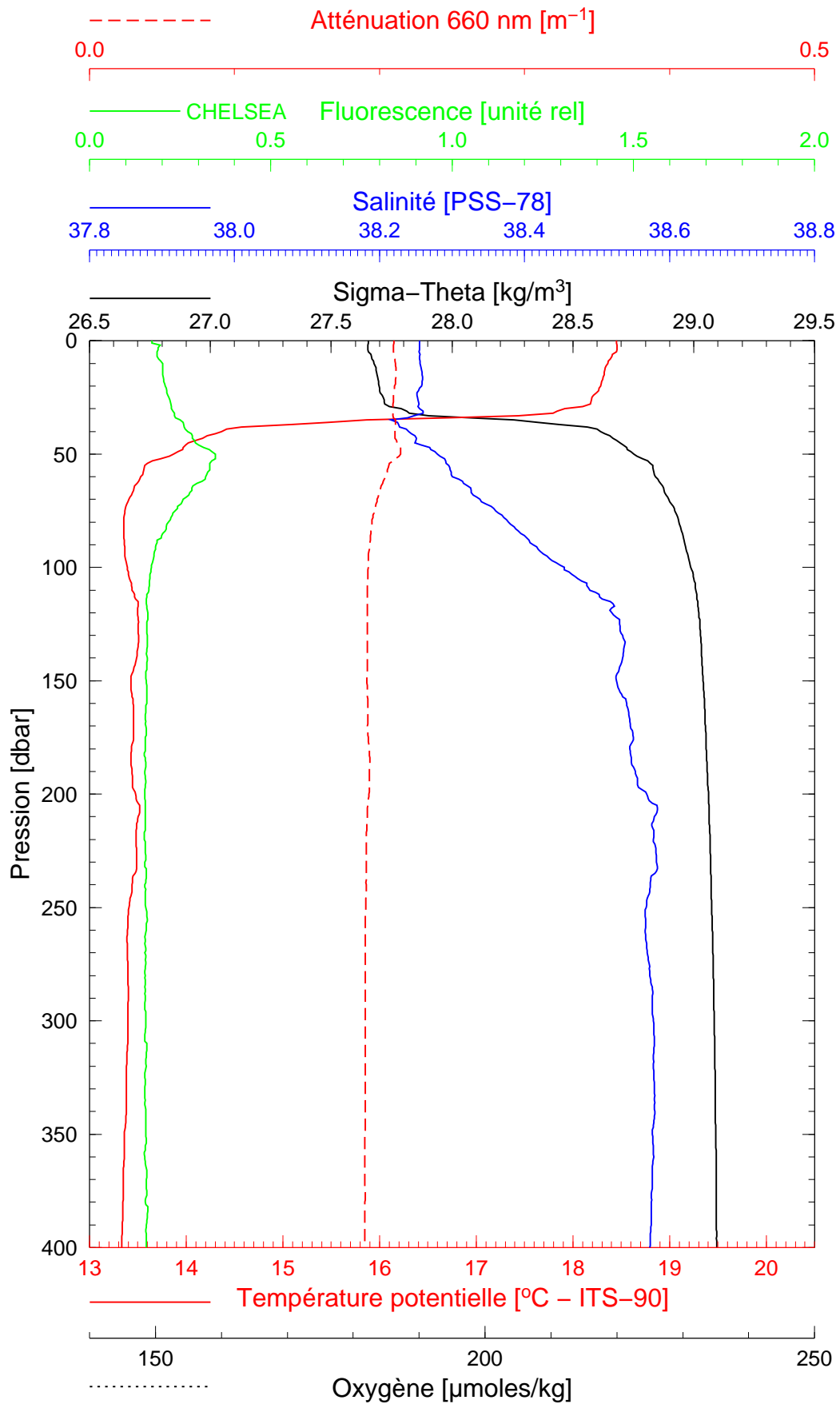
Longitude  $07^{\circ}54.480 E$

BOUSSOLE 140

19/10/2013

BOUS131019\_02

BOUS002



Date 19/10/2013

Latitude 43°25.180 N

Heure déb 11h 57min [TU]

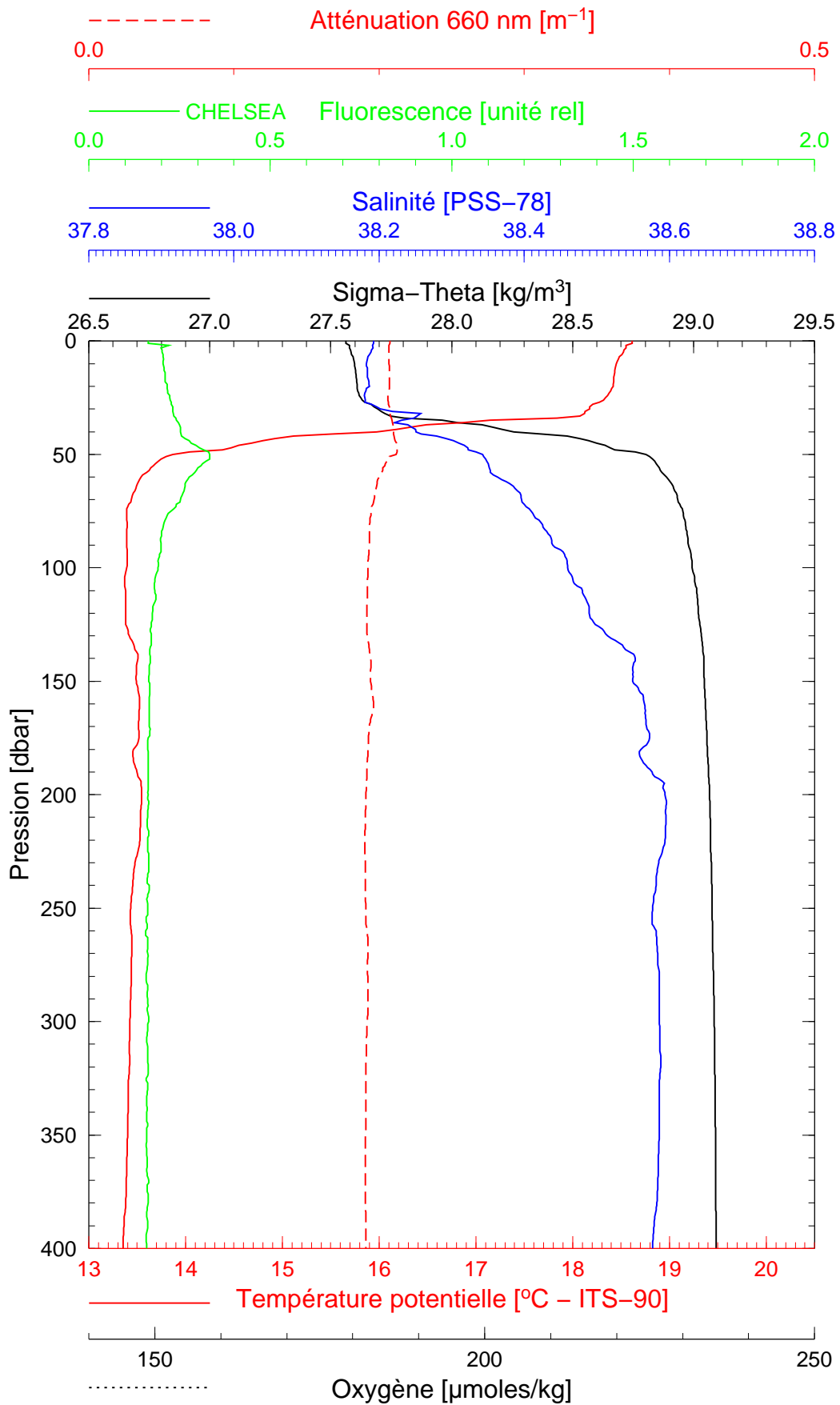
Longitude 07°47.780 E

BOUSSOLE 140

19/10/2013

BOUS131019\_03

BOUS003



Date 19/10/2013

Latitude 43°28.030 N

Heure déb 12h 53min [TU]

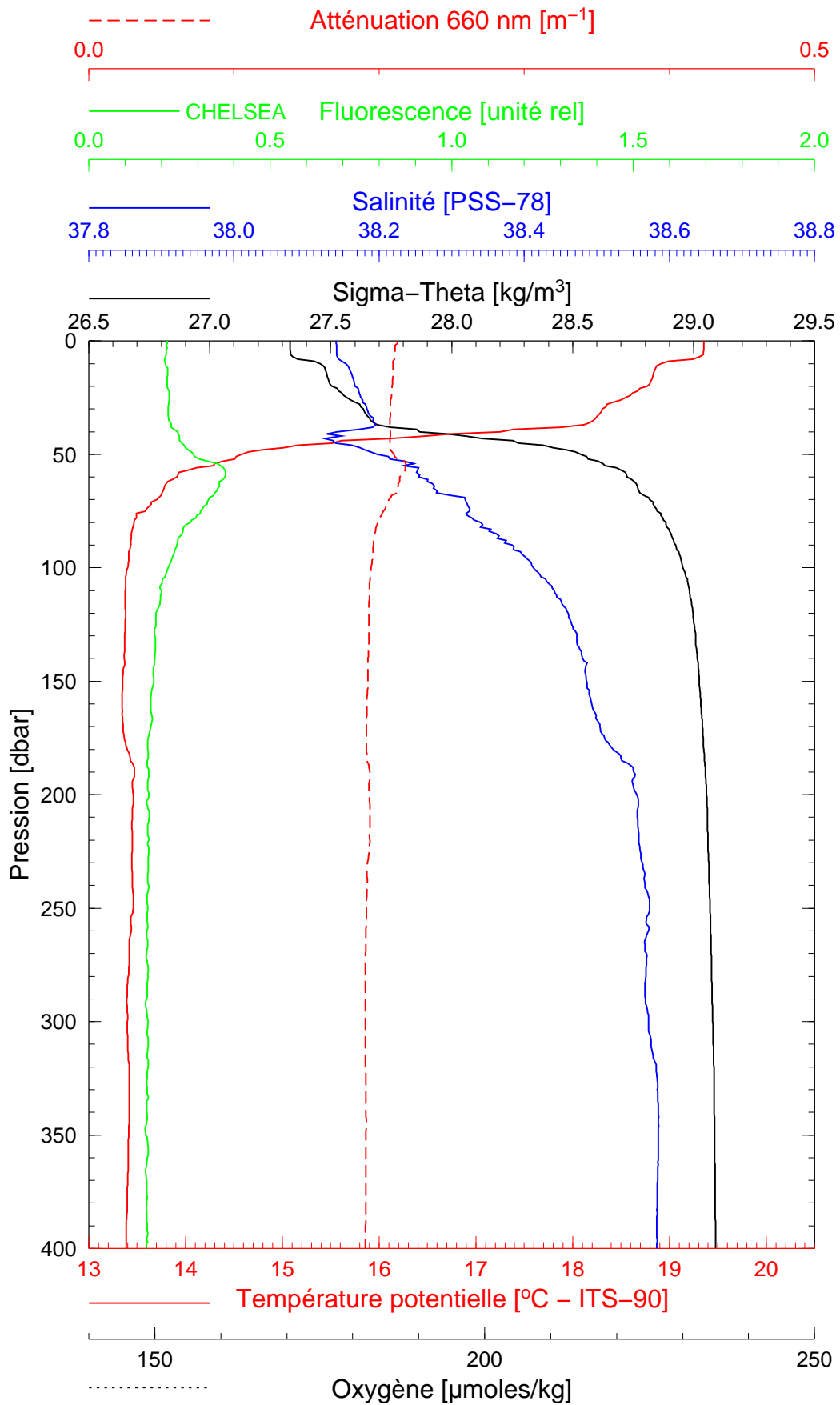
Longitude 07°42.020 E

BOUSSOLE 140

19/10/2013

BOUS131019\_04

BOUS004



Date 19/10/2013

Latitude 43°31.040 N

Heure déb 13h 44min [TU]

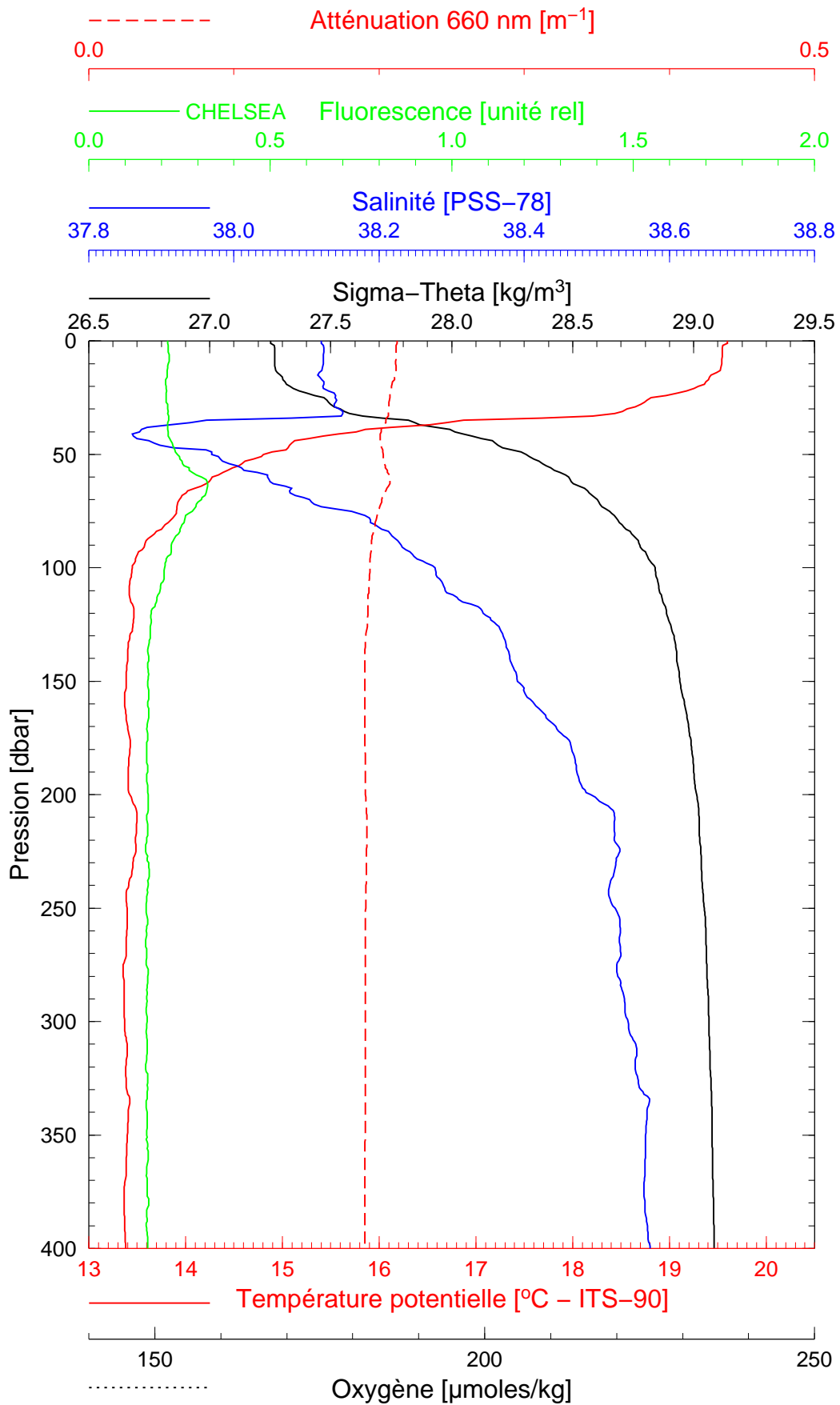
Longitude 07°37.110 E

BOUSSOLE 140

19/10/2013

BOUS131019\_05

BOUS005



Date 19/10/2013

Latitude  $43^{\circ}34.110 N$

Heure déb 14h 39min [TU]

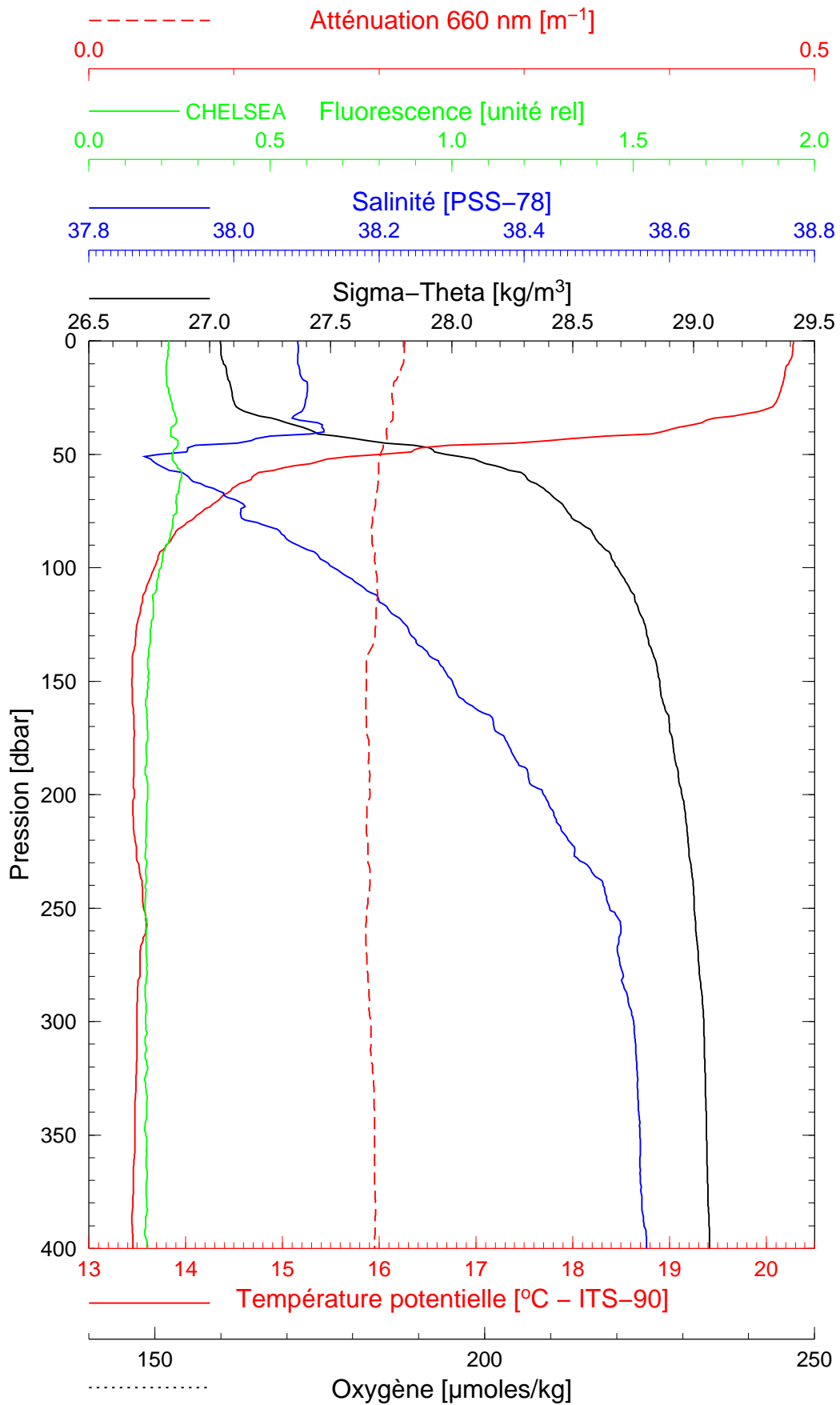
Longitude  $07^{\circ}30.980 E$

BOUSSOLE 140

19/10/2013

BOUS131019\_06

BOUS006



Date 19/10/2013  
Heure déb 15h 33min [TU]

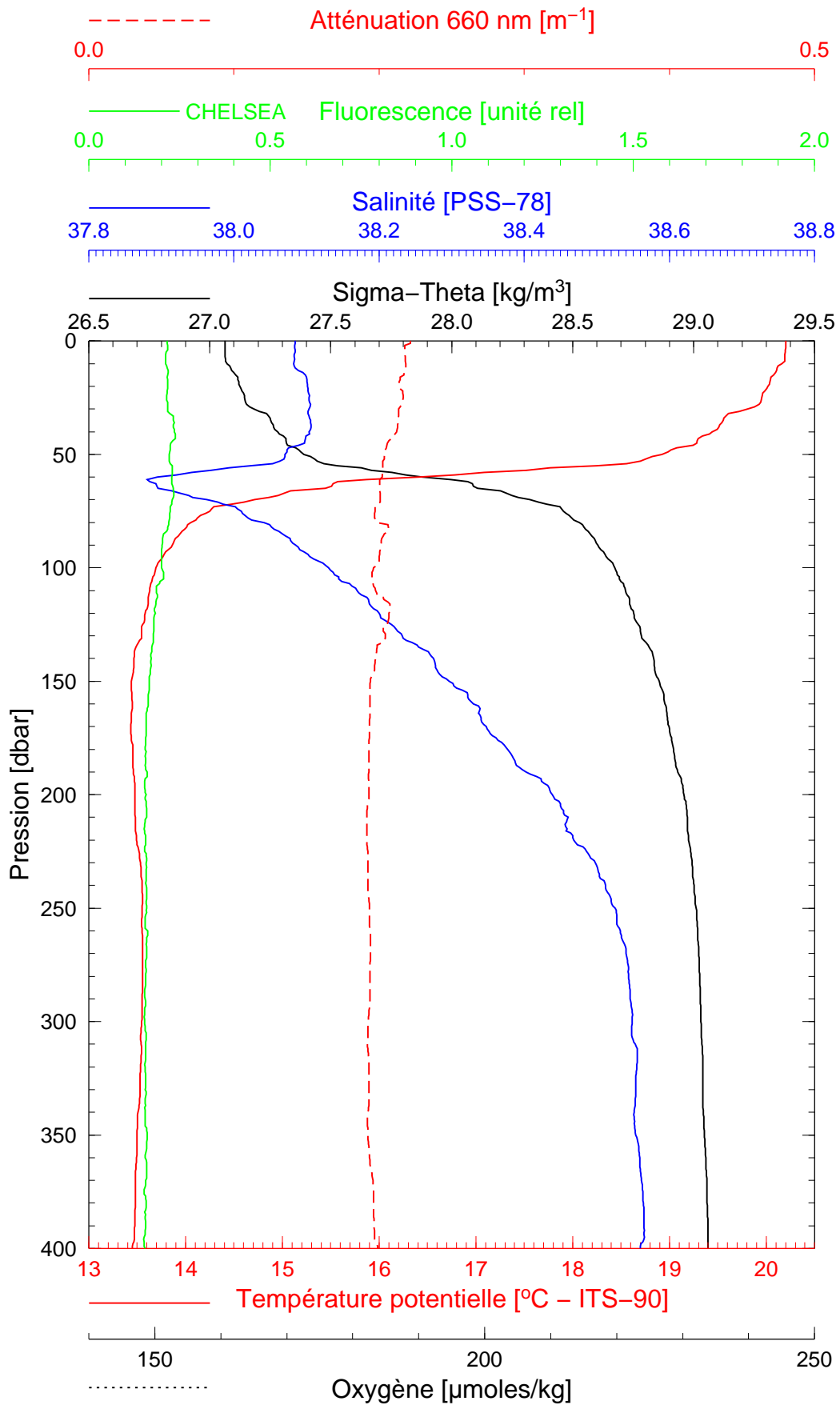
Latitude 43°37.174 N  
Longitude 07°24.980 E

BOUSSOLE 140

19/10/2013

BOUS131019\_07

BOUS007



Date 19/10/2013

Heure déb 16h 27min [TU]

Latitude  $43^{\circ}39.105 N$

Longitude  $07^{\circ}21.845 E$

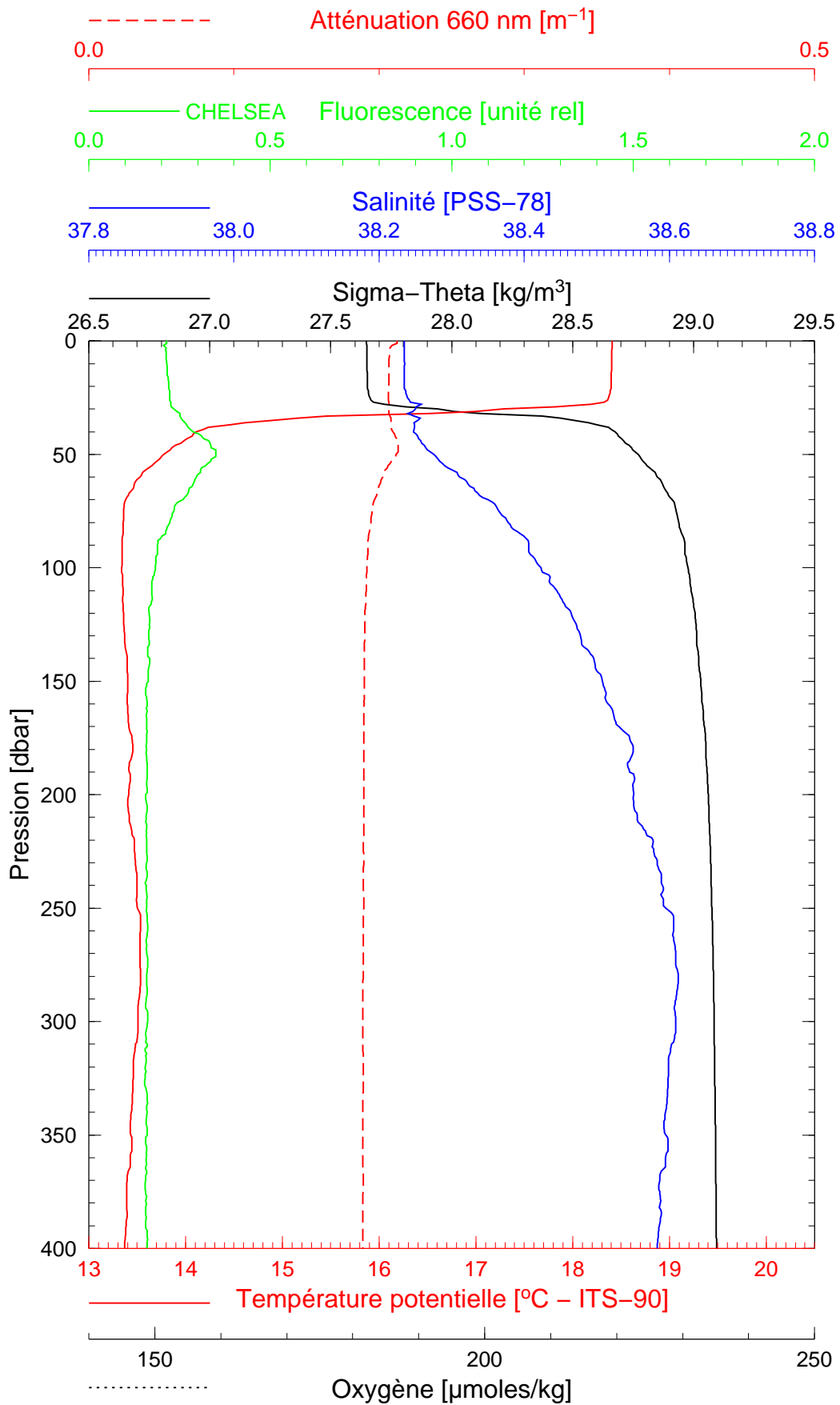


BOUSSOLE 140

20/10/2013

BOUS131020\_01

BOUS008



Date 20/10/2013

Heure déb 09h 22min [TU]

Latitude 43°21.950 N

Longitude 07°53.830 E