BOUSSOLE PROJECT

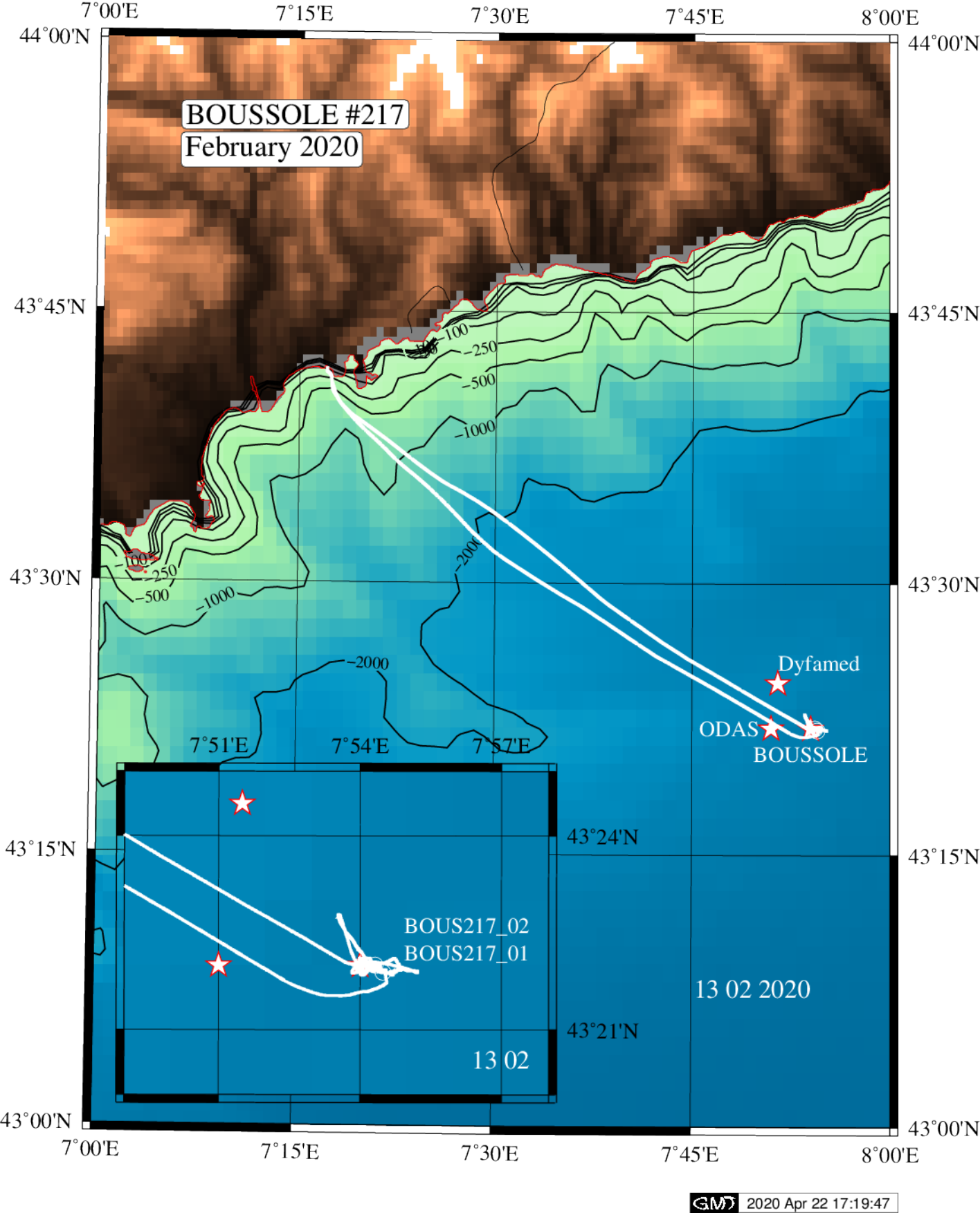
CTD Data catalogue for 2020

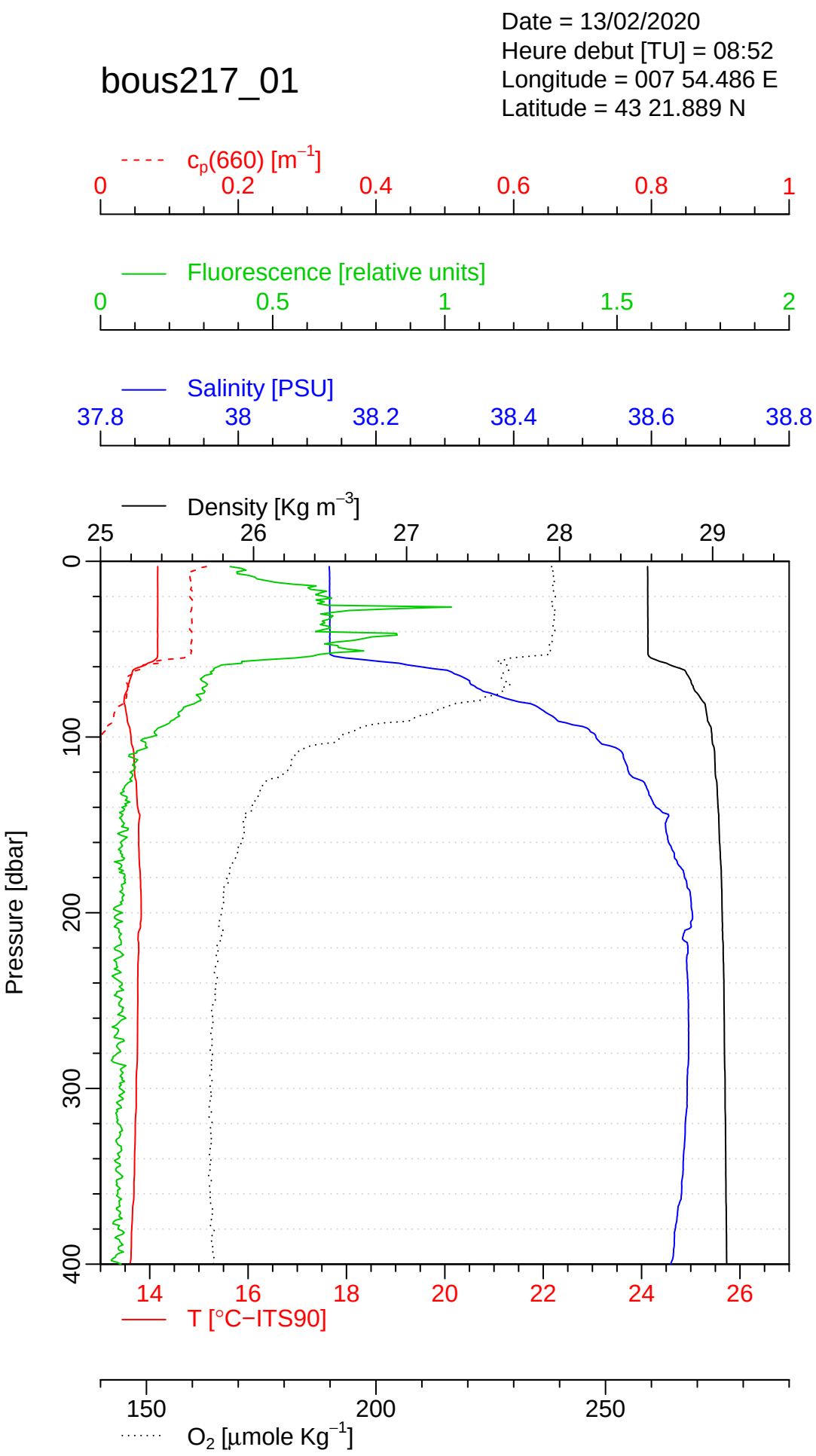
Cruise 216 to cruise 225

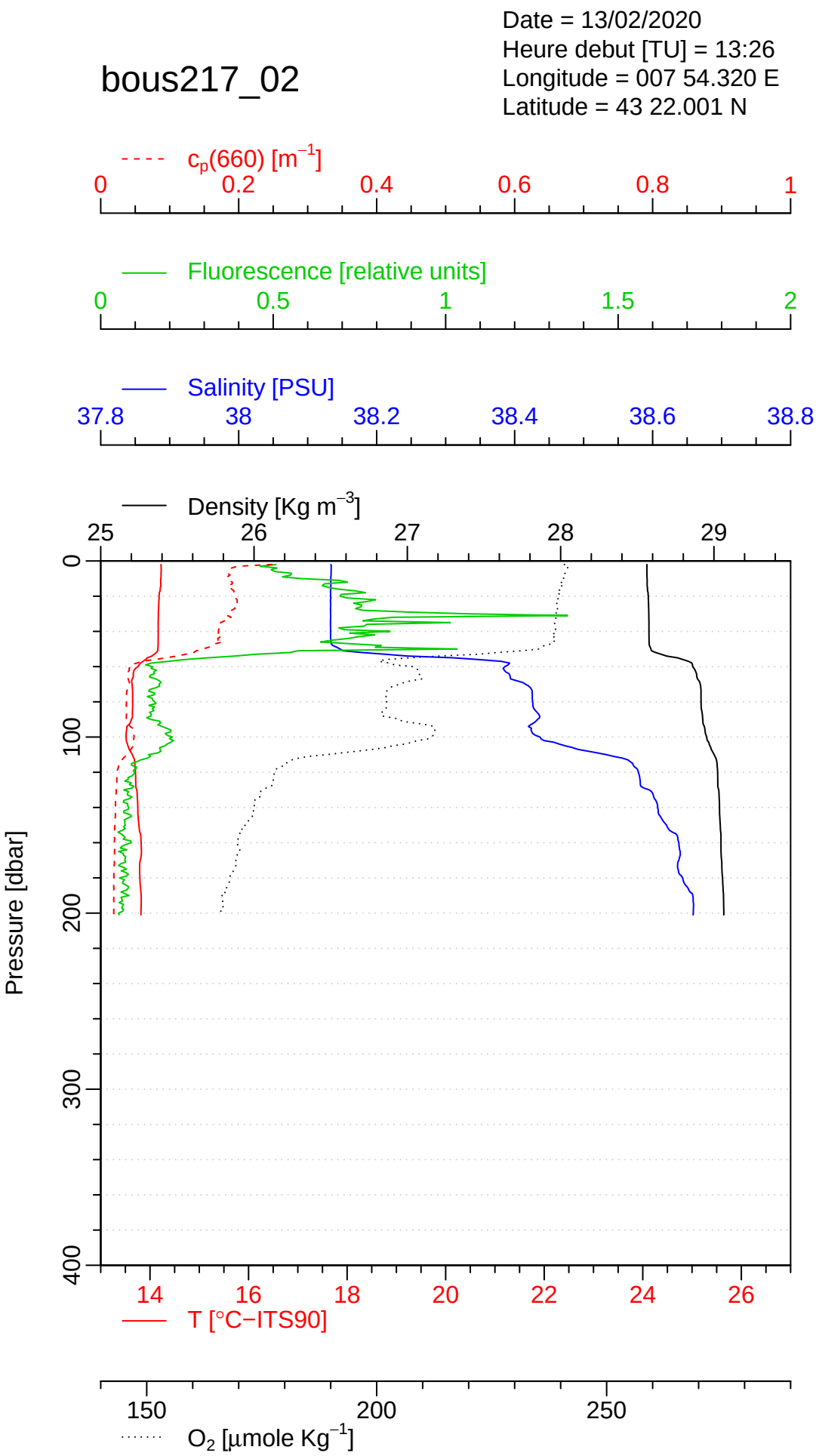
Institut de la Mer de Villefranche (IMEV), 06230 Villefranche sur mer, France

Recovery of the Rosette CTD + IOP package on the deck of the R/V *Téthys II* after its deployment at the BOUSSOLE site.

ESA/ESRIN contract N° 4000119096/17/I-BG


BOUSSOLE #217
February 2020
7°00'E
7°15'E
7°30'E
7°45'E
8°00'E
44°00'N
43°45'N
43°30'N
43°15'N
43°00'N
-100
-250
-500
-1000
-2000
Dyfamed
ODAS
BOUSSOLE
7°51'E
7°54'E
7°57'E
43°24'N
43°21'N
BOUS217_02
BOUS217_01
13 02 2020
13 02
GMT 2020 Apr 22 17:19:47


bous217_01
Date = 13/02/2020
Heure debut [TU] = 08:52
Longitude = 007 54.486 E
Latitude = 43 21.889 N
c_p(660) [m^-1]
0
0.2
0.4
0.6
0.8
1
Fluorescence [relative units]
0
0.5
1
1.5
2
Salinity [PSU]
37.8
38
38.2
38.4
38.6
38.8
Density [Kg m^-3]
25
26
27
28
29
Pressure [dbar]
0
100
200
300
400
14
16
18
20
22
24
26
T [°C−ITS90]
150
200
250
O2 [µmole Kg^-1]


bous217_02
Date = 13/02/2020
Heure debut [TU] = 13:26
Longitude = 007 54.320 E
Latitude = 43 22.001 N
c_p(660) [m^-1]
0 0.2 0.4 0.6 0.8 1
Fluorescence [relative units]
0 0.5 1 1.5 2
Salinity [PSU]
37.8 38 38.2 38.4 38.6 38.8
Density [Kg m^-3]
25 26 27 28 29
Pressure [dbar]
0 100 200 300 400
14 16 18 20 22 24 26
T [°C−ITS90]
150 200 250
O2 [µmole Kg^-1]

Date: 01/29/2021

Instrument configuration file: D:\boussole\Data\CTD\data&process\2020\B217\raw\BOUS 217_01.XMLCON

Configuration report for SBE 911plus/917plus CTD

```
Frequency channels suppressed : 2
Voltage words suppressed      : 0
Computer interface            : RS-232C
Deck unit                     : SBE11plus Firmware Version >= 5.0
Scans to average              : 1
NMEA position data added      : Yes
NMEA depth data added         : No
NMEA time added               : No
NMEA device connected to      : deck unit
Surface PAR voltage added     : No
Scan time added               : No
```

1) Frequency 0, Temperature

```
   Serial number : 5545
   Calibrated on : 11-Jul-18
   G             : 4.31331688e-003
   H             : 6.26102919e-004
   I             : 1.91674175e-005
   J             : 1.39951663e-006
   F0            : 1000.000
   Slope         : 1.00000000
   Offset        : 0.0000
```

2) Frequency 1, Conductivity

```
   Serial number : 4097
   Calibrated on : 29-Oct-19
   G             : -9.94156304e+000
   H             : 1.22604249e+000
   I             : -2.34562610e-003
   J             : 2.23476473e-004
   CTcor         : 3.2500e-006
   CPcor         : -9.57000000e-008
   Slope         : 1.00000000
   Offset        : 0.00000
```

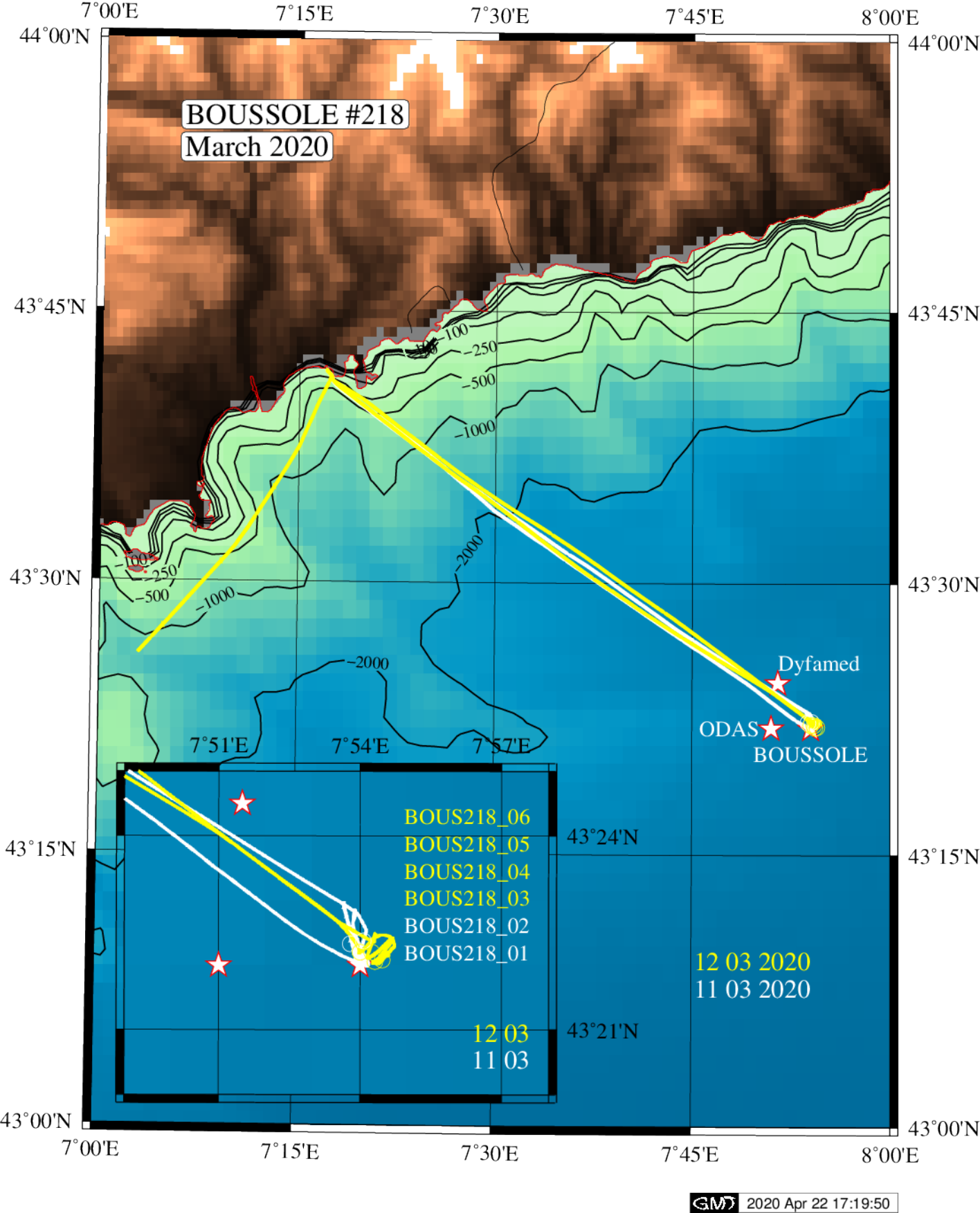
3) Frequency 2, Pressure, Digiquartz with TC

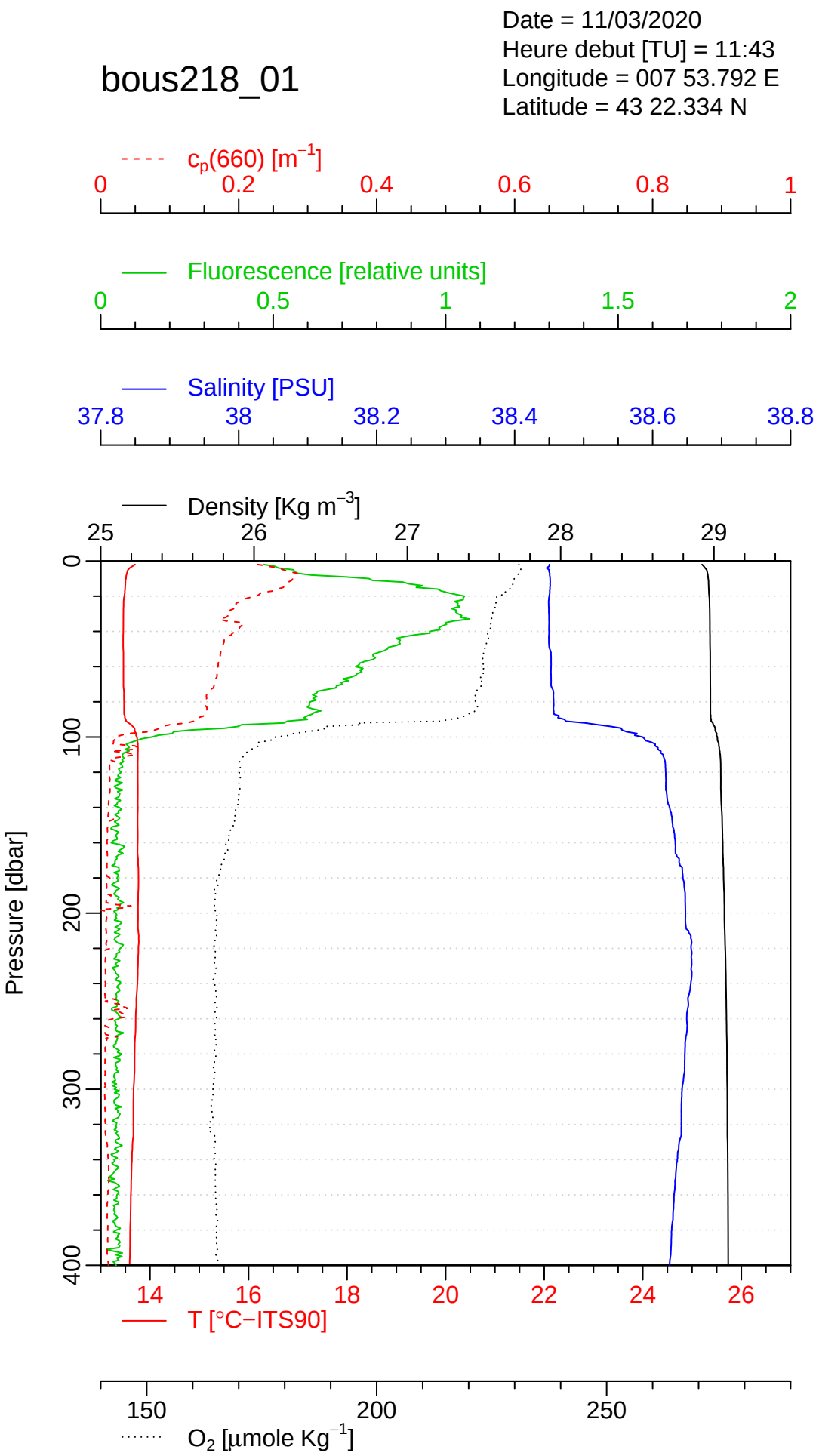
```
   Serial number : 0329
   Calibrated on : 04-Dec-09 (corr May-2017)
   C1            : -4.499631e+004
   C2            : 4.598757e-001
   C3            : 1.505020e-002
   D1            : 3.936600e-002
   D2            : 0.000000e+000
   T1            : 3.004570e+001
   T2            : -1.880753e-004
   T3            : 4.727060e-006
   T4            : -1.923520e-009
   T5            : 0.000000e+000
   Slope         : 0.99996509
   Offset        : -1.27039
   AD590M        : 1.280100e-002
   AD590B        : -9.240166e+000
```

4) A/D voltage 0, Oxygen, SBE 43

```
   Serial number : 0587
   Calibrated on : 22-May-19
   Equation      : Sea-Bird
   Soc           : 3.68480e-001
   Offset        : -6.77900e-001
   A             : -4.19030e-003
   B             : 1.84280e-004
   C             : -3.04220e-006
   E             : 3.60000e-002
   Tau20         : 1.11000e+000
```

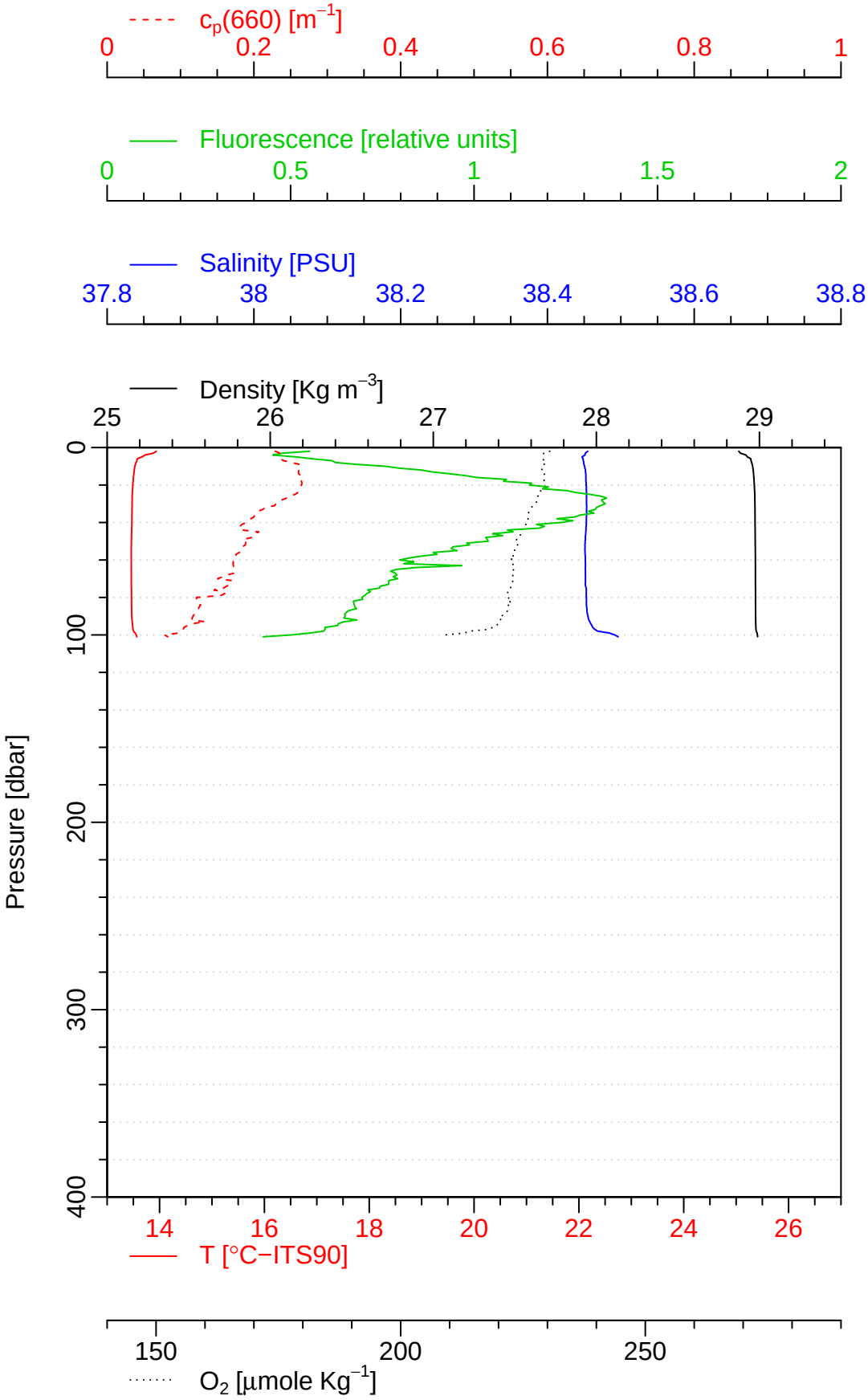
```
   D1            : 1.92634e-004
   D2            : -4.64803e-002
   H1            : -3.30000e-002
   H2            : 5.00000e+003
   H3            : 1.45000e+003

5) A/D voltage 1, Free

6) A/D voltage 2, Fluorometer, Chelsea Aqua 3

   Serial number : 088-193
   Calibrated on : 11-jul-2019
   VB            : 0.406700
   V1            : 1.761800
   Vacetone      : 0.683330
   Scale factor  : 1.000000
   Slope         : 1.000000
   Offset        : -0.260000

7) A/D voltage 3, Transmissometer, WET Labs C-Star

   Serial number : CST-887DR
   Calibrated on : oct2019
   M             : 21.0776
   B             : -0.2951
   Path length   : 0.250

8) A/D voltage 4, User Polynomial

   Serial number : 171
   Calibrated on : 19May2014
   Sensor name   : RINKOIII_DO
   A0            : 0.00000000
   A1            : 1.00000000
   A2            : 0.00000000
   A3            : 0.00000000

9) A/D voltage 5, User Polynomial, 2

   Serial number : 171
   Calibrated on : 12May2014
   Sensor name   : RINKOIII_Temp
   A0            : -5.25367500
   A1            : 16.66254000
   A2            : -2.13105300
   A3            : 0.45564880

10) A/D voltage 6, Altimeter

    Serial number : 310799
    Calibrated on : 19-Oct-16
    Scale factor  : 15.000
    Offset        : 0.000

11) A/D voltage 7, Free

Scan length                   : 31
```

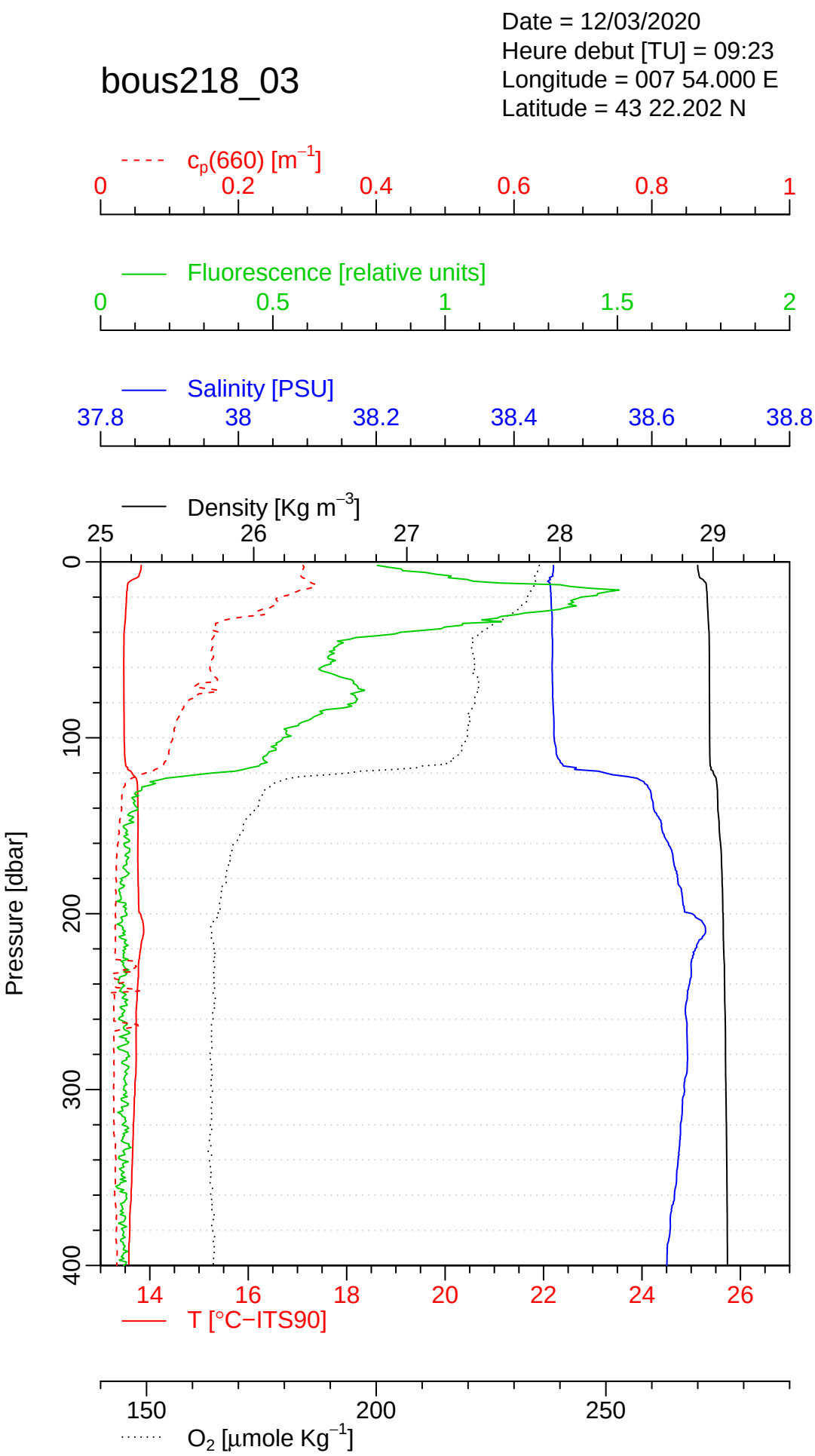

BOUSSOLE #218
March 2020
7°00'E
7°15'E
7°30'E
7°45'E
8°00'E
44°00'N
43°45'N
43°30'N
43°15'N
43°00'N
-100
-250
-500
-1000
-2000
Dyfamed
ODAS
BOUSSOLE
7°51'E
7°54'E
7°57'E
43°24'N
43°21'N
BOUS218_06
BOUS218_05
BOUS218_04
BOUS218_03
BOUS218_02
BOUS218_01
12 03 2020
11 03 2020
12 03
11 03
GMT 2020 Apr 22 17:19:50


bous218_01
Date = 11/03/2020
Heure debut [TU] = 11:43
Longitude = 007 53.792 E
Latitude = 43 22.334 N
c_p(660) [m^-1]
0
0.2
0.4
0.6
0.8
1
Fluorescence [relative units]
0
0.5
1
1.5
2
Salinity [PSU]
37.8
38
38.2
38.4
38.6
38.8
Density [Kg m^-3]
25
26
27
28
29
Pressure [dbar]
0
100
200
300
400
14
16
18
20
22
24
26
T [°C−ITS90]
150
200
250
O2 [µmole Kg^-1]

bous218_02

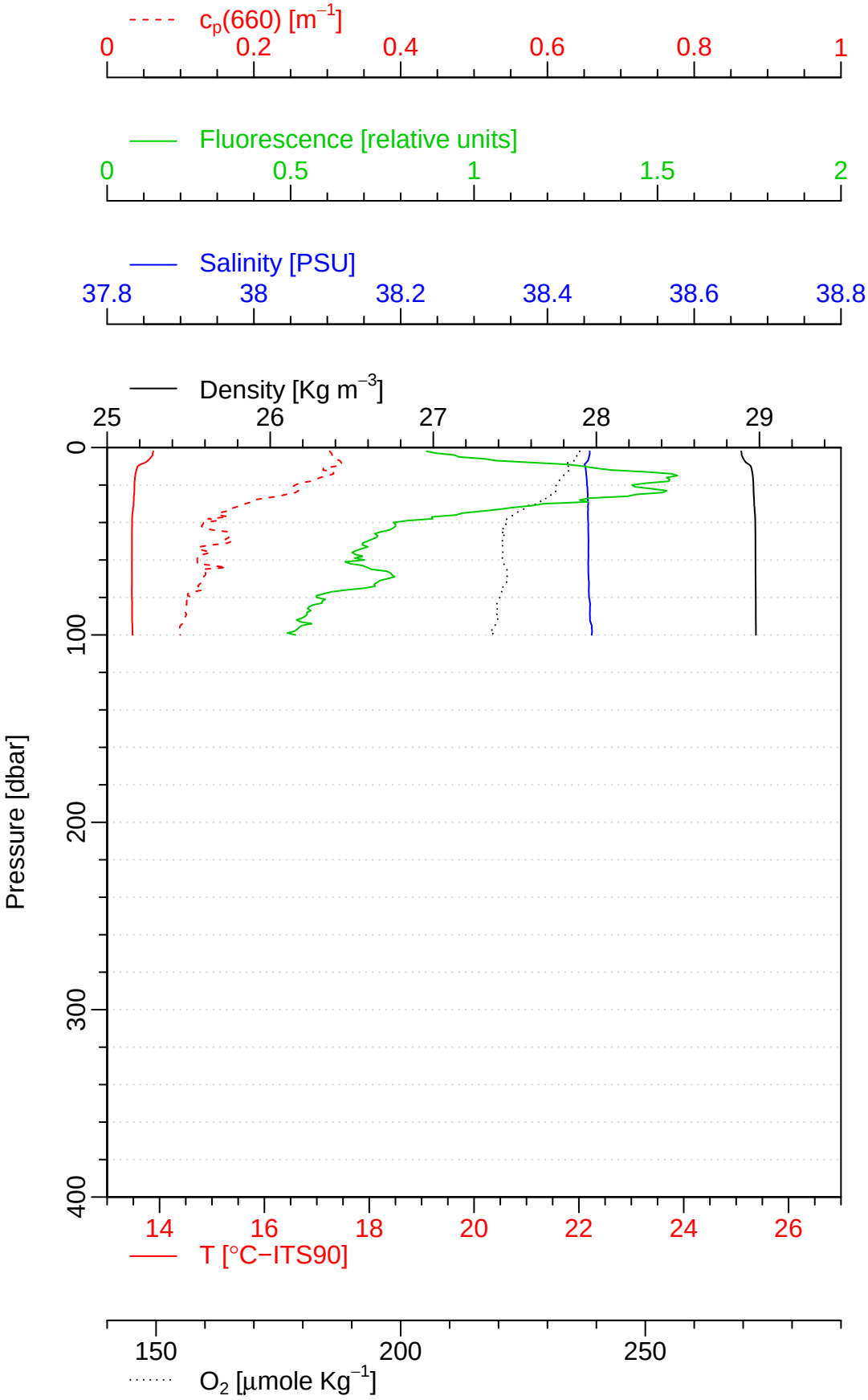
Date = 11/03/2020
Heure debut [TU] = 13:29
Longitude = 007 54.073 E
Latitude = 43 22.372 N

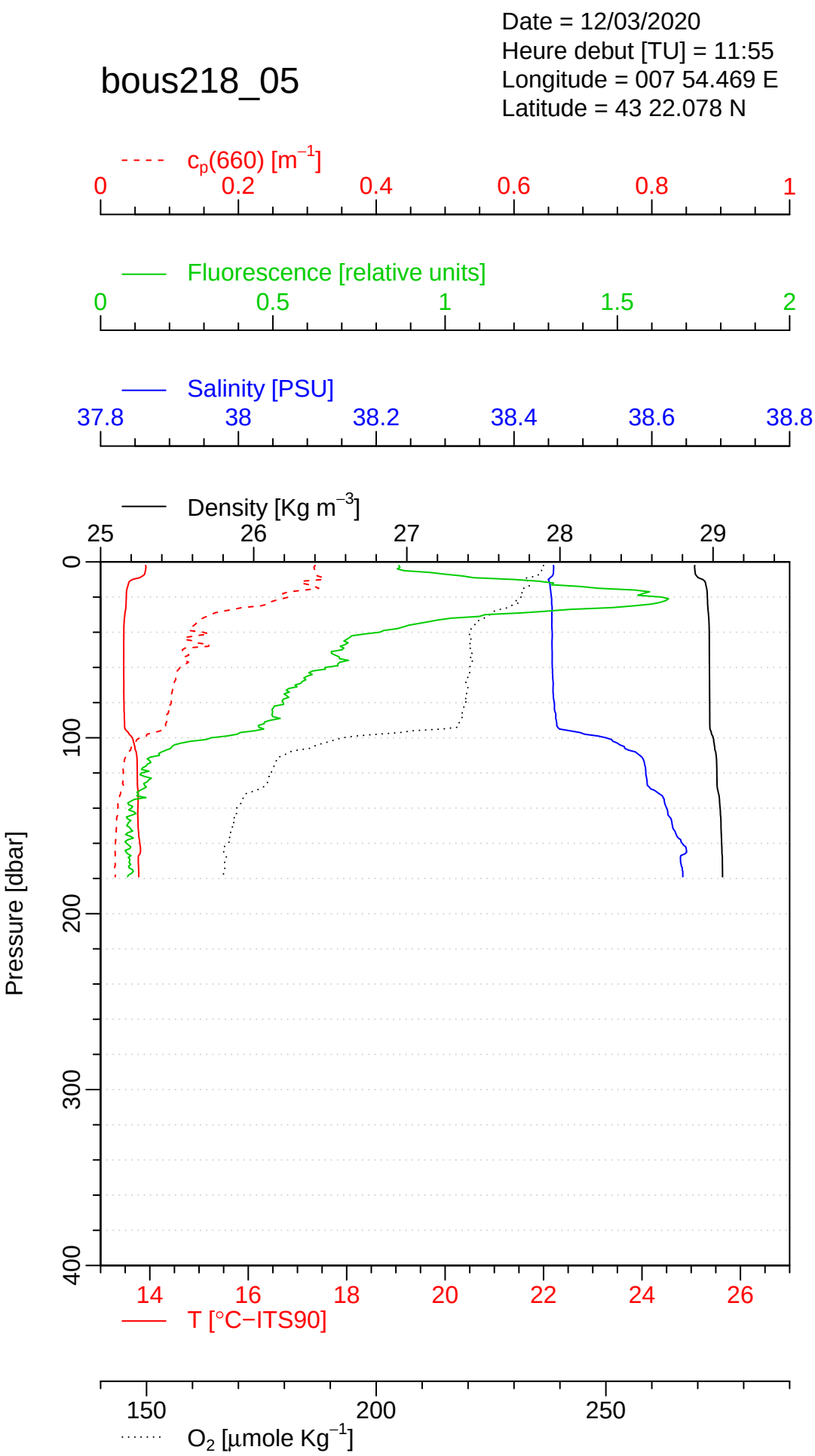



bous218_03
Date = 12/03/2020
Heure debut [TU] = 09:23
Longitude = 007 54.000 E
Latitude = 43 22.202 N
c_p(660) [m^-1]
0
0.2
0.4
0.6
0.8
1
Fluorescence [relative units]
0
0.5
1
1.5
2
Salinity [PSU]
37.8
38
38.2
38.4
38.6
38.8
Density [Kg m^-3]
25
26
27
28
29
Pressure [dbar]
0
100
200
300
400
14
16
18
20
22
24
26
T [°C−ITS90]
150
200
250
O2 [µmole Kg^-1]

bous218_04

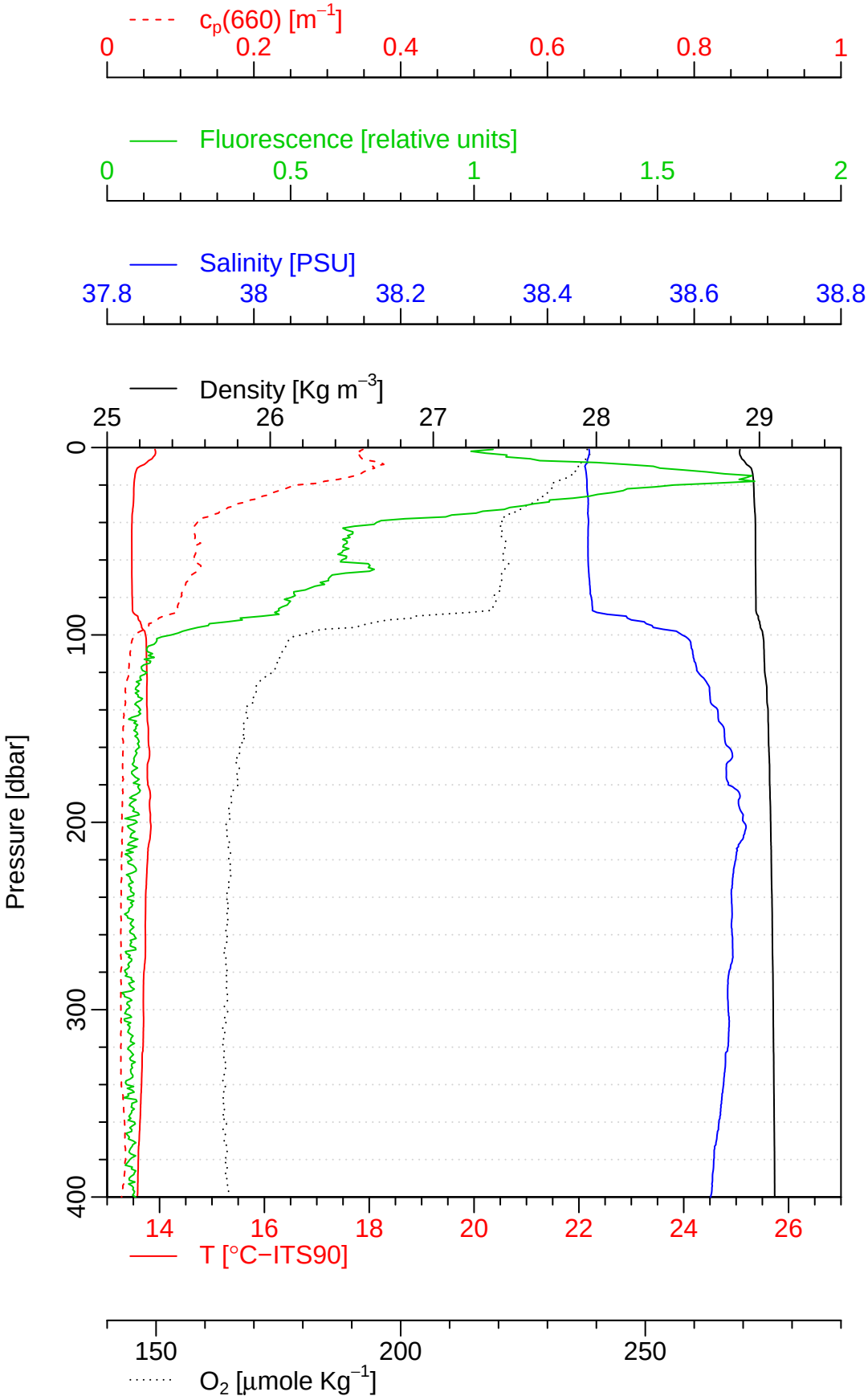
Date = 12/03/2020
Heure debut [TU] = 10:38
Longitude = 007 54.232 E
Latitude = 43 22.199 N




bous218_05
Date = 12/03/2020
Heure debut [TU] = 11:55
Longitude = 007 54.469 E
Latitude = 43 22.078 N
c_p(660) [m^-1]
0 0.2 0.4 0.6 0.8 1
Fluorescence [relative units]
0 0.5 1 1.5 2
Salinity [PSU]
37.8 38 38.2 38.4 38.6 38.8
Density [Kg m^-3]
25 26 27 28 29
Pressure [dbar]
0 100 200 300 400
14 16 18 20 22 24 26
T [°C−ITS90]
150 200 250
O2 [µmole Kg^-1]

bous218_06

Date = 12/03/2020
Heure debut [TU] = 12:19
Longitude = 007 54.316 E
Latitude = 43 22.058 N



Date: 01/29/2021

Instrument configuration file: D:\boussole\Data\CTD\data&process\2020\B218\raw\BOUS 218_01.XMLCON

Configuration report for SBE 911plus/917plus CTD

```
Frequency channels suppressed : 2
Voltage words suppressed      : 0
Computer interface            : RS-232C
Deck unit                     : SBE11plus Firmware Version >= 5.0
Scans to average              : 1
NMEA position data added      : Yes
NMEA depth data added         : No
NMEA time added               : No
NMEA device connected to      : deck unit
Surface PAR voltage added     : No
Scan time added               : No
```

1) Frequency 0, Temperature

```
   Serial number : 5545
   Calibrated on : 11-Jul-18
   G             : 4.31331688e-003
   H             : 6.26102919e-004
   I             : 1.91674175e-005
   J             : 1.39951663e-006
   F0            : 1000.000
   Slope         : 1.00000000
   Offset        : 0.0000
```

2) Frequency 1, Conductivity

```
   Serial number : 4097
   Calibrated on : 29-Oct-19
   G             : -9.94156304e+000
   H             : 1.22604249e+000
   I             : -2.34562610e-003
   J             : 2.23476473e-004
   CTcor         : 3.2500e-006
   CPcor         : -9.57000000e-008
   Slope         : 1.00000000
   Offset        : 0.00000
```

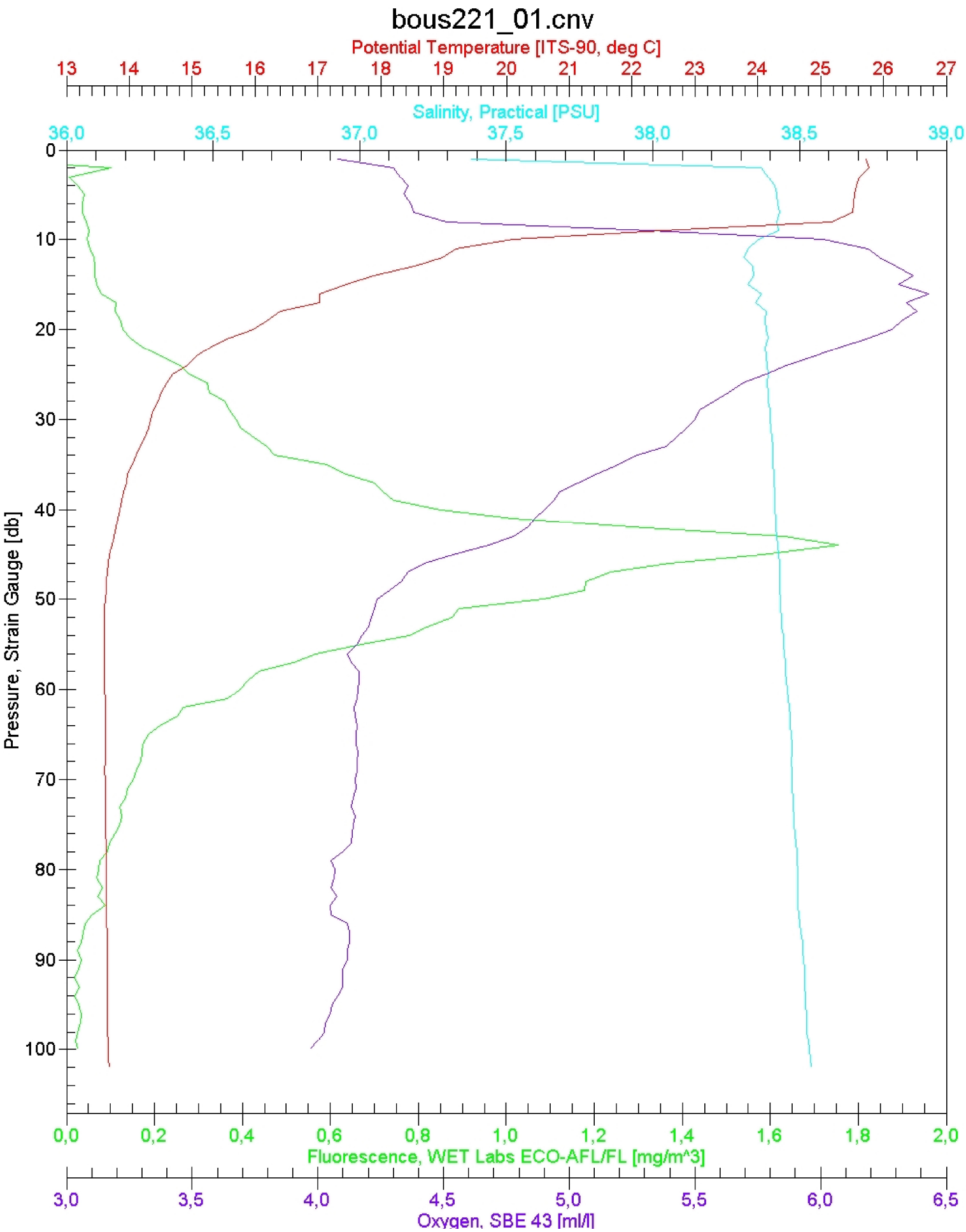
3) Frequency 2, Pressure, Digiquartz with TC

```
   Serial number : 0329
   Calibrated on : 04-Dec-09 (corr May-2017)
   C1            : -4.499631e+004
   C2            : 4.598757e-001
   C3            : 1.505020e-002
   D1            : 3.936600e-002
   D2            : 0.000000e+000
   T1            : 3.004570e+001
   T2            : -1.880753e-004
   T3            : 4.727060e-006
   T4            : -1.923520e-009
   T5            : 0.000000e+000
   Slope         : 0.99996509
   Offset        : -1.27039
   AD590M        : 1.280100e-002
   AD590B        : -9.240166e+000
```

4) A/D voltage 0, Oxygen, SBE 43

```
   Serial number : 0587
   Calibrated on : 22-May-19
   Equation      : Sea-Bird
   Soc           : 3.68480e-001
   Offset        : -6.77900e-001
   A             : -4.19030e-003
   B             : 1.84280e-004
   C             : -3.04220e-006
   E             : 3.60000e-002
   Tau20         : 1.11000e+000
```

```
   D1            : 1.92634e-004
   D2            : -4.64803e-002
   H1            : -3.30000e-002
   H2            : 5.00000e+003
   H3            : 1.45000e+003

5) A/D voltage 1, Free

6) A/D voltage 2, Fluorometer, Chelsea Aqua 3

   Serial number : 088-193
   Calibrated on : 11-jul-2019
   VB            : 0.406700
   V1            : 1.761800
   Vacetone      : 0.683330
   Scale factor  : 1.000000
   Slope         : 1.000000
   Offset        : -0.260000

7) A/D voltage 3, Transmissometer, WET Labs C-Star

   Serial number : CST-887DR
   Calibrated on : oct2019
   M             : 21.0776
   B             : -0.2951
   Path length   : 0.250

8) A/D voltage 4, User Polynomial

   Serial number : 171
   Calibrated on : 19May2014
   Sensor name   : RINKOIII_DO
   A0            : 0.00000000
   A1            : 1.00000000
   A2            : 0.00000000
   A3            : 0.00000000

9) A/D voltage 5, User Polynomial, 2

   Serial number : 171
   Calibrated on : 12May2014
   Sensor name   : RINKOIII_Temp
   A0            : -5.25367500
   A1            : 16.66254000
   A2            : -2.13105300
   A3            : 0.45564880

10) A/D voltage 6, Altimeter

    Serial number : 310799
    Calibrated on : 19-Oct-16
    Scale factor  : 15.000
    Offset        : 0.000

11) A/D voltage 7, Free

Scan length                   : 31
```


bous221_01.cnv
Potential Temperature [ITS-90, deg C]
13 14 15 16 17 18 19 20 21 22 23 24 25 26 27
Salinity, Practical [PSU]
36,0 36,5 37,0 37,5 38,0 38,5 39,0
Pressure, Strain Gauge [db]
0 10 20 30 40 50 60 70 80 90 100
0,0 0,2 0,4 0,6 0,8 1,0 1,2 1,4 1,6 1,8 2,0
Fluorescence, WET Labs ECO-AFL/FL [mg/m^3]
3,0 3,5 4,0 4,5 5,0 5,5 6,0 6,5
Oxygen, SBE 43 [ml/l]

Date: 01/29/2021

Instrument configuration file: D:\boussole\Data\CTD\data&process\2020\B221\raw\Bous 221_01.xmlcon

Configuration report for SBE 25plus Sealogger CTD

Usage: Process .XML file uploaded from CTD memory.
External voltage channels : 8

1) Frequency 0, Temperature

Serial number	: 1539
Calibrated on	: 19-Apr-19
G	: 4.83459939e-003
H	: 6.68355356e-004
I	: 2.37960006e-005
J	: 1.75426415e-006
F0	: 1000.000
Slope	: 1.00000000
Offset	: 0.0000

2) Frequency 1, Conductivity

Serial number	: 2059
Calibrated on	: 03-Dec-19
G	: -9.97817269e+000
H	: 1.35562262e+000
I	: -3.54890305e-003
J	: 3.35451808e-004
CTcor	: 3.2500e-006
CPcor	: -9.57000000e-008
Slope	: 1.00000000
Offset	: 0.00000

3) Count, Pressure, Strain Gauge

Serial number	: 1012
Calibrated on	: 17-May-17
PA0	: 2.27172254e-002
PA1	: 9.66749293e-005
PA2	: 2.09213666e-014
PTEMPA0	: -6.62710354e+001
PTEMPA1	: 5.17622685e+001
PTEMPA2	: -4.69262843e-001
PTCA0	: 8.38104915e+006
PTCA1	: 5.60606778e+001
PTCA2	: -2.00953878e+000
PTCB0	: 2.49461250e+001
PTCB1	: 2.50000000e-005
PTCB2	: 0.00000000e+000
Offset	: 0.000000

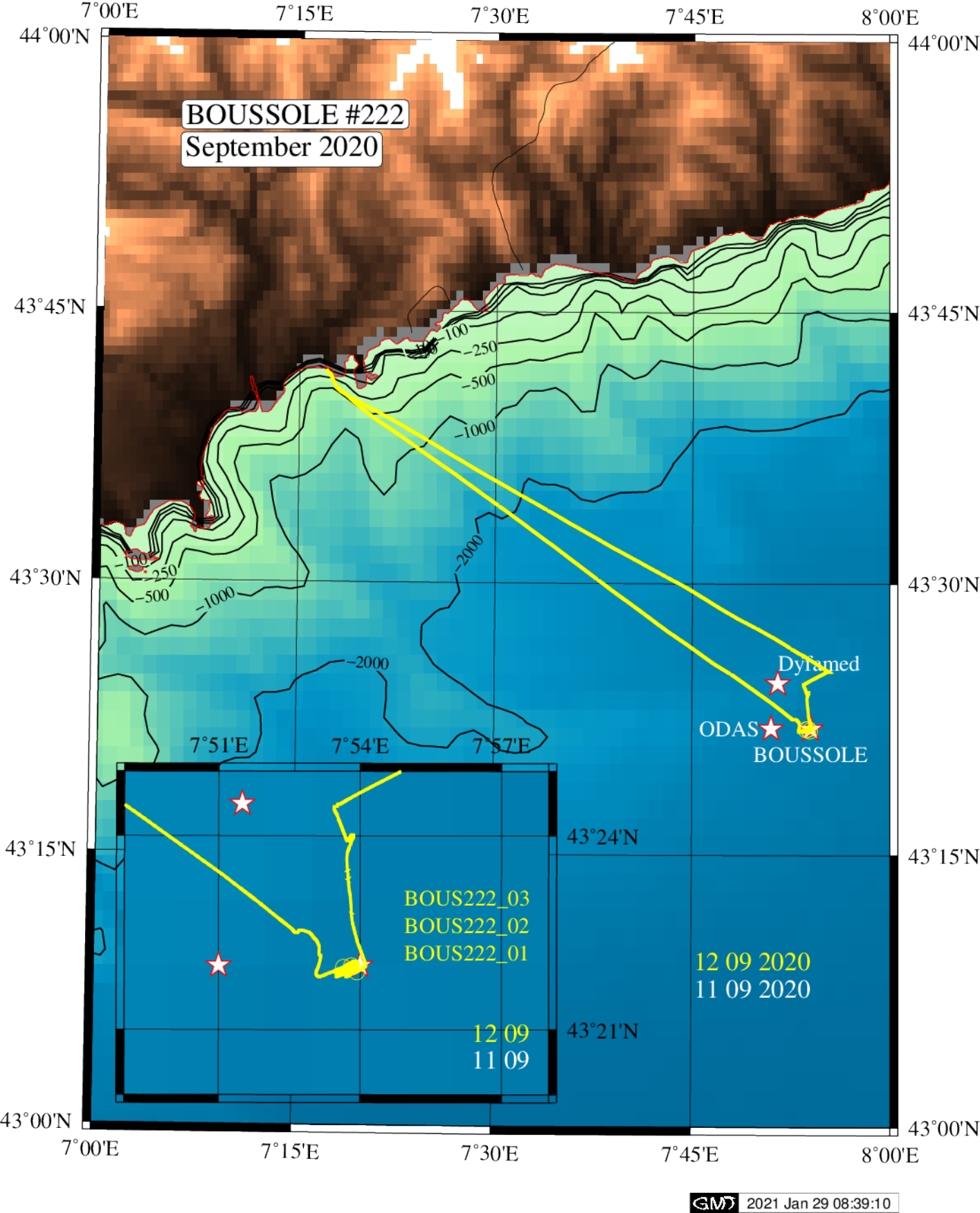
4) A/D voltage 0, Oxygen, SBE 43

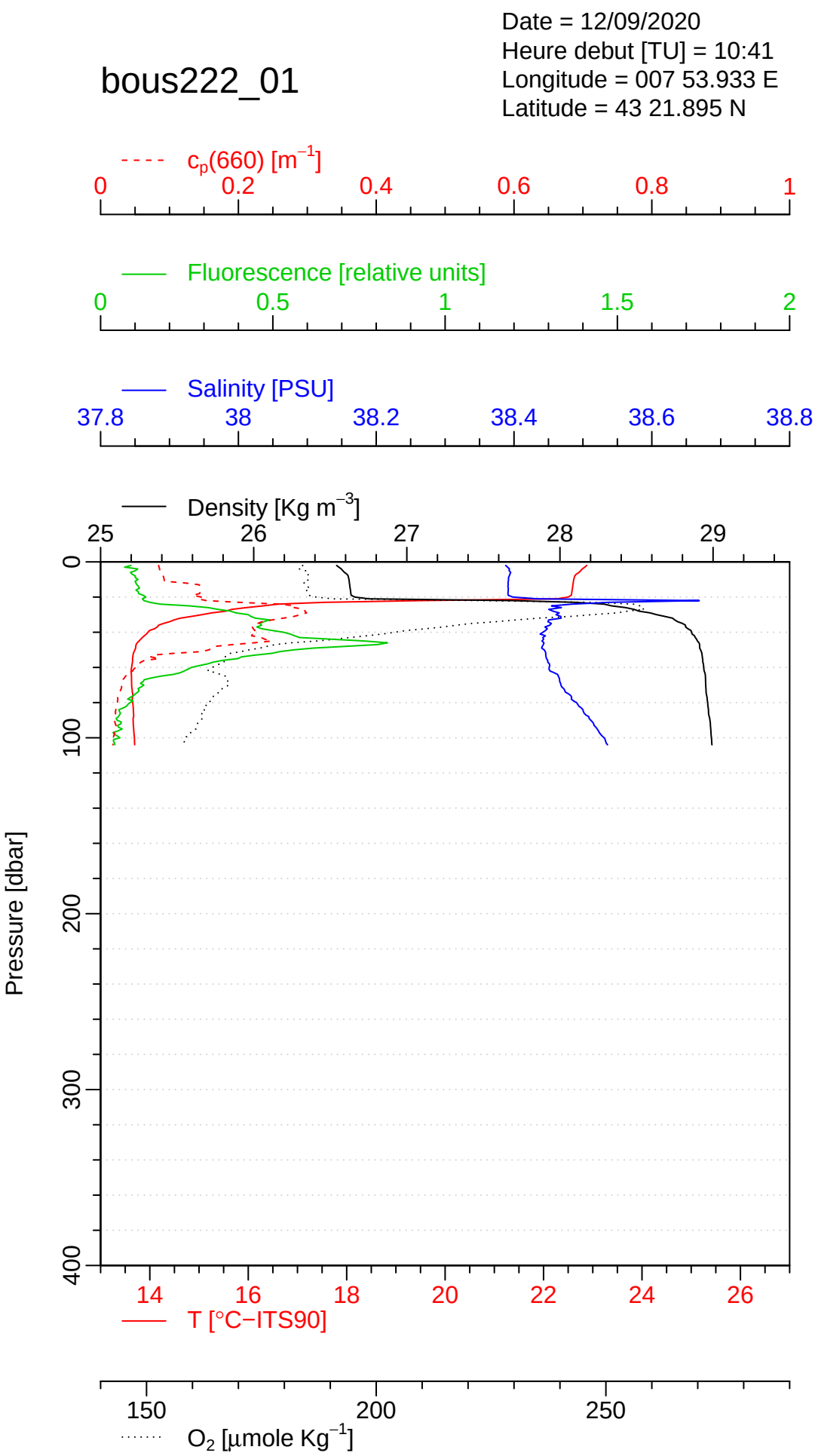
Serial number	: 2396
Calibrated on	: 16-Oct-18
Equation	: Sea-Bird
Soc	: 4.51140e-001
Offset	: -5.01300e-001
A	: -3.55360e-003
B	: 1.79890e-004
C	: -2.39980e-006
E	: 3.60000e-002
Tau20	: 1.47000e+000
D1	: 1.92634e-004
D2	: -4.64803e-002
H1	: -3.30000e-002
H2	: 5.00000e+003
H3	: 1.45000e+003

5) Unknown 1, Free

6) A/D voltage 2, Fluorometer, WET Labs ECO-AFL/FL

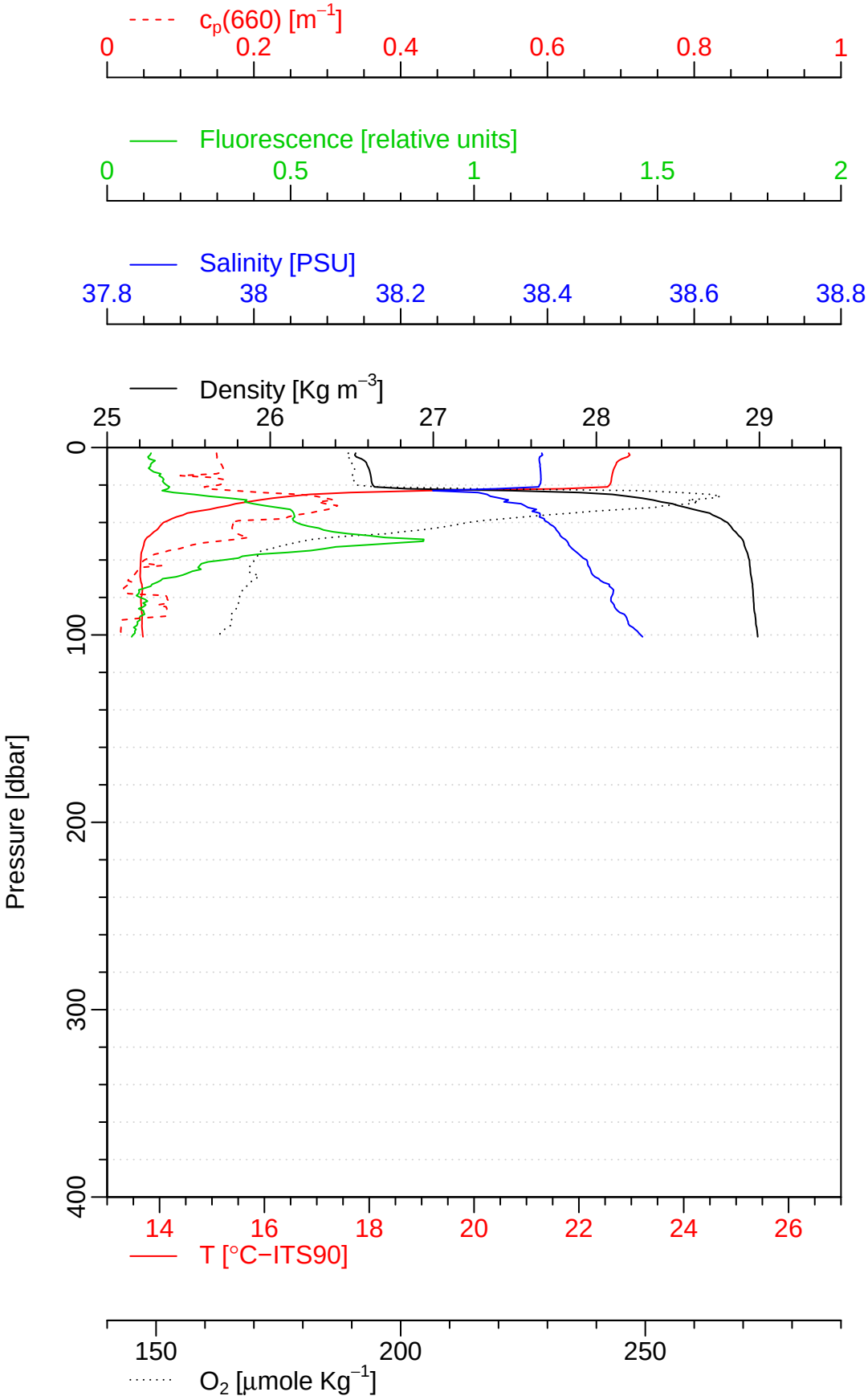
```
   Serial number : 6013
   Calibrated on : 05/12/2019
   Dark output   : 0.0630
   Scale factor  : 6.00000000e+000

7) A/D voltage 3, Turbidity Meter, WET Labs, ECO-NTU

   Serial number : 6013
   Calibrated on : 05/12/2019
   ScaleFactor   : 2.000000
   Dark output   : 0.073000

8) A/D voltage 4, PAR/Irradiance, Biospherical/Licor

   Serial number        : 70405
   Calibrated on        : 31-Jan-2012
   M                    : 1.00000000
   B                    : 0.00000000
   Calibration constant : 25125628140.00000000
   Multiplier           : 1.00000000
   Offset               : -0.09490800

9) Unknown 5, Free

10) Unknown 6, Free

11) Unknown 7, Free

Serial Sensor data not processed in this version of Seasoft.
Sample interval            : 0.06250000
Scan length                : 72
```

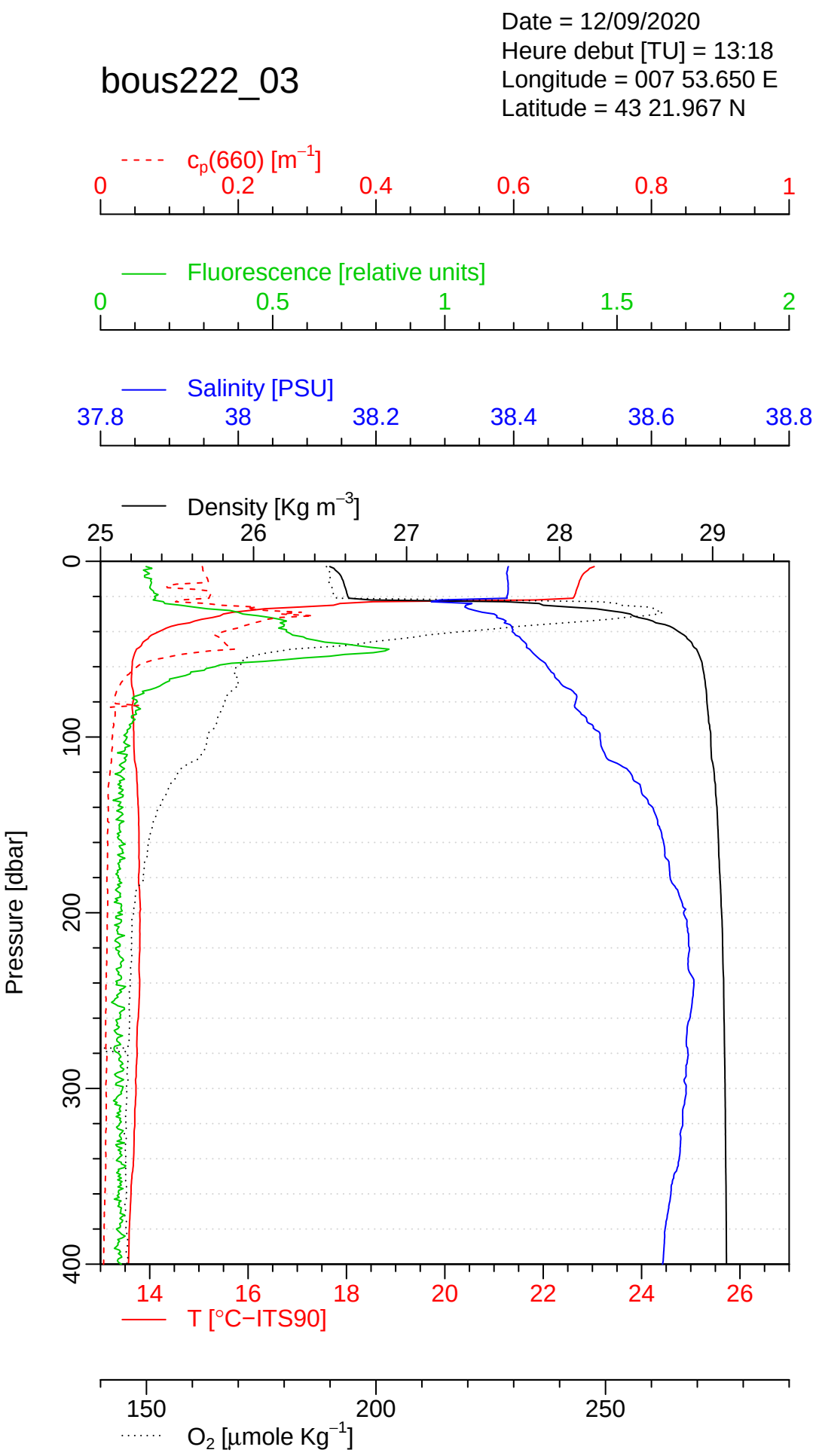

BOUSSOLE #222
September 2020
7°00'E
7°15'E
7°30'E
7°45'E
8°00'E
44°00'N
43°45'N
43°30'N
43°15'N
43°00'N
-100
-250
-500
-1000
-2000
Dyfamed
ODAS
BOUSSOLE
7°51'E
7°54'E
7°57'E
43°24'N
43°21'N
BOUS222_03
BOUS222_02
BOUS222_01
12 09
11 09
12 09 2020
11 09 2020
GMT 2021 Jan 29 08:39:10


bous222_01
Date = 12/09/2020
Heure debut [TU] = 10:41
Longitude = 007 53.933 E
Latitude = 43 21.895 N
c_p(660) [m^-1]
0
0.2
0.4
0.6
0.8
1
Fluorescence [relative units]
0
0.5
1
1.5
2
Salinity [PSU]
37.8
38
38.2
38.4
38.6
38.8
Density [Kg m^-3]
25
26
27
28
29
Pressure [dbar]
0
100
200
300
400
14
16
18
20
22
24
26
T [°C−ITS90]
150
200
250
O2 [µmole Kg^-1]

bous222_02

Date = 12/09/2020
Heure debut [TU] = 12:13
Longitude = 007 53.820 E
Latitude = 43 21.992 N




bous222_03
Date = 12/09/2020
Heure debut [TU] = 13:18
Longitude = 007 53.650 E
Latitude = 43 21.967 N
c_p(660) [m^-1]
0 0.2 0.4 0.6 0.8 1
Fluorescence [relative units]
0 0.5 1 1.5 2
Salinity [PSU]
37.8 38 38.2 38.4 38.6 38.8
Density [Kg m^-3]
25 26 27 28 29
Pressure [dbar]
0 100 200 300 400
14 16 18 20 22 24 26
T [°C−ITS90]
150 200 250
O2 [µmole Kg^-1]

Date: 01/29/2021

Instrument configuration file: D:\boussole\Data\CTD\data&process\2020\B222\raw\BOUS 222_01.XMLCON

Configuration report for SBE 911plus/917plus CTD

```
Frequency channels suppressed : 0
Voltage words suppressed      : 0
Computer interface            : RS-232C
Deck unit                     : SBE11plus Firmware Version >= 5.0
Scans to average              : 1
NMEA position data added      : Yes
NMEA depth data added         : No
NMEA time added               : No
NMEA device connected to      : deck unit
Surface PAR voltage added     : No
Scan time added               : No
```

1) Frequency 0, Temperature

```
   Serial number : 5545
   Calibrated on : 11-Jul-18
   G             : 4.31331688e-003
   H             : 6.26102919e-004
   I             : 1.91674175e-005
   J             : 1.39951663e-006
   F0            : 1000.000
   Slope         : 1.00000000
   Offset        : 0.0000
```

2) Frequency 1, Conductivity

```
   Serial number : 4097
   Calibrated on : 29-Oct-19
   G             : -9.94156304e+000
   H             : 1.22604249e+000
   I             : -2.34562610e-003
   J             : 2.23476473e-004
   CTcor         : 3.2500e-006
   CPcor         : -9.57000000e-008
   Slope         : 1.00000000
   Offset        : 0.00000
```

3) Frequency 2, Pressure, Digiquartz with TC

```
   Serial number : 0329
   Calibrated on : 04-Dec-09 (corr May-2017)
   C1            : -4.499631e+004
   C2            : 4.598757e-001
   C3            : 1.505020e-002
   D1            : 3.936600e-002
   D2            : 0.000000e+000
   T1            : 3.004570e+001
   T2            : -1.880753e-004
   T3            : 4.727060e-006
   T4            : -1.923520e-009
   T5            : 0.000000e+000
   Slope         : 0.99996509
   Offset        : -2.27039
   AD590M        : 1.280100e-002
   AD590B        : -9.240166e+000
```

4) Frequency 3, Temperature, 2

```
   Serial number : 2473
   Calibrated on : 04-Mar-20
   G             : 4.36726120e-003
   H             : 6.43151581e-004
   I             : 2.33812060e-005
   J             : 2.23255667e-006
   F0            : 1000.000
   Slope         : 1.00000000
   Offset        : 0.0000
```

5) Frequency 4, Conductivity, 2

```
Serial number : 2929
Calibrated on : 05-Mar-20
G             : -1.05951733e+001
H             : 1.41908901e+000
I             : 7.59510042e-004
J             : 2.04144674e-005
CTcor         : 3.2500e-006
CPcor         : -9.57000000e-008
Slope         : 1.00000000
Offset        : 0.00000
```

6) A/D voltage 0, Oxygen, SBE 43

```
Serial number : 0587
Calibrated on : 22-May-19
Equation      : Sea-Bird
Soc           : 3.68480e-001
Offset        : -6.77900e-001
A             : -4.19030e-003
B             : 1.84280e-004
C             : -3.04220e-006
E             : 3.60000e-002
Tau20         : 1.11000e+000
D1            : 1.92634e-004
D2            : -4.64803e-002
H1            : -3.30000e-002
H2            : 5.00000e+003
H3            : 1.45000e+003
```

7) A/D voltage 1, Free

8) A/D voltage 2, Fluorometer, Chelsea Aqua 3

```
Serial number : 088-193
Calibrated on : 11-jul-2019
VB            : 0.406700
V1            : 1.761800
Vacetone      : 0.683330
Scale factor  : 1.000000
Slope         : 1.000000
Offset        : -0.260000
```

9) A/D voltage 3, Transmissometer, WET Labs C-Star

```
Serial number : CST-887DR
Calibrated on : oct2019
M             : 21.0776
B             : -0.2951
Path length   : 0.250
```

10) A/D voltage 4, User Polynomial

```
Serial number : 171
Calibrated on : 19May2014
Sensor name   : RINKOIII_DO
A0            : 0.00000000
A1            : 1.00000000
A2            : 0.00000000
A3            : 0.00000000
```

11) A/D voltage 5, User Polynomial, 2

```
Serial number : 171
Calibrated on : 12May2014
Sensor name   : RINKOIII_Temp
A0            : -5.25367500
A1            : 16.66254000
A2            : -2.13105300
A3            : 0.45564880
```

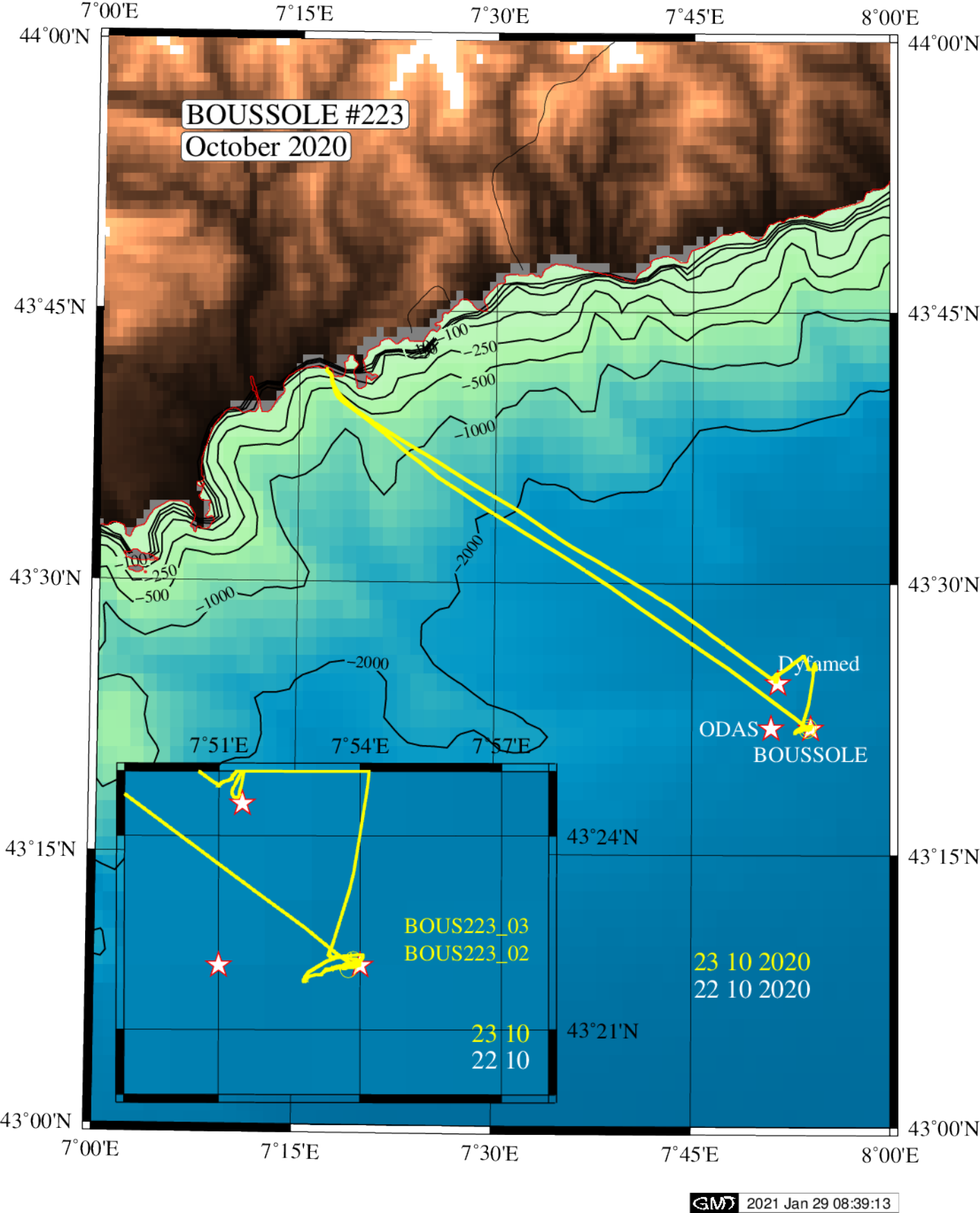
12) A/D voltage 6, Altimeter

```
Serial number : 310799
Calibrated on : 19-Oct-16
```

Scale factor : 15.000
Offset : 0.000

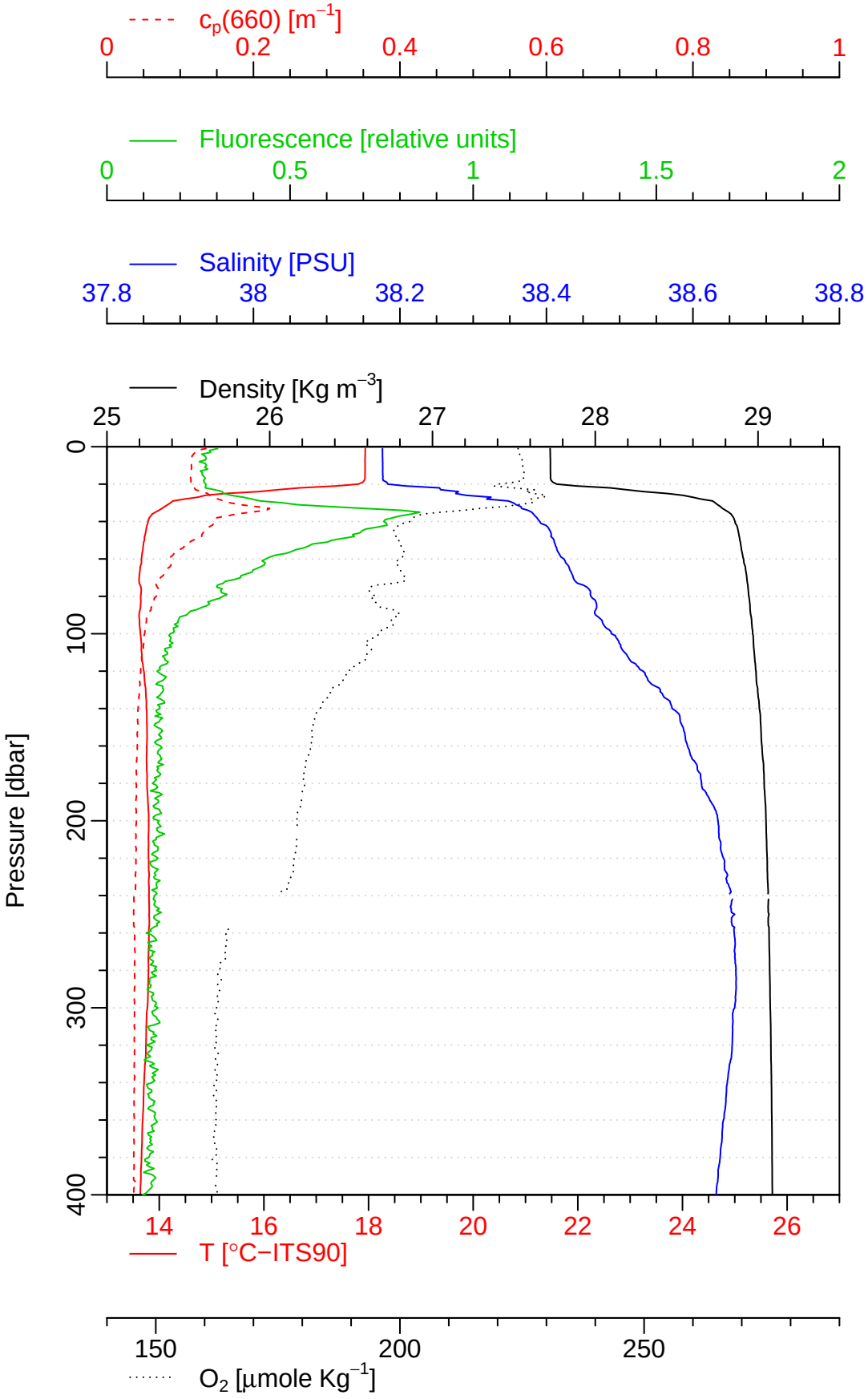
13) A/D voltage 7, Free

Scan length : 37


BOUSSOLE #223
October 2020
7°00'E
7°15'E
7°30'E
7°45'E
8°00'E
44°00'N
43°45'N
43°30'N
43°15'N
43°00'N
-100
-250
-500
-1000
-2000
Dyfamed
ODAS
BOUSSOLE
7°51'E
7°54'E
7°57'E
43°24'N
43°21'N
BOUS223_03
BOUS223_02
23 10
22 10
23 10 2020
22 10 2020
GMT 2021 Jan 29 08:39:13

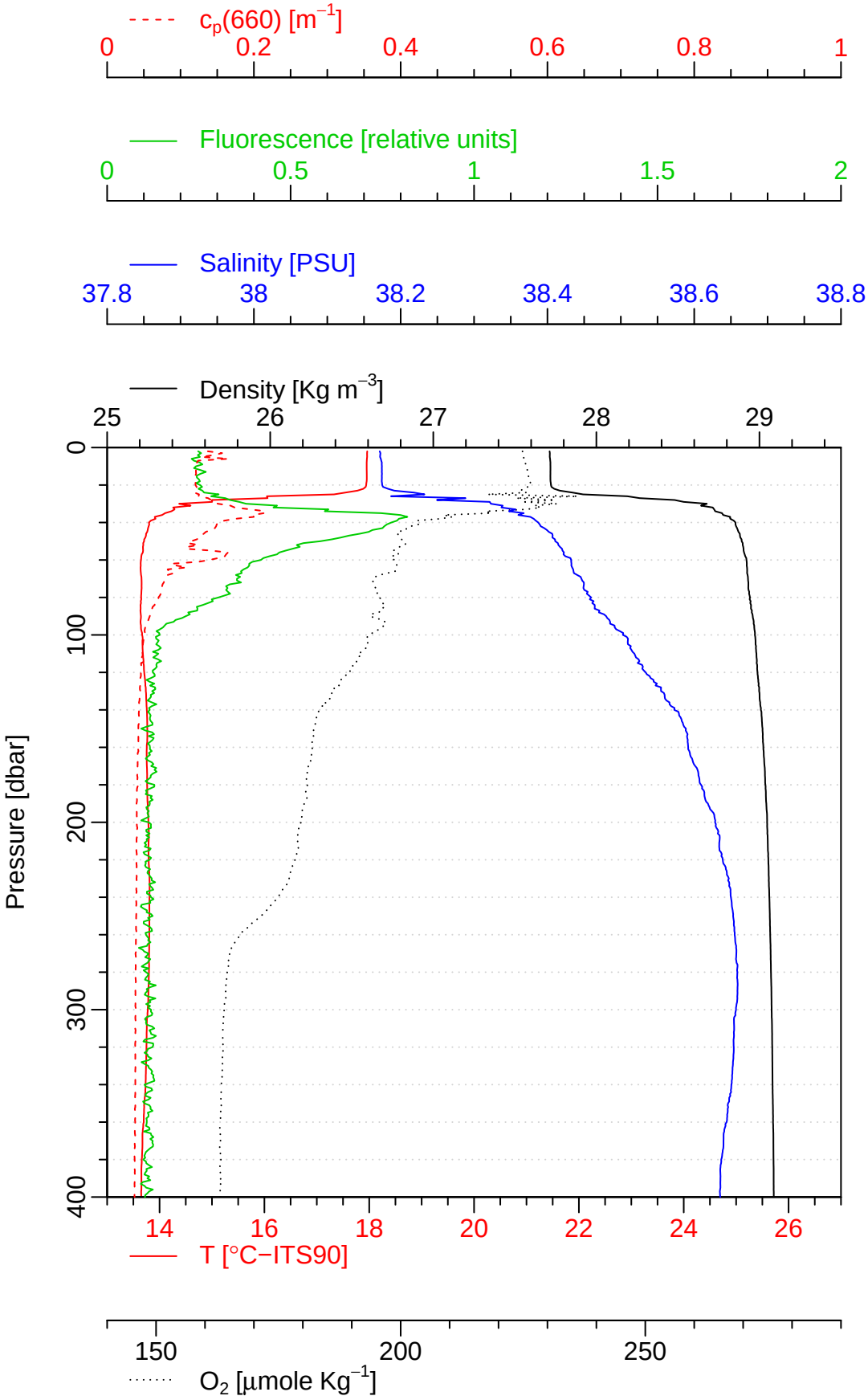
bous223_02

Date = 23/10/2020
Heure debut [TU] = 09:00
Longitude = 007 53.751 E
Latitude = 43 21.928 N



bous223_03

Date = 23/10/2020
Heure debut [TU] = 10:59
Longitude = 007 53.854 E
Latitude = 43 22.089 N



Date: 01/29/2021

Instrument configuration file: D:\boussole\Data\CTD\data&process\2020\B223\raw\BOUS 223_02.XMLCON

Configuration report for SBE 911plus/917plus CTD

```
Frequency channels suppressed : 0
Voltage words suppressed      : 0
Computer interface            : RS-232C
Deck unit                     : SBE11plus Firmware Version >= 5.0
Scans to average              : 1
NMEA position data added      : Yes
NMEA depth data added         : No
NMEA time added               : No
NMEA device connected to      : deck unit
Surface PAR voltage added     : No
Scan time added               : No
```

1) Frequency 0, Temperature

```
   Serial number : 5545
   Calibrated on : 11-Jul-18
   G             : 4.31331688e-003
   H             : 6.26102919e-004
   I             : 1.91674175e-005
   J             : 1.39951663e-006
   F0            : 1000.000
   Slope         : 1.00000000
   Offset        : 0.0000
```

2) Frequency 1, Conductivity

```
   Serial number : 4097
   Calibrated on : 29-Oct-19
   G             : -9.94156304e+000
   H             : 1.22604249e+000
   I             : -2.34562610e-003
   J             : 2.23476473e-004
   CTcor         : 3.2500e-006
   CPcor         : -9.57000000e-008
   Slope         : 1.00000000
   Offset        : 0.00000
```

3) Frequency 2, Pressure, Digiquartz with TC

```
   Serial number : 0329
   Calibrated on : 04-Dec-09 (corr May-2017)
   C1            : -4.499631e+004
   C2            : 4.598757e-001
   C3            : 1.505020e-002
   D1            : 3.936600e-002
   D2            : 0.000000e+000
   T1            : 3.004570e+001
   T2            : -1.880753e-004
   T3            : 4.727060e-006
   T4            : -1.923520e-009
   T5            : 0.000000e+000
   Slope         : 0.99996509
   Offset        : -2.27039
   AD590M        : 1.280100e-002
   AD590B        : -9.240166e+000
```

4) Frequency 3, Temperature, 2

```
   Serial number : 2473
   Calibrated on : 04-Mar-20
   G             : 4.36726120e-003
   H             : 6.43151581e-004
   I             : 2.33812060e-005
   J             : 2.23255667e-006
   F0            : 1000.000
   Slope         : 1.00000000
   Offset        : 0.0000
```

5) Frequency 4, Conductivity, 2

```
Serial number : 2929
Calibrated on : 05-Mar-20
G             : -1.05951733e+001
H             : 1.41908901e+000
I             : 7.59510042e-004
J             : 2.04144674e-005
CTcor         : 3.2500e-006
CPcor         : -9.57000000e-008
Slope         : 1.00000000
Offset        : 0.00000
```

6) A/D voltage 0, Oxygen, SBE 43

```
Serial number : 0033
Calibrated on : 26-Aug-20
Equation      : Sea-Bird
Soc           : 5.95200e-001
Offset        : -4.77100e-001
A             : -4.60520e-003
B             : 1.52260e-004
C             : -2.23960e-006
E             : 3.60000e-002
Tau20         : 1.34000e+000
D1            : 1.92634e-004
D2            : -4.64803e-002
H1            : -3.30000e-002
H2            : 5.00000e+003
H3            : 1.45000e+003
```

7) A/D voltage 1, Free

8) A/D voltage 2, Fluorometer, Chelsea Aqua 3

```
Serial number : 088-193
Calibrated on : 11-jul-2019
VB            : 0.406700
V1            : 1.761800
Vacetone      : 0.683330
Scale factor  : 1.000000
Slope         : 1.000000
Offset        : -0.260000
```

9) A/D voltage 3, Transmissometer, WET Labs C-Star

```
Serial number : CST-887DR
Calibrated on : oct2019
M             : 21.0776
B             : -0.2951
Path length   : 0.250
```

10) A/D voltage 4, User Polynomial

```
Serial number : 171
Calibrated on : 19May2014
Sensor name   : RINKOIII_DO
A0            : 0.00000000
A1            : 1.00000000
A2            : 0.00000000
A3            : 0.00000000
```

11) A/D voltage 5, User Polynomial, 2

```
Serial number : 171
Calibrated on : 12May2014
Sensor name   : RINKOIII_Temp
A0            : -5.25367500
A1            : 16.66254000
A2            : -2.13105300
A3            : 0.45564880
```

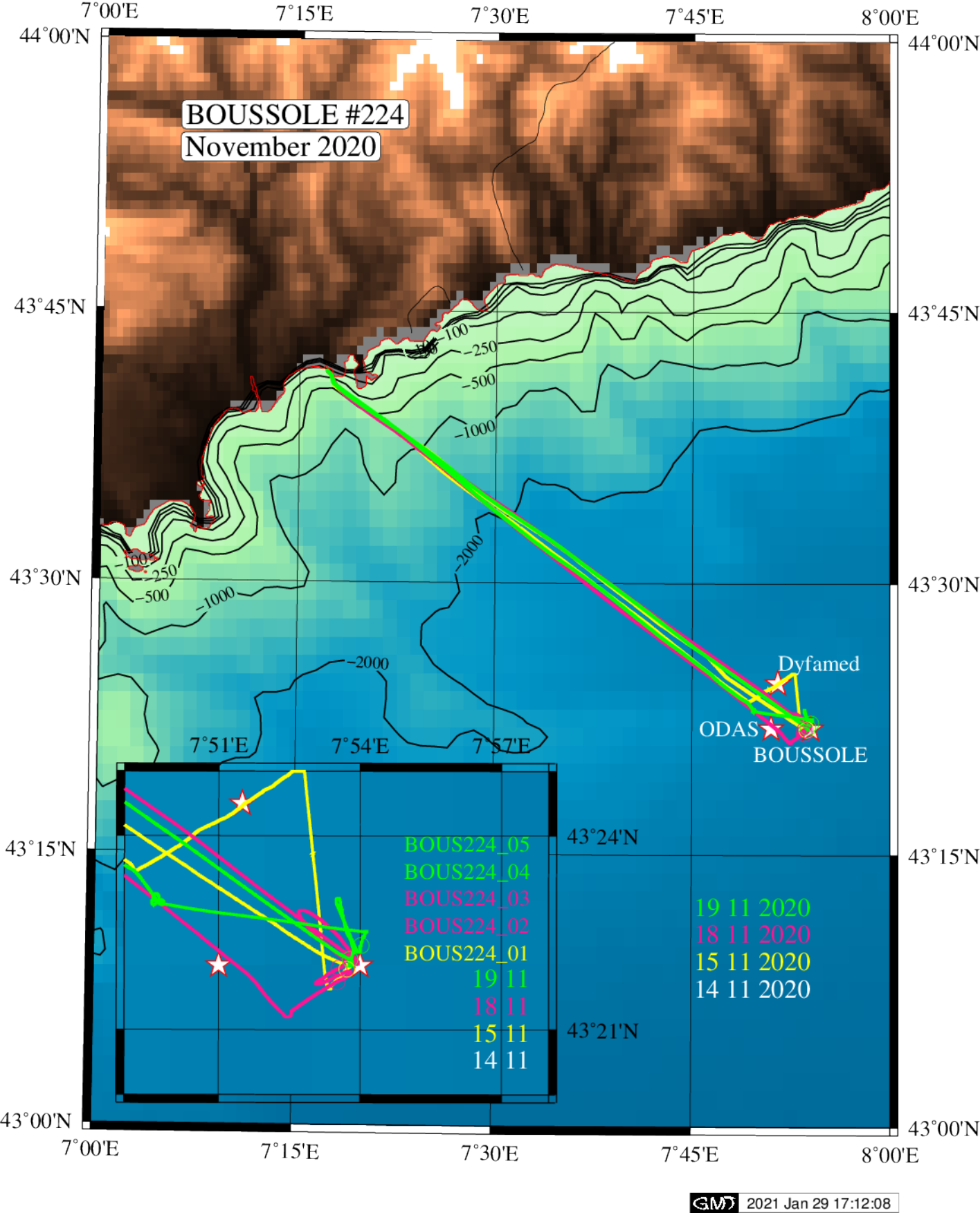
12) A/D voltage 6, Altimeter

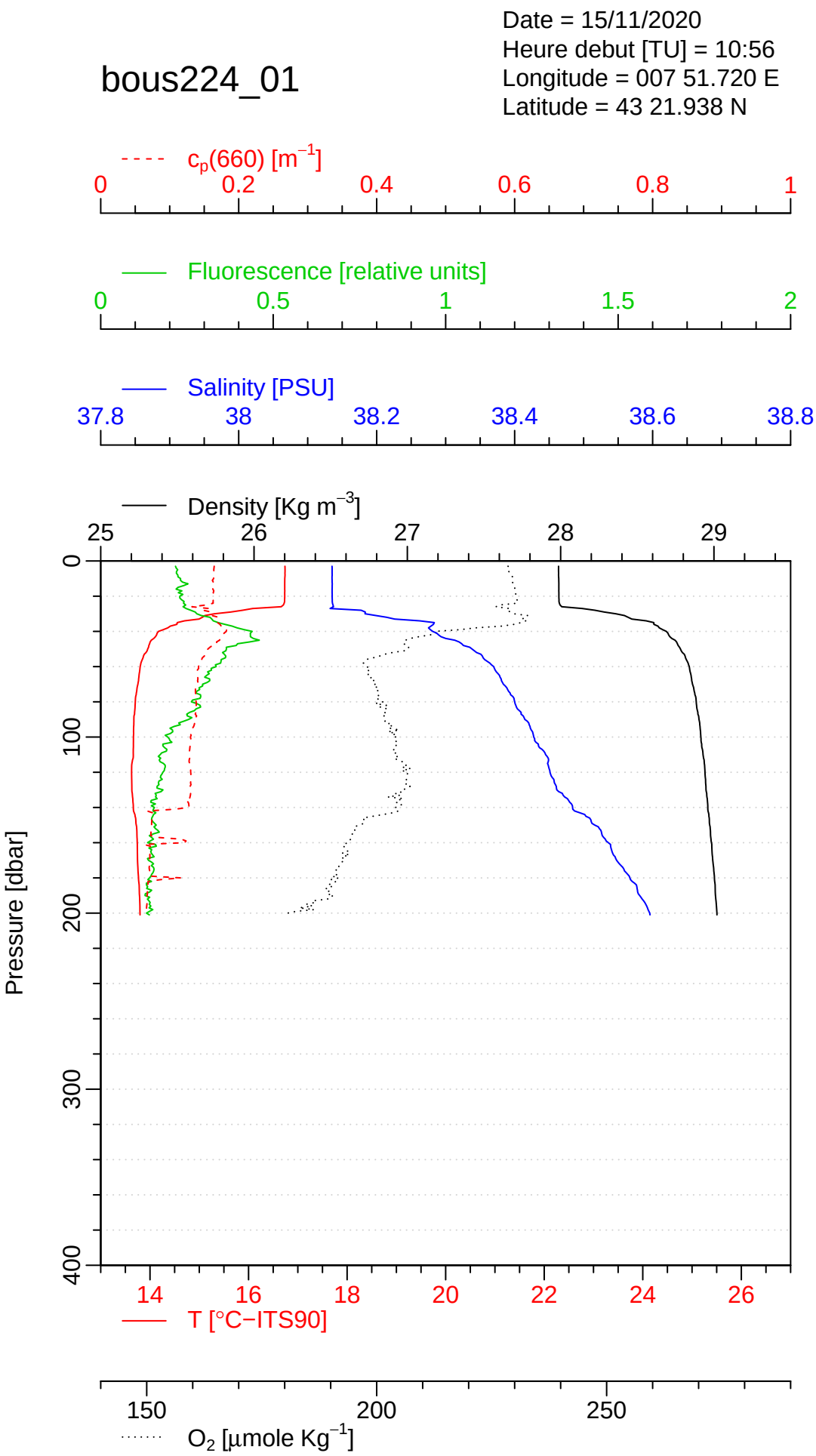
```
Serial number : 310799
Calibrated on : 19-Oct-16
```

Scale factor : 15.000
Offset : 0.000

13) A/D voltage 7, Free

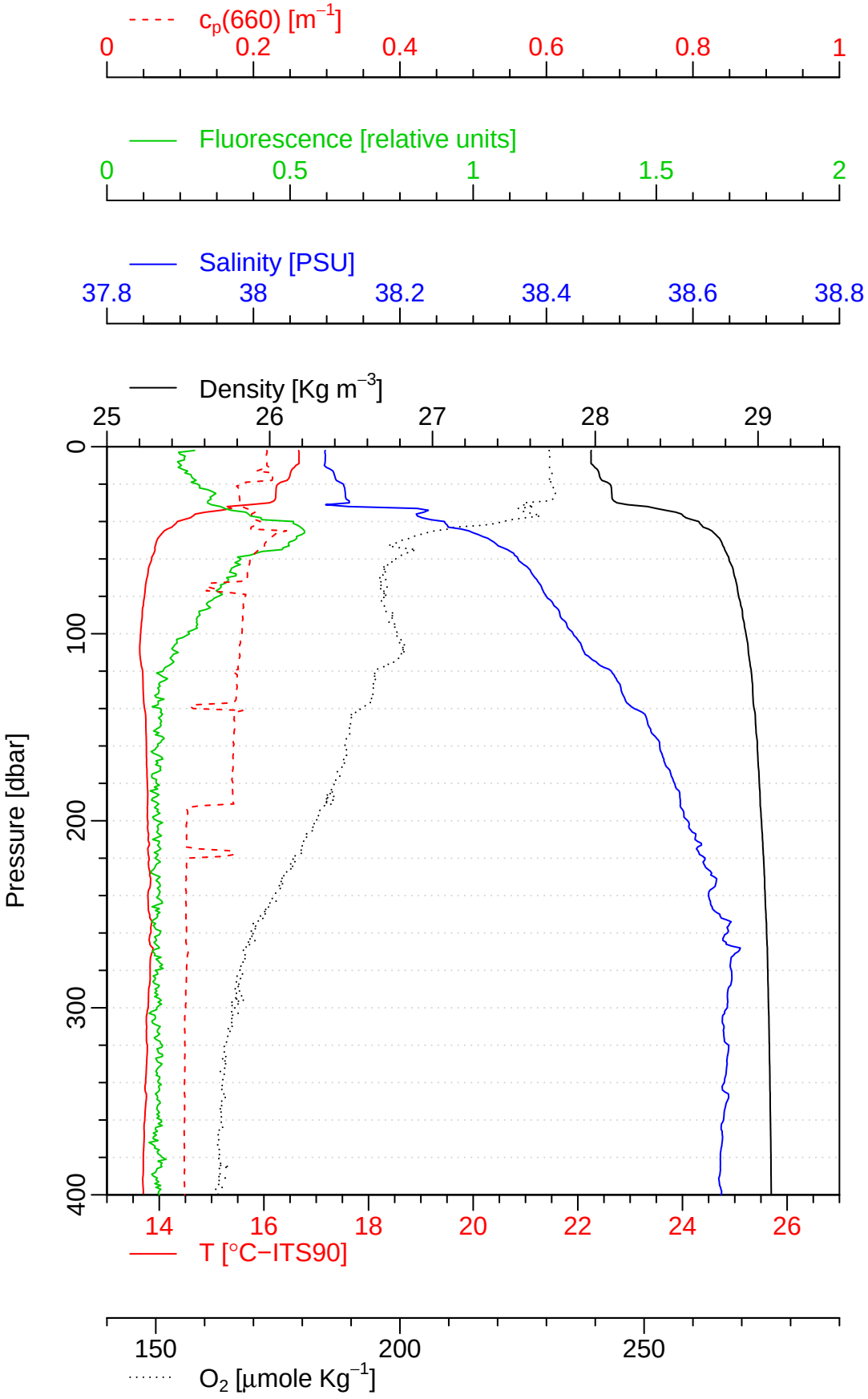
Scan length : 37

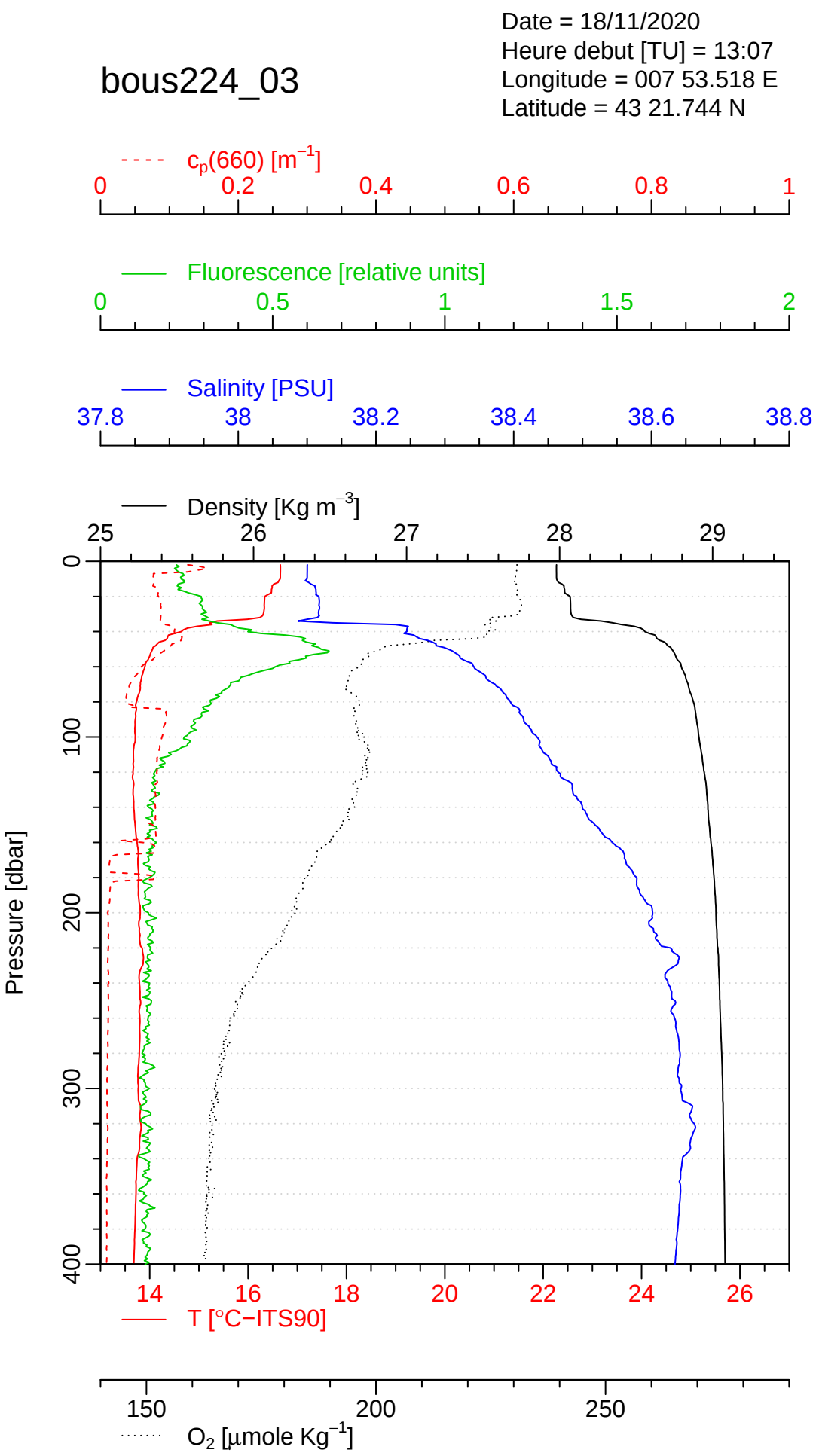

BOUSSOLE #224
November 2020
7°00'E
7°15'E
7°30'E
7°45'E
8°00'E
44°00'N
43°45'N
43°30'N
43°15'N
43°00'N
-100
-250
-500
-1000
-2000
Dyfamed
ODAS
BOUSSOLE
7°51'E
7°54'E
7°57'E
43°24'N
43°21'N
BOUS224_05
BOUS224_04
BOUS224_03
BOUS224_02
BOUS224_01
19 11
18 11
15 11
14 11
19 11 2020
18 11 2020
15 11 2020
14 11 2020
GMT 2021 Jan 29 17:12:08


bous224_01
Date = 15/11/2020
Heure debut [TU] = 10:56
Longitude = 007 51.720 E
Latitude = 43 21.938 N
c_p(660) [m^-1]
0
0.2
0.4
0.6
0.8
1
Fluorescence [relative units]
0
0.5
1
1.5
2
Salinity [PSU]
37.8
38
38.2
38.4
38.6
38.8
Density [Kg m^-3]
25
26
27
28
29
Pressure [dbar]
0
100
200
300
400
14
16
18
20
22
24
26
T [°C−ITS90]
150
200
250
O2 [µmole Kg^-1]

bous224_02

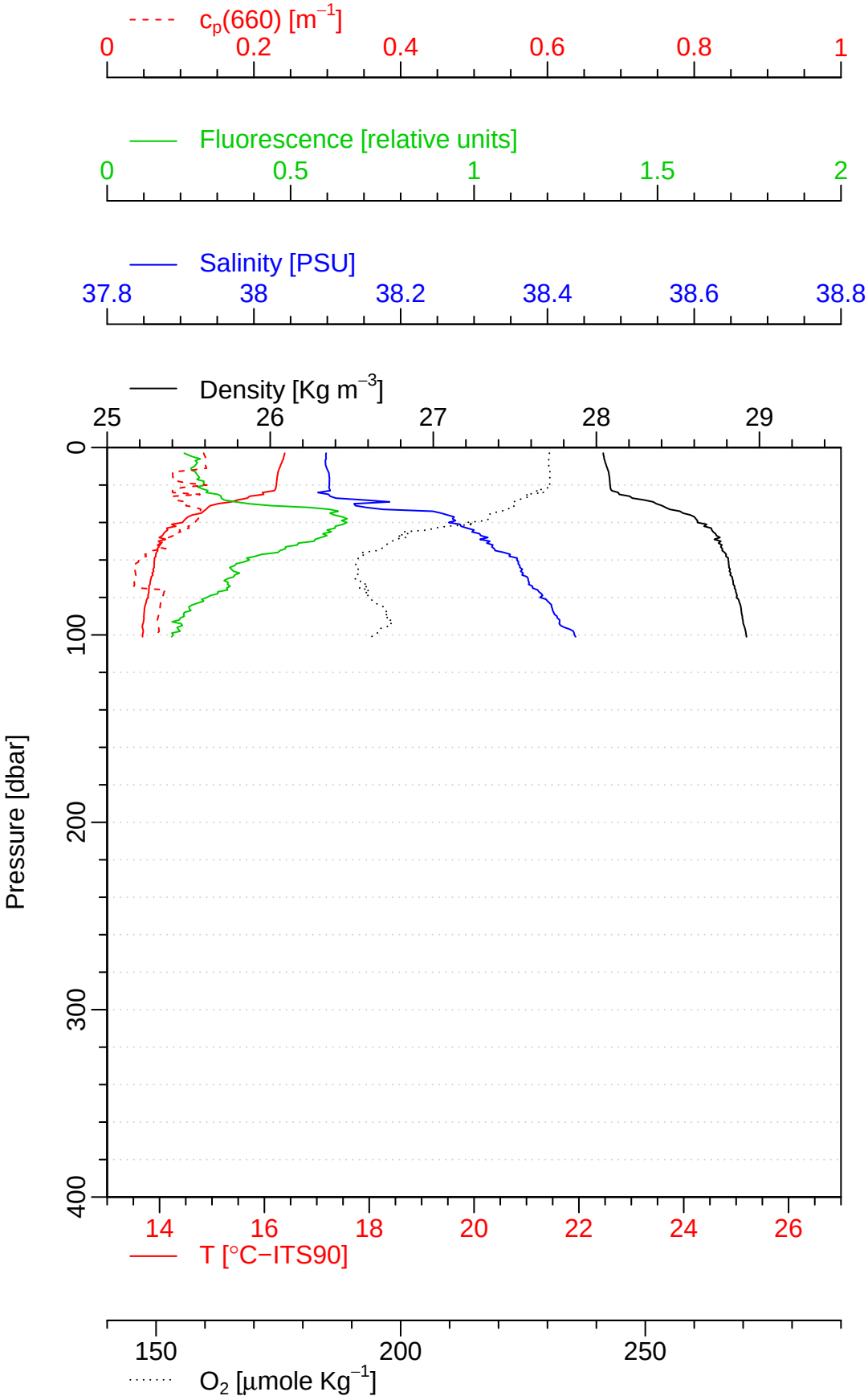
Date = 18/11/2020
Heure debut [TU] = 11:54
Longitude = 007 53.556 E
Latitude = 43 21.955 N

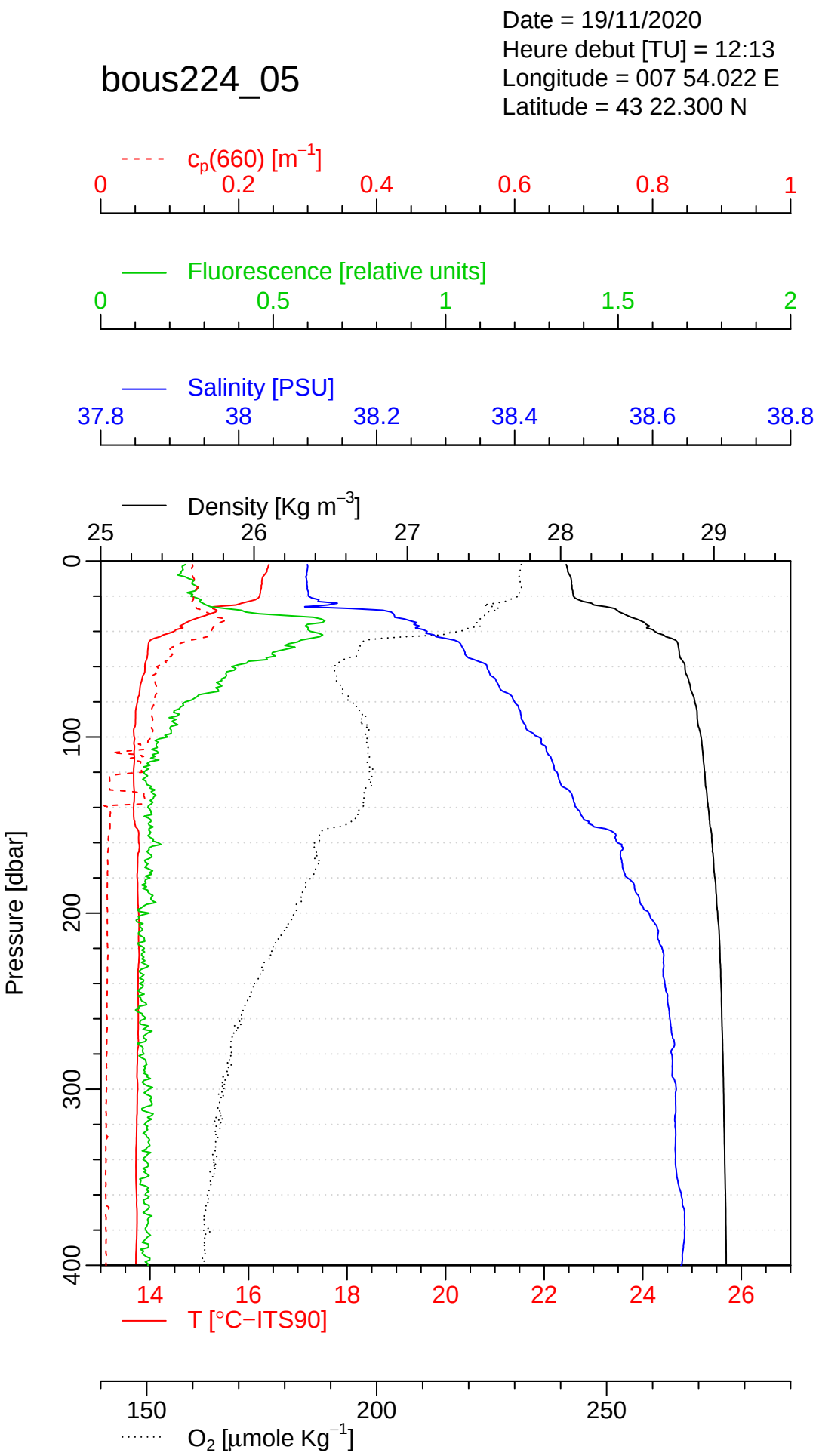



bous224_03
Date = 18/11/2020
Heure debut [TU] = 13:07
Longitude = 007 53.518 E
Latitude = 43 21.744 N
c_p(660) [m^-1]
0 0.2 0.4 0.6 0.8 1
Fluorescence [relative units]
0 0.5 1 1.5 2
Salinity [PSU]
37.8 38 38.2 38.4 38.6 38.8
Density [Kg m^-3]
25 26 27 28 29
Pressure [dbar]
0 100 200 300 400
14 16 18 20 22 24 26
T [°C−ITS90]
150 200 250
O2 [µmole Kg^-1]

bous224_04

Date = 19/11/2020
Heure debut [TU] = 10:50
Longitude = 007 53.790 E
Latitude = 43 22.090 N




bous224_05
Date = 19/11/2020
Heure debut [TU] = 12:13
Longitude = 007 54.022 E
Latitude = 43 22.300 N
c_p(660) [m^-1]
0
0.2
0.4
0.6
0.8
1
Fluorescence [relative units]
0
0.5
1
1.5
2
Salinity [PSU]
37.8
38
38.2
38.4
38.6
38.8
Density [Kg m^-3]
25
26
27
28
29
Pressure [dbar]
0
100
200
300
400
14
16
18
20
22
24
26
T [°C−ITS90]
150
200
250
O2 [µmole Kg^-1]

Date: 01/29/2021

Instrument configuration file: D:\boussole\Data\CTD\data&process\2020\B224\raw\BOUS 224_01.XMLCON

Configuration report for SBE 911plus/917plus CTD

```
Frequency channels suppressed : 0
Voltage words suppressed      : 0
Computer interface            : RS-232C
Deck unit                     : SBE11plus Firmware Version >= 5.0
Scans to average              : 1
NMEA position data added      : Yes
NMEA depth data added         : No
NMEA time added               : No
NMEA device connected to      : deck unit
Surface PAR voltage added     : No
Scan time added               : No
```

1) Frequency 0, Temperature

```
   Serial number : 2473
   Calibrated on : 04-Mar-20
   G             : 4.36726120e-003
   H             : 6.43151581e-004
   I             : 2.33812060e-005
   J             : 2.23255667e-006
   F0            : 1000.000
   Slope         : 1.00000000
   Offset        : 0.0000
```

2) Frequency 1, Conductivity

```
   Serial number : 2929
   Calibrated on : 05-Mar-20
   G             : -1.05951733e+001
   H             : 1.41908901e+000
   I             : 7.59510042e-004
   J             : 2.04144674e-005
   CTcor         : 3.2500e-006
   CPcor         : -9.57000000e-008
   Slope         : 1.00000000
   Offset        : 0.00000
```

3) Frequency 2, Pressure, Digiquartz with TC

```
   Serial number : 0329
   Calibrated on : 04-Dec-09 (corr May-2017)
   C1            : -4.499631e+004
   C2            : 4.598757e-001
   C3            : 1.505020e-002
   D1            : 3.936600e-002
   D2            : 0.000000e+000
   T1            : 3.004570e+001
   T2            : -1.880753e-004
   T3            : 4.727060e-006
   T4            : -1.923520e-009
   T5            : 0.000000e+000
   Slope         : 0.99996509
   Offset        : -2.27039
   AD590M        : 1.280100e-002
   AD590B        : -9.240166e+000
```

4) Frequency 3, Temperature, 2

```
   Serial number : 5545
   Calibrated on : 11-Jul-18
   G             : 4.31331688e-003
   H             : 6.26102919e-004
   I             : 1.91674175e-005
   J             : 1.39951663e-006
   F0            : 1000.000
   Slope         : 1.00000000
   Offset        : 0.0000
```

5) Frequency 4, Conductivity, 2

```
Serial number : 4097
Calibrated on : 29-Oct-19
G             : -9.94156304e+000
H             : 1.22604249e+000
I             : -2.34562610e-003
J             : 2.23476473e-004
CTcor         : 3.2500e-006
CPcor         : -9.57000000e-008
Slope         : 1.00000000
Offset        : 0.00000
```

6) A/D voltage 0, Oxygen, SBE 43

```
Serial number : 0033
Calibrated on : 26-Aug-20
Equation      : Sea-Bird
Soc           : 5.95200e-001
Offset        : -4.77100e-001
A             : -4.60520e-003
B             : 1.52260e-004
C             : -2.23960e-006
E             : 3.60000e-002
Tau20         : 1.34000e+000
D1            : 1.92634e-004
D2            : -4.64803e-002
H1            : -3.30000e-002
H2            : 5.00000e+003
H3            : 1.45000e+003
```

7) A/D voltage 1, Free

8) A/D voltage 2, Fluorometer, Chelsea Aqua 3

```
Serial number : 088-193
Calibrated on : 11-jul-2019
VB            : 0.406700
V1            : 1.761800
Vacetone      : 0.683330
Scale factor  : 1.000000
Slope         : 1.000000
Offset        : -0.260000
```

9) A/D voltage 3, Transmissometer, WET Labs C-Star

```
Serial number : CST-887DR
Calibrated on : oct2019
M             : 21.0776
B             : -0.2951
Path length   : 0.250
```

10) A/D voltage 4, User Polynomial

```
Serial number : 171
Calibrated on : 19May2014
Sensor name   : RINKOIII_DO
A0            : 0.00000000
A1            : 1.00000000
A2            : 0.00000000
A3            : 0.00000000
```

11) A/D voltage 5, User Polynomial, 2

```
Serial number : 171
Calibrated on : 12May2014
Sensor name   : RINKOIII_Temp
A0            : -5.25367500
A1            : 16.66254000
A2            : -2.13105300
A3            : 0.45564880
```

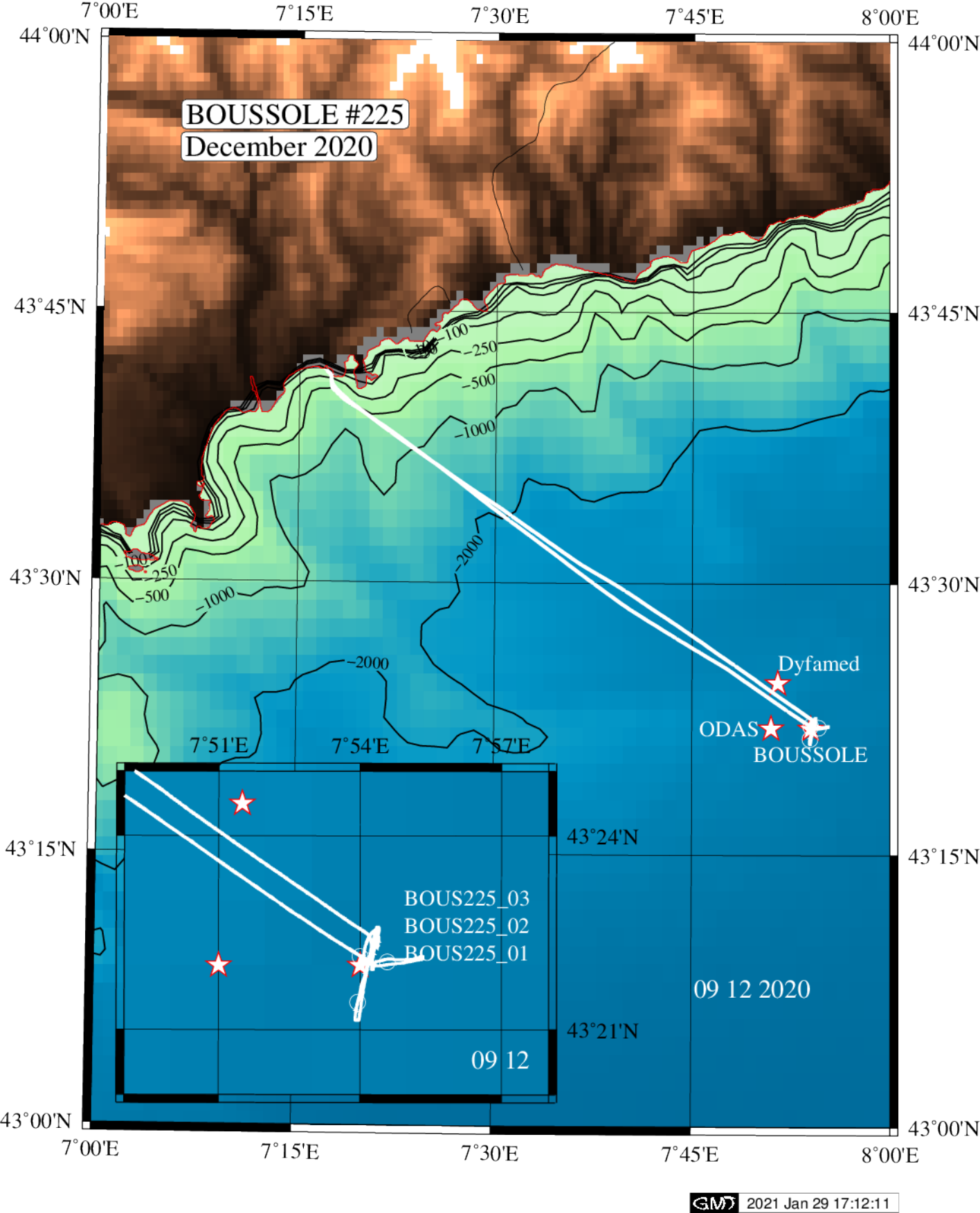
12) A/D voltage 6, Altimeter

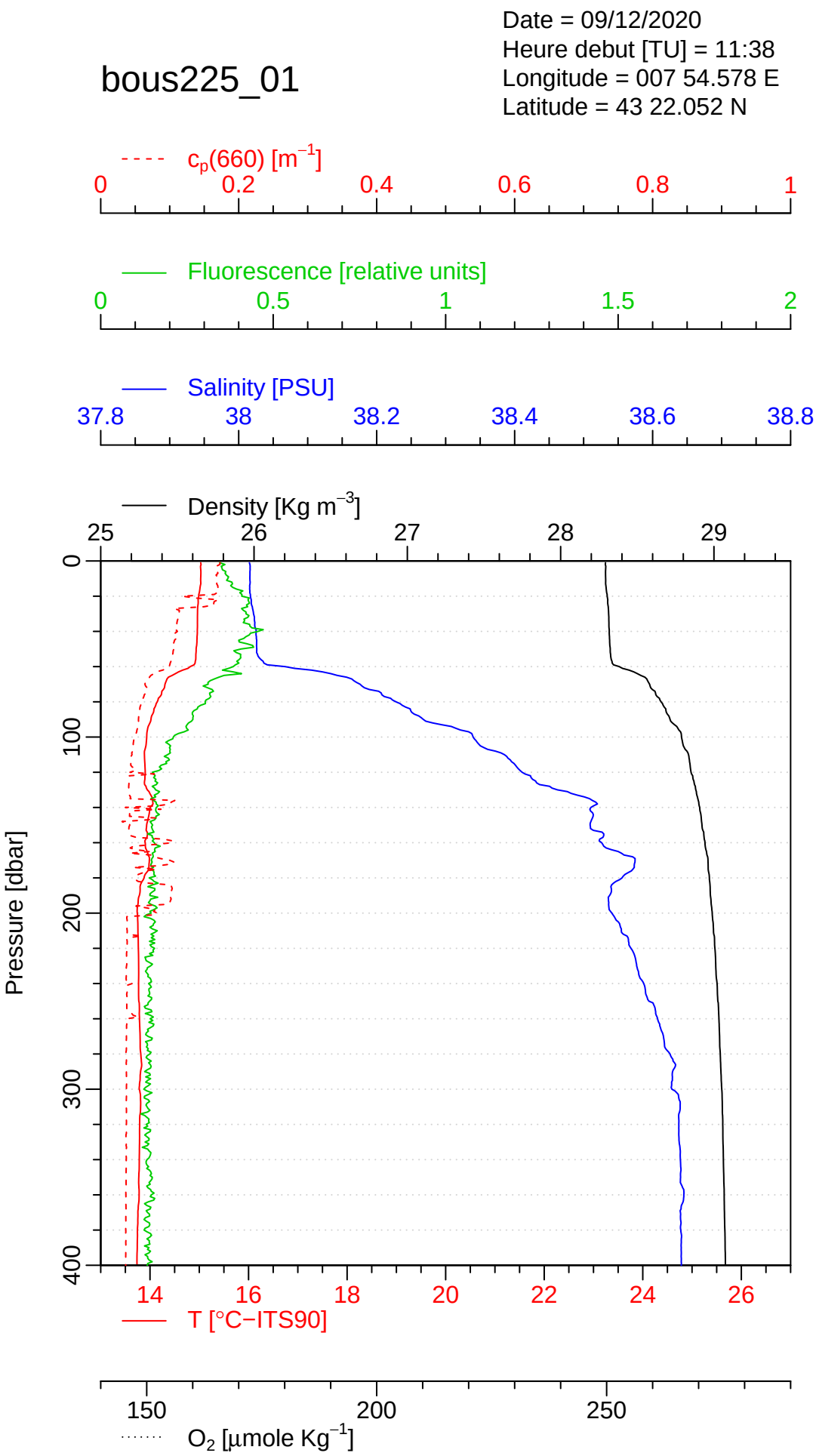
```
Serial number : 310799
Calibrated on : 19-Oct-16
```

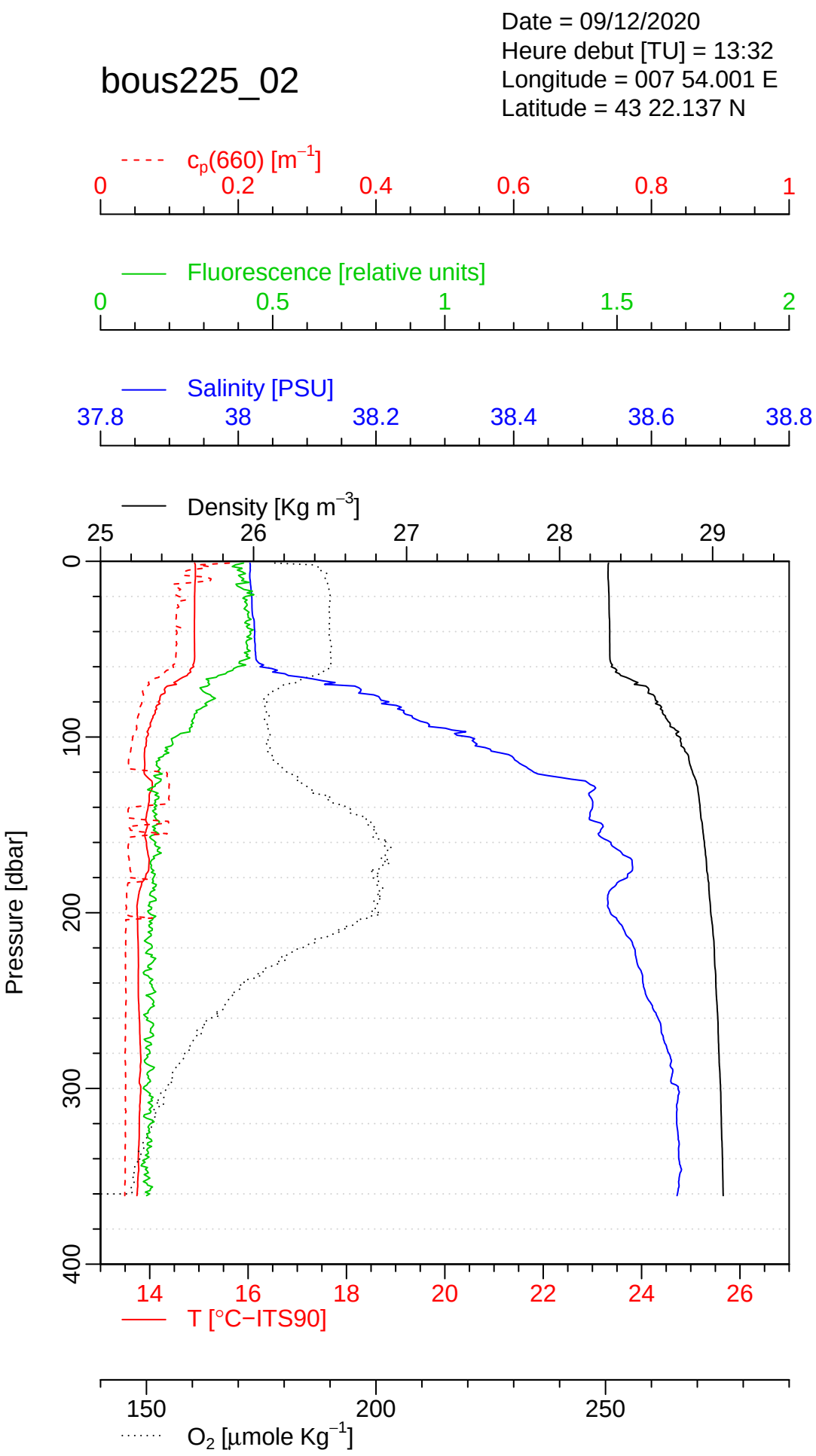
Scale factor : 15.000
Offset : 0.000

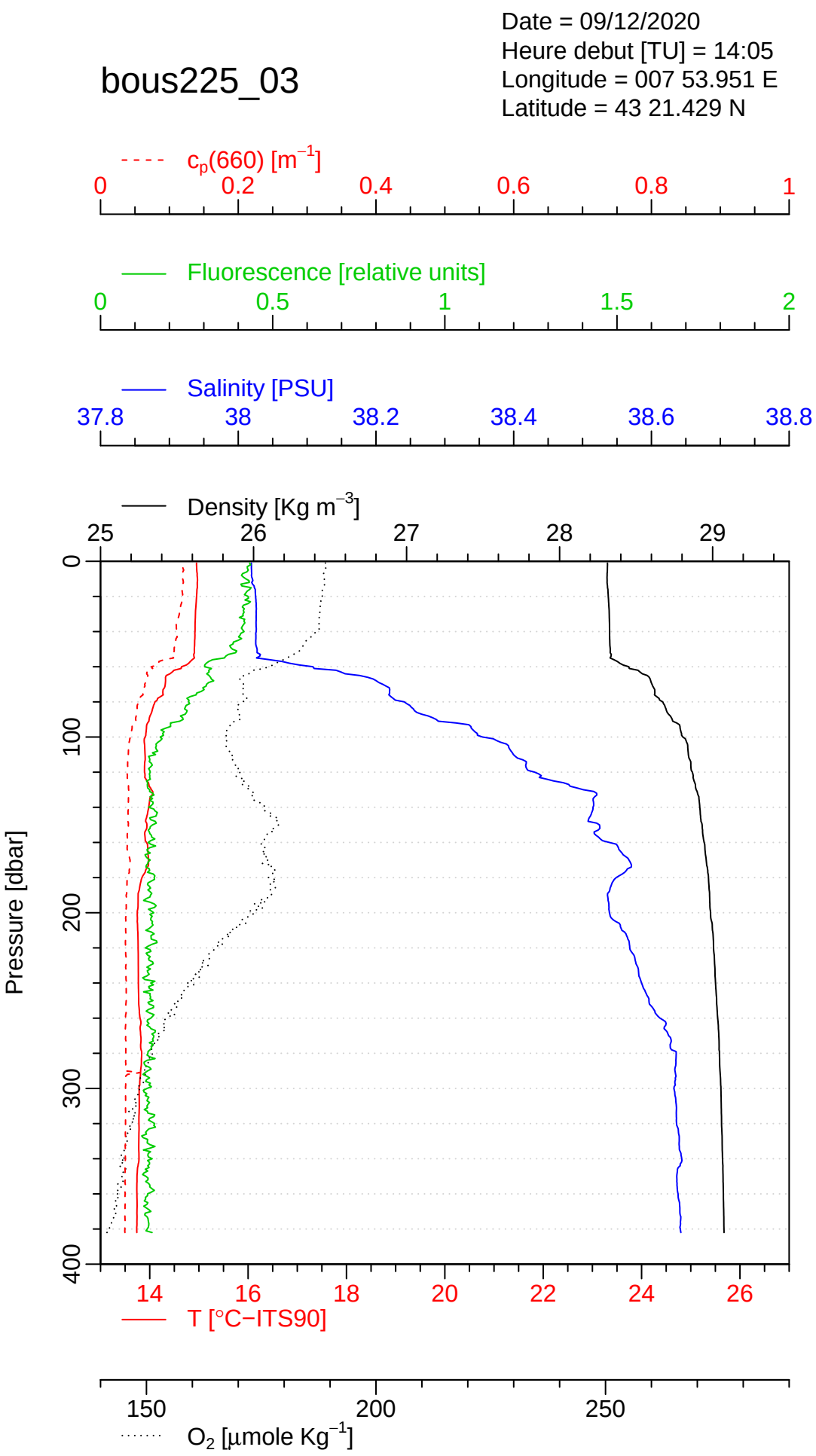
13) A/D voltage 7, Free

Scan length : 37


BOUSSOLE #225
December 2020
7°00'E
7°15'E
7°30'E
7°45'E
8°00'E
44°00'N
43°45'N
43°30'N
43°15'N
43°00'N
-100
-250
-500
-1000
-2000
Dyfamed
ODAS
BOUSSOLE
7°51'E
7°54'E
7°57'E
43°24'N
43°21'N
BOUS225_03
BOUS225_02
BOUS225_01
09 12 2020
09 12
GMT 2021 Jan 29 17:12:11


bous225_01
Date = 09/12/2020
Heure debut [TU] = 11:38
Longitude = 007 54.578 E
Latitude = 43 22.052 N
c_p(660) [m^-1]
0
0.2
0.4
0.6
0.8
1
Fluorescence [relative units]
0
0.5
1
1.5
2
Salinity [PSU]
37.8
38
38.2
38.4
38.6
38.8
Density [Kg m^-3]
25
26
27
28
29
Pressure [dbar]
0
100
200
300
400
14
16
18
20
22
24
26
T [°C−ITS90]
150
200
250
O2 [µmole Kg^-1]


bous225_02
Date = 09/12/2020
Heure debut [TU] = 13:32
Longitude = 007 54.001 E
Latitude = 43 22.137 N
c_p(660) [m^-1]
0 0.2 0.4 0.6 0.8 1
Fluorescence [relative units]
0 0.5 1 1.5 2
Salinity [PSU]
37.8 38 38.2 38.4 38.6 38.8
Density [Kg m^-3]
25 26 27 28 29
Pressure [dbar]
0 100 200 300 400
14 16 18 20 22 24 26
T [°C−ITS90]
150 200 250
O2 [µmole Kg^-1]


bous225_03
Date = 09/12/2020
Heure debut [TU] = 14:05
Longitude = 007 53.951 E
Latitude = 43 21.429 N
c_p(660) [m^-1]
0
0.2
0.4
0.6
0.8
1
Fluorescence [relative units]
0
0.5
1
1.5
2
Salinity [PSU]
37.8
38
38.2
38.4
38.6
38.8
Density [Kg m^-3]
25
26
27
28
29
Pressure [dbar]
0
100
200
300
400
14
16
18
20
22
24
26
T [°C−ITS90]
150
200
250
O2 [µmole Kg^-1]

Date: 01/29/2021

Instrument configuration file: D:\boussole\Data\CTD\data&process\2020\B225\raw\BOUS 225_01.XMLCON

Configuration report for SBE 911plus/917plus CTD

```
Frequency channels suppressed : 0
Voltage words suppressed      : 0
Computer interface            : RS-232C
Deck unit                     : SBE11plus Firmware Version >= 5.0
Scans to average              : 1
NMEA position data added      : Yes
NMEA depth data added         : No
NMEA time added               : No
NMEA device connected to      : deck unit
Surface PAR voltage added     : No
Scan time added               : No
```

1) Frequency 0, Temperature

```
   Serial number : 2473
   Calibrated on : 04-Mar-20
   G             : 4.36726120e-003
   H             : 6.43151581e-004
   I             : 2.33812060e-005
   J             : 2.23255667e-006
   F0            : 1000.000
   Slope         : 1.00000000
   Offset        : 0.0000
```

2) Frequency 1, Conductivity

```
   Serial number : 2929
   Calibrated on : 05-Mar-20
   G             : -1.05951733e+001
   H             : 1.41908901e+000
   I             : 7.59510042e-004
   J             : 2.04144674e-005
   CTcor         : 3.2500e-006
   CPcor         : -9.57000000e-008
   Slope         : 1.00000000
   Offset        : 0.00000
```

3) Frequency 2, Pressure, Digiquartz with TC

```
   Serial number : 0329
   Calibrated on : 04-Dec-09 (corr May-2017)
   C1            : -4.499631e+004
   C2            : 4.598757e-001
   C3            : 1.505020e-002
   D1            : 3.936600e-002
   D2            : 0.000000e+000
   T1            : 3.004570e+001
   T2            : -1.880753e-004
   T3            : 4.727060e-006
   T4            : -1.923520e-009
   T5            : 0.000000e+000
   Slope         : 0.99996509
   Offset        : -2.27039
   AD590M        : 1.280100e-002
   AD590B        : -9.240166e+000
```

4) Frequency 3, Temperature, 2

```
   Serial number : 5545
   Calibrated on : 11-Jul-18
   G             : 4.31331688e-003
   H             : 6.26102919e-004
   I             : 1.91674175e-005
   J             : 1.39951663e-006
   F0            : 1000.000
   Slope         : 1.00000000
   Offset        : 0.0000
```

5) Frequency 4, Conductivity, 2

```
Serial number : 4097
Calibrated on : 29-Oct-19
G             : -9.94156304e+000
H             : 1.22604249e+000
I             : -2.34562610e-003
J             : 2.23476473e-004
CTcor         : 3.2500e-006
CPcor         : -9.57000000e-008
Slope         : 1.00000000
Offset        : 0.00000
```

6) A/D voltage 0, Oxygen, SBE 43

```
Serial number : 0033
Calibrated on : 26-Aug-20
Equation      : Sea-Bird
Soc           : 5.95200e-001
Offset        : -4.77100e-001
A             : -4.60520e-003
B             : 1.52260e-004
C             : -2.23960e-006
E             : 3.60000e-002
Tau20         : 1.34000e+000
D1            : 1.92634e-004
D2            : -4.64803e-002
H1            : -3.30000e-002
H2            : 5.00000e+003
H3            : 1.45000e+003
```

7) A/D voltage 1, Free

8) A/D voltage 2, Fluorometer, Chelsea Aqua 3

```
Serial number : 088-193
Calibrated on : 11-jul-2019
VB            : 0.406700
V1            : 1.761800
Vacetone      : 0.683330
Scale factor  : 1.000000
Slope         : 1.000000
Offset        : -0.260000
```

9) A/D voltage 3, Transmissometer, WET Labs C-Star

```
Serial number : CST-887DR
Calibrated on : oct2019
M             : 21.0776
B             : -0.2951
Path length   : 0.250
```

10) A/D voltage 4, User Polynomial

```
Serial number : 171
Calibrated on : 19May2014
Sensor name   : RINKOIII_DO
A0            : 0.00000000
A1            : 1.00000000
A2            : 0.00000000
A3            : 0.00000000
```

11) A/D voltage 5, User Polynomial, 2

```
Serial number : 171
Calibrated on : 12May2014
Sensor name   : RINKOIII_Temp
A0            : -5.25367500
A1            : 16.66254000
A2            : -2.13105300
A3            : 0.45564880
```

12) A/D voltage 6, Altimeter

```
Serial number : 310799
Calibrated on : 19-Oct-16
```

Scale factor : 15.000
Offset : 0.000

13) A/D voltage 7, Free

Scan length : 37

Problems identified during the cruises

BOUSSOLE #216

This BOUSSOLE cruise was cancelled due to unexpected delays in the technical stop work of the R/V *Téthys II*: the ship was not ready in time to complete the mission.
The cruise was rescheduled on the R/V *Sagitta III* the 27th or 29th January depending on the weather. Unfortunately, the cruise was cancelled again because of bad weather during this period.

BOUSSOLE #217

During the installation of the CTD, there was a problem in the connection with the carousel water sampler. The problem was due to a faulty RS 232 card connection. The card was replaced with a RS232 to USB adapter cable. Then, the first CTD deployment failed because the temperature sensor was not functioning. It appeared that the cable that connects the temperature sensor to the CTD was faulty. It was replaced and the CTD functioned correctly.

Because of a lack of time due to an unusually loaded program (BOUSSOLE and DYFAMED operations combined the same day) and arrival of bad weather during the afternoon, the first CTD cast was performed jointly between BOUSSOLE and DYFAMED programs. Therefore, there were not enough bottles to sample all the usual depths. Only 200, 120, 80, 60, 40, 20, 10 and 5 m depths were sampled for HPLC, a_p, TA/TC and O_2. The Niskin bottle #12 (5 m) was half filled, so that there was not enough water for HPLC and a_p sampling. This depth was therefore sampled again during CTD cast #02.

BOUSSOLE #218

CTD 03: Niskin bottles #4 and #10 (80 and 20 m) did not close. So, only 10 depths were sampled for HPLC analyses. However, these depths were sampled again during CTD cast 04.

BOUSSOLE #219

Monthly servicing cruises could not be carried out as normal on the R/V *Téthys*-II from April to May 2020 because of the restrictions due to the Covid-19 pandemic (all activities on the R/V *Téthys II* were cancelled until September). We were allowed to use the R/V *Sagitta III* instead, for joint operations of the BOUSSOLE and MOOSE programs during 2 days per month from June. The first day was dedicated to BOUSSOLE and DYFAMED operations and the second day to BOUSSOLE and its current adjunct operations (OBOO and EFFICACY project).

The R/V *Sagitta-III* engine overheating led to cancelling of the BOUSSOLE operations.

BOUSSOLE #220

The problem of the engine overheating of the R/V *Sagitta III* was not solved so that a low ship's speed had to be maintained, reducing the available work time on site. Therefore, it was decided to perform only one CTD and seawater sampling with Niskin bottles at the DYFAMED site. C-OPS profiles and sampling for the EFFICACY and OBOO projects were not performed.

Because it is not possible to use the main BOUSSOLE Rosette on the deck of the *Sagitta III*, the water sampling was performed with Niskin bottles and messengers at four depths.

CTD casts were not performed: there were spikes on T, S and DO sensors during the first attempt. Three other CTD casts were attempted after cleaning the connections and after replacing the cable between the T sensor and the CTD with new cables. Unfortunately, all three casts failed: there were "bip" errors on the deck unit. We do not know whether the problem originates from the CTD or from the electro carrier cable. However, the IOP package includes also a CTD which can be used for data analysis.

BOUSSOLE#221

It is not possible to use the main BOUSSOLE Rosette on the deck of the *Sagitta III*. The main CTD could not be deployed separately from the Rosette because the electro carrier cable was not operational. So, a CTD SBE25plus was lent by the *Institut de la Mer de Villefranche*, and could be deployed down to 100 m. However, the IOP package also includes a CTD and was deployed down to 400 m. Water sampling was performed directly with Niskin bottles and messengers at six depths.

BOUSSOLE#222
CTD 01: Niskin bottles #3 and #4 (60 and 45 m) did not close but there was enough water in other bottles closed at the same depth to sample for metagenomic analyses.

BOUSSOLE#223
The connector of the uplink on the CTD, which allows the connection between the three additional optical sensors of the OBOO project and the CTD, was broken during the installation of the sensors. So, these sensors were not operational during this cruise.

The first CTD cast had to be stopped at 78 m because an alarm sounded on the deck unit. The CTD was recovered and the connectors between the CTD and the sea cable were cleaned. This CTD cast could not be processed but the data of the IOP package which was deployed simultaneously were kept and processed.

CTD cast 02: there were outliers in oxygen data between 239 and 257 m: these data were removed.

BOUSSOLE #224
No problems.

BOUSSOLE #225
The oxygen sensor of the CTD did not function correctly during the first CTD cast.

Problems appeared during the second CTD cast: there were micro cuts in the communication between the CTD and deck unit. The CTD was brought to the surface and deployed again. Then, the CTD had to be stopped at 383 m during the descent because of a bug with the computer and the CTD was relaunched for the upcast. Two files were recorded for this cast: CTD 02 for the downcast and CTD 03 for the upcast.