# BOUSSOLE Monthly Cruise Report

## Cruise 33
## June 02 – 05, 2004

Duty Chief: Alec Scott (alec.scott@obs-vlfr.fr)
Vessel: R/V Téthys II
(Captain: Rémy Lafond)

Science Personnel: Alec Scott, Dominique Tailliez, David Antoine, Aurelie Laudea, Davy Merien and Marc Tedetti

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

Fig 1. Exceptionally clear conditions provide a clear view of the french Alpes from the Boussole site 30 miles away. Just behind the buoy can be seen the high speed ferry on its way out to Corsica from Nice.

**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

# Contents

# Cruise Objectives

Multiple SPMR profiles are to occur within 1 hour of satellite overhead passes of SeaWiFS and MERIS and around solar noon. 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), SIMBADA measurements are to be performed consecutively where possible with SPMR profiles. If sea conditions are poor but sky is good, SIMBADA 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 LN2 for HPLC pigment and particule absorption spectrophotometric filter analysis in the lab. A gimbled 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. On other uninterrupted transits between Nice and Boussole, Simbada measurements of optical thickness should be taken every 30 minutes to characterise variability between the Cap Ferrat sun photometer site and the Boussole site.

Davey Merien will be assisting Dominique Tailliez with CTD operations in order to establish an efficient protocol for processing the data from the AC9.

Three private commercial divers will be aboard to check on the physical state of the buoy below the surface, providing underwater photographs, cleaning the sensors and exchanging the radiometers. A new 3m80 Quiksilver semi-rigid inflatable boat will be used for the first time for these activities.

Other activities will also be performed on the buoy to try to establish communication. Various configurations will be tried with the laptop PC, each time using the direct cable link to bypass the cisco systems.

The mission was one day ahead of the scheduled dates as an arrangement with the ship to allow them more time to transit to their next port of visit.

# Cruise Summary

Wednesday 2nd June
Departure was very late (10h15 local time) due to the need for loading the ship that morning plus problems during the testing of the ctd rosette with two AC9s and the ISUS nitrate sensors. Once on site, the sea conditions were found to be very calm, despite a significant ground swell. The skies in the afternoon were clear as the morning haze lifted. The CTD was launched first thus testing the ISUS unit. This was found to be recording data well but there was a problem such as a bad contact in the cable between the ISUS and the CTD. Therefore, there was no real_time display. There was no Modis pass but the SPMR session coincided with the two SeaWiFS passes. The transect station was performed as far as Station 5.

Thursday 3rd June
Departure was at 06h30 sharp and arrival on site was a few minutes after 10h00. Once again, there was virtually no wind at all and just a gentle swell rolling through.The diver Yves went straight to work by photographing the buoy underwater then cleaning all of the sensors. Using a file and a knife he tried to clean an anode that had been painted by the builder. This turned out to be a very difficult job with the paint being very thick and rubbery. Straight after the diver was back aboard, an attempt was made to communicate with the buoy via a laptop cable link but this happened just a fraction too late so a connection was not able to be established.

In order to provide a comparison with the newly cleaned optics sensors, two SPMR profiles were performed before lunch. Leaving the cleaned sensors in place during lunch provided several measurement periods before they were replaced with newly calibrated sensors.

After lunch, the divers made the instrument exchanges. Stan Hooker's MVD and Boussole's underwater radiometers were replaced with the other sets. This was completed by 14h30. Communication by cable link with the buoy was established at 15h00. The buoy time was found to be 2mins 33 secs ahead of GPS but this was corrected. Node health was reset. The data was successfully uploaded but the event file loading failed on the first file. There were no schedule changes made and the MVD was replaced during this period.

After teh initial haze of the morning, the sky cleared providing good optics skies.

Divers' comments: Neoprene caps for radiometers. 50mm anodes still okay.

Friday 4th June
Departure was again at 6h30 sharp and arrival at site was just before 10h00. Visibility was excellent with the French coastline in very clear sight and also the mountains of Corsica 60 miles away. Sea conditions were very calm with barely a breeze.

The day consisted of SPMR profiling, in particular, using the surface float. The quadrilateral was also completed. All went very well. At 17h00 local time the buoy data was uploaded in order to allow a comparison with the old sensors.

Saturday 5th June

Conditions were fair but a breeze of around 13 knots persisted throughout the morning. The CTD launching the activities for the day encountered electrical problems encountered suggesting a termination problem. A couple of SPMR profileswere made before lunch. Afterwards, the CTD was still showing errors but some samples at 5 and 10 meters were. SPMR profiles were spread through afternoon to cover the two SeaWiFS passes. The breeze decreased in the afternoon.

# Cruise Report

## 2nd June, 2004 (Times UTC)

0815 Depart port of Nice
1125 Arrival at Boussole Site (43°22'N 7°54'E).
1130 CTD Boussole 1. Max 400m. No bottle fired
1215 SPMR in water
1315 SPMR on deck (5 profiles + SeaWiFS 1138 and 1315)
1335 CTD Boussole 2. Max 400m. Bottle depths (m): 10, 5.
1448 CTD Boussole 3. Max 400m. Transect Station 1 (43°25'N 7°28'E).
1545 CTD Boussole 4. Max 400m. Transect Station 2 (43°28'N 7°42'E).
1649 CTD Boussole 5. Max 400m. Transect Station 3 (43°31'N 7°37'E).
1753 CTD Boussole 6. Max 400m. Transect Station 4 (43°34'N 7°31'E).
1857 CTD Boussole 7. Max 400m. Transect Station 5 (43°37'N 7°25'E).
1945 Arrival in port of Nice

## 3rd June, 2004

0430 Depart port of Nice
0802 Arrival at Boussole Site (43°22'N 7°54'E).
0805 Divers on buoy for cleaning sensors and photography
0855 Divers on board
0855 Alec on buoy to attempt communication
0905 SPMR in water.
1025 SPMR on deck (2 profiles +Meris 1018)
1115 Divers in water to exchange radiometers

1230 Divers on board
1255 Alec on buoy to attempt communication
1330 SPMR in water
1420 SPMR on deck (3 profiles)
1449 CTD Boussole 8. Max 400m. Bottle depths (m): 200,100,70,60,50,40,30,20,10,5
1505 CTD on deck
1520 SPMR in water
1605 SPMR on deck (2 profiles)
1610 Depart for port of Nice
1930 Arrival in port of Nice

## 4th June, 2004

0430 Depart port of Nice
0755 Arrival at Boussole Site (43°22'N 7°54'E).
0814 CTD Boussole 9. Max 400m. Bottle depths (m): 200,100,70,60,50,40,30,20,10,5
0835 CTD on deck
0840 SPMR in water
1010 SPMR on deck (3 profiles, 1 surface float + Meris 0947)
1140 SPMR surface float in water
1320 SPMR on deck (4 profiles simultaneously +SeaWiFS 1121,1258)
1344 Start of quadrilateral
1427 End of quadrilateral
1430 SPMR in water
1445 SPMR on deck (1 profile)
1455 Alec on buoy to attempt communication
1519 CTD Boussole 10. Max 400m. Bottle depths (m):10,5
1546 CTD on deck
1550 Depart for port of Nice
1905 Arrival in port of Nice

## 5th June, 2004

0430 Depart port of Nice
0755 Arrival at Boussole Site (43°22'N 7°54'E).
0844 CTD Boussole 11. Max 400m. Bottle fire failure
0902 CTD on deck
0915 SPMR in water
0955 SPMR on deck (2 profiles)
1121 CTD Boussole 12. Max 400m. Bottle depths (m): (200,100,70 not filtered) 10,5
1150 CTD on deck
1200 SPMR in water
1240 SPMR on deck (3 profiles + SeaWiFS 1201)
1315 SPMR in water
1355 SPMR on deck (4 profiles + SeaWiFS 1339)
1400 Depart for port of Nice
1715 Arrival in Port of Nice

# Boussole Site Satellite Overhead Pass Schedule

SeaWiFS: Viewing Times

| Date Time (UTC) | Lat (DEG) | Lon (DEG) | Sat. Azi. | Sat. Elev. | Range (km) | Sun Azi. | Sun Elev. | Tilt | Flags* |
|---|---|---|---|---|---|---|---|---|---|
| 02 Jun 2004 11:38:22 | 43.220 | 7.540 | 115.01 | 32.19 | 1179 | 186.77 | 68.94 | AFT | 2 3 |
| 02 Jun 2004 13:15:49 | 43.220 | 7.540 | 278.57 | 25.90 | 1359 | 235.51 | 59.38 | AFT | 2 3 |
| 03 Jun 2004 12:18:42 | 43.220 | 7.540 | 183.67 | 67.69 | 749 | 210.79 | 66.68 | AFT | 2 |
| 04 Jun 2004 11:21:20 | 43.220 | 7.540 | 108.22 | 22.40 | 1482 | 175.52 | 69.24 | AFT | 2 3 |
| 04 Jun 2004 12:58:55 | 43.220 | 7.540 | 270.83 | 36.35 | 1088 | 229.45 | 62.05 | AFT | 2 |

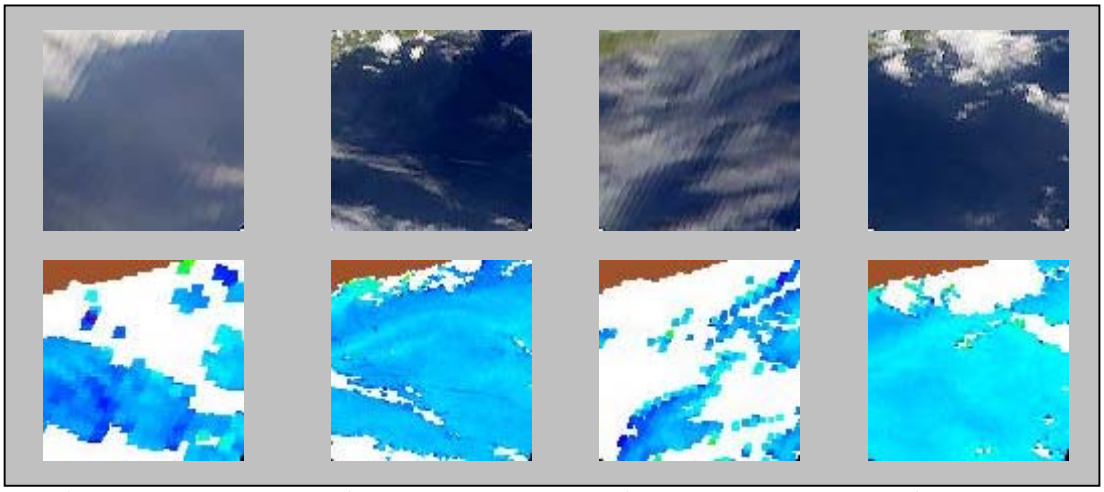
05 Jun 2004 12:01:44 43.220 7.540 134.64 52.86 853 201.19 68.27 AFT 2
05 Jun 2004 13:39:00 43.220 7.540 285.69 16.42 1757 243.16 56.08 AFT 2 3
06 Jun 2004 11:04:17 43.220 7.540 103.54 15.36 1812 164.30 68.89 AFT 2 3
06 Jun 2004 12:42:00 43.220 7.540 255.91 51.43 868 222.40 64.49 AFT 2

MERIS: Viewing Times
Date Time Lat Lon Sat. Sat. Range Sun Sun Tilt Flags*
(UTC) (DEG) (DEG) Azi. Elev. (km) Azi. Elev.
---
03 Jun 2004 10:18:49 43.220 7.540 288.04 64.85 863 139.95 64.71 NADIR 4
04 Jun 2004 09:47:37 43.220 7.540 101.27 67.09 849 126.83 60.64 NADIR
06 Jun 2004 10:24:29 43.220 7.540 288.85 57.57 917 142.01 65.58 NADIR 4

## Ligurian Sea Boussole Site Satellite Images

### SeaWiFS

http://seawifs.gsfc.nasa.gov/cgi/seawifs_region_extracts.pl



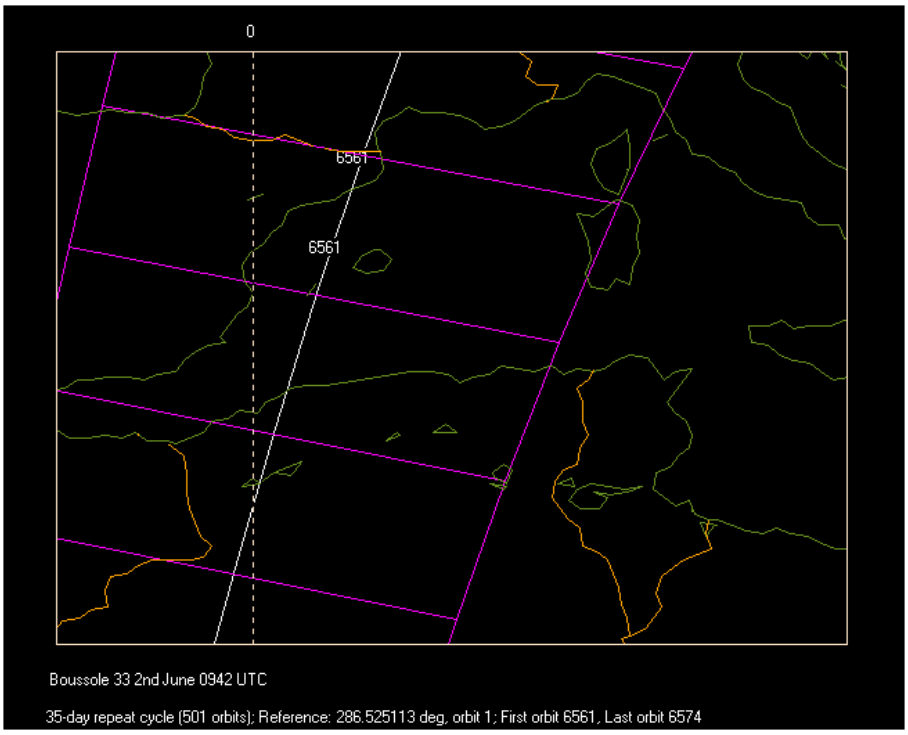
2nd June 2004 | 3rd June 2004 | 4th June 2004 | 5th June 2004

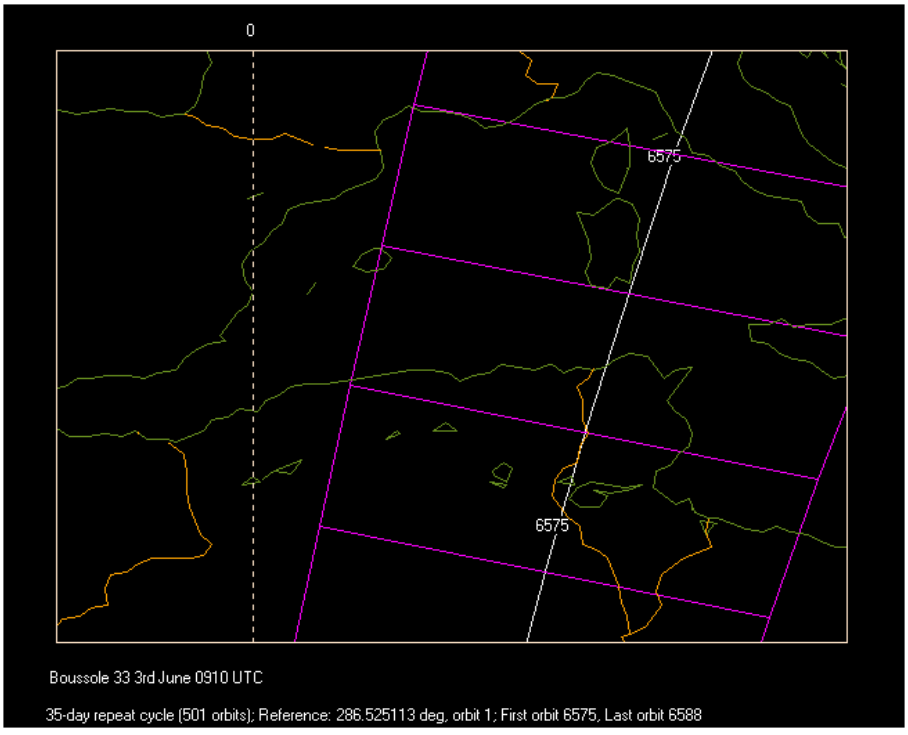
Figure 2. SeaWiFS images Level 1 hdf (upper) and Level 2 hdf (lower) images of the french coastline and Boussole site. (http://seawifs.gsfc.nasa.gov/cgi/seawifs_region_extracts)

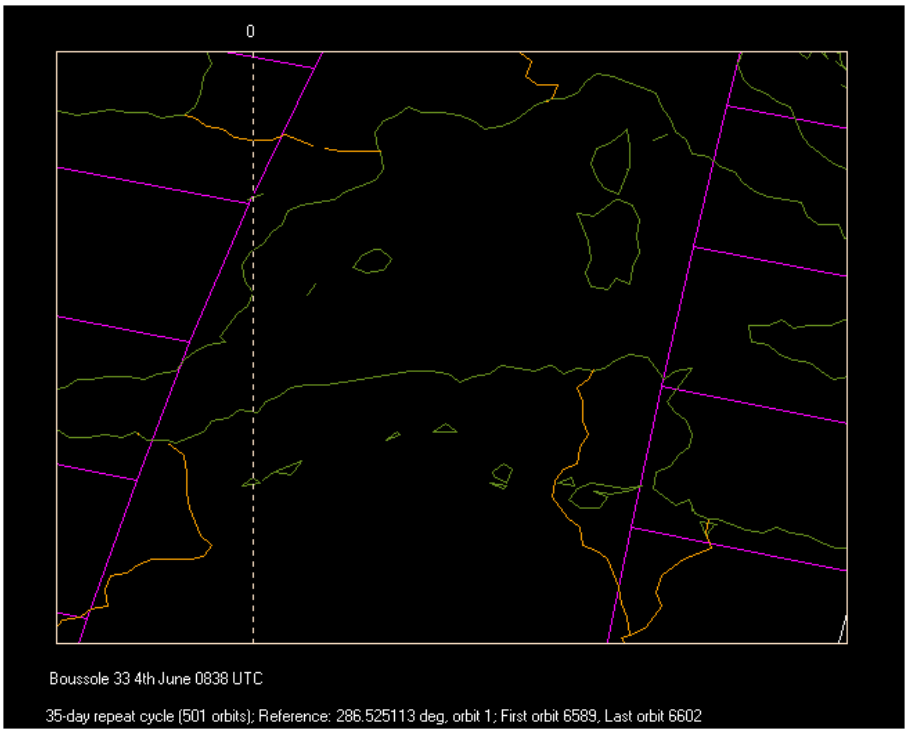
### Modis

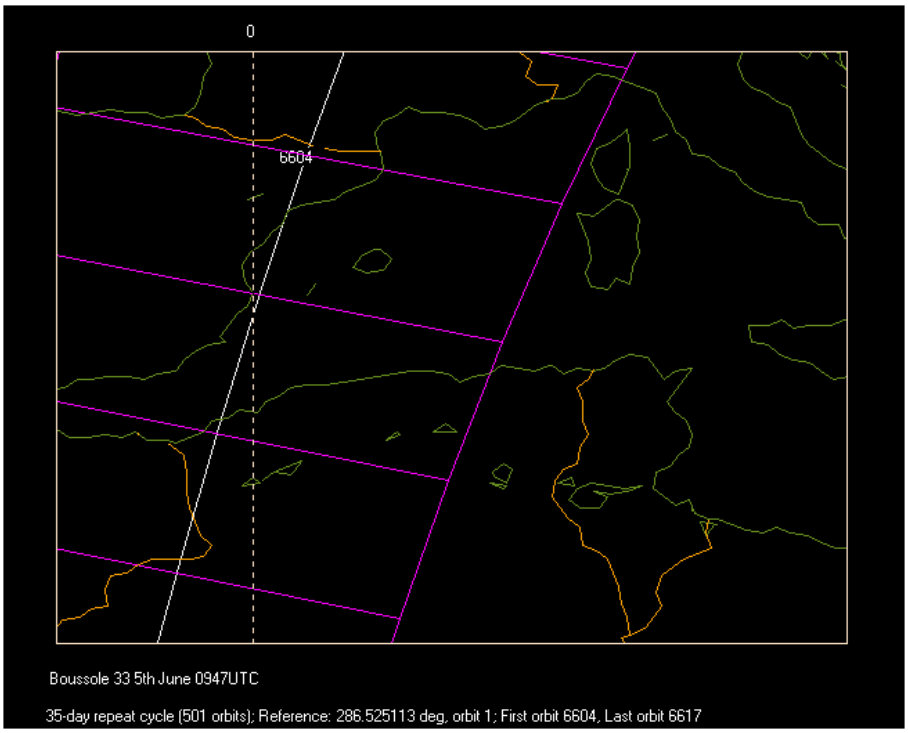
Modis images not available at time of last edit

# Calculated Swath paths for Meris Sensor (ESOV Software)



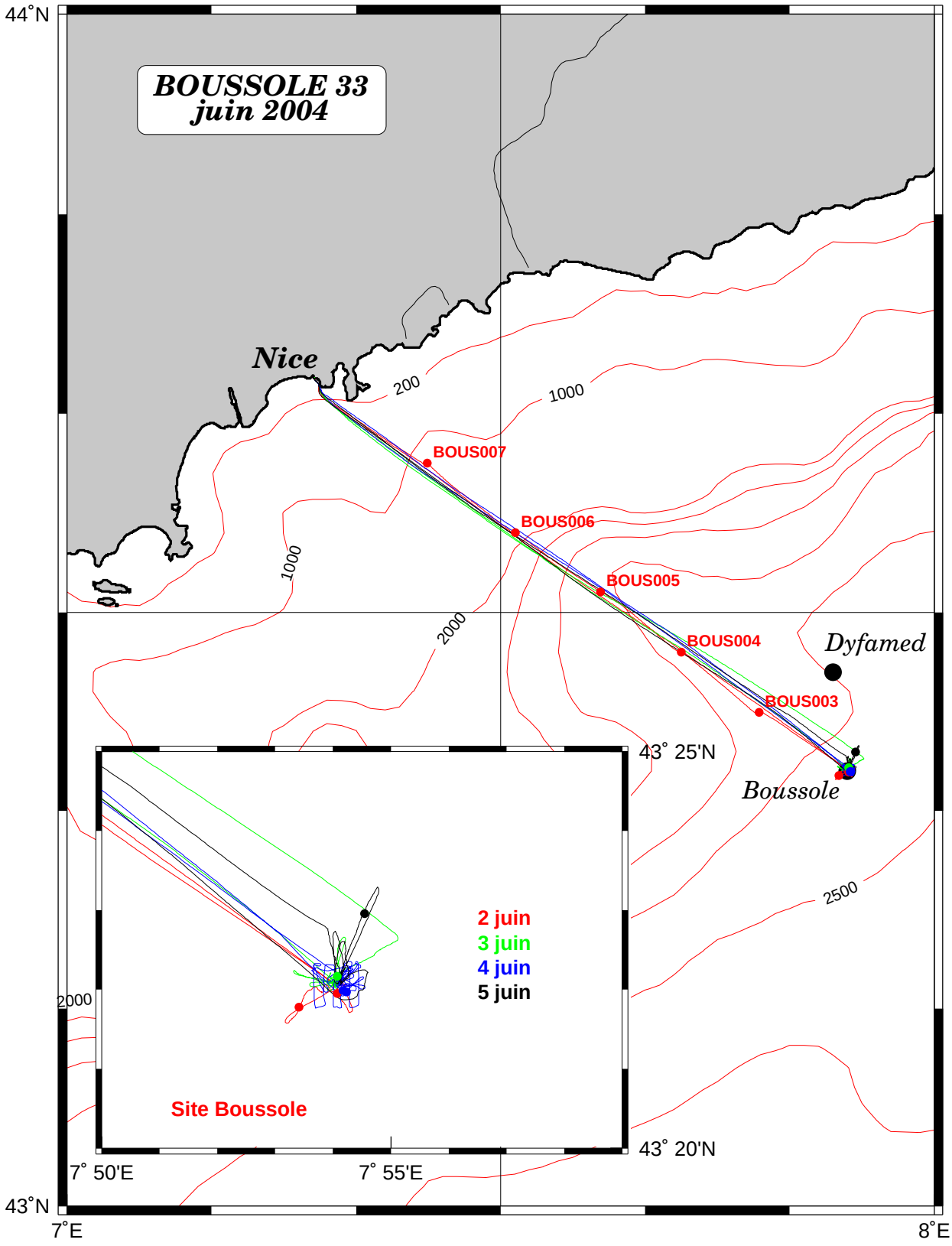




0
Boussole 33 4th June 0838 UTC
35-day repeat cycle (501 orbits); Reference: 286.525113 deg, orbit 1; First orbit 6589, Last orbit 6602

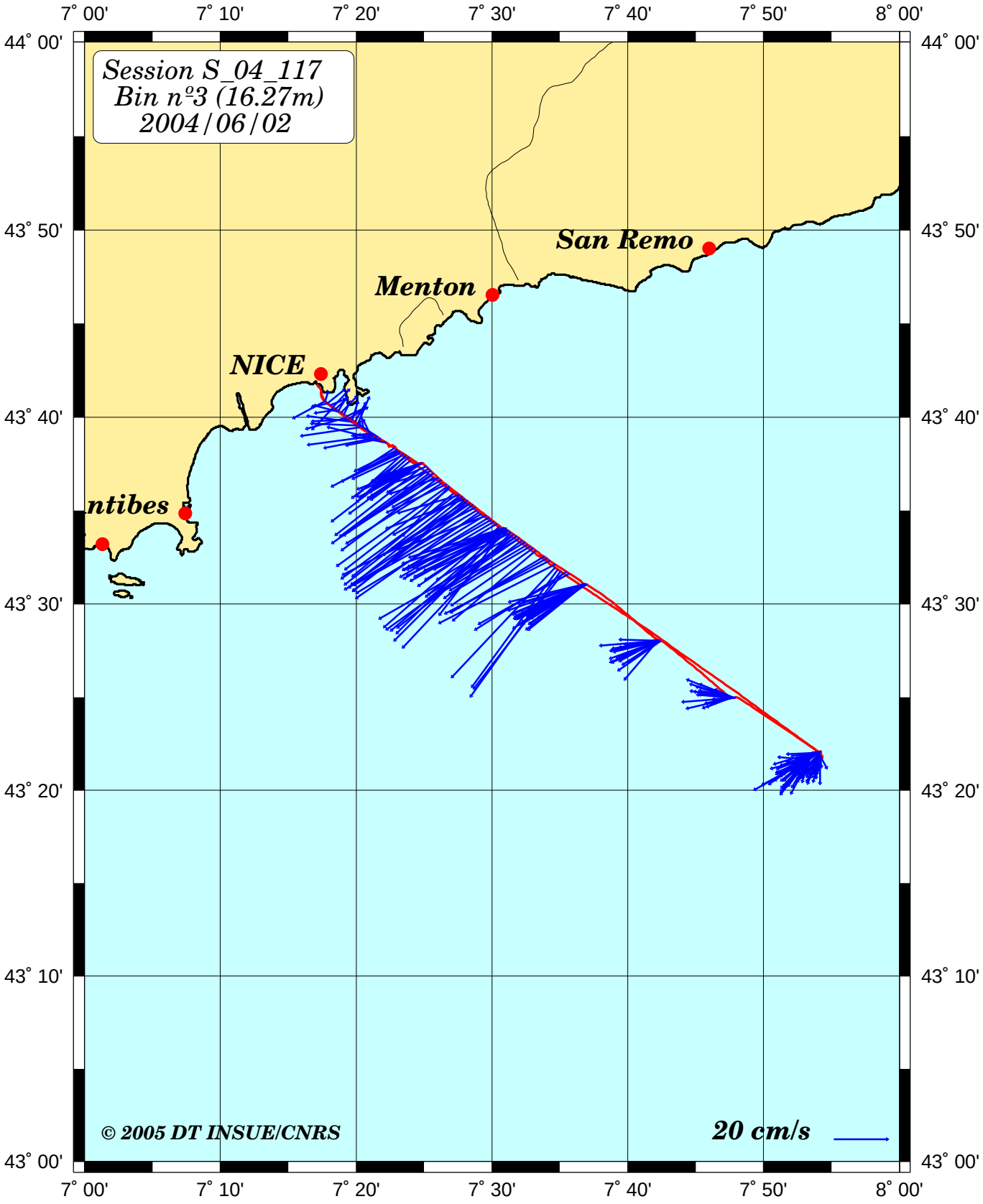

0
6604
Boussole 33 5th June 0947UTC
35-day repeat cycle (501 orbits); Reference: 286.525113 deg, orbit 1; First orbit 6604, Last orbit 6617

Summary Table for Boussole 33

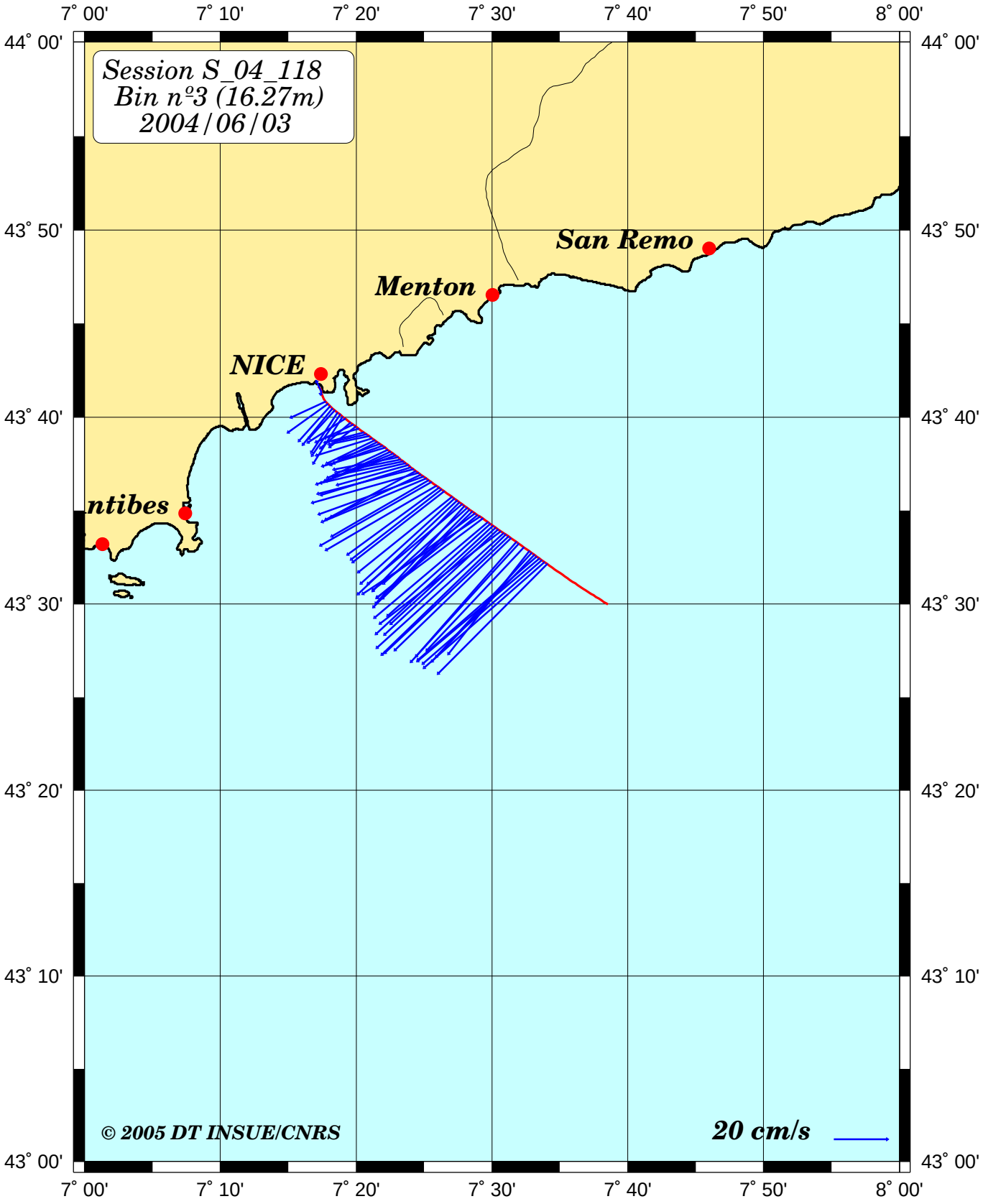
| Date | Black names | Profile names | CTD notées / | Start Time | Duration | Depth max | Latitude (N) | | 50 | | Other sensors | Their cast | PAR | Start/Finish | | | | Weather | | | | | | | Sea | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (file ext: ".raw") | (file extension: ".raw") | satellite overpass | GMT (hour.min) | (min.sec) | (meter) | (Degree) | (Minute) | (Degree) | (Minute) | | | | S# F# | Sky | Clouds | Quantity (#/8) | Wind speed | Wind dir. | Atm. Pressure | humidity | Visibility | T air | T water | Sea | Swell ht | Swell dir. | White horses |
| 02/06/04 | | | CTDBOUS001 | 11.30 | - | 400 | 43 | 21.952 | 7 | 54.070 | | | | | | | 4 | 5 | 45 | 1014.9 | 81 | | 19.9 | 19.05 | calm | | | |
| | bou020604black1 | | | 12:09 | 03:00 | | | | | | | | | | | | | | | | | | | | | | |
| | | bou020604A | | 12:20 | 04:02 | 181 | 43 | 22.058 | 7 | 54.12 | | | | | Milky | - | 0 | 6 | 50 | 1014.2 | 82 | good | 20.1 | | calm | 0.4 | | no |
| | | bou020604B | | 12:34 | 04:09 | 200 | 43 | 22.059 | 7 | 53.898 | | | | | Milky | - | 0 | 6 | 50 | 1014.2 | 82 | good | 20.1 | | calm | 0.4 | | no |
| | | bou020604C | | 12:47 | 04:16 | 200 | 43 | 21.997 | 7 | 53.755 | | | | | Milky | - | 0 | 6 | 50 | 1014.2 | 82 | good | 20.1 | | calm | 0.4 | | no |
| | | bou020604D | | 12:58 | 04:12 | 200 | 43 | 22.031 | 7 | 53.716 | | | | | Milky | - | 0 | 6 | 50 | 1014.2 | 82 | good | 20.1 | | calm | 0.4 | | no |
| | | bou020604E | | 13:09 | 04:02 | 200 | 43 | 21.991 | 7 | 53.58 | | | | | Milky | - | 0 | 6 | 50 | 1014.2 | 82 | good | 20.1 | | calm | 0.4 | | no |
| | | | CTDBOUS002 | 13:35 | | 400 | 43 | 21.779 | 7 | 53.411 | | | | | | | 2 | 6 | 50 | 1014.3 | 82 | | 20.1 | 19.16 | calm | | | |
| | bou020604black2 | | | 14:45 | 03:00 | | | | | | | | | | | | | | | | | | | | | | |
| | | | CTDBOUS003 | 14:48 | 25:00 | 400 | 43 | 24.972 | 7 | 47.887 | | | | | | | 3 | 5 | 120 | 1013.6 | 83 | | 20.1 | 20.16 | calm | | | |
| | | | CTDBOUS004 | 15:45 | 25:00 | 400 | 43 | 27.999 | 7 | 42.501 | | | | | | | 4 | 4 | 164 | 1013.5 | 84 | | 20.1 | 20.2 | calm | | | |
| | | | CTDBOUS005 | 16:49 | 27:00 | 400 | 43 | 31.038 | 7 | 36.926 | | | | | | | 5 | 4 | 205 | 1013.3 | 80 | | 21.1 | 19.89 | 2 | | | |
| | | | CTDBOUS006 | 17:53 | 27:00 | 400 | 43 | 31.038 | 7 | 36.926 | | | | | | | 6 | 2 | 206 | 1013.1 | 83 | | 19.9 | 19.77 | 1 | | | |
| | | | CTDBOUS007 | 18:57 | 28:00 | 400 | 43 | 37.511 | 7 | 24.921 | | | | | | | 6 | 3 | 202 | 1013 | 85 | | 19.4 | 19.87 | 1 | | | |
| 03/06/04 | | | CTDBOUS008 | 11:45 | 16:00 | 400 | 43 | 43.22.169 | 7 | 54.07 | | | | | | | 2 | 10 | 308 | 1012.4 | 72 | | 20.8 | 20.59 | 2 | | | |
| | bou030604black1 | | | 09:25 | 03:00 | | | | | | | | | | | | | | | | | | | | | | |
| | | bou030604A | | 09:31 | 05:25 | 210 | 43 | 22.107 | 7 | 53.902 | | | | | cloudy | cumulus | 8 | 3 | 72 | 1013 | 82 | fair | 20 | | | 0 | - | no |
| | | bou030604B | | 09:45 | - | 120 | 43 | 22.094 | 7 | 53.724 | | | | | cloudy | cumulus | 8 | 3 | 72 | 1013 | 82 | fair | 20 | | | 0 | - | no |
| | bou030604black2 | | | 10:24 | 03:00 | | | | | | | | | | | | | | | | | | | | | | |
| | bou030604black3 | | | 13:31 | 03:00 | | | | | | | | | | | | | | | | | | | | | | |
| | | bou030604C | | 13:38 | 04:34 | 200 | 43 | 22.328 | 7 | 54.097 | | | | | Milky | | 2 | 10 | 307 | 1012.3 | 72 | good | 20.9 | | | 0.4 | - | no |
| | | bou030604D | | 13:50 | 04:20 | 200 | 43 | 22.505 | 7 | 54.085 | | | | | Milky | | 2 | 10 | 307 | 1012.3 | 72 | good | 20.9 | | | 0.4 | - | no |
| | | bou030604E | | 14:00 | 03:58 | 200 | 43 | 22.565 | 7 | 54.107 | | | | | Milky | | 2 | 10 | 307 | 1012.3 | 72 | good | 20.9 | | | 0.4 | - | no |
| | bou030604black4 | | | 14:20 | 03:00 | | | | | | | | | | | | | | | | | | | | | | |
| | | bou030604F | | 15:25 | 04:13 | 180 | 43 | 22.459 | 7 | 54.749 | | | | | blue | cumulus and cirrus | 7 | 11 | 306 | 1012.1 | 71 | good | 21 | | | 0.3 | | occasional |
| | | bou030604G | | 15:34 | - | 180 | 43 | 22.539 | 7 | 54.904 | | | | | blue | cumulus and cirrus | 7 | 11 | 306 | 1012.1 | 71 | good | 21 | | calm | 0.3 | 0.3 | occasional |
| | bou030604black5 | | | 15:59 | 03:00 | | | | | | | | | | | | | | | | | | | | | | |
| 04/06/04 | | | CTDBOUS009 | 08:14 | 26:00 | 400 | 43 | 21.974 | 7 | 54.237 | | | | | | | 1 | 4 | 28 | 1014.4 | 53 | | 21.6 | 19.49 | calm | | | |
| | bou040604black1 | | | 08:46 | | | | | | | | | | | | | | | | | | | | | | | |
| | | bou040604A | | 08:53 | - | 200 | 43 | 22.087 | 7 | 54.136 | | | | | blue | cirrus | 1 | 3 | 72 | 1014.4 | 57 | excellent | 22 | | very calm | 0.3 | 0 | no |
| | | bou040604B | | 09:05 | - | 200 | 43 | 22.212 | 7 | 54.193 | | | | | blue | cirrus | 1 | 3 | 72 | 1014.4 | 57 | excellent | 22 | | very calm | 0.3 | 0 | no |
| | | bou040604C | | 09:14 | 04:08 | 200 | 43 | 22.273 | 7 | 54.29 | | | | | blue | cirrus | 1 | 3 | 72 | 1014.4 | 57 | excellent | 22 | | very calm | 0.3 | 0 | no |
| | | bou040604spmratsurface1 | | 09:58 | 07:03 | 200 | 43 | 22.163 | 7 | 54.239 | | | | | blue | cirrus | 1 | 3 | 72 | 1014.4 | 57 | excellent | 22 | | very calm | 0.3 | 0 | no |
| | bou040604black2 | | | 10:14 | 03:00 | | | | | | | | | | | | | | | | | | | | | | |
| | bou040604black3 | | | 11:30 | 03:00 | | | | | | | | | | | | | | | | | | | | | | |
| | | bou040604spmratsurface2 | | 11:45 | 07:12 | 200 | 43 | 22.062 | 7 | 54.33 | | | | | blue | cirrus | 3 | 3 | 227 | 1014.1 | 47 | excellent | 23.3 | | very calm | 0.3 | 0 | no |
| | | bou040604spmratsurface3 | | 12:08 | 07:12 | 200 | 43 | 22.048 | 7 | 54.194 | | | | | blue | cirrus | 3 | 3 | 227 | 1014.1 | 47 | excellent | 23.3 | | very calm | 0.3 | 0 | no |
| | | bou040604spmratsurface4 | | 12:51 | - | 200 | 43 | 22.182 | 7 | 54.158 | | | | | blue | cirrus | 5 | 4 | 252 | 1013.6 | 56 | excellent | 23.3 | | very calm | 0 | 0 | no |
| | | bou040604spmratsurface5 | | 13:10 | 06:54 | 200 | 43 | 22.307 | 7 | 54.196 | | | | | blue | cirrus | 5 | 4 | 252 | 1013.6 | 56 | excellent | 23.3 | | very calm | 0 | 0 | no |
| | | | Quadrilateral001 | 13:44 | | 5 | 43 | 22.305 | 7 | 53.716 | | | | | | | | | | | | | | | | | |
| | | | Quadrilateral002 | 14:05 | | 5 | 43 | 21.773 | 7 | 54.088 | | | | | | | | | | | | | | | | | |
| | | | Quadrilateral003 | 14:27 | | 5 | 43 | 22.323 | 7 | 54.431 | | | | | | | | | | | | | | | | | |
| | | bou040604D | | 14:36 | 03:18 | 160 | 43 | 22.157 | 7 | 54.144 | | | | | | | | | | | | | | | | | |
| | | | CTDBOUS010 | 15:19 | 27:00 | 400 | 43 | 21.988 | 7 | 54.172 | | | | | | | 3 | 9 | 238 | 1012.8 | 67 | | 22 | 21.01 | calm | | | |
| | bou040604black4 | | | 15:59 | 03:00 | | | | | | | | | | | | | | | | | | | | | | |
| 05/06/04 | | | CTDBOUS011 | 8.44 | 18:00 | 400 | 43 | 22 | 7 | 54.518 | | | | | | | 2 | 9 | 178 | 1012.1 | 77 | | 20.5 | 20.15 | 2 | | | |
| | bou050604black1 | | | 9.05 | 03:00 | | | | | | | | | | | | | | | | | | | | | | |
| | | bou050604A | | 9.32 | - | 200 | 43 | 22.331 | 7 | 54.173 | | | | | milky | cumulus and cirrus | 4 | 13 | 208 | 1011.9 | 75 | v.good | 21 | | calm | 0 | | no |
| | | bou050604B | | 9.42 | 04:16 | 200 | 43 | 22.529 | 7 | 54.104 | | | | | milky | cumulus and cirrus | 4 | 13 | 208 | 1011.9 | 75 | v.good | 21 | | calm | 0 | | no |
| | bou050604black2 | | | 9.58 | 03:00 | | | | | | | | | | | | | | | | | | | | | | |
| | | | CTDBOUS012 | 11.21 | 29:00 | 400 | 43 | 22.961 | 7 | 54.548 | | | | | | | 2 | 12 | 221 | 1011.9 | 82 | | 19.9 | 20.3 | 3 | | | |
| | | bou050604C | | 12.08 | 04:50 | 200 | 43 | 22.191 | 7 | 54.264 | | | | | blue | cirrus | 1 | 10 | 234 | 1011.6 | 84 | good | 19.6 | | | 0 | | few |
| | | bou050604D | | 12.16 | 04:19 | 200 | 43 | 22.328 | 7 | 54.234 | | | | | blue | cirrus | 1 | 10 | 234 | 1011.6 | 84 | good | 19.6 | | | 0 | | few |
| | | bou050604E | | 12.27 | 04:11 | 200 | 43 | 24.432 | 7 | 54.209 | | | | | blue | cirrus | 1 | 10 | 234 | 1011.6 | 84 | good | 19.6 | | | 0 | | few |
| | | bou050604F | | 13.20 | - | 200 | 43 | 22.25 | 7 | 54.113 | | | | | | | | | | | | | | | | | |
| | | bou050604G | | 13.29 | 04:13 | 200 | 43 | 22.364 | 7 | 54.05 | | | | | | | | | | | | | | | | | |
| | | bou050604H | | 13.38 | 04:14 | 200 | 43 | 22.499 | 7 | 53.998 | | | | | | | | | | | | | | | | | |
| | | bou050604I | | 13.48 | 04:20 | 200 | 43 | 22.626 | 7 | 53.947 | | | | | | | | | | | | | | | | | |
| | bou050604black3 | | | 13.59 | 03:00 | | | | | | | | | | | | | | | | | | | | | | |



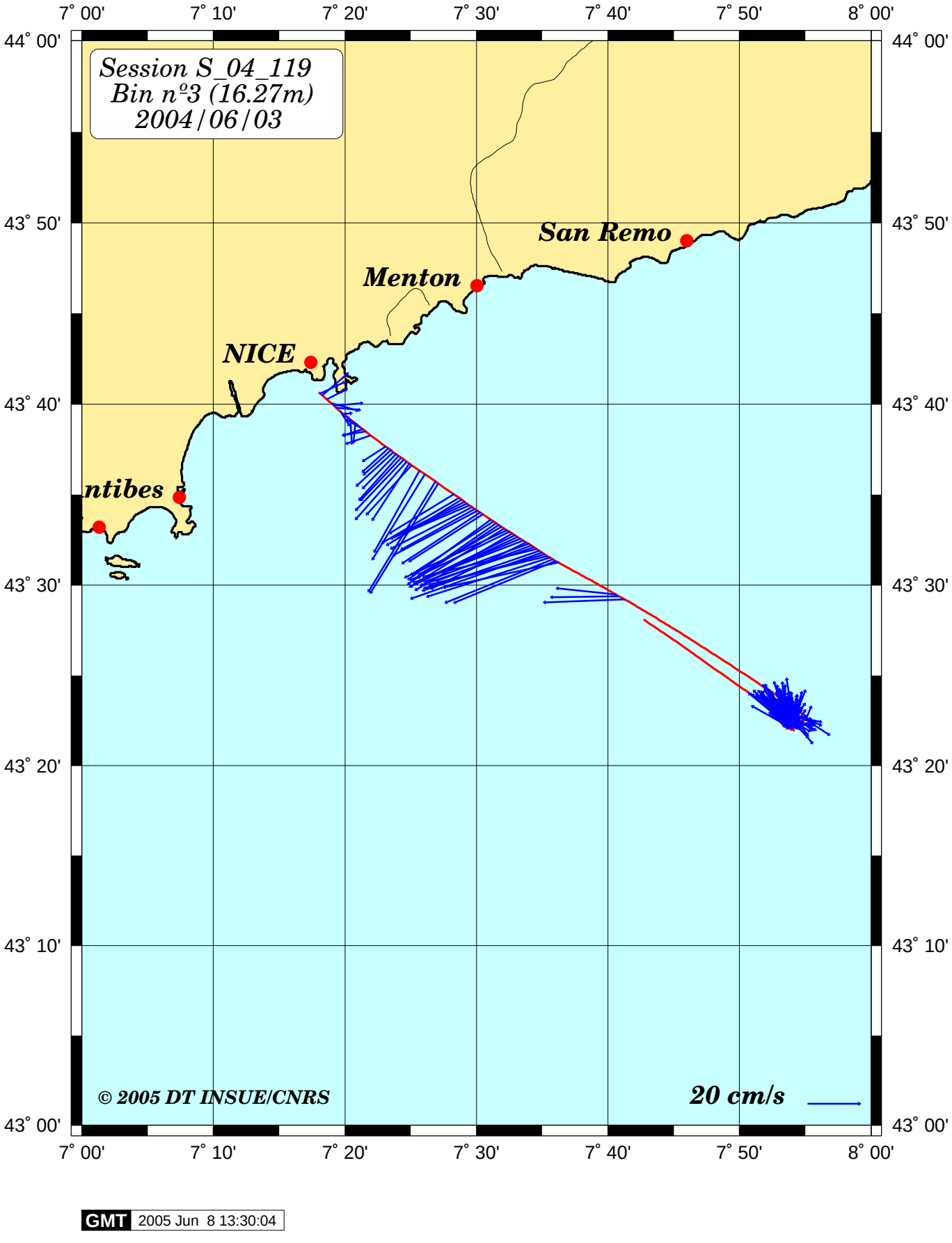

GMT 2004 Jul 7 00:53:28



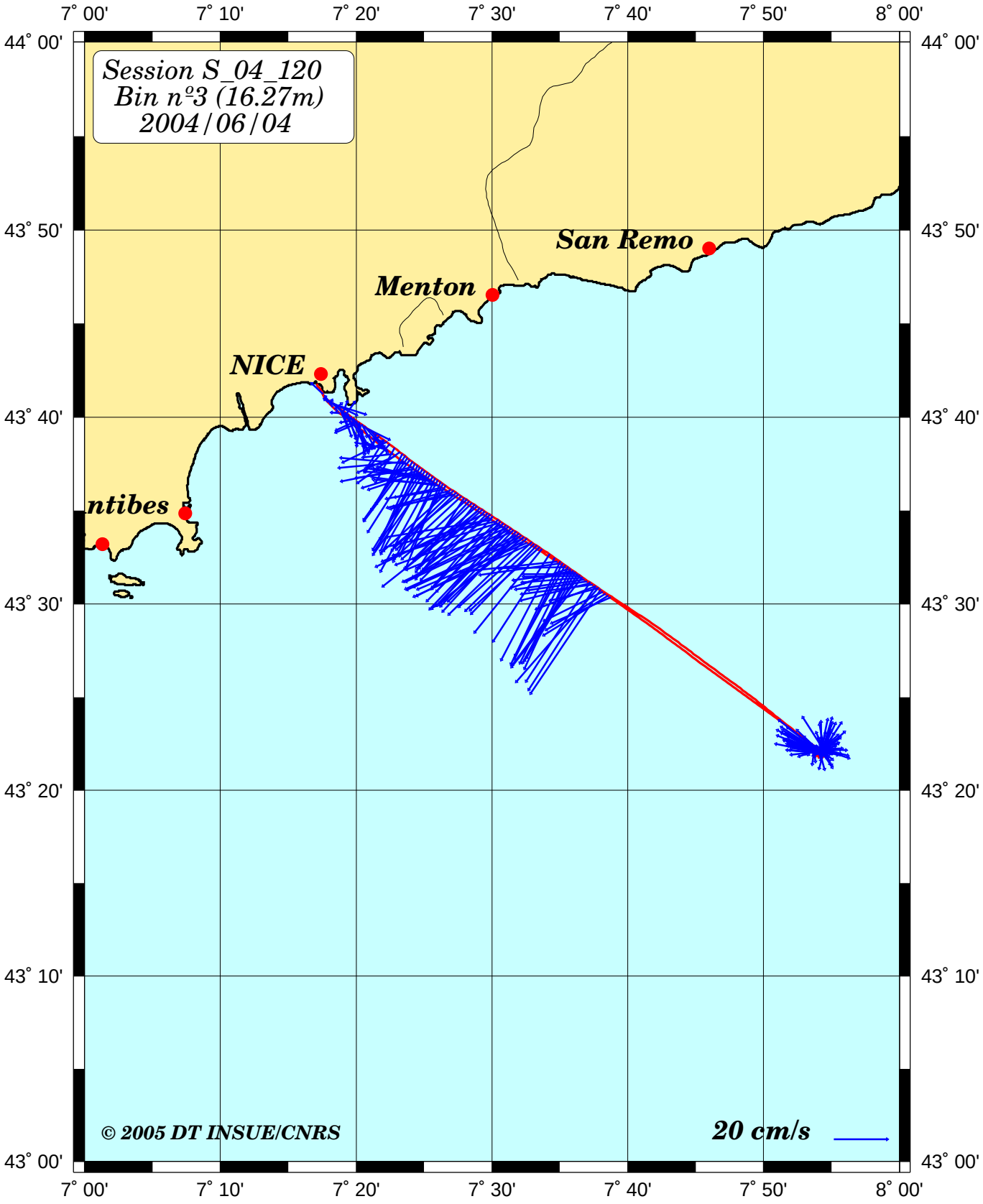

GMT 2005 Jun 8 13:29:34



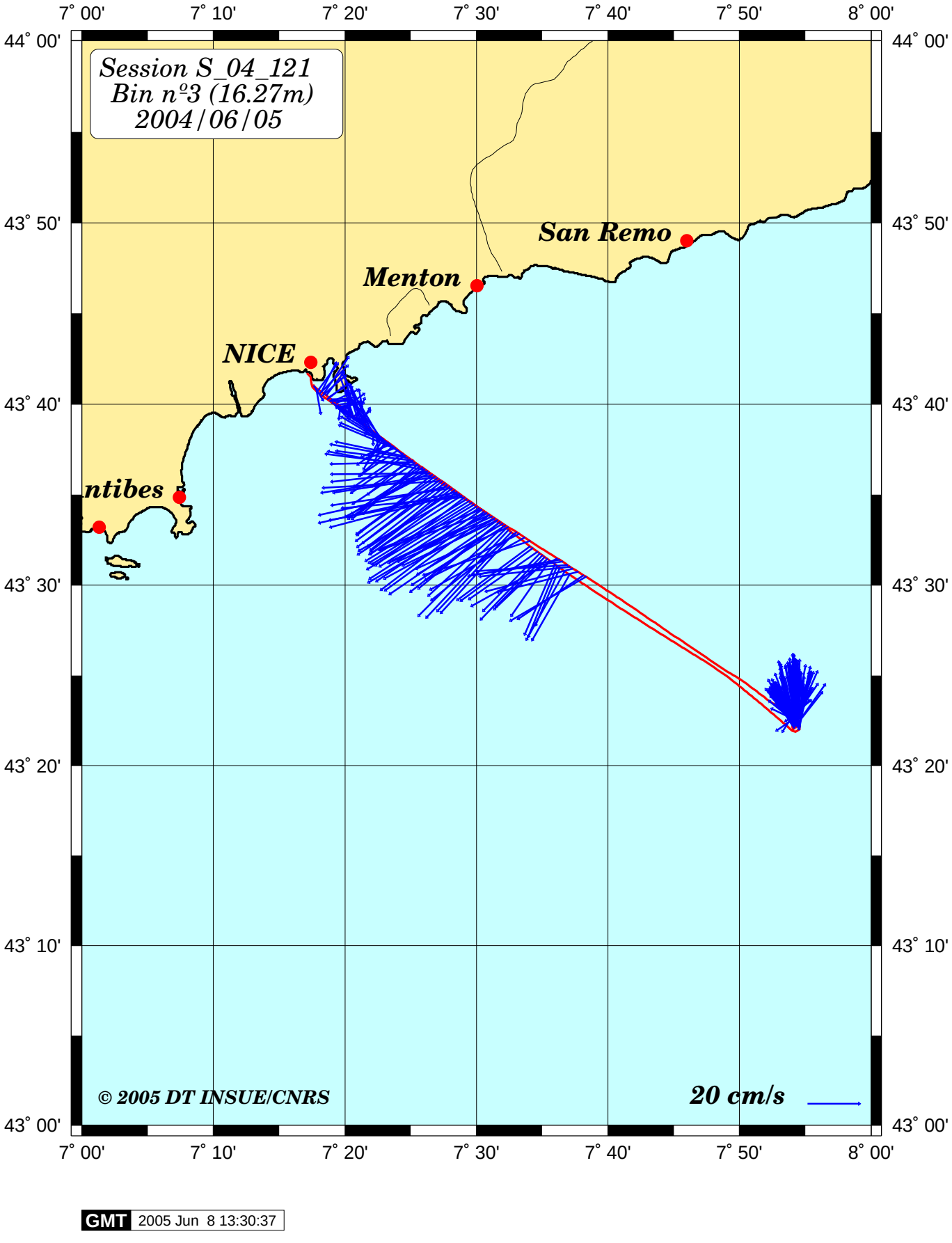

GMT 2005 Jun 8 13:29:50




GMT 2005 Jun 8 13:30:04



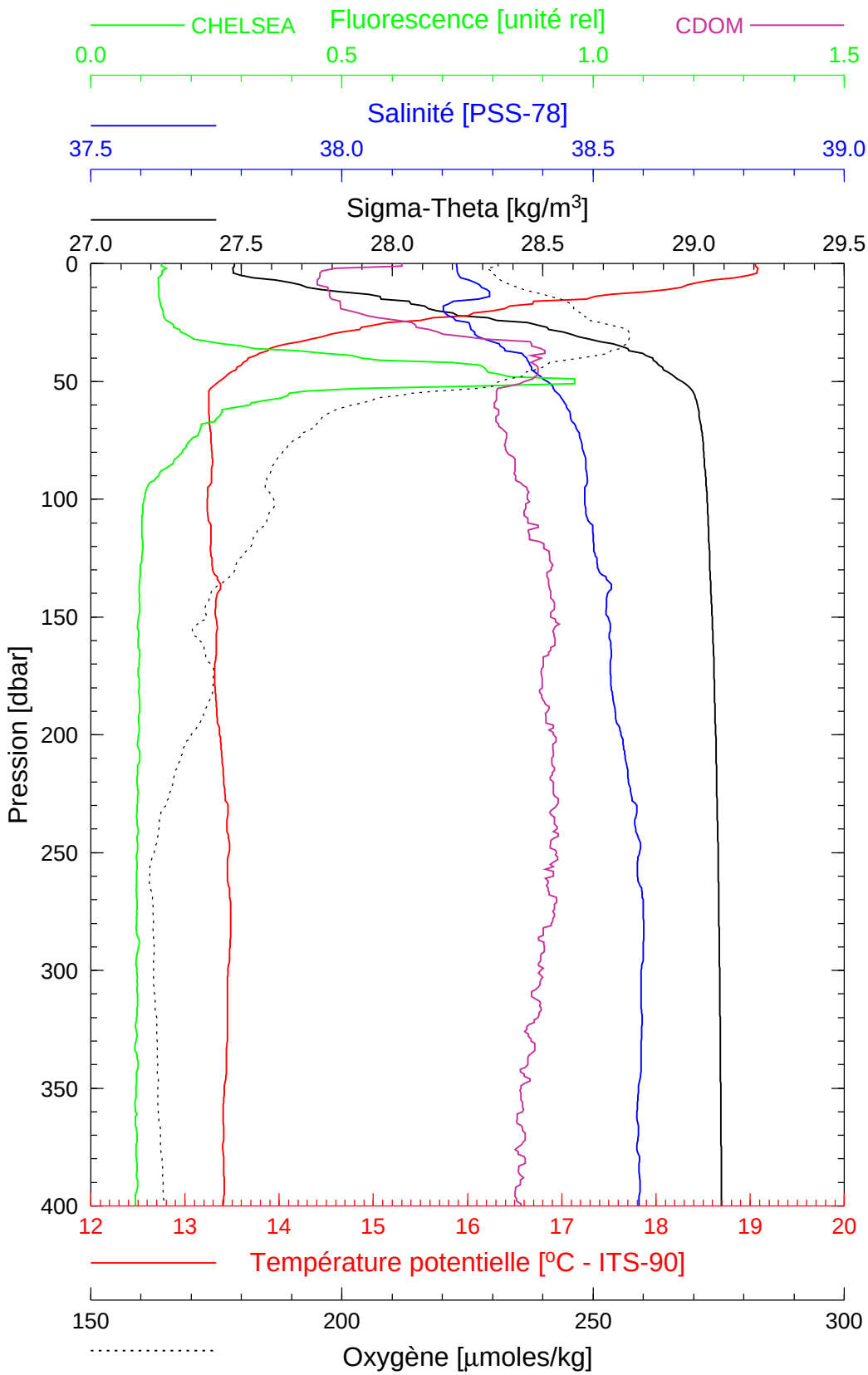

GMT 2005 Jun 8 13:30:21




GMT 2005 Jun 8 13:30:37

**Boussole 33** **02/06/2004** **BOUS040602_01**

*BOUS001*

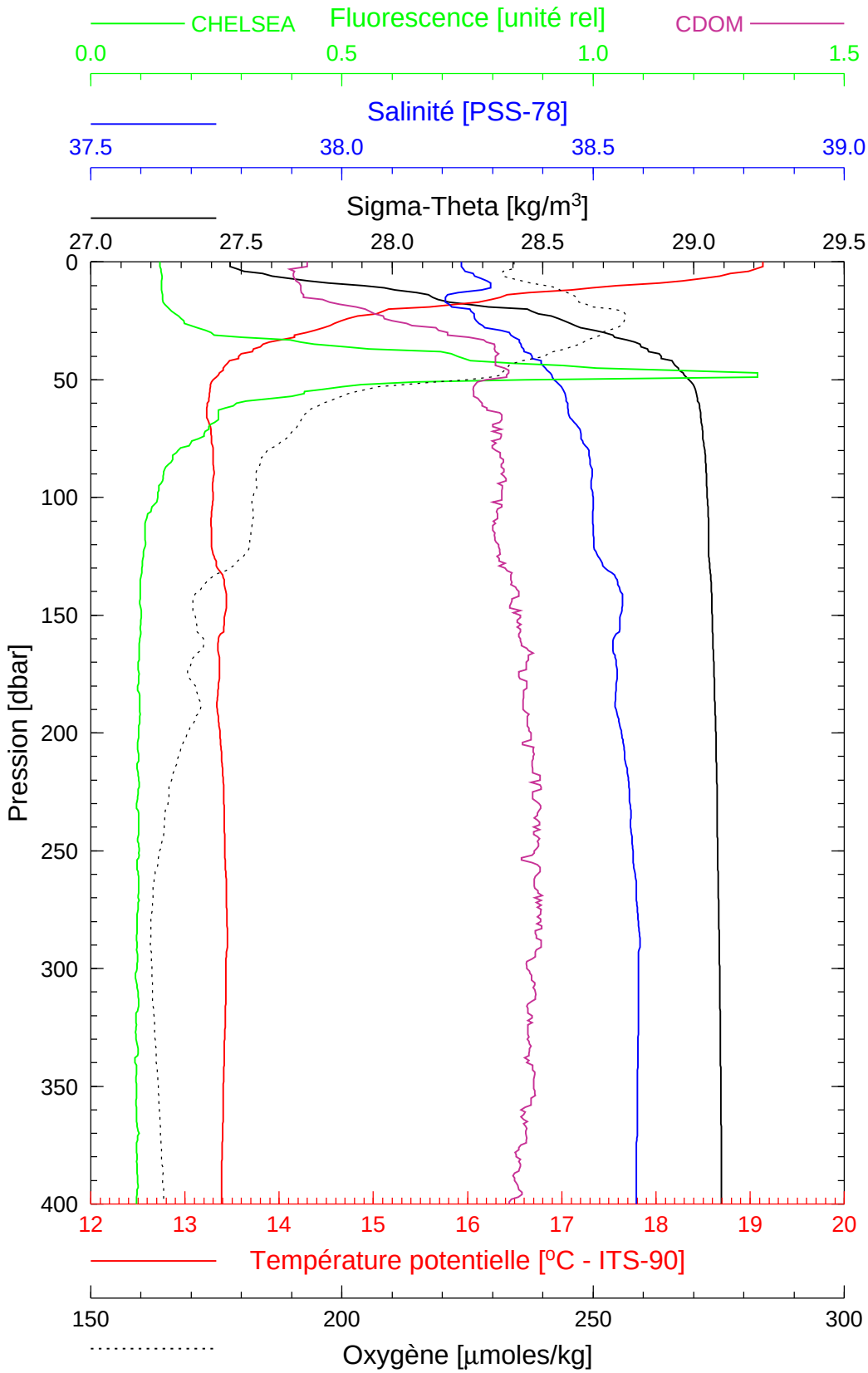



*Date* *02/06/2004* *Latitude* *43º21.952 N*

*Heure déb* *11h 30min [TU]* *Longitude* *07º54.070 E*

**Boussole 33** **02/06/2004** **BOUS040602_02**

*BOUS002*

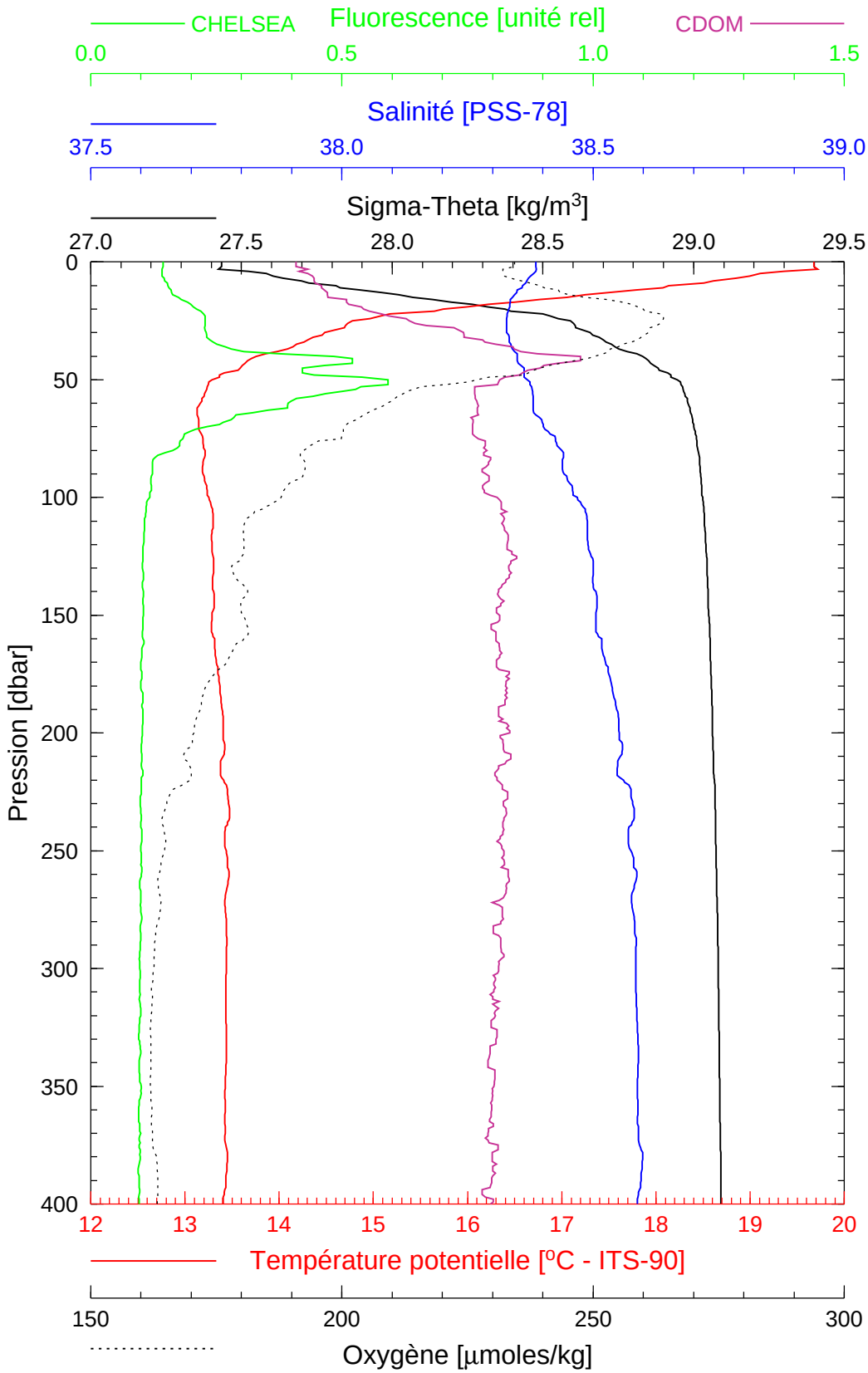



*Date* *02/06/2004* *Latitude* *43º21.779 N*

*Heure déb* *13h 35min [TU]* *Longitude* *07º53.411 E*

**Boussole 33** **02/06/2004** **BOUS040602_03**

*BOUS003*

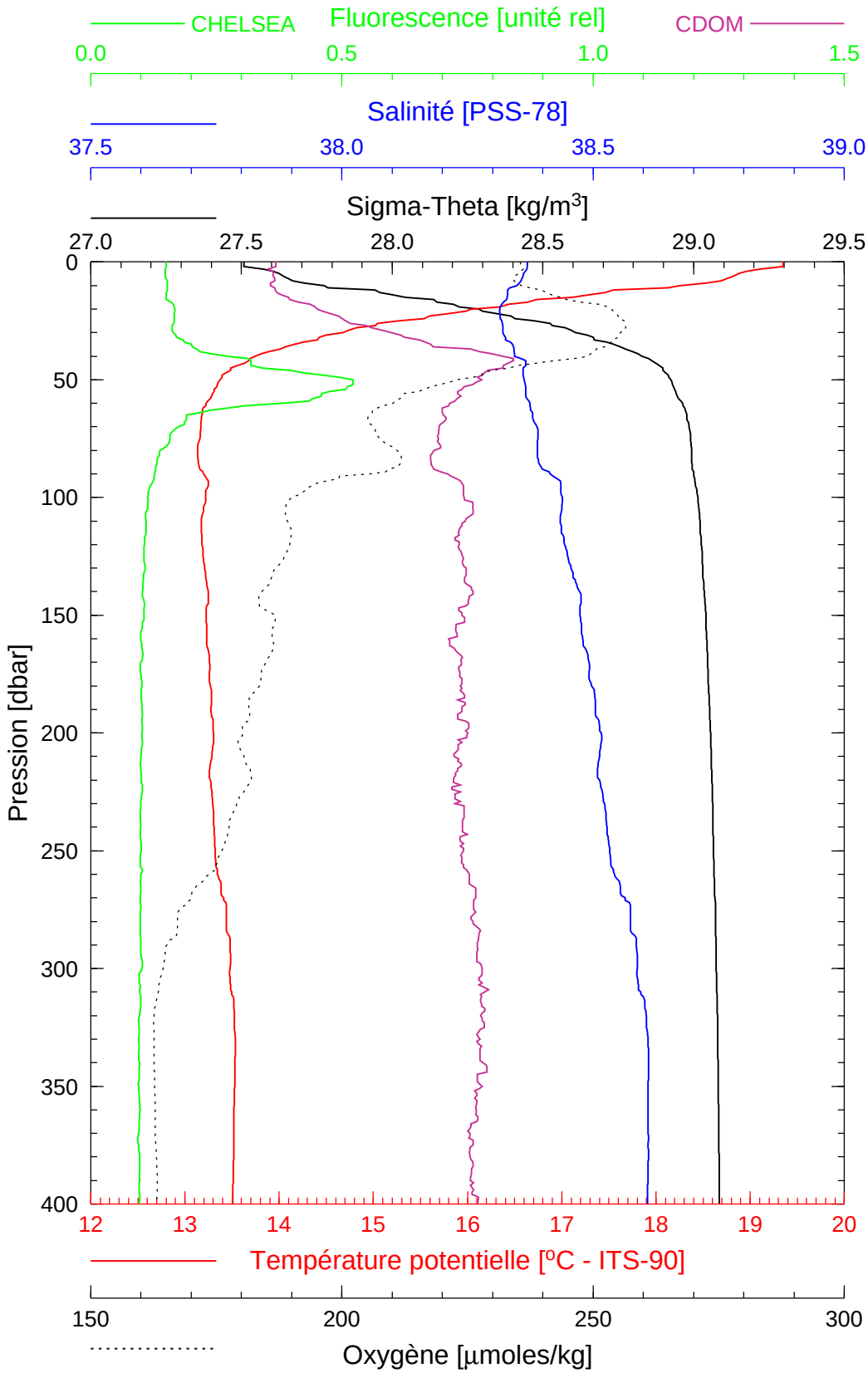



*Date* *02/06/2004* *Latitude* *43º24.972 N*

*Heure déb* *14h 48min [TU]* *Longitude* *07º47.887 E*

**Boussole 33** **02/06/2004** **BOUS040602_04**

*BOUS004*

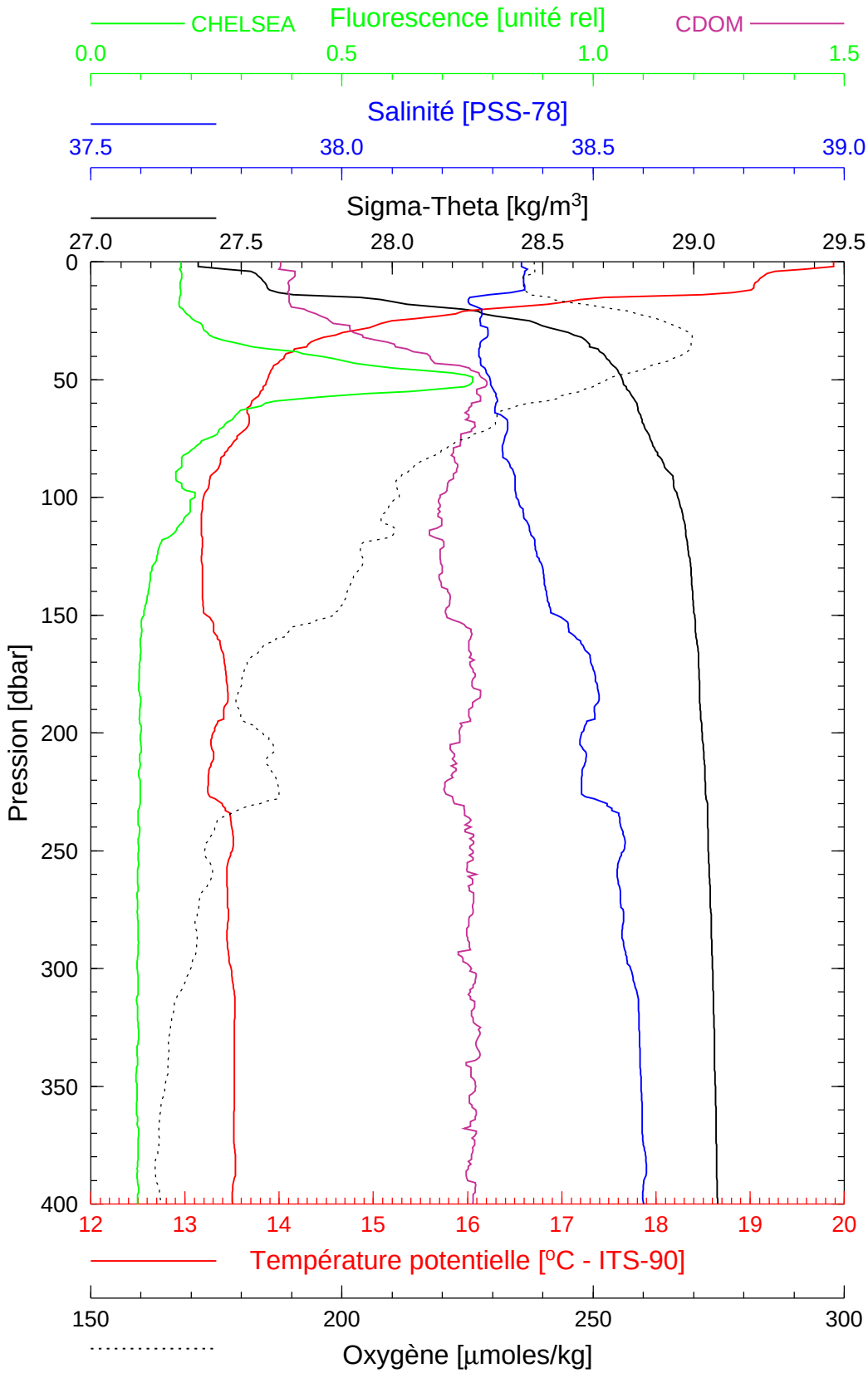



*Date* *02/06/2004* *Latitude* *43º27.999 N*

*Heure déb* *15h 45min [TU]* *Longitude* *07º42.501 E*

**Boussole 33** **02/06/2004** **BOUS040602_05**

*BOUS005*

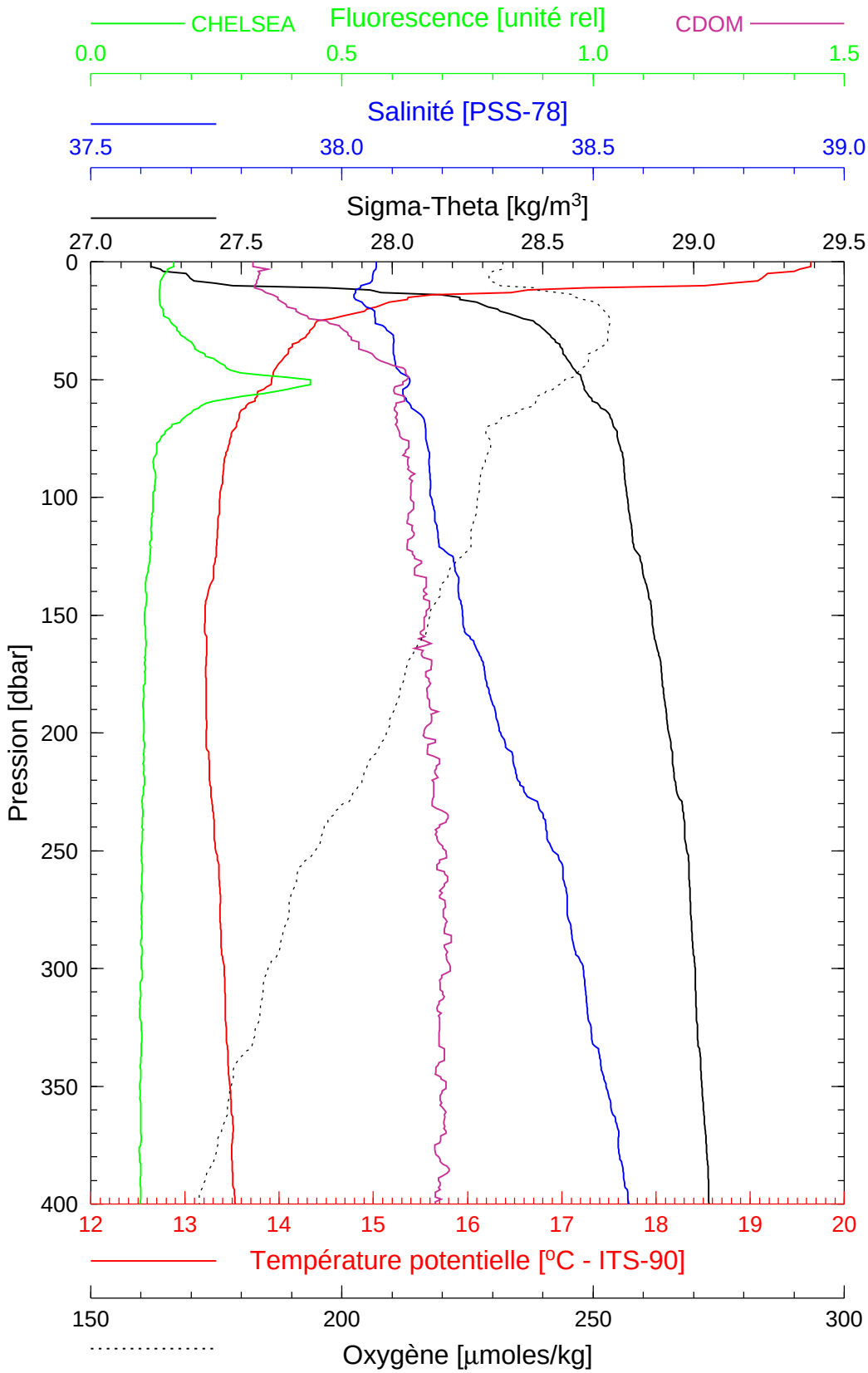



*Date* *02/06/2004* *Latitude* *43º31.038 N*

*Heure déb* *16h 49min [TU]* *Longitude* *07º36.926 E*

**Boussole 33** **02/06/2004** **BOUS040602_06**

*BOUS006*

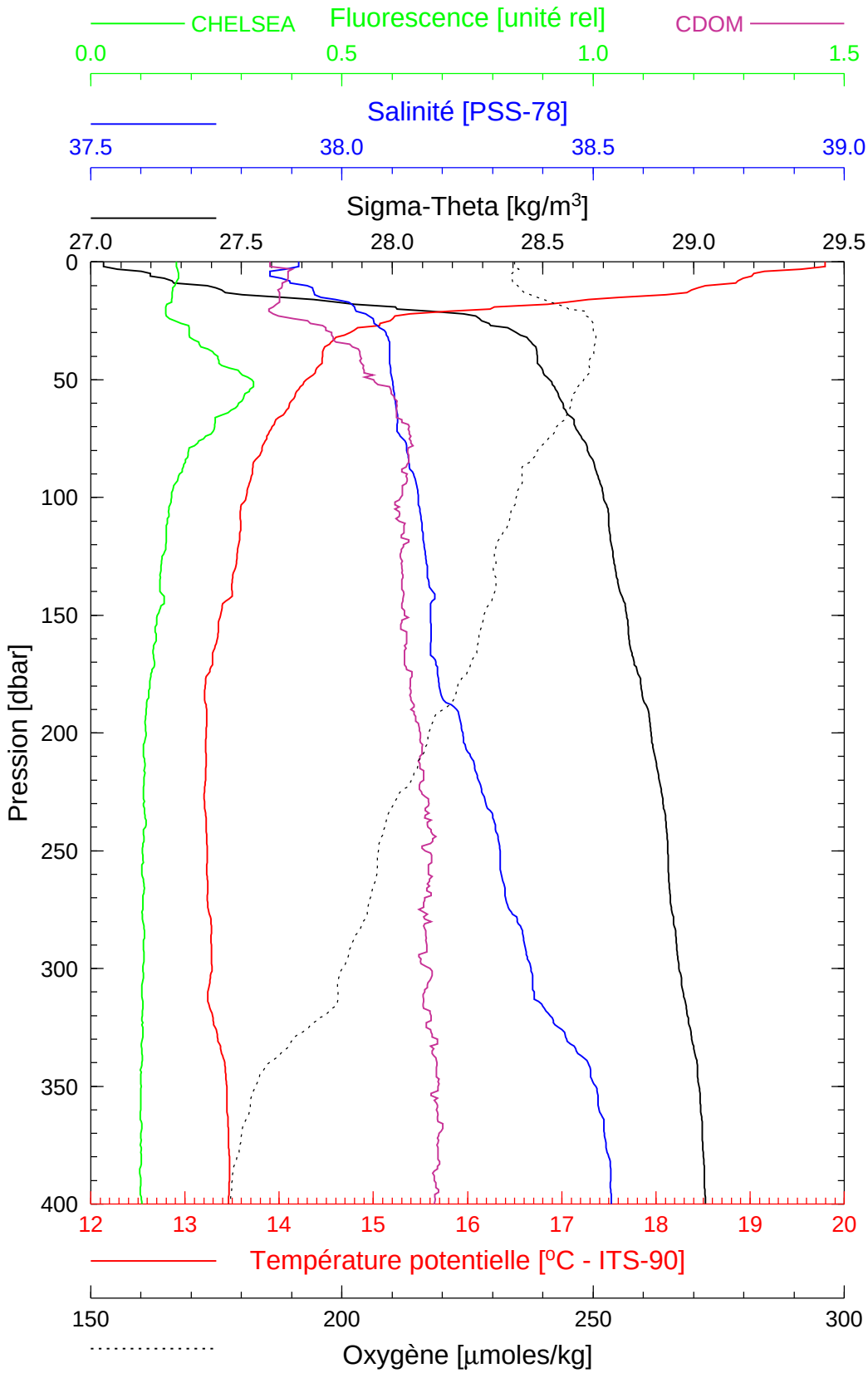



*Date* *02/06/2004* *Latitude* *43º43.030 N*

*Heure déb* *17h 53min [TU]* *Longitude* *07º31.020 E*

**Boussole 33** **02/06/2004** **BOUS040602_07**

*BOUS007*

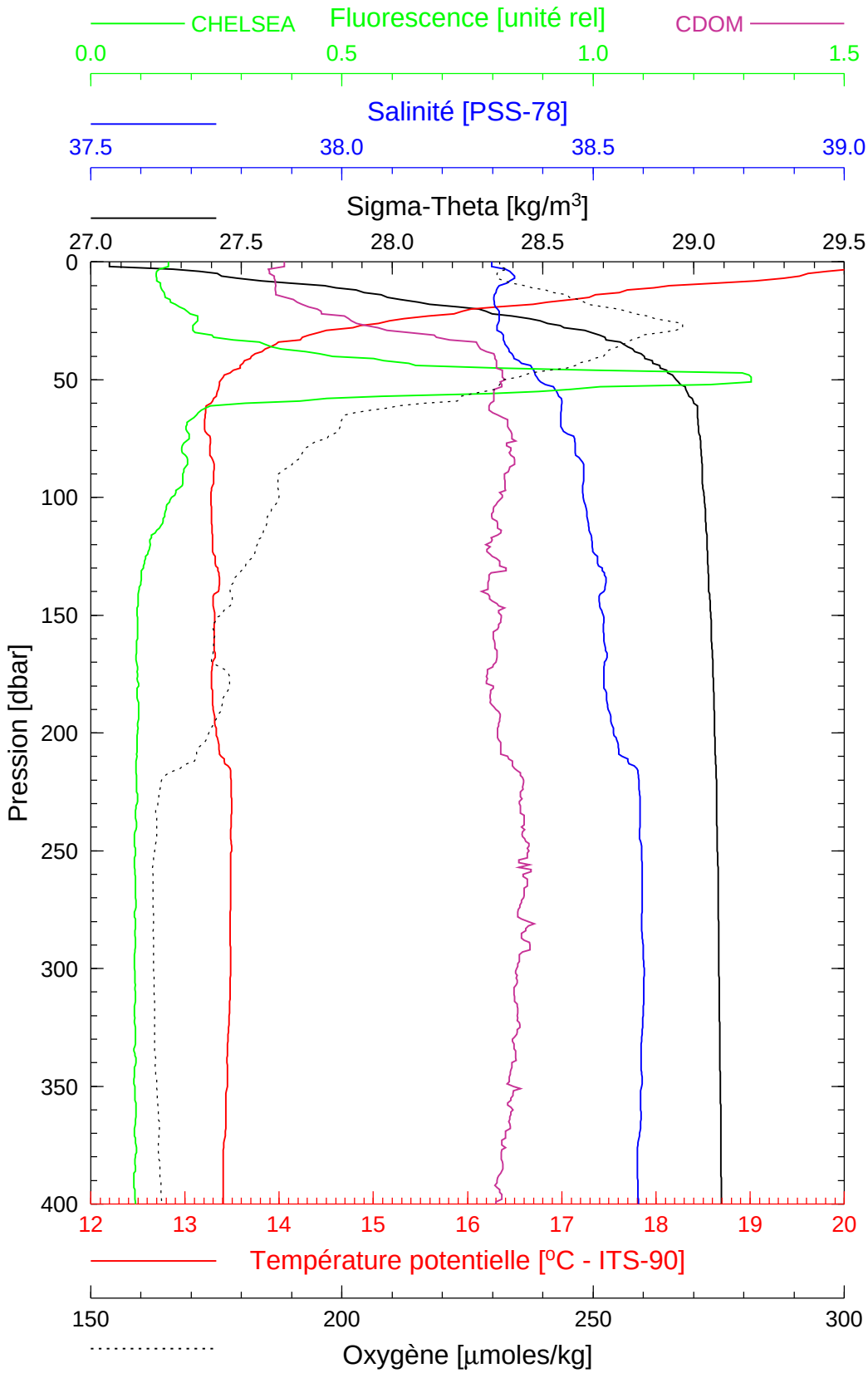



*Date* *02/06/2004* *Latitude* *43º37.511 N*

*Heure déb* *18h 57min [TU]* *Longitude* *07º24.921 E*

**Boussole 33** **03/06/2004** **BOUS040603_01**

*BOUS008*

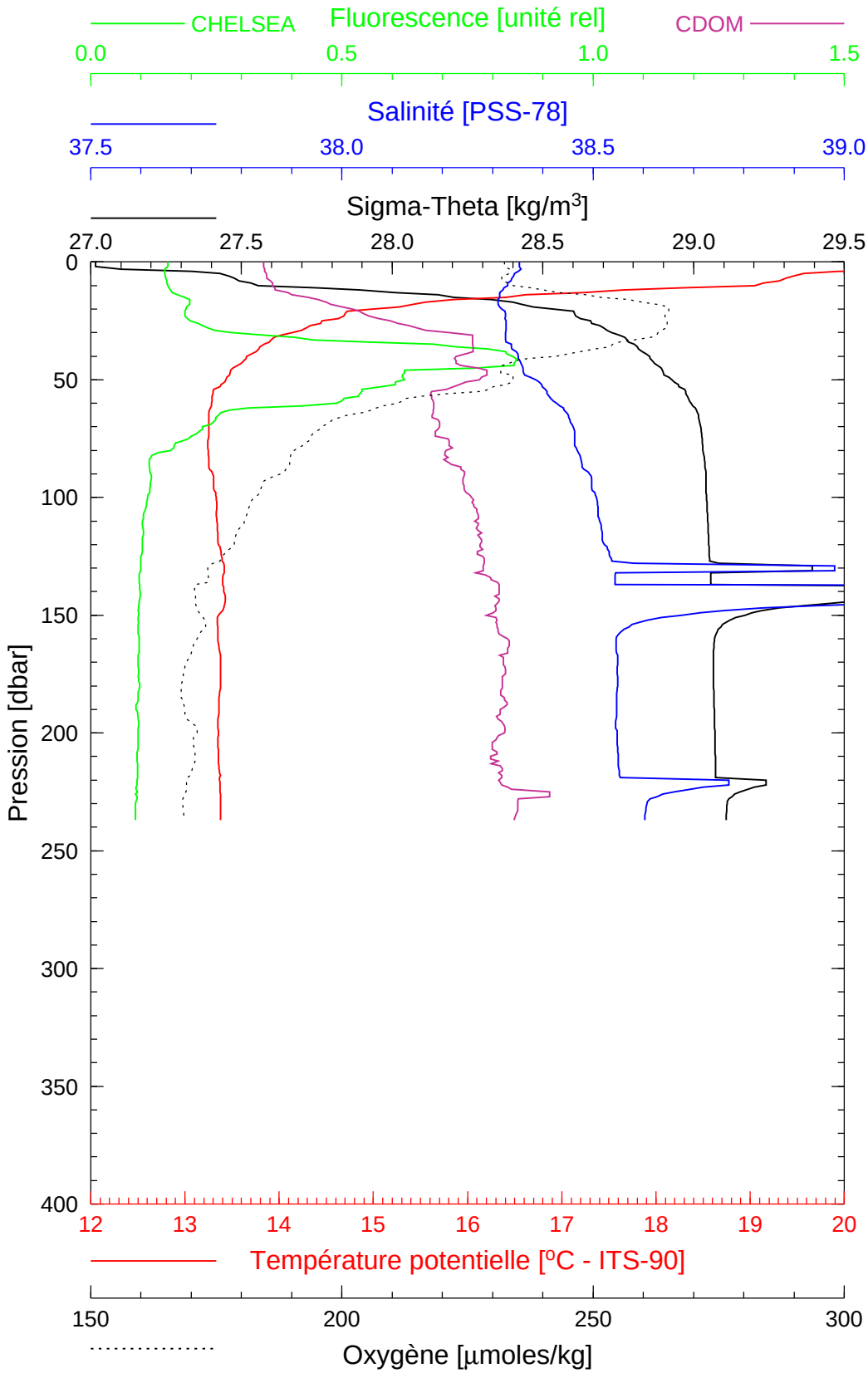



*Date* *03/06/2004* *Latitude* *43º22.169 N*

*Heure déb* *14h 49min [TU]* *Longitude* *07º54.070 E*

**Boussole 33** **04/06/2004** **BOUS040604_02**

*BOUS010*

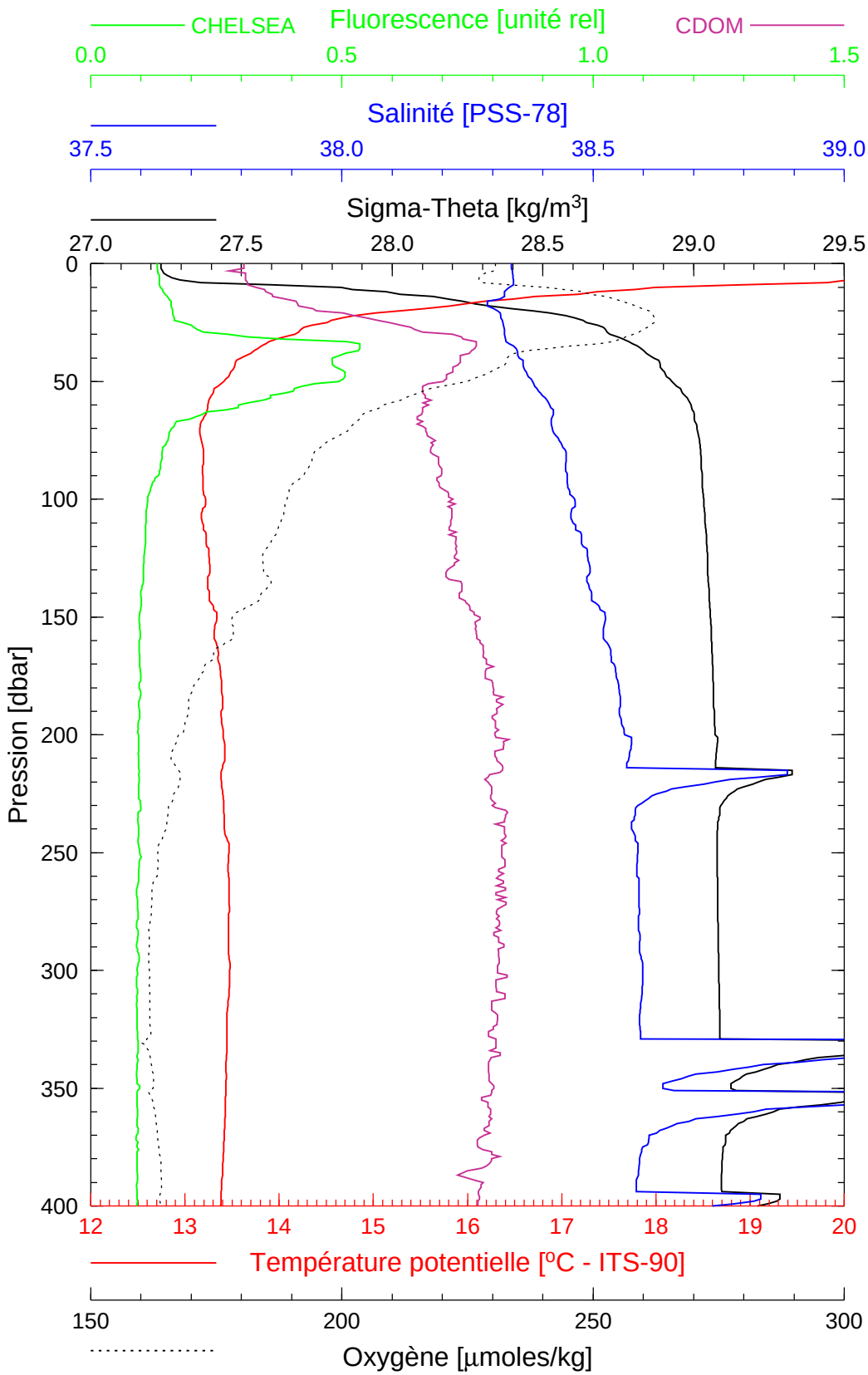



*Date* *04/06/2004* *Latitude* *43º21.988 N*

*Heure déb* *15h 19min [TU]* *Longitude* *07º54.172 E*

**Boussole 33** **05/06/2004** **BOUS040605_01**

*BOUS011*




*Date* *05/06/2004* *Latitude* *43º22.961 N*

*Heure déb* *11h 21min [TU]* *Longitude* *07º54.548 E*