MVP Processing Notes – 2016 Leg1

Last updated on 27 September 2017

NGCC • CCGS

AMUNDSEN

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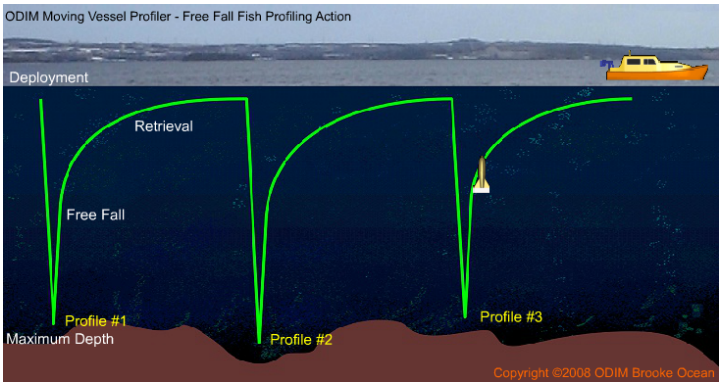
1. Introduction

The Canadian research icebreaker CCGS *Amundsen* is equipped with a Moving Vessel Profiler™ (MVP). It is a multi-purpose instrument for aiding in the collection of both shallow and deep-water datasets. The MVP's primary function is to allow accurate data collection without the need to stop the vessel.

The system includes a computer-controlled smart winch and deployment system that allows the free fall fish to be deployed while the vessel is underway.

The fish is equipped with several sensors to record data on temperature, salinity, Fluorescence, sound velocity, dissolved oxygen and transmittance.



Down cast (free fall) and up cast (low recovery)

Winch operation

Fish (Sensors platform)

Table 1: Instruments and probes

Instrument	Company	Unit	Serial number	Calibration date
Temperature	AML	°C	7437	2015-12-04
Conductivity	AML	mS/cm	7437	2015-12-04
Pressure	AML	Db	7437	2015-12-04
Sound velocity	AML	m/s	7438	2015-12-04
Pressure	AML	db	7438	2015-12-04
Dissolved Oxygen	Rinko	%	149	2016-09-23
Fluorescence	WetLabs	ug/L	FLRTD-678	2015-12-16
Transmittance	WetLabs	%	1049DR	2016-01-12

Table 2: Recorded variables

Instrument	Company	Measurement	Specification	
Micro CTD	AML	Temperature	Range (°C)	-2 to +32
			Initial Accuracy (°C)	0.005
			Resolution (°C)	0.001
		Conductivity	Range (mS/cm)	2 to 70
			Initial Accuracy (mS/cm)	0.01
			Resolution (mS/cm)	0.0015
		Pressure	Range (m)	0 to 6000
			Initial Accuracy (%FS)	0.05
			Resolution (%FS)	0.005
Micro SV	AML	Sound velocity	Range (m/s)	1375 to 1600
			Initial Accuracy (m/s)	0.05
			Resolution (m/s)	0.01
		Pressure	Range (m)	0 to 6000
			Initial Accuracy (%FS)	0.05
			Resolution (%FS)	0.005
Rinko III	JFE Alec	Dissolved	Range (%)	0-100
		Oxygen	Response time (s)	0.9 (90%)
			Drift (%/month)	5
ECOFLO	WetLabs	Fluorescence	Range (ug/L)	0 to 125
			Sensitivity (ug/L)	0.062
			Wave length (nm)	470/695
C-Stars	WetLabs	Transmittance	Range (%)	0 to 100
			Path length (cm)	25

2. Processing protocol

The following treatment steps were performed using the script:
Processing_Amundsen_MVP.m developed in Matlab in Amundsen Science offices.

A: Data reading

A1: Read TSG data

From processed TSG data (files *.int, see TSG processing report by the Amundsen Science technical team).

A2: Read CTD Rosette data

From processed Rosette data (files *.int, see Rosette processing report by the Amundsen Science technical team).

A3: Read MVP data

From MVP raw data (files *.raw).

B: Flag and processing

The processing steps in section B are sequentially applied on each cast of a given MVP transect.

B.1: Calibration of the analogic inputs

MVP data from the transmissometer, fluorimeter and dissolved oxygen sensors are recorded in volts 0-5V. Calibration coefficients are applied in post processing to transform the volt values into the recognised units for these recorded variables. Calibration dates are given in table 1.

B.2: Averaging pressure

The SVP and CTD sensors both record pressure. Data from the two datasets are averaged to improve the accuracy of the variable.

B.3: Low pass filter (SBE data processing toolbox)

A Low pass filter is applied on the temperature, conductivity, sound velocity, transmittance, fluorescence and dissolved oxygen time series data. The time constant is fixed at 0.2s to keep the accuracy of the measure and allow for further filtering on averaged bin performed in B8. For instance, with a free fall at ~3m/s, the filter does not affect a depth gap of one meter (3x0.2=0.6m).

B.4: Align sensor filter (SBE data processing toolbox)

The temperature and conductivity sensors do not have the same response time. This filter aligns data parameters by time, relative to pressure. This ensures that calculations of salinity and other derived parameters are made using measurements from the same parcel of water. The time offset corrections are the following:

- Temperature: + 0.200s
- Conductivity: + 0.025s

The comparison with and without the Low pass filter and Align sensor filter is presented in annex 5.

B.5: Loop edit filter (SBE data processing toolbox)

The Loop Edit processing tests the data for pressure slowdowns and reversals (typically caused by ship heave). It flags scans that fail these tests. Loop edit filter marks also scans associated with an initial surface soak.

The thresholds for the tests are:

- Minimum velocity: 0.25m/s
- Surface soak depth: 8m
- Minimum soak depth: 5m
- Maximum soak depth: 20m

B.6: Flag out-of-range values

For pressure, latitude and longitude, temperature, conductivity, sound velocity, transmittance, fluorescence and dissolved oxygen values, the flag checks if the values are not out of range (see thresholds in section 3 “Processing characteristics”):

B.7: Flag of spiking values

For each measurement (temperature, conductivity, sound velocity, transmittance, fluorescence and dissolved oxygen), the flag checks spiking values (see thresholds in section 3 “Processing characteristics”) as follows:

$|V2 – (V3 + V1) / 2| - |V1 –V3| / 2 >$ threshold, where V1, V2 and V3 are 3 consecutive values.

B.8: Bin average filter (SBE data processing toolbox)

The Bin average filter averages data, using averaging intervals based on the pressure ranges. The bin sizes are fixed at one meter.

B.9: Calculation of the derived parameters

These calculations use pressure, temperature, and conductivity data to compute the following oceanographic parameters: salinity, sound velocity, density, freezing point, depth and DO2 saturation (sea water toolbox V3.2 from CSIRO).

B.10: Manual data check

A graphic toolbox allows the analyst to check, compare and flag the measurements for the following variables:

- Temperature profile: down cast, up cast and freezing point
- Salinity profile: both down and up casts
- Sound velocity profile: both down and up casts from measurements and down cast from derived value (calculated from pressure, salinity and temperature)
- Transmittance: both down and up casts
- Fluorescence: both down and up casts
- Dissolved oxygen: both down and up casts
- Density: both down and up casts
- d(density)/d(pressure): both down cast and up casts

See example in annex 6.

C: Correction and inter-comparison

The processing steps described in section C are applied on each MVP transect.

C.1: Transmittance maximum adjustment

Transmittance values of each MVP cast are adjusted with the transect maximum transmittance as follows:

Vcorrected = Vmeasured + (100-maximum).

C.2: Fluorescence minimum adjustment

The minimum fluorescence recorded value for each MVP cast is determined. Then, the median of these minimum values is subtracted from all fluorescence values of all casts:

Vcorrected = Vmeasured - minimum.

C.3: Dissolved oxygen adjustment

The oxygen sensor output also has a non-negligible drift with time. The calibration coefficients (measured before the cruise) are not sufficient to calibrate the sensor. A comparison with the oxygen sensor on the rosette is therefore required: the percentage of dissolved oxygen measured with the co-localised rosette is averaged between 150 and 250-meter depth. This value is then compared to the MVP up cast at the same depths and a constant error is calculated. This error adjustment is then applied on all MVP casts for all depths of each transect.

C.4: Rosette inter-comparison

- All rosettes done between 24 hours before the first cast and 24 hours after the last cast of the transect are detected.
- Each of these rosettes is associated to the nearest MVP cast for variables inter-comparison (rejected if the distance is greater than 10.8NM – Nautical Mile).
- The variable of each MVP profile are then plotted (down casts) with the profiles of the bordering rosette. In addition, mean and standard deviation of all MVP down cast profiles of each transect are plotted (for geographic variability visualisation). See plot for this leg in annex 1.

C.5: TSG inter-comparison

- The first 10 meters of MVP salinity and fluorescence records are averaged for each down cast and each up cast.
- TSG data are co-localised and averaged on 2 minutes
- Differences (MVP-TSG) are flagged if:

1- MVP vertical standard deviation (on first 10 meter) > threshold
2- TSG time series standard deviation (on 2 minutes) > threshold
3- Difference > median (differences) +/- standard deviation (differences).

- Remaining differences (not flagged) are plotted and then a constant is selected and applied on all casts (for salinity and fluorescence).

See annex 2 for graph and section 3 Processing characteristics for thresholds.

D: Final data format

Data profiles (down cast profiles only, excepted dissolved oxygen data) are saved in text format with the extension *.int. One folder per MVP transects and one file per cast are created.

Table 3: Data file format

Col	Content	Format	Units
1	Pressure	F12.2	dB
2	Temperature (ITS-90)	F12.2	deg C
3	Practical Salinity	F12.2	psu
4	Sound velocity	F12.2	m/s
5	Transmittance	F12.2	%
6	Fluorescence	F12.2	ug/L
7	Dissolved Oxygen	F12.2	mL/L
8	Absolute Salinity (TEOS-10)	F12.2	g/kg
9	Conservative Temperature (TEOS-10)	F12.2	deg C
10	In situ density (TEOS-10)	F12.2	kg/m^3
11	Potential density (TEOS-10)	F12.2	kg/m^3

NaN stands for: Not a Number. It indicates that no data was recorded or that the data was flagged and mistrusted.

3. Processing characteristics

This information is automatically generated from the processing program. The codes B6, C3, C5, etc. refer to the processing steps explained and detailed in the corresponding sections above. The Processing characteristics section provides the values for each

parameter used during the treatments detailed in section B6, C3, C5, etc. Due to the absence of data, a treatment may not be applied.

3.1 Transect 1

Amundsen MVP data processing
Amundsen_2016001
Year: 2016
Leg: 1
Transect: 1
Processing date: 07-Aug-2017

////////// Limits and Thresholds Settings //////////
B6: -2.00 db - Minimum pressure
B6: 7000.00 db - Maximum pressure
B6: -3.00 °C - Minimum temperature
B6: 30.00 °C - Maximum temperature
B6: 0.00 mS/cm - Minimum conductivity
B6: 70.00 mS/cm - Maximum conductivity
B6: -0.10 ug/L - Minimum fluorescence
B6: 20.00 ug/L - Maximum fluorescence
B6: 1400.00 m/s - Minimum sound velocity
B6: 1500.00 m/s - Maximum sound velocity
B6: 0.00 % - Minimum dissolved oxygen
B6: 100.00 % - Maximum dissolved oxygen
B6: 0.00 % - Minimum transmittance
B6: 120.00 % - Maximum transmittance
B7: 0.40 °C/m - Temperature limit spike
B7: 0.20 mS/cm - Conductivity limit spike
B7: 4.00 m/s/m - Sound velocity limit spike
B7: 4.00 %/m - Transmittance limit spike
B7: 10.00 ml/L/m - Dissolved oxygen limit spike
B7: 10.00 ml/L/m - Fluorescence limit spike
C5: 10.00 m - Lower depth for comparison MVP-TSG
C5: 0.05 psu - Standard deviation flags on MVP salinity at several depths for comparison MVP-TSG

C5: 0.20 ug/L - Standard deviation flags on MVP fluorescence at several depths for comparison MVP-TSG
C5: 0.04 psu - Standard deviation flags on TSG salinity during 5 minutes for comparison MVP-TSG
C5: 0.05 ug/L - Standard deviation flags on TSG fluorescence during 5 minutes for comparison MVP-TSG

////////// Processing //////////
------ Inter-comparison------
C1: Bias applied on Transmittance
Constant bias correction: -0.900 %
C2: Bias applied on Fluorescence
Constant bias correction: -0.100 ug/l
C3: Bias applied on Dissolved oxygen
Constant bias correction: 3.565%
C5: Salinity bias statistics
Number of samples used (TSG) = 43
Median (bias)= -0.053
Mean (bias)= -0.052
Standard deviation (bias)= 0.007
Accuracy (bias)= 0.001
C5: Fluorescence bias statistic calculate
Number of samples used (TSG) = 2
Median (bias)= -0.060
Mean (bias)= -0.060
Standard deviation (bias)= 0.019
Accuracy (bias)= 0.014
C5: Bias applied on Salinity
Constant bias correction: -0.050 psu
C5: Bias applied on Fluorescence
Constant bias correction: 0.000 ug/L

////// List of Casts //////

Cast	File_name	Date	Hour
1	1600_0010.raw	10-June-16	00:55:27
2	1600_0011.raw	10-June-16	01:02:51
3	1600_0012.raw	10-June-16	01:10:20

4	1600_0013.raw	10-June-16	01:19:40
5	1600_0017.raw	10-June-16	01:31:55
6	1600_0018.raw	10-June-16	01:40:54
7	1600_0020.raw	10-June-16	01:50:45
8	1600_0022.raw	10-June-16	02:00:11
9	1600_0023.raw	10-June-16	02:10:02
10	1600_0026.raw	10-June-16	02:23:59
11	1600_0027.raw	10-June-16	02:33:57
12	1600_0028.raw	10-June-16	02:44:05
13	1600_0029.raw	10-June-16	02:51:16
14	1600_0031.raw	10-June-16	03:01:36
15	1600_0033.raw	10-June-16	03:11:45
16	1600_0035.raw	10-June-16	03:20:36
17	1600_0036.raw	10-June-16	03:30:42
18	1600_0038.raw	10-June-16	03:41:33
19	1600_0039.raw	10-June-16	03:51:30
20	1600_0041.raw	10-June-16	04:01:46
21	1600_0042.raw	10-June-16	04:12:26
22	1600_0043.raw	10-June-16	04:23:14
23	1600_0045.raw	10-June-16	04:33:18
24	1600_0047.raw	10-June-16	04:44:38
25	1600_0049.raw	10-June-16	04:54:57
26	1600_0050.raw	10-June-16	05:04:51
27	1600_0051.raw	10-June-16	05:14:39
28	1600_0052.raw	10-June-16	05:31:31
29	1600_0053.raw	10-June-16	05:40:13
30	1600_0054.raw	10-June-16	05:51:40
31	1600_0055.raw	10-June-16	06:01:30
32	1600_0057.raw	10-June-16	06:12:16
33	1600_0064.raw	10-June-16	06:24:48
34	1600_0070.raw	10-June-16	06:36:29
35	1600_0073.raw	10-June-16	06:47:15
36	1600_0078.raw	10-June-16	06:58:25

3.2 Transect 2

Amundsen MVP data processing
Amundsen_2016001
Year: 2016
Leg: 1
Transect: 2
Processing date: 07-Aug-2017

////////// Limits and Thresholds Settings //////////
B6: -2.00 db - Minimum pressure
B6: 7000.00 db - Maximum pressure
B6: -3.00 °C - Minimum temperature
B6: 30.00 °C - Maximum temperature
B6: 0.00 mS/cm - Minimum conductivity
B6: 70.00 mS/cm - Maximum conductivity
B6: -0.10 ug/L - Minimum fluorescence
B6: 20.00 ug/L - Maximum fluorescence
B6: 1400.00 m/s - Minimum sound velocity
B6: 1500.00 m/s - Maximum sound velocity
B6: 0.00 % - Minimum dissolved oxygen
B6: 100.00 % - Maximum dissolved oxygen
B6: 0.00 % - Minimum transmittance
B6: 120.00 % - Maximum transmittance
B7: 0.40 °C/m - Temperature limit spike
B7: 0.20 mS/cm - Conductivity limit spike
B7: 4.00 m/s/m - Sound velocity limit spike
B7: 4.00 %/m - Transmittance limit spike
B7: 10.00 ml/L/m - Dissolved oxygen limit spike
B7: 10.00 ml/L/m - Fluorescence limit spike
C5: 10.00 m - Lower depth for comparison MVP-TSG
C5: 0.05 psu - Standard deviation flags on MVP salinity at several depths for comparison MVP-TSG
C5: 0.20 ug/L - Standard deviation flags on MVP fluorescence at several depths for comparison MVP-TSG
C5: 0.04 psu - Standard deviation flags on TSG salinity during 5 minutes for comparison MVP-TSG

C5: 0.05 ug/L - Standard deviation flags on TSG fluorescence during 5 minutes for comparison MVP-TSG

////////// Processing //////////
------ Inter-comparison------
C1: Bias applied on Transmittance
Constant bias correction: -0.800 %
C2: Bias applied on Fluorescence
Constant bias correction: -0.100 ug/l
C3: Bias applied on Dissolved oxygen
Constant bias correction: 0.360%
C5: Salinity bias statistics
Number of samples used (TSG) = 24
Median (bias)= -0.046
Mean (bias)= -0.045
Standard deviation (bias)= 0.005
Accuracy (bias)= 0.001
C5: Fluorescence bias statistic calculate
Number of samples used (TSG) = 0
Median (bias)= NaN
Mean (bias)= NaN
Standard deviation (bias)= NaN
Accuracy (bias)= NaN
C5: Bias applied on Salinity
Constant bias correction: -0.040 psu
C5: Bias applied on Fluorescence
Constant bias correction: 0.000 ug/L

////// List of Casts //////

Cast	File_name	Date	Hour
1	1601_0001.raw	10-June-16	17:17:04
2	1601_0003.raw	10-June-16	17:25:56
3	1601_0005.raw	10-June-16	17:35:48
4	1601_0006.raw	10-June-16	18:00:57
5	1601_0007.raw	10-June-16	18:07:31
6	1601_0009.raw	10-June-16	18:16:30

7	1601_0010.raw	10-June-16	18:22:37
8	1601_0011.raw	10-June-16	18:29:44
9	1601_0012.raw	10-June-16	18:36:11
10	1601_0013.raw	10-June-16	18:43:02
11	1601_0014.raw	10-June-16	18:49:54
12	1601_0015.raw	10-June-16	18:56:56
13	1601_0016.raw	10-June-16	19:03:54
14	1601_0017.raw	10-June-16	19:10:54
15	1601_0018.raw	10-June-16	19:18:02
16	1601_0019.raw	10-June-16	19:25:12

3.2 Transect 3

Amundsen MVP data processing
Amundsen_2016001
Year: 2016
Leg: 1
Transect: 3
Processing date: 09-Aug-2017

////////// Limits and Thresholds Settings //////////

B6: -2.00 db - Minimum pressure
B6: 7000.00 db - Maximum pressure
B6: -3.00 °C - Minimum temperature
B6: 30.00 °C - Maximum temperature
B6: 0.00 mS/cm - Minimum conductivity
B6: 70.00 mS/cm - Maximum conductivity
B6: -0.10 ug/L - Minimum fluorescence
B6: 20.00 ug/L - Maximum fluorescence
B6: 1400.00 m/s - Minimum sound velocity
B6: 1500.00 m/s - Maximum sound velocity
B6: 0.00 % - Minimum dissolved oxygen
B6: 100.00 % - Maximum dissolved oxygen
B6: 0.00 % - Minimum transmittance
B6: 120.00 % - Maximum transmittance
B7: 0.40 °C/m - Temperature limit spike

B7: 0.20 mS/cm - Conductivity limit spike
B7: 4.00 m/s/m - Sound velocity limit spike
B7: 4.00 %/m - Transmittance limit spike
B7: 10.00 ml/L/m - Dissolved oxygen limit spike
B7: 10.00 ml/L/m - Fluorescence limit spike
C5: 10.00 m - Lower depth for comparison MVP-TSG
C5: 0.05 psu - Standard deviation flags on MVP salinity at several depths for comparison MVP-TSG
C5: 0.20 ug/L - Standard deviation flags on MVP fluorescence at several depths for comparison MVP-TSG
C5: 0.04 psu - Standard deviation flags on TSG salinity during 5 minutes for comparison MVP-TSG
C5: 0.05 ug/L - Standard deviation flags on TSG fluorescence during 5 minutes for comparison MVP-TSG

////////// Processing //////////
------ Inter-comparison------
C1: Bias applied on Transmittance
Constant bias correction: -0.700 %
C2: Bias applied on Fluorescence
Constant bias correction: -0.100 ug/l
C3: Bias applied on Dissolved oxygen
Constant bias correction: 2.204%
C5: Salinity bias statistics
Number of samples used (TSG) = 67
Median (bias)= -0.038
Mean (bias)= -0.033
Standard deviation (bias)= 0.019
Accuracy (bias)= 0.002
C5: Fluorescence bias statistic calculate
Number of samples used (TSG) = 16
Median (bias)= -0.086
Mean (bias)= -0.058
Standard deviation (bias)= 0.051
Accuracy (bias)= 0.013
C5: Bias applied on Salinity
Constant bias correction: -0.040 psu

C5: Bias applied on Fluorescence

Constant bias correction: 0.000 ug/L

////// List of Casts //////

Cast	File_name	Date	Hour
1	1601_0003.raw	16-June-16	04:49:26
2	1601_0005.raw	16-June-16	04:55:47
3	1601_0008.raw	16-June-16	05:05:14
4	1601_0009.raw	16-June-16	05:10:37
5	1601_0010.raw	16-June-16	05:15:50
6	1601_0011.raw	16-June-16	05:21:17
7	1601_0012.raw	16-June-16	05:26:20
8	1601_0013.raw	16-June-16	05:31:21
9	1601_0014.raw	16-June-16	05:36:58
10	1601_0015.raw	16-June-16	05:42:03
11	1601_0016.raw	16-June-16	05:47:13
12	1601_0017.raw	16-June-16	05:52:22
13	1601_0018.raw	16-June-16	05:57:33
14	1601_0019.raw	16-June-16	06:02:55
15	1601_0020.raw	16-June-16	06:08:15
16	1601_0021.raw	16-June-16	06:13:32
17	1601_0022.raw	16-June-16	06:18:54
18	1601_0023.raw	16-June-16	06:24:24
19	1601_0024.raw	16-June-16	06:30:08
20	1601_0025.raw	16-June-16	06:35:50
21	1601_0026.raw	16-June-16	06:41:23
22	1601_0027.raw	16-June-16	06:46:52
23	1601_0028.raw	16-June-16	06:52:13
24	1601_0029.raw	16-June-16	06:57:30
25	1601_0030.raw	16-June-16	07:02:37
26	1601_0031.raw	16-June-16	07:07:40
27	1601_0032.raw	16-June-16	07:12:35
28	1601_0033.raw	16-June-16	07:17:23
29	1601_0034.raw	16-June-16	07:22:11
30	1601_0035.raw	16-June-16	07:26:44
31	1601_0036.raw	16-June-16	07:31:17
32	1601_0037.raw	16-June-16	07:35:40
33	1601_0038.raw	16-June-16	07:39:54
34	1601_0039.raw	16-June-16	07:43:57

35	1601_0040.raw	16-June-16	07:47:54
36	1601_0041.raw	16-June-16	07:51:46
37	1601_0042.raw	16-June-16	08:07:06
38	1601_0043.raw	16-June-16	08:10:31
39	1601_0044.raw	16-June-16	08:14:08
40	1601_0045.raw	16-June-16	08:17:49
41	1601_0046.raw	16-June-16	08:21:41
42	1601_0047.raw	16-June-16	08:25:43
43	1601_0048.raw	16-June-16	08:29:57
44	1601_0049.raw	16-June-16	08:36:01
45	1601_0050.raw	16-June-16	08:40:28
46	1601_0051.raw	16-June-16	08:44:54
47	1601_0052.raw	16-June-16	08:49:30
48	1601_0053.raw	16-June-16	08:54:16
49	1601_0054.raw	16-June-16	08:59:12
50	1601_0055.raw	16-June-16	09:04:14
51	1601_0056.raw	16-June-16	09:09:24
52	1601_0057.raw	16-June-16	09:14:44
53	1601_0058.raw	16-June-16	09:20:14
54	1601_0059.raw	16-June-16	09:25:48
55	1601_0060.raw	16-June-16	09:31:22
56	1601_0061.raw	16-June-16	09:36:51
57	1601_0062.raw	16-June-16	09:42:19
58	1601_0063.raw	16-June-16	09:47:30
59	1601_0064.raw	16-June-16	09:52:38
60	1601_0065.raw	16-June-16	09:57:45
61	1601_0066.raw	16-June-16	10:02:40
62	1601_0067.raw	16-June-16	10:07:50
63	1601_0068.raw	16-June-16	10:12:48
64	1601_0069.raw	16-June-16	10:17:42
65	1601_0070.raw	16-June-16	10:22:37
66	1601_0071.raw	16-June-16	10:27:34
67	1601_0072.raw	16-June-16	10:32:41
68	1601_0073.raw	16-June-16	10:37:47
69	1601_0074.raw	16-June-16	10:43:37
70	1601_0075.raw	16-June-16	10:49:42
71	1601_0076.raw	16-June-16	10:55:29
72	1601_0077.raw	16-June-16	11:01:26

3.4 Transect 4

Amundsen MVP data processing
Amundsen_2016001
Year: 2016
Leg: 1
Transect: 4
Processing date: 25-Sep-2017

////////// Limits and Thresholds Settings //////////
B6: -2.00 db - Minimum pressure
B6: 7000.00 db - Maximum pressure
B6: -3.00 °C - Minimum temperature
B6: 30.00 °C - Maximum temperature
B6: 0.00 mS/cm - Minimum conductivity
B6: 70.00 mS/cm - Maximum conductivity
B6: -0.10 ug/L - Minimum fluorescence
B6: 20.00 ug/L - Maximum fluorescence
B6: 1400.00 m/s - Minimum sound velocity
B6: 1500.00 m/s - Maximum sound velocity
B6: 0.00 % - Minimum dissolved oxygen
B6: 100.00 % - Maximum dissolved oxygen
B6: 0.00 % - Minimum transmittance
B6: 120.00 % - Maximum transmittance
B7: 0.40 °C/m - Temperature limit spike
B7: 0.20 mS/cm - Conductivity limit spike
B7: 4.00 m/s/m - Sound velocity limit spike
B7: 4.00 %/m - Transmittance limit spike
B7: 10.00 ml/L/m - Dissolved oxygen limit spike
B7: 10.00 ml/L/m - Fluorescence limit spike
C5: 10.00 m - Lower depth for comparison MVP-TSG
C5: 0.05psu - Standard deviation flags on MVP salinity at several depths for comparison MVP-TSG
C5: 0.20 ug/L - Standard deviation flags on MVP fluorescence at several depths for comparison MVP-TSG
C5: 0.04 psu - Standard deviation flags on TSG salinity during 5 minutes for comparison MVP-TSG

C5: 0.05 ug/L - Standard deviation flags on TSG fluorescence during 5 minutes for comparison MVP-TSG

////////// Processing //////////
------ Inter-comparison------
C1: Bias applied on Transmittance
Constant bias correction: -0.700 %
C2: Bias applied on Fluorescence
Constant bias correction: -0.100 ug/l
C3: Bias applied on Dissolved oxygen
Constant bias correction: 2.787%
C5: Salinity bias statistics
Number of samples used (TSG) = 66
Median (bias)= -0.037
Mean (bias)= -0.037
Standard deviation (bias)= 0.003
Accuracy (bias)= 0.000
C5: Fluorescence bias statistic calculate
Number of samples used (TSG) = 0
Median (bias)= NaN
Mean (bias)= NaN
Standard deviation (bias)= NaN
Accuracy (bias)= NaN
C5: Bias applied on Salinity
Constant bias correction: -0.035 psu
C5: Bias applied on Fluorescence
Constant bias correction: 0.000 ug/L

////// List of Casts //////

Cast	File_name	Date	Hour
1	1601_0001.raw	17-June-16	07:43:18
2	1601_0002.raw	17-June-16	07:48:31
3	1601_0003.raw	17-June-16	07:54:02
4	1601_0004.raw	17-June-16	07:59:30
5	1601_0005.raw	17-June-16	08:04:56
6	1601_0006.raw	17-June-16	08:10:18
7	1601_0007.raw	17-June-16	08:15:41

8	1601_0008.raw	17-June-16	08:21:01
9	1601_0009.raw	17-June-16	08:26:18
10	1601_0010.raw	17-June-16	08:31:35
11	1601_0011.raw	17-June-16	08:36:49
12	1601_0012.raw	17-June-16	08:42:04
13	1601_0013.raw	17-June-16	08:47:19
14	1601_0014.raw	17-June-16	08:52:44
15	1601_0015.raw	17-June-16	08:58:05
16	1601_0016.raw	17-June-16	09:03:21
17	1601_0017.raw	17-June-16	09:08:33
18	1601_0018.raw	17-June-16	09:13:45
19	1601_0019.raw	17-June-16	09:18:52
20	1601_0020.raw	17-June-16	09:23:54
21	1601_0021.raw	17-June-16	09:28:49
22	1601_0022.raw	17-June-16	09:33:34
23	1601_0023.raw	17-June-16	09:38:14
24	1601_0024.raw	17-June-16	09:42:49
25	1601_0025.raw	17-June-16	09:47:17
26	1601_0026.raw	17-June-16	09:51:32
27	1601_0027.raw	17-June-16	09:55:40
28	1601_0028.raw	17-June-16	09:59:38
29	1601_0029.raw	17-June-16	10:03:35
30	1601_0030.raw	17-June-16	10:07:28
31	1601_0031.raw	17-June-16	10:11:25
32	1601_0032.raw	17-June-16	10:15:17
33	1601_0033.raw	17-June-16	10:19:12
34	1601_0034.raw	17-June-16	10:23:13
35	1601_0035.raw	17-June-16	10:27:07
36	1601_0036.raw	17-June-16	10:31:00
37	1601_0037.raw	17-June-16	10:34:48
38	1601_0038.raw	17-June-16	10:38:28
39	1601_0039.raw	17-June-16	10:42:06
40	1601_0040.raw	17-June-16	10:45:40
41	1601_0041.raw	17-June-16	10:49:13
42	1601_0042.raw	17-June-16	10:52:41
43	1601_0043.raw	17-June-16	10:55:57
44	1601_0044.raw	17-June-16	10:59:18
45	1601_0045.raw	17-June-16	11:02:35
46	1601_0046.raw	17-June-16	11:05:49

47	1601_0047.raw	17-June-16	11:09:07
48	1601_0048.raw	17-June-16	11:12:18
49	1601_0049.raw	17-June-16	11:15:29
50	1601_0050.raw	17-June-16	11:18:41
51	1601_0051.raw	17-June-16	11:21:52
52	1601_0052.raw	17-June-16	11:25:01
53	1601_0053.raw	17-June-16	11:28:06
54	1601_0054.raw	17-June-16	11:31:04
55	1601_0055.raw	17-June-16	11:34:01
56	1601_0056.raw	17-June-16	11:37:00
57	1601_0057.raw	17-June-16	11:40:00
58	1601_0058.raw	17-June-16	11:42:58
59	1601_0059.raw	17-June-16	11:45:51
60	1601_0060.raw	17-June-16	11:48:36
61	1601_0061.raw	17-June-16	11:51:15
62	1601_0062.raw	17-June-16	11:53:59
63	1601_0063.raw	17-June-16	11:56:46
64	1601_0064.raw	17-June-16	11:59:41
65	1601_0065.raw	17-June-16	12:02:19
66	1601_0066.raw	17-June-16	12:04:59
67	1601_0067.raw	17-June-16	12:07:40
68	1601_0068.raw	17-June-16	12:10:12
69	1601_0069.raw	17-June-16	12:12:29
70	1601_0070.raw	17-June-16	12:14:50
71	1601_0071.raw	17-June-16	12:17:05
72	1601_0072.raw	17-June-16	12:19:11
73	1601_0073.raw	17-June-16	12:21:12
74	1601_0074.raw	17-June-16	12:23:08
75	1601_0075.raw	17-June-16	12:25:03
76	1601_0076.raw	17-June-16	12:26:52
77	1601_0077.raw	17-June-16	12:28:42
78	1601_0078.raw	17-June-16	12:30:38
79	1601_0079.raw	17-June-16	12:32:34
80	1601_0080.raw	17-June-16	12:34:34
81	1601_0081.raw	17-June-16	12:36:38
82	1601_0082.raw	17-June-16	12:38:38

3.5 Transect 5

Amundsen MVP data processing
Amundsen_2016001
Year: 2016
Leg: 1
Transect: 5
Processing date: 25-Sep-2017

////////// Limits and Thresholds Settings //////////
B6: -2.00 db - Minimum pressure
B6: 7000.00 db - Maximum pressure
B6: -3.00 °C - Minimum temperature
B6: 30.00 °C - Maximum temperature
B6: 0.00 mS/cm - Minimum conductivity
B6: 70.00 mS/cm - Maximum conductivity
B6: -0.10 ug/L - Minimum fluorescence
B6: 20.00 ug/L - Maximum fluorescence
B6: 1400.00 m/s - Minimum sound velocity
B6: 1500.00 m/s - Maximum sound velocity
B6: 0.00 % - Minimum dissolved oxygen
B6: 100.00 % - Maximum dissolved oxygen
B6: 0.00 % - Minimum transmittance
B6: 120.00 % - Maximum transmittance
B7: 0.40 °C/m - Temperature limit spike
B7: 0.20 mS/cm - Conductivity limit spike
B7: 4.00 m/s/m - Sound velocity limit spike
B7: 4.00 %/m - Transmittance limit spike
B7: 10.00 ml/L/m - Dissolved oxygen limit spike
B7: 10.00 ml/L/m - Fluorescence limit spike
C5: 10.00 m - Lower depth for comparison MVP-TSG
C5: 0.05 psu - Standard deviation flags on MVP salinity at several depths for comparison MVP-TSG
C5: 0.20 ug/L - Standard deviation flags on MVP fluorescence at several depths for comparison MVP-TSG
C5: 0.04 psu - Standard deviation flags on TSG salinity during 5 minutes for comparison MVP-TSG

C5: 0.05 ug/L - Standard deviation flags on TSG fluorescence during 5 minutes for comparison MVP-TSG

////////// Processing //////////
------ Inter-comparison------
C1: Bias applied on Transmittance
Constant bias correction: -0.900 %
C2: Bias applied on Fluorescence
Constant bias correction: -0.100 ug/l
C3: Bias applied on Dissolved oxygen
Constant bias correction: 7.014%
C5: Salinity bias statistics
Number of samples used (TSG) = 0
Median (bias)= NaN
Mean (bias)= NaN
Standard deviation (bias)= NaN
Accuracy (bias)= NaN
C5: Fluorescence bias statistic calculate
Number of samples used (TSG) = 0
Median (bias)= NaN
Mean (bias)= NaN
Standard deviation (bias)= NaN
Accuracy (bias)= NaN
C5: Bias applied on Salinity
Constant bias correction: -0.035 psu
C5: Bias applied on Fluorescence
Constant bias correction: 0.000 ug/L

////// List of Casts //////

Cast	File_name	Date	Hour
1	1601_0000.raw	28-June-16	04:21:00
2	1601_0001.raw	28-June-16	04:26:37
3	1601_0002.raw	28-June-16	04:31:02
4	1601_0003.raw	28-June-16	04:35:51
5	1601_0004.raw	28-June-16	04:40:36
6	1601_0005.raw	28-June-16	04:45:18
7	1601_0006.raw	28-June-16	04:50:01

8	1601_0007.raw	28-June-16	04:55:04
9	1601_0008.raw	28-June-16	05:00:12
10	1601_0009.raw	28-June-16	05:05:21
11	1601_0010.raw	28-June-16	05:10:28
12	1601_0011.raw	28-June-16	05:15:31
13	1601_0012.raw	28-June-16	05:20:36
14	1601_0013.raw	28-June-16	05:25:39
15	1601_0014.raw	28-June-16	05:30:44
16	1601_0015.raw	28-June-16	05:35:50
17	1601_0016.raw	28-June-16	05:40:56
18	1601_0017.raw	28-June-16	05:46:04
19	1601_0018.raw	28-June-16	05:51:01
20	1601_0019.raw	28-June-16	05:55:49
21	1601_0020.raw	28-June-16	06:00:32
22	1601_0021.raw	28-June-16	06:05:03
23	1601_0022.raw	28-June-16	06:09:18
24	1601_0023.raw	28-June-16	06:13:06
25	1601_0024.raw	28-June-16	06:16:52
26	1601_0025.raw	28-June-16	06:20:39
27	1601_0026.raw	28-June-16	06:24:29
28	1601_0027.raw	28-June-16	06:28:21
29	1601_0028.raw	28-June-16	06:32:02
30	1601_0029.raw	28-June-16	06:35:36
31	1601_0030.raw	28-June-16	06:39:02
32	1601_0031.raw	28-June-16	06:42:30
33	1601_0032.raw	28-June-16	06:45:55
34	1601_0033.raw	28-June-16	06:49:19
35	1601_0034.raw	28-June-16	06:52:37
36	1601_0035.raw	28-June-16	06:55:53
37	1601_0036.raw	28-June-16	06:58:59
38	1601_0037.raw	28-June-16	07:02:02
39	1601_0038.raw	28-June-16	07:05:04
40	1601_0039.raw	28-June-16	07:08:04
41	1601_0040.raw	28-June-16	07:11:04
42	1601_0041.raw	28-June-16	07:14:10
43	1601_0042.raw	28-June-16	07:17:15
44	1601_0043.raw	28-June-16	07:20:21
45	1601_0044.raw	28-June-16	07:23:24
46	1601_0045.raw	28-June-16	07:26:33

47	1601_0046.raw	28-June-16	07:29:35
48	1601_0047.raw	28-June-16	07:32:30
49	1601_0048.raw	28-June-16	07:35:22
50	1601_0049.raw	28-June-16	07:38:12
51	1601_0050.raw	28-June-16	07:40:54
52	1601_0051.raw	28-June-16	07:43:28
53	1601_0052.raw	28-June-16	07:46:02
54	1601_0053.raw	28-June-16	07:48:36
55	1601_0054.raw	28-June-16	07:51:06
56	1601_0055.raw	28-June-16	07:53:40
57	1601_0056.raw	28-June-16	07:56:14
58	1601_0057.raw	28-June-16	07:58:45
59	1601_0058.raw	28-June-16	08:01:17

3.6 Transect 6

Amundsen MVP data processing
Amundsen_2016001
Year: 2016
Leg: 1
Transect: 6
Processing date: 25-Sep-2017

////////// Limits and Thresholds Settings //////////
B6: -2.00 db - Minimum pressure
B6: 7000.00 db - Maximum pressure
B6: -3.00 °C - Minimum temperature
B6: 30.00 °C - Maximum temperature
B6: 0.00 mS/cm - Minimum conductivity
B6: 70.00 mS/cm - Maximum conductivity
B6: -0.10 ug/L - Minimum fluorescence
B6: 20.00 ug/L - Maximum fluorescence
B6: 1400.00 m/s - Minimum sound velocity
B6: 1500.00 m/s - Maximum sound velocity
B6: 0.00 % - Minimum dissolved oxygen
B6: 100.00 % - Maximum dissolved oxygen
B6: 0.00 % - Minimum transmittance
B6: 120.00 % - Maximum transmittance
B7: 0.40 °C/m - Temperature limit spike

B7: 0.20 mS/cm - Conductivity limit spike
B7: 4.00 m/s/m - Sound velocity limit spike
B7: 4.00 %/m - Transmittance limit spike
B7: 10.00 ml/L/m - Dissolved oxygen limit spike
B7: 10.00 ml/L/m - Fluorescence limit spike
C5: 10.00 m - Lower depth for comparison MVP-TSG
C5: 0.05 psu - Standard deviation flags on MVP salinity at several depths for comparison MVP-TSG
C5: 0.20 ug/L - Standard deviation flags on MVP fluorescence at several depths for comparison MVP-TSG
C5: 0.04 psu - Standard deviation flags on TSG salinity during 5 minutes for comparison MVP-TSG
C5: 0.05 ug/L - Standard deviation flags on TSG fluorescence during 5 minutes for comparison MVP-TSG

////////// Processing //////////
------ Inter-comparison------
C1: Bias applied on Transmittance
Constant bias correction: -0.800 %
C2: Bias applied on Fluorescence
Constant bias correction: -0.100 ug/l
C3: Bias applied on Dissolved oxygen
Constant bias correction: 2.623%
C5: Salinity bias statistics
Number of samples used (TSG) = 6
Median (bias)= -0.036
Mean (bias)= -0.016
Standard deviation (bias)= 0.054
Accuracy (bias)= 0.022
C5: Fluorescence bias statistic calculate
Number of samples used (TSG) = 0
Median (bias)= NaN
Mean (bias)= NaN
Standard deviation (bias)= NaN
Accuracy (bias)= NaN
C5: Bias applied on Salinity
Constant bias correction: -0.035 psu

C5: Bias applied on Fluorescence

Constant bias correction: 0.000 ug/L

////// List of Casts //////

Cast	File_name	Date	Hour
1	1601_0000.raw	29-June-16	14:54:19
2	1601_0001.raw	29-June-16	14:58:49
3	1601_0002.raw	29-June-16	15:02:44
4	1601_0003.raw	29-June-16	15:06:45
5	1601_0004.raw	29-June-16	15:10:50
6	1601_0005.raw	29-June-16	15:14:58
7	1601_0006.raw	29-June-16	15:19:12
8	1601_0007.raw	29-June-16	15:23:23
9	1601_0008.raw	29-June-16	15:27:40
10	1601_0009.raw	29-June-16	15:31:53
11	1601_0010.raw	29-June-16	15:36:06
12	1601_0011.raw	29-June-16	15:40:21
13	1601_0012.raw	29-June-16	15:44:33
14	1601_0013.raw	29-June-16	15:48:51
15	1601_0014.raw	29-June-16	15:53:14
16	1601_0015.raw	29-June-16	15:57:36
17	1601_0016.raw	29-June-16	16:02:13
18	1601_0017.raw	29-June-16	16:06:56
19	1601_0018.raw	29-June-16	16:11:40
20	1601_0019.raw	29-June-16	16:16:22
21	1601_0020.raw	29-June-16	16:21:12
22	1601_0021.raw	29-June-16	16:26:03
23	1601_0022.raw	29-June-16	16:30:55
24	1601_0023.raw	29-June-16	16:35:49
25	1601_0024.raw	29-June-16	16:40:42
26	1601_0025.raw	29-June-16	16:45:34
27	1601_0026.raw	29-June-16	16:50:26
28	1601_0027.raw	29-June-16	16:55:22
29	1601_0028.raw	29-June-16	17:00:15
30	1601_0029.raw	29-June-16	17:05:09
31	1601_0030.raw	29-June-16	17:10:04
32	1601_0031.raw	29-June-16	17:14:58
33	1601_0032.raw	29-June-16	17:19:56
34	1601_0033.raw	29-June-16	17:24:56

35	1601_0034.raw	29-June-16	17:29:56
36	1601_0035.raw	29-June-16	17:34:56
37	1601_0036.raw	29-June-16	17:39:52
38	1601_0037.raw	29-June-16	17:44:52
39	1601_0038.raw	29-June-16	17:49:49
40	1601_0039.raw	29-June-16	17:54:43
41	1601_0040.raw	29-June-16	17:59:37
42	1601_0041.raw	29-June-16	18:04:29
43	1601_0042.raw	29-June-16	18:09:13
44	1601_0043.raw	29-June-16	18:13:54
45	1601_0044.raw	29-June-16	18:18:32
46	1601_0045.raw	29-June-16	18:23:07
47	1601_0046.raw	29-June-16	18:27:39
48	1601_0047.raw	29-June-16	18:32:12
49	1601_0048.raw	29-June-16	18:36:44
50	1601_0049.raw	29-June-16	18:41:18
51	1601_0050.raw	29-June-16	18:45:49
52	1601_0051.raw	29-June-16	18:50:21
53	1601_0052.raw	29-June-16	18:54:48
54	1601_0053.raw	29-June-16	18:59:17
55	1601_0054.raw	29-June-16	19:03:42
56	1601_0055.raw	29-June-16	19:08:04
57	1601_0056.raw	29-June-16	19:12:19
58	1601_0057.raw	29-June-16	19:16:39
59	1601_0058.raw	29-June-16	19:20:53
60	1601_0059.raw	29-June-16	19:24:59
61	1601_0060.raw	29-June-16	19:28:58
62	1601_0061.raw	29-June-16	19:33:00
63	1601_0062.raw	29-June-16	19:37:02
64	1601_0063.raw	29-June-16	19:40:59
65	1601_0064.raw	29-June-16	19:44:51
66	1601_0065.raw	29-June-16	19:48:40
67	1601_0066.raw	29-June-16	19:52:29
68	1601_0067.raw	29-June-16	19:56:14
69	1601_0068.raw	29-June-16	19:59:58
70	1601_0069.raw	29-June-16	20:03:46
71	1601_0070.raw	29-June-16	20:07:33
72	1601_0071.raw	29-June-16	20:11:15
73	1601_0072.raw	29-June-16	20:15:00

74	1601_0073.raw	29-June-16	20:18:42
75	1601_0074.raw	29-June-16	20:22:22
76	1601_0075.raw	29-June-16	20:26:01
77	1601_0076.raw	29-June-16	20:29:35
78	1601_0077.raw	29-June-16	20:33:07
79	1601_0078.raw	29-June-16	20:36:35
80	1601_0079.raw	29-June-16	20:39:56
81	1601_0080.raw	29-June-16	20:43:06
82	1601_0081.raw	29-June-16	20:46:04
83	1601_0082.raw	29-June-16	20:48:57
84	1601_0083.raw	29-June-16	20:51:47
85	1601_0084.raw	29-June-16	20:54:35
86	1601_0085.raw	29-June-16	20:57:23
87	1601_0086.raw	29-June-16	21:00:10
88	1601_0087.raw	29-June-16	21:02:56
89	1601_0088.raw	29-June-16	21:05:38

3.7 Transect 7

Amundsen MVP data processing
Amundsen_2016001
Year: 2016
Leg: 1
Transect: 7
Processing date: 25-Sep-2017

////////// Limits and Thresholds Settings //////////

B6: -2.00 db - Minimum pressure
B6: 7000.00 db - Maximum pressure
B6: -3.00 °C - Minimum temperature
B6: 30.00 °C - Maximum temperature
B6: 0.00 mS/cm - Minimum conductivity
B6: 70.00 mS/cm - Maximum conductivity
B6: -0.10 ug/L - Minimum fluorescence
B6: 20.00 ug/L - Maximum fluorescence
B6: 1400.00 m/s - Minimum sound velocity
B6: 1500.00 m/s - Maximum sound velocity

B6: 0.00 % - Minimum dissolved oxygen
B6: 100.00 % - Maximum dissolved oxygen
B6: 0.00 % - Minimum transmittance
B6: 120.00 % - Maximum transmittance
B7: 0.40 °C/m - Temperature limit spike
B7: 0.20 mS/cm - Conductivity limit spike
B7: 4.00 m/s/m - Sound velocity limit spike
B7: 4.00 %/m - Transmittance limit spike
B7: 10.00 ml/L/m - Dissolved oxygen limit spike
B7: 10.00 ml/L/m - Fluorescence limit spike
C5: 10.00 m - Lower depth for comparison MVP-TSG
C5: 0.05 psu - Standard deviation flags on MVP salinity at several depths for comparison MVP-TSG
C5: 0.20 ug/L - Standard deviation flags on MVP fluorescence at several depths for comparison MVP-TSG
C5: 0.04 psu - Standard deviation flags on TSG salinity during 2 minutes for comparison MVP-TSG
C5: 0.05 ug/L - Standard deviation flags on TSG fluorescence during 2 minutes for comparison MVP-TSG

////////// Processing //////////
------ Inter-comparison------
C1: Bias applied on Transmittance
Constant bias correction: -0.800 %
C2: Bias applied on Fluorescence
Constant bias correction: -0.100 ug/l
C3: Bias applied on Dissolved oxygen
Constant bias correction: 5.151%
C5: Salinity bias statistics
Number of samples used (TSG) = 0
Median (bias)= NaN
Mean (bias)= NaN
Standard deviation (bias)= NaN
Accuracy (bias)= NaN
C5: Fluorescence bias statistic calculate
Number of samples used (TSG) = 0
Median (bias)= NaN

Mean (bias)= NaN

Standard deviation (bias)= NaN

Accuracy (bias)= NaN

C5: Bias applied on Salinity

Constant bias correction: -0.035 psu

C5: Bias applied on Fluorescence

Constant bias correction: 0.000 ug/L

////// List of Casts //////

Cast	File_name	Date	Hour
1	1601_0001.raw	30-June-16	08:16:02
2	1601_0002.raw	30-June-16	08:19:10
3	1601_0003.raw	30-June-16	08:22:17
4	1601_0004.raw	30-June-16	08:25:24
5	1601_0005.raw	30-June-16	08:28:31
6	1601_0006.raw	30-June-16	08:31:38
7	1601_0007.raw	30-June-16	08:34:45
8	1601_0008.raw	30-June-16	08:37:53
9	1601_0009.raw	30-June-16	08:40:59
10	1601_0010.raw	30-June-16	08:44:06
11	1601_0011.raw	30-June-16	08:47:12
12	1601_0012.raw	30-June-16	08:50:18
13	1601_0013.raw	30-June-16	08:53:21
14	1601_0014.raw	30-June-16	08:56:25
15	1601_0015.raw	30-June-16	08:59:27

3.8 Transect 8

Amundsen MVP data processing

Amundsen_2016001

Year: 2016

Leg: 1

Transect: 8

Processing date: 26-Sep-2017

////////// Limits and Thresholds Settings //////////

B6: -2.00 db - Minimum pressure

B6: 7000.00 db - Maximum pressure

B6: -3.00 °C - Minimum temperature
B6: 30.00 °C - Maximum temperature
B6: 0.00 mS/cm - Minimum conductivity
B6: 70.00 mS/cm - Maximum conductivity
B6: -0.10 ug/L - Minimum fluorescence
B6: 50.00 ug/L - Maximum fluorescence
B6: 1400.00 m/s - Minimum sound velocity
B6: 1500.00 m/s - Maximum sound velocity
B6: 0.00 % - Minimum dissolved oxygen
B6: 100.00 % - Maximum dissolved oxygen
B6: 0.00 % - Minimum transmittance
B6: 120.00 % - Maximum transmittance
B7: 0.40 °C/m - Temperature limit spike
B7: 0.20 mS/cm - Conductivity limit spike
B7: 4.00 m/s/m - Sound velocity limit spike
B7: 4.00 %/m - Transmittance limit spike
B7: 10.00 ml/L/m - Dissolved oxygen limit spike
B7: 10.00 ml/L/m - Fluorescence limit spike
C5: 10.00 m - Lower depth for comparison MVP-TSG
C5: 0.05 psu - Standard deviation flags on MVP salinity at several depths for comparison MVP-TSG
C5: 0.20 ug/L - Standard deviation flags on MVP fluorescence at several depths for comparison MVP-TSG
C5: 0.04 psu - Standard deviation flags on TSG salinity during 5 minutes for comparison MVP-TSG
C5: 0.05 ug/L - Standard deviation flags on TSG fluorescence during 5 minutes for comparison MVP-TSG

////////// Processing //////////
------ Inter-comparison------
C1: Bias applied on Transmittance
Constant bias correction: -0.700 %
C2: Bias applied on Fluorescence
Constant bias correction: -0.100 ug/l
C3: Bias applied on Dissolved oxygen
Constant bias correction: 3.171%
C5: Salinity bias statistics

Number of samples used (TSG) = 44
Median (bias)= -0.035
Mean (bias)= -0.027
Standard deviation (bias)= 0.025
Accuracy (bias)= 0.004
C5: Fluorescence bias statistic calculate
Number of samples used (TSG) = 0
Median (bias)= NaN
Mean (bias)= NaN
Standard deviation (bias)= NaN
Accuracy (bias)= NaN
C5: Bias applied on Salinity
Constant bias correction: -0.035 psu
C5: Bias applied on Fluorescence
Constant bias correction: 0.000 ug/L

////// List of Casts //////

Cast	File_name	Date	Hour
1	1601_0000.raw	05-July-16	01:07:41
2	1601_0001.raw	05-July-16	01:10:58
3	1601_0002.raw	05-July-16	01:14:15
4	1601_0003.raw	05-July-16	01:17:31
5	1601_0004.raw	05-July-16	01:20:47
6	1601_0005.raw	05-July-16	01:24:02
7	1601_0006.raw	05-July-16	01:27:18
8	1601_0007.raw	05-July-16	01:30:34
9	1601_0008.raw	05-July-16	01:33:51
10	1601_0009.raw	05-July-16	01:37:08
11	1601_0010.raw	05-July-16	01:40:26
12	1601_0011.raw	05-July-16	01:43:42
13	1601_0012.raw	05-July-16	01:46:59
14	1601_0013.raw	05-July-16	01:50:17
15	1601_0014.raw	05-July-16	01:53:37
16	1601_0015.raw	05-July-16	01:56:57
17	1601_0016.raw	05-July-16	02:00:17
18	1601_0017.raw	05-July-16	02:03:36
19	1601_0018.raw	05-July-16	02:06:54

20	1601_0019.raw	05-July-16	02:10:10
21	1601_0020.raw	05-July-16	02:13:28
22	1601_0021.raw	05-July-16	02:16:46
23	1601_0022.raw	05-July-16	02:20:10
24	1601_0023.raw	05-July-16	02:23:35
25	1601_0024.raw	05-July-16	02:26:51
26	1601_0025.raw	05-July-16	02:30:15
27	1601_0026.raw	05-July-16	02:33:41
28	1601_0027.raw	05-July-16	02:36:58
29	1601_0028.raw	05-July-16	02:40:16
30	1601_0029.raw	05-July-16	02:43:36
31	1601_0030.raw	05-July-16	02:46:55
32	1601_0031.raw	05-July-16	02:50:14
33	1601_0032.raw	05-July-16	02:53:34
34	1601_0033.raw	05-July-16	02:56:53
35	1601_0034.raw	05-July-16	03:00:14
36	1601_0035.raw	05-July-16	03:03:34
37	1601_0036.raw	05-July-16	03:06:53
38	1601_0037.raw	05-July-16	03:10:12
39	1601_0038.raw	05-July-16	03:13:29
40	1601_0039.raw	05-July-16	03:16:47
41	1601_0040.raw	05-July-16	03:20:04
42	1601_0041.raw	05-July-16	03:23:20
43	1601_0042.raw	05-July-16	03:26:32
44	1601_0043.raw	05-July-16	03:29:49
45	1601_0044.raw	05-July-16	03:33:06
46	1601_0045.raw	05-July-16	03:36:24
47	1601_0046.raw	05-July-16	03:39:41
48	1601_0047.raw	05-July-16	03:43:01
49	1601_0048.raw	05-July-16	03:46:19
50	1601_0049.raw	05-July-16	03:49:38
51	1601_0050.raw	05-July-16	03:52:56
52	1601_0051.raw	05-July-16	03:56:17
53	1601_0052.raw	05-July-16	03:59:38
54	1601_0053.raw	05-July-16	04:02:55
55	1601_0054.raw	05-July-16	04:06:12
56	1601_0055.raw	05-July-16	04:09:30
57	1601_0056.raw	05-July-16	04:12:46
58	1601_0057.raw	05-July-16	04:16:04

59	1601_0058.raw	05-July-16	04:19:22
60	1601_0059.raw	05-July-16	04:22:42
61	1601_0060.raw	05-July-16	04:26:01
62	1601_0061.raw	05-July-16	04:29:22
63	1601_0062.raw	05-July-16	04:32:43
64	1601_0063.raw	05-July-16	04:36:03
65	1601_0064.raw	05-July-16	04:39:23
66	1601_0065.raw	05-July-16	04:42:44
67	1601_0066.raw	05-July-16	04:46:04
68	1601_0067.raw	05-July-16	04:49:27
69	1601_0068.raw	05-July-16	04:52:46
70	1601_0069.raw	05-July-16	04:56:07
71	1601_0070.raw	05-July-16	04:59:27
72	1601_0071.raw	05-July-16	05:02:48
73	1601_0072.raw	05-July-16	05:06:07
74	1601_0073.raw	05-July-16	05:09:29
75	1601_0074.raw	05-July-16	05:12:50
76	1601_0075.raw	05-July-16	05:16:08
77	1601_0076.raw	05-July-16	05:19:26
78	1601_0077.raw	05-July-16	05:22:43
79	1601_0078.raw	05-July-16	05:26:00
80	1601_0079.raw	05-July-16	05:29:18
81	1601_0080.raw	05-July-16	05:32:33
82	1601_0081.raw	05-July-16	05:35:48
83	1601_0082.raw	05-July-16	05:39:04
84	1601_0083.raw	05-July-16	05:42:20
85	1601_0084.raw	05-July-16	05:45:36
86	1601_0085.raw	05-July-16	05:48:52
87	1601_0086.raw	05-July-16	05:52:09
88	1601_0087.raw	05-July-16	05:55:24
89	1601_0088.raw	05-July-16	05:58:39
90	1601_0089.raw	05-July-16	06:01:54
91	1601_0090.raw	05-July-16	06:05:08
92	1601_0091.raw	05-July-16	06:08:23
93	1601_0092.raw	05-July-16	06:11:37
94	1601_0093.raw	05-July-16	06:14:52
95	1601_0094.raw	05-July-16	06:18:07
96	1601_0095.raw	05-July-16	06:21:24
97	1601_0096.raw	05-July-16	06:24:40

98	1601_0097.raw	05-July-16	06:27:57
99	1601_0098.raw	05-July-16	06:31:15
100	1601_0099.raw	05-July-16	06:34:32
101	1601_0100.raw	05-July-16	06:37:50
102	1601_0101.raw	05-July-16	06:41:08
103	1601_0102.raw	05-July-16	06:44:27
104	1601_0103.raw	05-July-16	06:47:45
105	1601_0104.raw	05-July-16	06:51:05
106	1601_0105.raw	05-July-16	06:54:25
107	1601_0106.raw	05-July-16	06:57:46
108	1601_0107.raw	05-July-16	07:01:08
109	1601_0108.raw	05-July-16	07:04:28
110	1601_0109.raw	05-July-16	07:07:49
111	1601_0110.raw	05-July-16	07:10:36
112	1601_0111.raw	05-July-16	07:13:57
113	1601_0112.raw	05-July-16	07:17:18
114	1601_0113.raw	05-July-16	07:20:38
115	1601_0114.raw	05-July-16	07:23:56
116	1601_0115.raw	05-July-16	07:27:10
117	1601_0116.raw	05-July-16	07:30:26
118	1601_0117.raw	05-July-16	07:33:40
119	1601_0118.raw	05-July-16	07:36:54
120	1601_0119.raw	05-July-16	07:40:06
121	1601_0120.raw	05-July-16	07:43:21
122	1601_0121.raw	05-July-16	07:46:36
123	1601_0122.raw	05-July-16	07:49:51
124	1601_0123.raw	05-July-16	07:53:02
125	1601_0124.raw	05-July-16	07:56:13
126	1601_0125.raw	05-July-16	07:59:25
127	1601_0126.raw	05-July-16	08:02:36
128	1601_0127.raw	05-July-16	08:05:49
129	1601_0128.raw	05-July-16	08:09:02
130	1601_0129.raw	05-July-16	08:12:16
131	1601_0130.raw	05-July-16	08:15:28
132	1601_0131.raw	05-July-16	08:18:41
133	1601_0132.raw	05-July-16	08:21:54
134	1601_0133.raw	05-July-16	08:25:05
135	1601_0134.raw	05-July-16	08:28:18
136	1601_0135.raw	05-July-16	08:31:30

137	1601_0136.raw	05-July-16	08:34:44
138	1601_0137.raw	05-July-16	08:37:56
139	1601_0138.raw	05-July-16	08:41:10
140	1601_0139.raw	05-July-16	08:44:23
141	1601_0140.raw	05-July-16	08:47:33
142	1601_0141.raw	05-July-16	08:50:45
143	1601_0142.raw	05-July-16	08:53:58
144	1601_0143.raw	05-July-16	08:57:10
145	1601_0144.raw	05-July-16	09:00:22
146	1601_0145.raw	05-July-16	09:03:35
147	1601_0146.raw	05-July-16	09:06:47
148	1601_0147.raw	05-July-16	09:09:59
149	1601_0148.raw	05-July-16	09:13:12
150	1601_0149.raw	05-July-16	09:16:23
151	1601_0150.raw	05-July-16	09:19:37
152	1601_0151.raw	05-July-16	09:22:51
153	1601_0152.raw	05-July-16	09:26:04

3.9 Transect 9

Amundsen MVP data processing
Amundsen_2016001
Year: 2016
Leg: 1
Transect: 9
Processing date: 26-Sep-2017

////////// Limits and Thresholds Settings //////////
B6: -2.00 db - Minimum pressure
B6: 7000.00 db - Maximum pressure
B6: -3.00 °C - Minimum temperature
B6: 30.00 °C - Maximum temperature
B6: 0.00 mS/cm - Minimum conductivity
B6: 70.00 mS/cm - Maximum conductivity
B6: -0.10 ug/L - Minimum fluorescence
B6: 50.00 ug/L - Maximum fluorescence
B6: 1400.00 m/s - Minimum sound velocity
B6: 1500.00 m/s - Maximum sound velocity

B6: 0.00 % - Minimum dissolved oxygen
B6: 100.00 % - Maximum dissolved oxygen
B6: 0.00 % - Minimum transmittance
B6: 120.00 % - Maximum transmittance
B7: 0.40 °C/m - Temperature limit spike
B7: 0.20 mS/cm - Conductivity limit spike
B7: 4.00 m/s/m - Sound velocity limit spike
B7: 4.00 %/m - Transmittance limit spike
B7: 10.00 ml/L/m - Dissolved oxygen limit spike
B7: 10.00 ml/L/m - Fluorescence limit spike
C5: 10.00 m - Lower depth for comparison MVP-TSG
C5: 0.05 psu - Standard deviation flags on MVP salinity at several depths for comparison MVP-TSG
C5: 0.20 ug/L - Standard deviation flags on MVP fluorescence at several depths for comparison MVP-TSG
C5: 0.04 psu - Standard deviation flags on TSG salinity during 5 minutes for comparison MVP-TSG
C5: 0.05 ug/L - Standard deviation flags on TSG fluorescence during 5 minutes for comparison MVP-TSG

////////// Processing //////////
------ Inter-comparison------
C1: Bias applied on Transmittance
Constant bias correction: -0.500 %
C2: Bias applied on Fluorescence
Constant bias correction: -0.100 ug/l
C3: Bias applied on Dissolved oxygen
Constant bias correction: 2.054%
C5: Salinity bias statistics
Number of samples used (TSG) = 8
Median (bias)= -0.033
Mean (bias)= -0.028
Standard deviation (bias)= 0.018
Accuracy (bias)= 0.006
C5: Fluorescence bias statistic calculate
Number of samples used (TSG) = 0
Median (bias)= NaN

Mean (bias)= NaN

Standard deviation (bias)= NaN

Accuracy (bias)= NaN

C5: Bias applied on Salinity

Constant bias correction: -0.035 psu

C5: Bias applied on Fluorescence

Constant bias correction: 0.000 ug/L

////// List of Casts //////

Cast	File_name	Date	Hour
1	1601_0000.raw	06-July-16	08:18:56
2	1601_0001.raw	06-July-16	08:22:48
3	1601_0002.raw	06-July-16	08:26:40
4	1601_0003.raw	06-July-16	08:30:30
5	1601_0004.raw	06-July-16	08:34:18
6	1601_0005.raw	06-July-16	08:38:09
7	1601_0006.raw	06-July-16	08:41:57
8	1601_0007.raw	06-July-16	08:45:46
9	1601_0008.raw	06-July-16	08:49:36
10	1601_0009.raw	06-July-16	08:55:03
11	1601_0010.raw	06-July-16	08:58:50
12	1601_0011.raw	06-July-16	09:02:41
13	1601_0012.raw	06-July-16	09:06:34
14	1601_0013.raw	06-July-16	09:10:27
15	1601_0014.raw	06-July-16	09:14:22
16	1601_0015.raw	06-July-16	09:18:17
17	1601_0016.raw	06-July-16	09:22:13
18	1601_0017.raw	06-July-16	09:26:11
19	1601_0018.raw	06-July-16	09:30:13
20	1601_0019.raw	06-July-16	09:34:17
21	1601_0020.raw	06-July-16	09:38:19
22	1601_0021.raw	06-July-16	09:42:21
23	1601_0022.raw	06-July-16	09:46:24
24	1601_0023.raw	06-July-16	09:50:26
25	1601_0024.raw	06-July-16	09:54:30
26	1601_0025.raw	06-July-16	09:58:34
27	1601_0026.raw	06-July-16	10:02:38
28	1601_0027.raw	06-July-16	10:06:44

29	1601_0028.raw	06-July-16	10:10:49
30	1601_0029.raw	06-July-16	10:14:54
31	1601_0030.raw	06-July-16	10:19:00
32	1601_0031.raw	06-July-16	10:23:07
33	1601_0032.raw	06-July-16	10:27:15
34	1601_0033.raw	06-July-16	10:31:23
35	1601_0034.raw	06-July-16	10:35:32
36	1601_0035.raw	06-July-16	10:39:40
37	1601_0036.raw	06-July-16	10:43:49
38	1601_0037.raw	06-July-16	10:59:35
39	1601_0038.raw	06-July-16	11:03:31
40	1601_0039.raw	06-July-16	11:07:36
41	1601_0040.raw	06-July-16	11:11:40
42	1601_0041.raw	06-July-16	11:15:44
43	1601_0042.raw	06-July-16	11:19:49
44	1601_0043.raw	06-July-16	11:23:53

3.10 Transect 10

Amundsen MVP data processing
Amundsen_2016001
Year: 2016
Leg: 1
Transect: 10
Processing date: 26-Sep-2017

////////// Limits and Thresholds Settings //////////
B6: -2.00 db - Minimum pressure
B6: 7000.00 db - Maximum pressure
B6: -3.00 °C - Minimum temperature
B6: 30.00 °C - Maximum temperature
B6: 0.00 mS/cm - Minimum conductivity
B6: 70.00 mS/cm - Maximum conductivity
B6: -0.10 ug/L - Minimum fluorescence
B6: 50.00 ug/L - Maximum fluorescence
B6: 1400.00 m/s - Minimum sound velocity
B6: 1500.00 m/s - Maximum sound velocity
B6: 0.00 % - Minimum dissolved oxygen

B6: 100.00 % - Maximum dissolved oxygen
B6: 0.00 % - Minimum transmittance
B6: 120.00 % - Maximum transmittance
B7: 0.40 °C/m - Temperature limit spike
B7: 0.20 mS/cm - Conductivity limit spike
B7: 4.00 m/s/m - Sound velocity limit spike
B7: 4.00 %/m - Transmittance limit spike
B7: 10.00 ml/L/m - Dissolved oxygen limit spike
B7: 10.00 ml/L/m - Fluorescence limit spike
C5: 10.00 m - Lower depth for comparison MVP-TSG
C5: 0.05 psu - Standard deviation flags on MVP salinity at several depths for comparison MVP-TSG
C5: 0.20 ug/L - Standard deviation flags on MVP fluorescence at several depths for comparison MVP-TSG
C5: 0.04 psu - Standard deviation flags on TSG salinity during 5 minutes for comparison MVP-TSG
C5: 0.05 ug/L - Standard deviation flags on TSG fluorescence during 5 minutes for comparison MVP-TSG

////////// Processing //////////
------ Inter-comparison------
C1: Bias applied on Transmittance
Constant bias correction: -0.700 %
C2: Bias applied on Fluorescence
Constant bias correction: -0.100 ug/l
C3: Bias applied on Dissolved oxygen
Constant bias correction: 0%
C5: Salinity bias statistics
Number of samples used (TSG) = 3
Median (bias)= 0.292
Mean (bias)= 0.255
Standard deviation (bias)= 0.145
Accuracy (bias)= 0.084
C5: Fluorescence bias statistic calculate
Number of samples used (TSG) = 0
Median (bias)= NaN
Mean (bias)= NaN

Standard deviation (bias)= NaN

Accuracy (bias)= NaN

C5: Bias applied on Salinity

Constant bias correction: -0.035 psu

C5: Bias applied on Fluorescence

Constant bias correction: 0.000 ug/L

////// List of Casts //////

Cast	File_name	Date	Hour
1	1601_0001.raw	08-July-16	12:00:03
2	1601_0002.raw	08-July-16	12:03:46
3	1601_0003.raw	08-July-16	12:07:32
4	1601_0004.raw	08-July-16	12:12:13
5	1601_0005.raw	08-July-16	12:15:23
6	1601_0006.raw	08-July-16	12:18:33
7	1601_0007.raw	08-July-16	12:21:45
8	1601_0008.raw	08-July-16	12:24:55
9	1601_0009.raw	08-July-16	12:28:07
10	1601_0010.raw	08-July-16	12:31:27
11	1601_0011.raw	08-July-16	12:34:48
12	1601_0012.raw	08-July-16	12:38:07
13	1601_0013.raw	08-July-16	12:41:27
14	1601_0014.raw	08-July-16	12:44:48
15	1601_0015.raw	08-July-16	12:48:08
16	1601_0016.raw	08-July-16	12:51:29
17	1601_0017.raw	08-July-16	12:54:50
18	1601_0018.raw	08-July-16	12:58:14
19	1601_0019.raw	08-July-16	13:01:40
20	1601_0020.raw	08-July-16	13:04:39

4. Data quality discussion

- Temperature uncertainty is in the order of 0.01°C or better. Inter-comparisons with the co-localised Rosette will provide some validation for the MVP temperature data.

- Salinity uncertainty is in the order of 0.01psu (good Rosette inter-comparison) or better during periods of low vertical variability. However, the uncertainty can exceed 0.015psu during high vertical gradient.

- The sound velocity sensor worked well. Its measurements can be interpreted with an uncertainty in the order of 0.02m/s. The MVP sound velocity variation exactly corresponds to those calculated using the pressure, the salinity and the temperature. However, a constant difference persists between the MVP sound velocity values and values estimated from pressure, salinity and temperature (~0.3-0.4m/s). These differences persists every legs and years. This might suggest that the method of estimating sound velocity from salinity and temperature is not suitable.

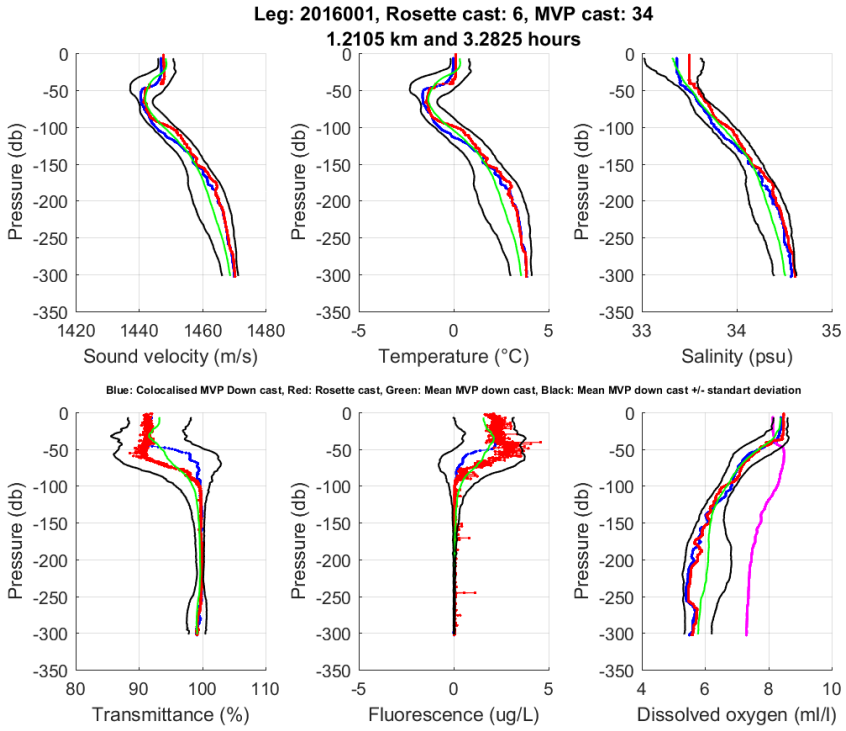
- Transmissometer provides very good results for this kind of use. The measurement noise is smaller than 0.1%.

- The dissolved oxygen sensor on the MVP provides satisfying results. However, adjustments from CTD-Rosette data is needed due to an important drift in time. Adjustments are performed on data from transects associated with CTD-Rosette casts performed before and after. Dissolved oxygen data shows then an accuracy of ~1%. When the comparison with CTD-Rosette data is not possible, the accuracy of the data is higher (~5%). Furthermore, the uncertainty can exceed the above values in presence of high vertical temperature and salinity gradients. The equation to convert % to µg/L uses the temperature and the salinity. A very small misalignment between the two sensors can bring high dissolved oxygen bias (>3 %).

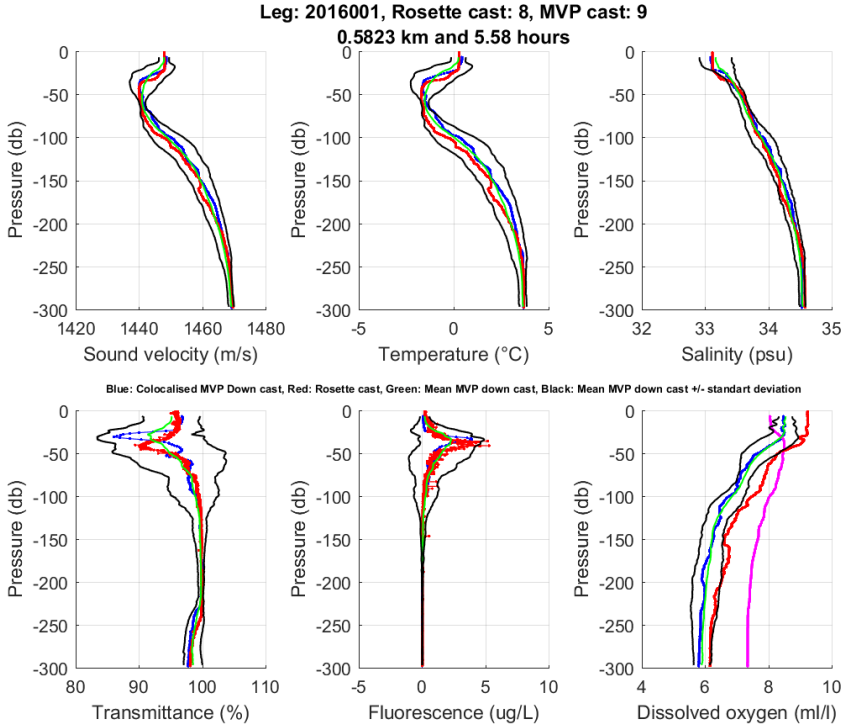
- The fluorimeter provides good data. Its accuracy is estimated at 0.1ug/L. Comparisons with CTD-Rosette data are good.

Annex 1: Rosette inter-comparison plot

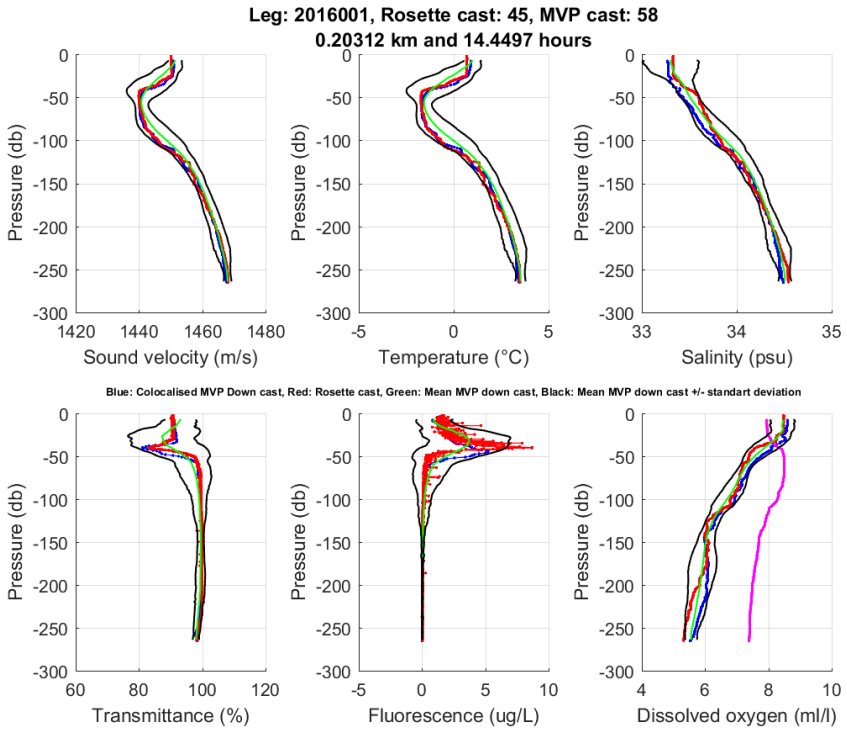
- Transect 1



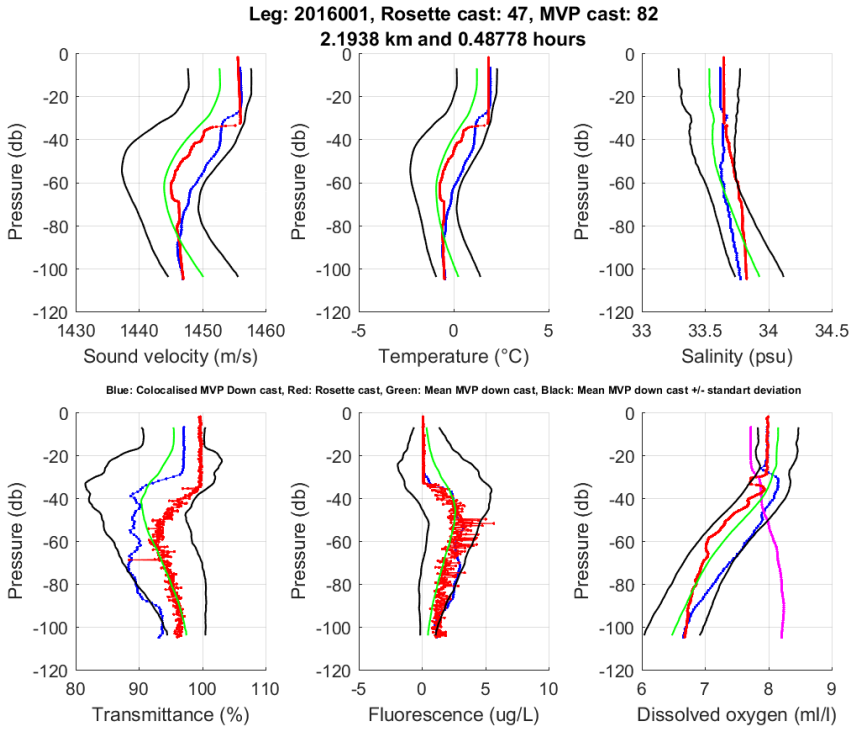
- Transect 2



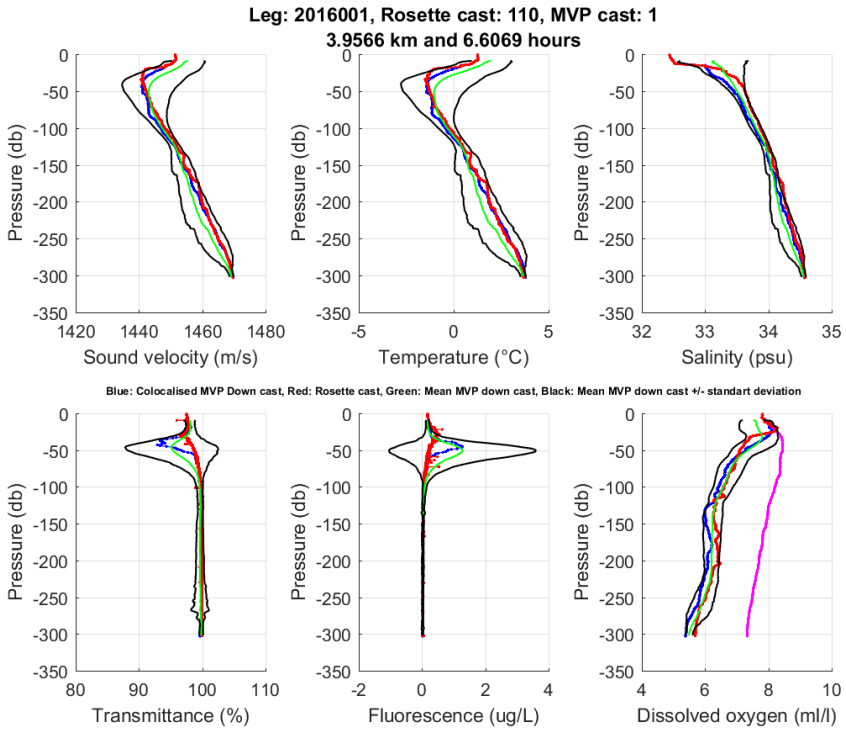
- Transect 3



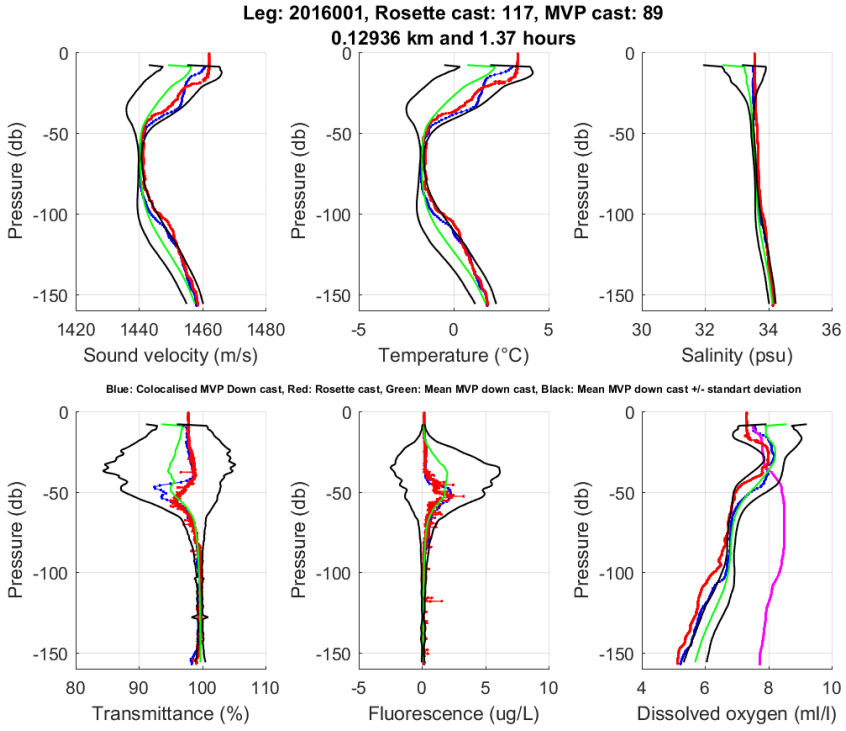
- Transect 4



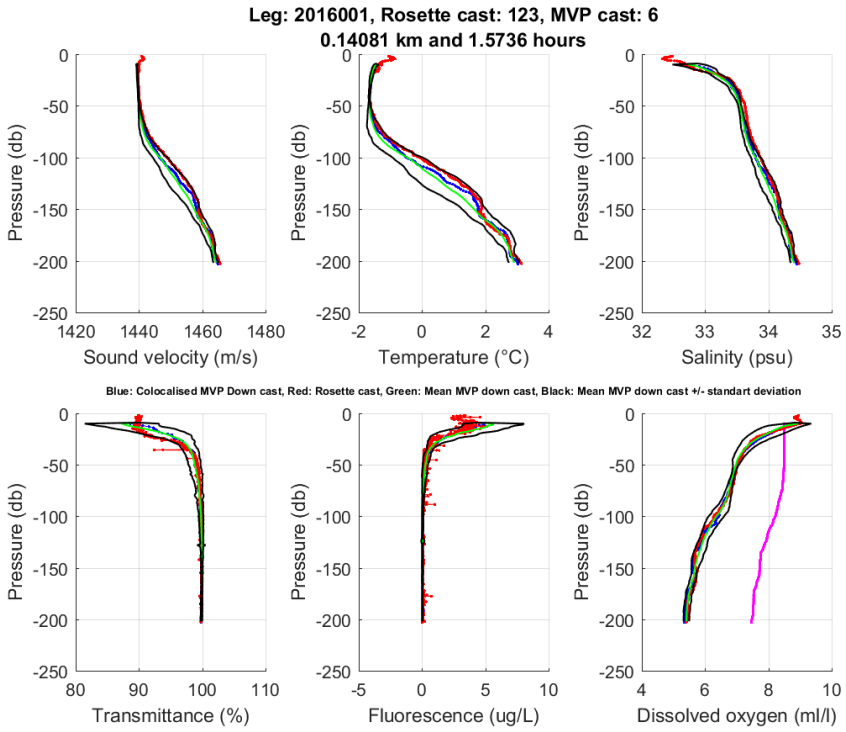
- Transect 5



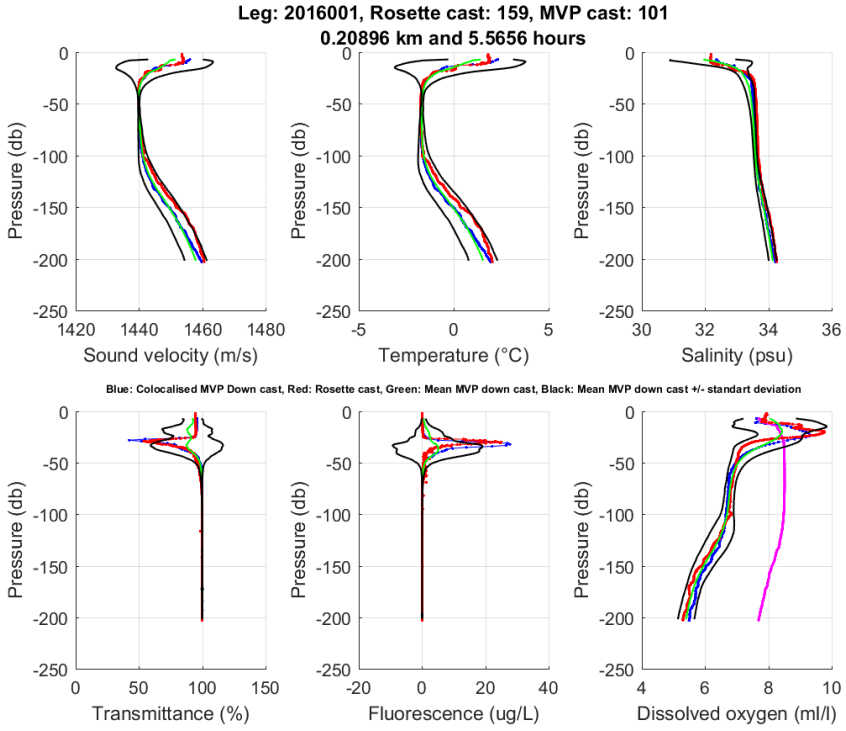
- Transect 6



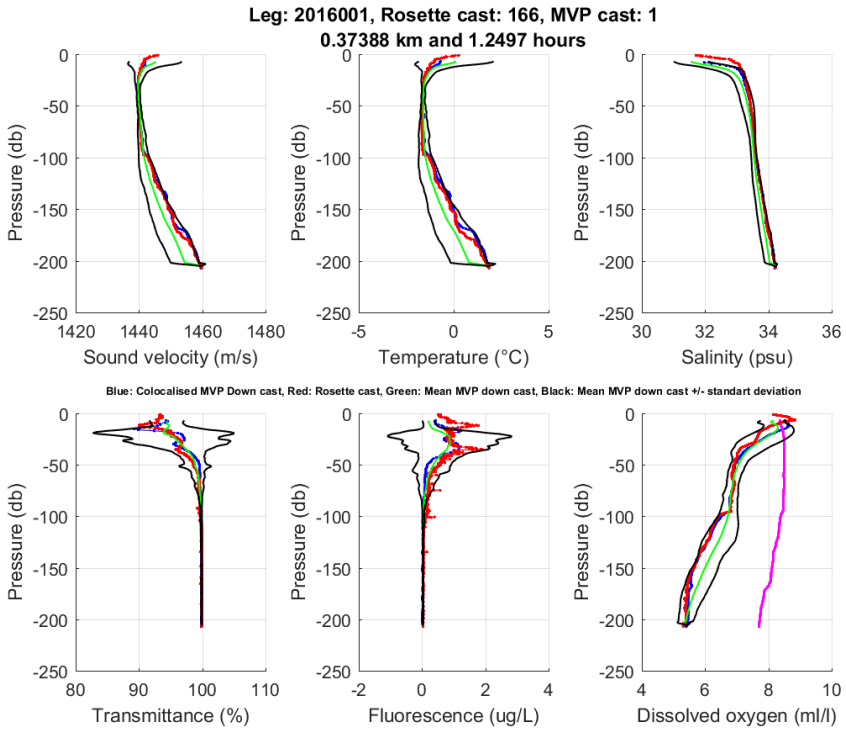
- Transect 7



- Transect 8

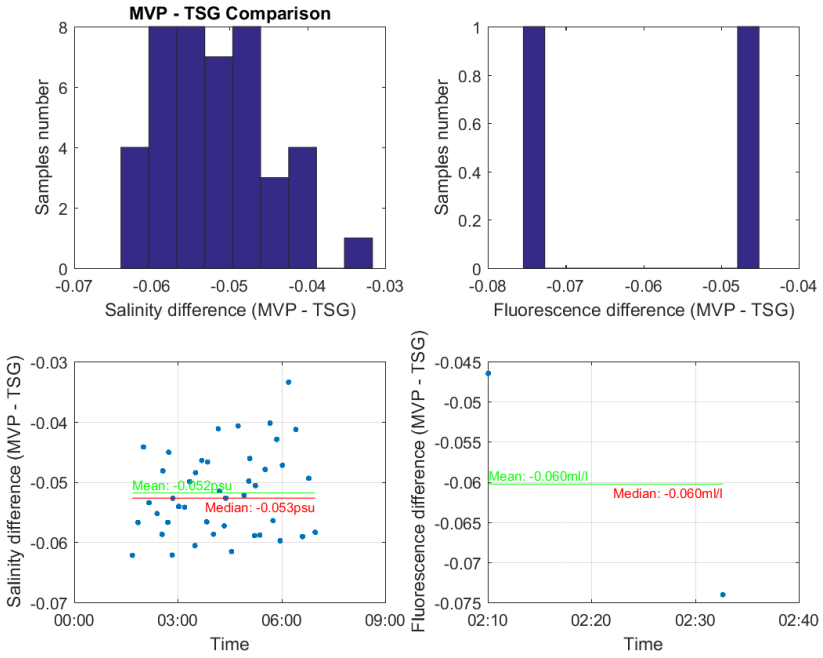


- Transect 9

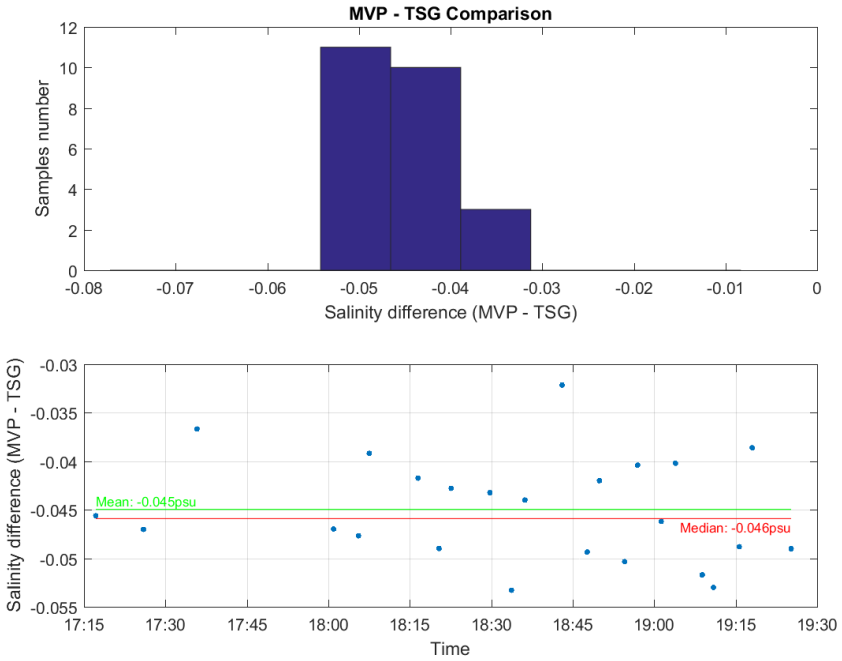

Leg: 2016001, Rosette cast: 166, MVP cast: 1
0.37388 km and 1.2497 hours
Pressure (db)
Sound velocity (m/s)
Temperature (°C)
Salinity (psu)
Blue: Colocalised MVP Down cast, Red: Rosette cast, Green: Mean MVP down cast, Black: Mean MVP down cast +/- standart deviation
Transmittance (%)
Fluorescence (ug/L)
Dissolved oxygen (ml/l)

Annex 2: TSG Inter-comparison plot

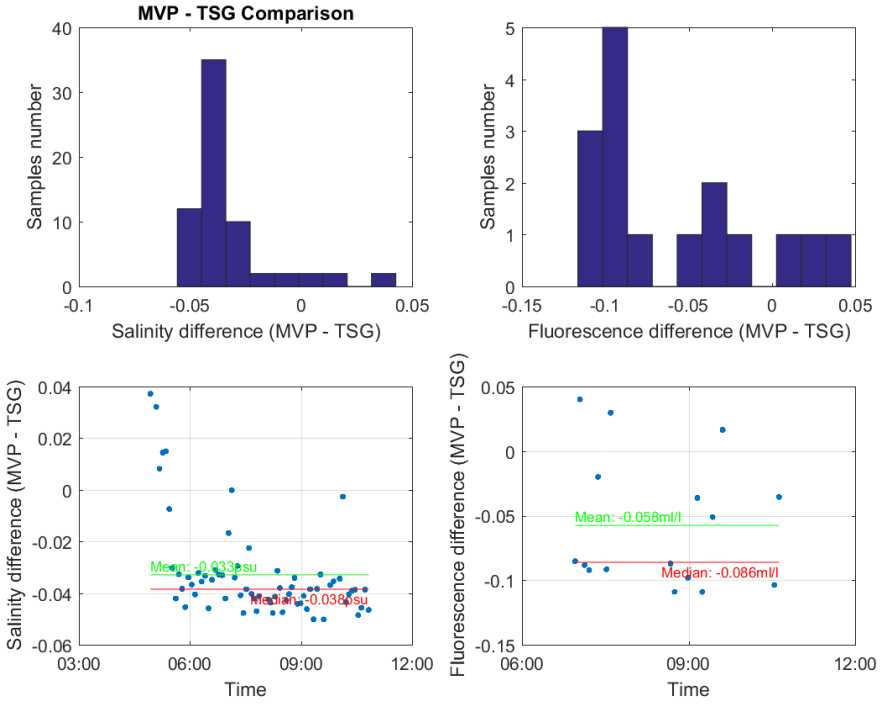
- Transect 1



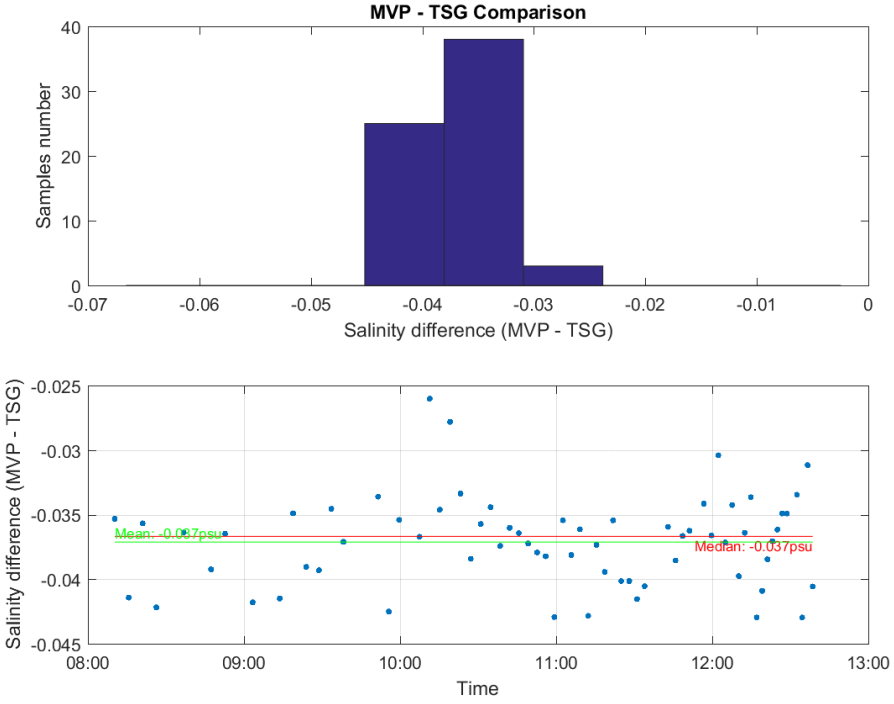
- Transect 2



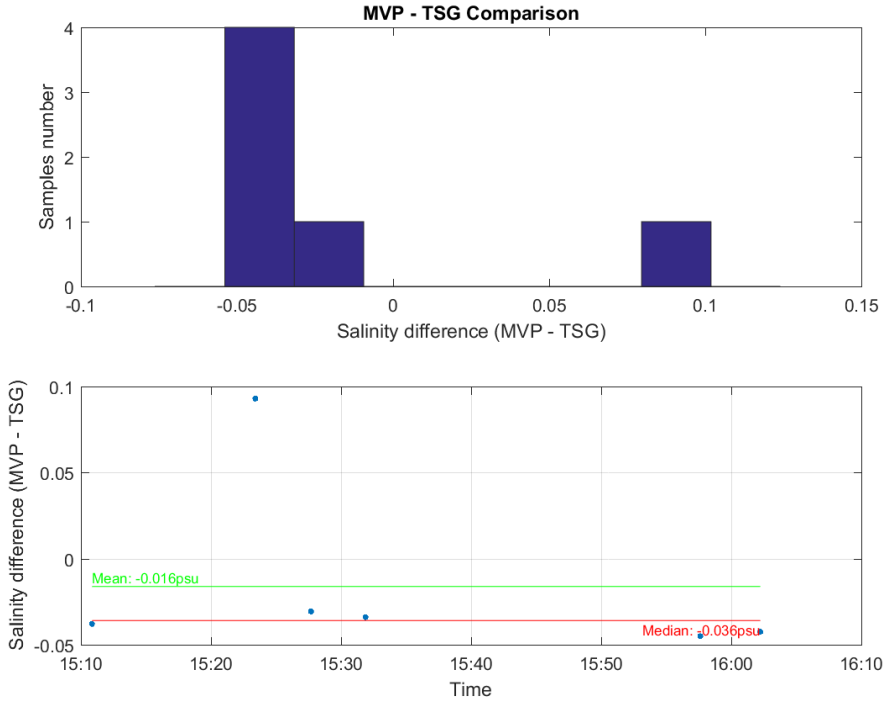
- Transect 3



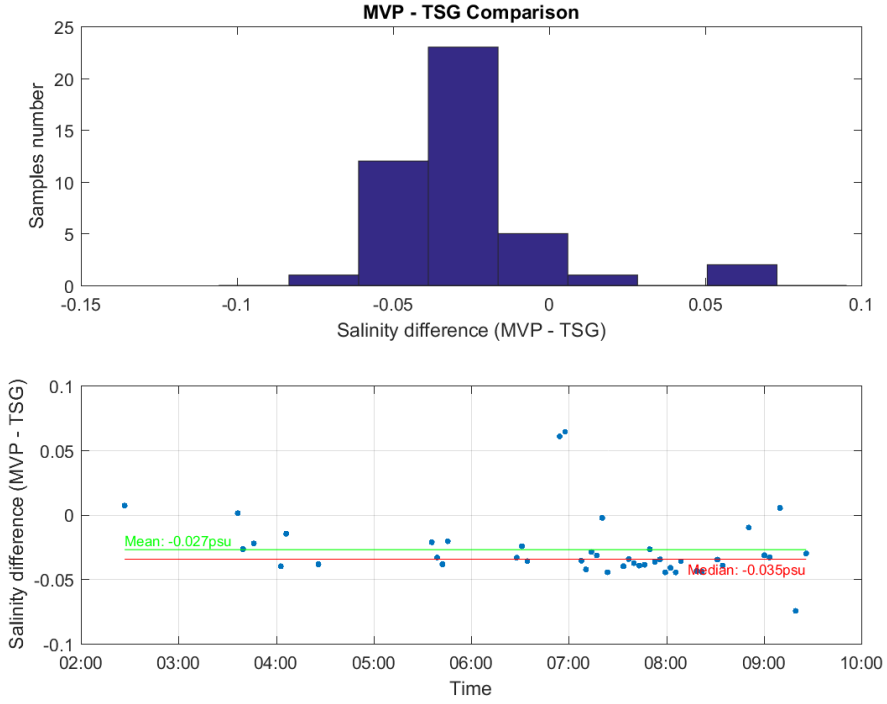
- Transect 4



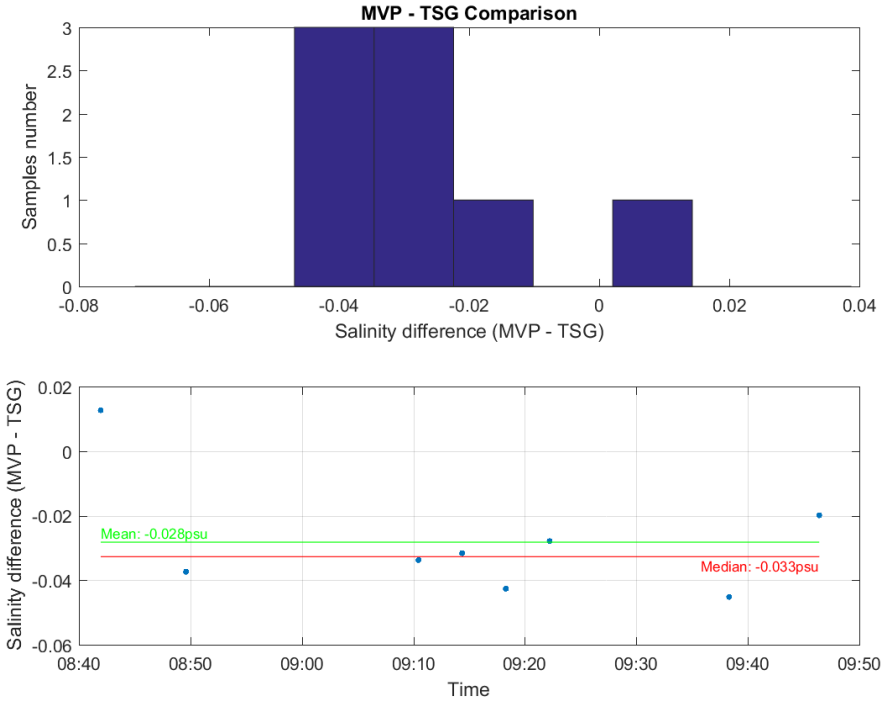
- Transect 6



- Transect 8



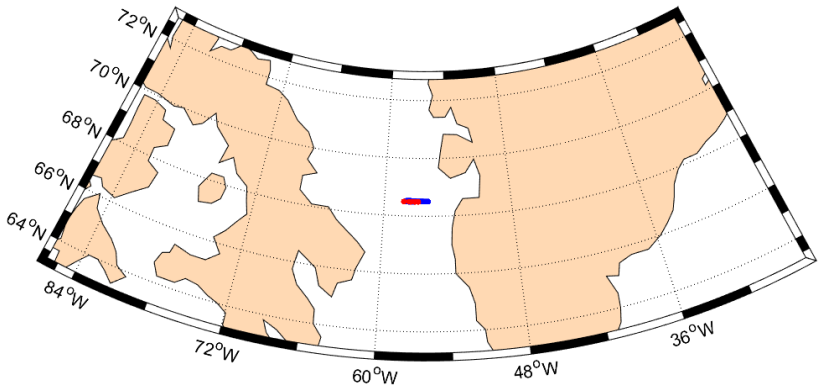
- Transect 9


MVP - TSG Comparison
Samples number
Salinity difference (MVP - TSG)
Salinity difference (MVP - TSG)
Mean: -0.028psu
Median: -0.033psu
Time

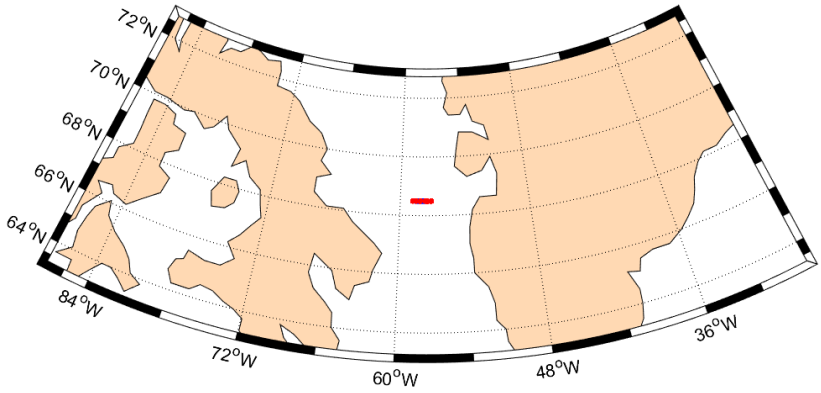
Annex 3: Mapping

Blue points represent the MVP cast positions and red points the co-localised rosette positions.

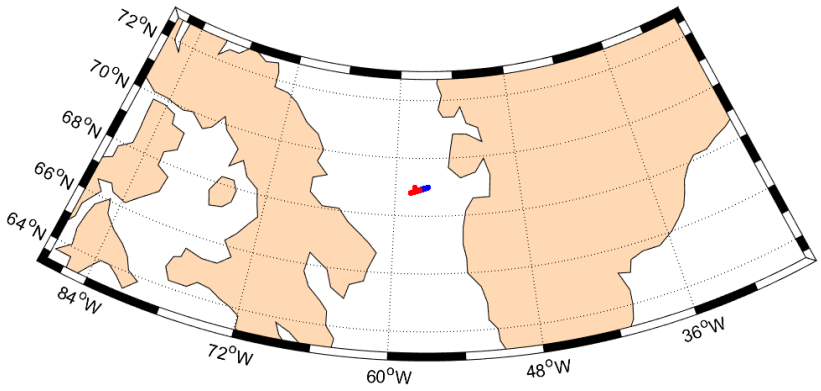
- Transect 1



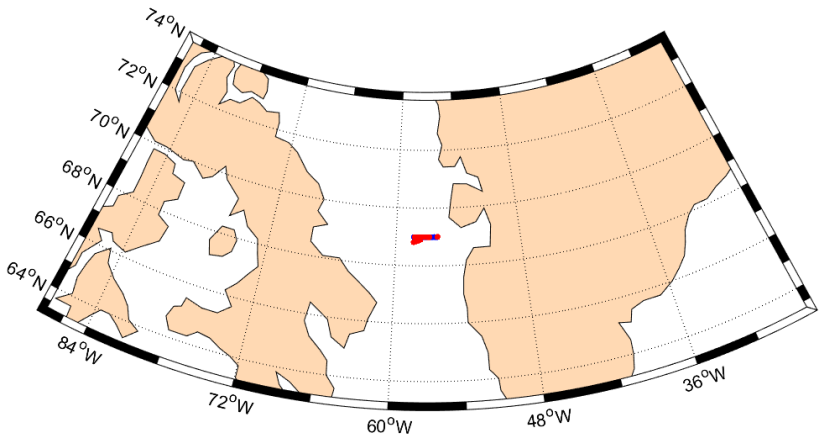
- Transect 2



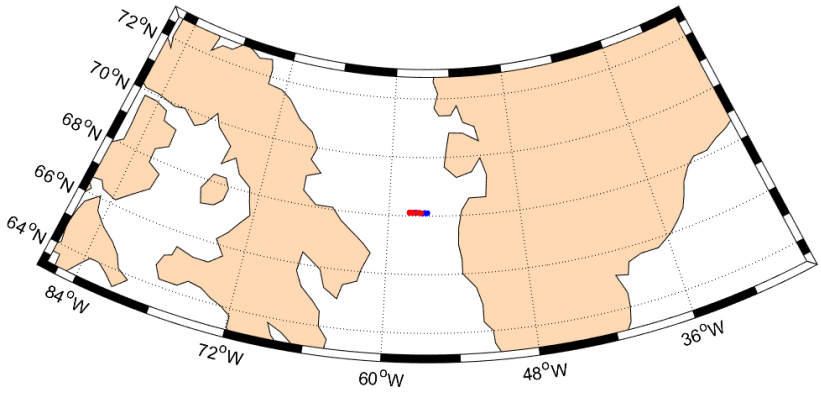
- Transect 3



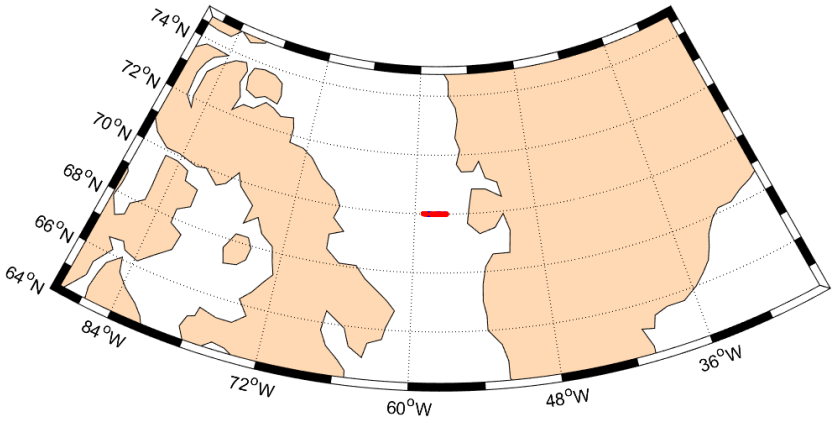
- Transect 4



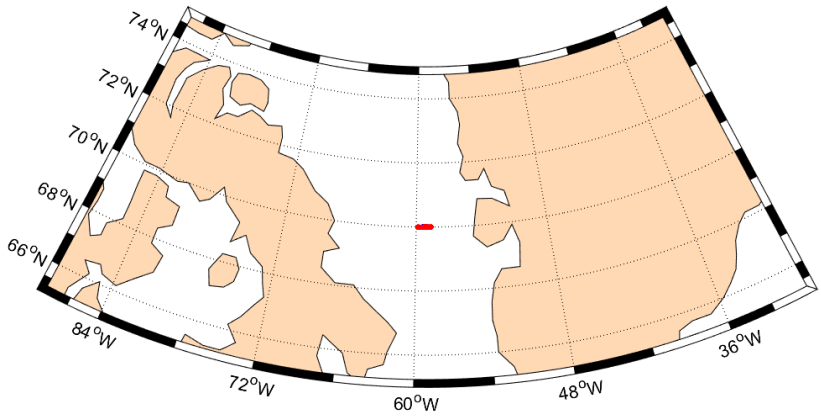
Transect 5



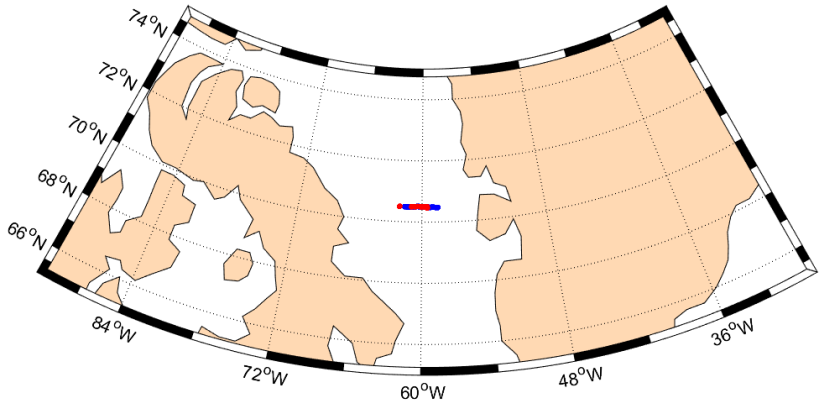
- Transect 6



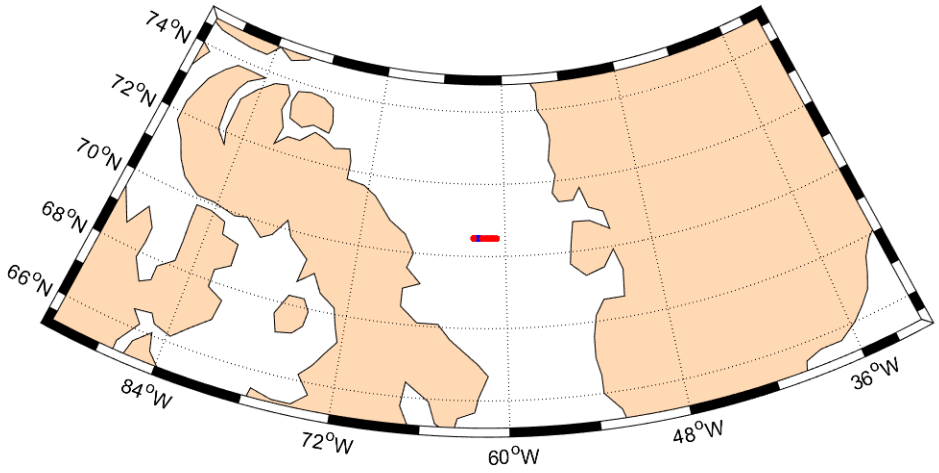
- Transect 7



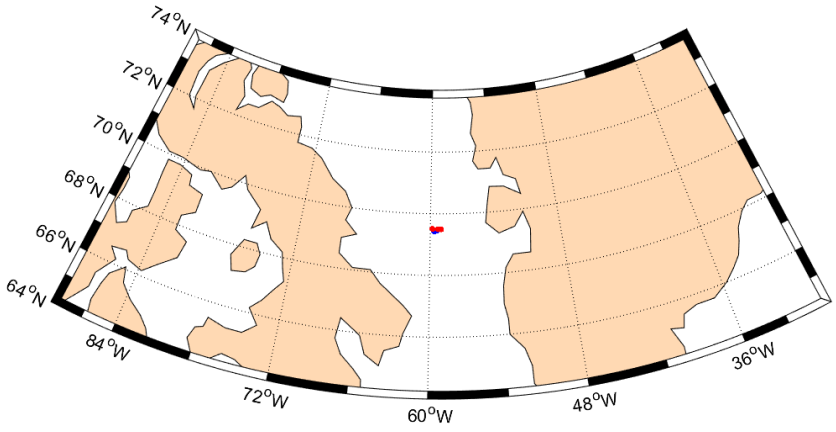
- Transect 8



- Transect 9



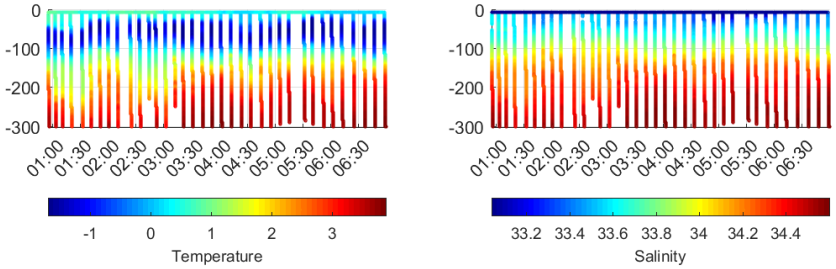
- Transect 10

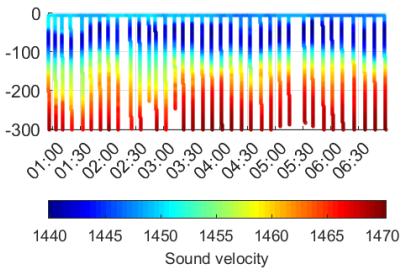


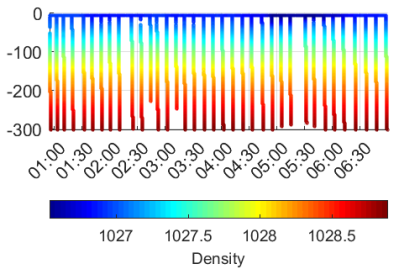
Annex 4: Scatter plots (MVP+ TSG)

TSG data are the points represented near the surface.

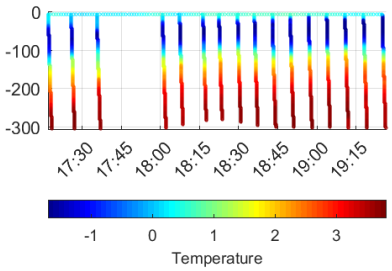
- Transect 1

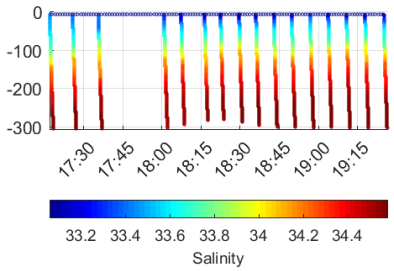


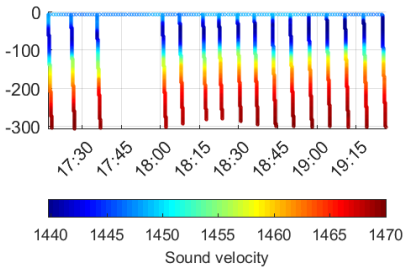


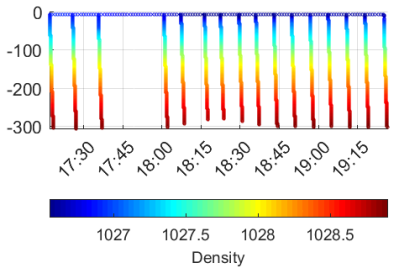


- Transect 2

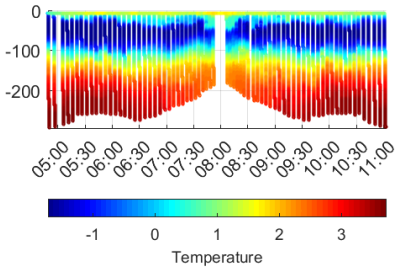


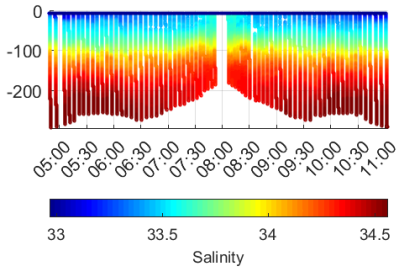


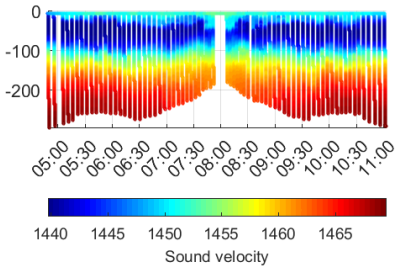


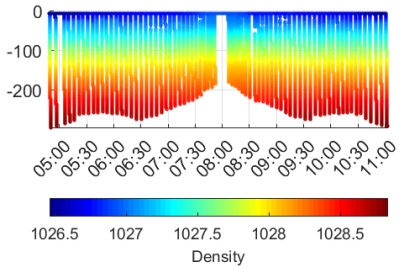


- Transect 3

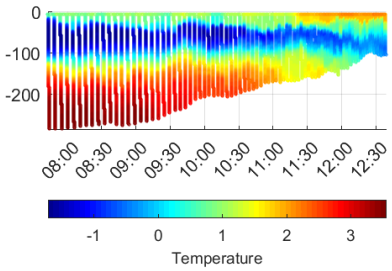


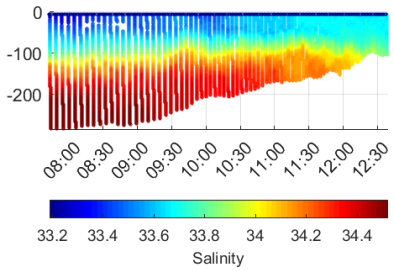


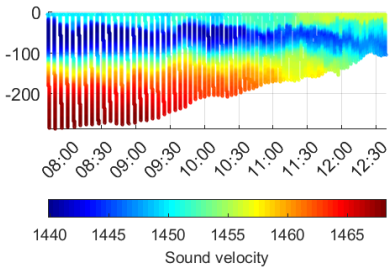


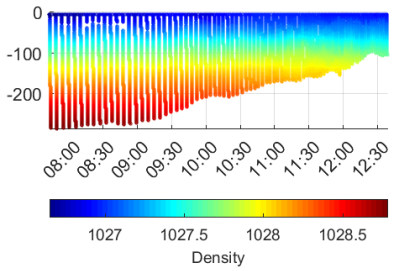


- Transect 4

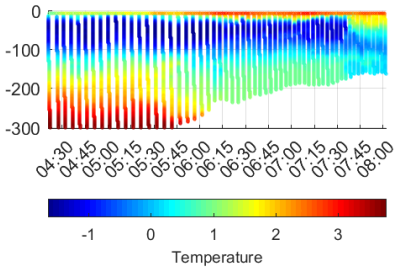


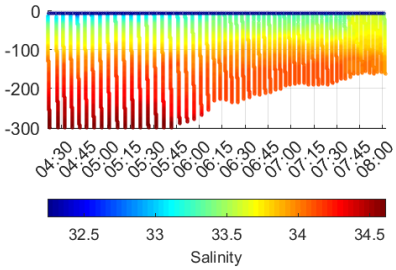


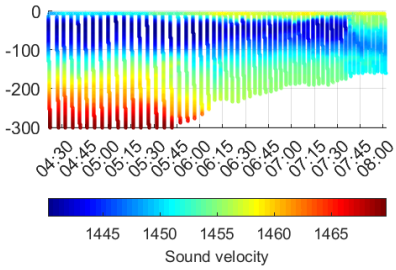


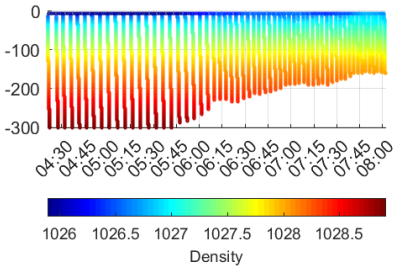


- Transect 5

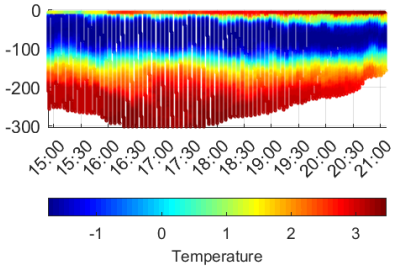


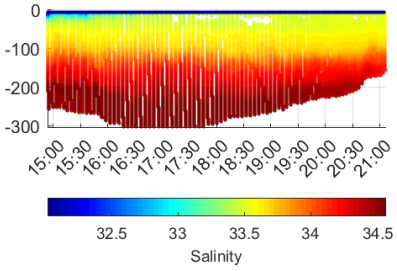


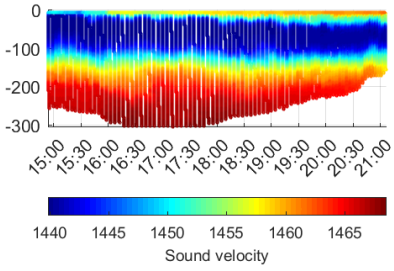


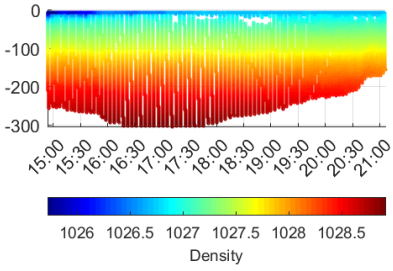


- Transect 6

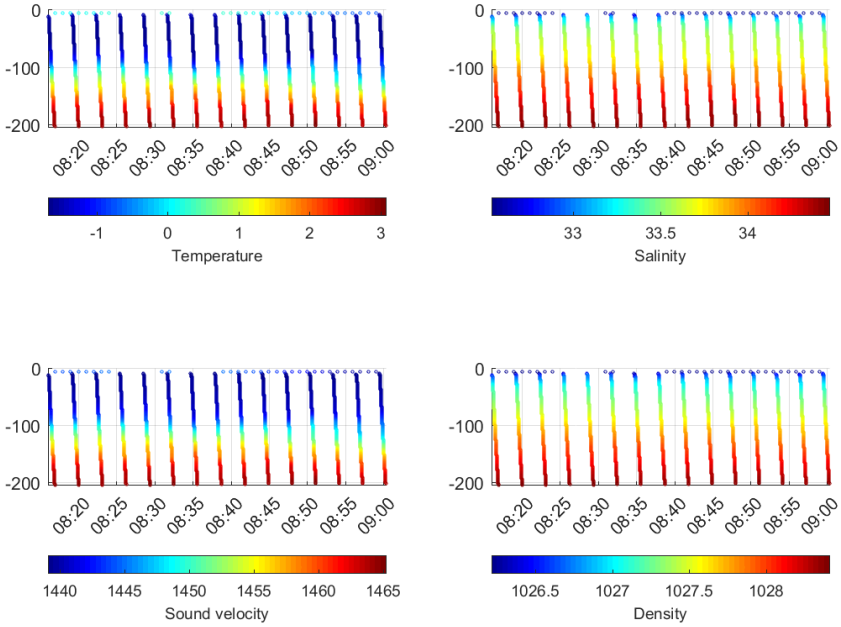




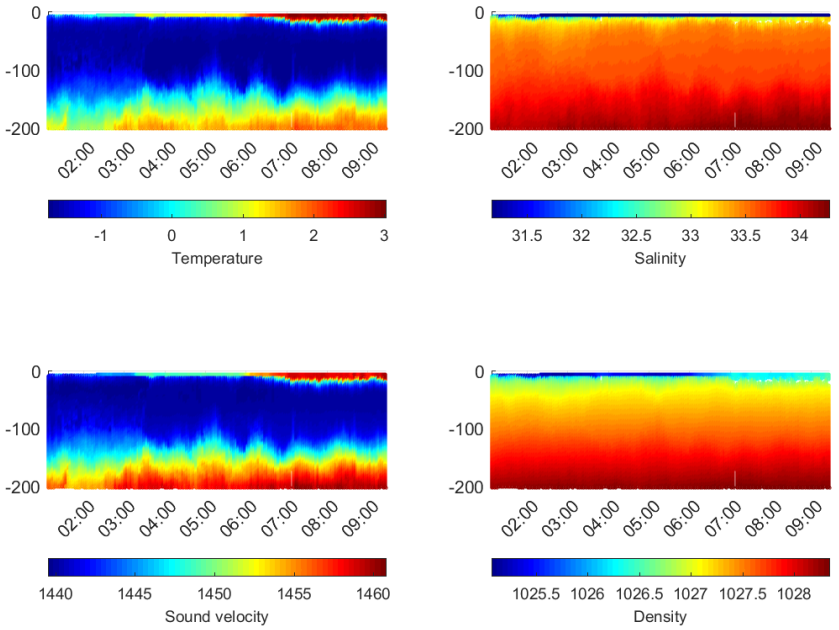




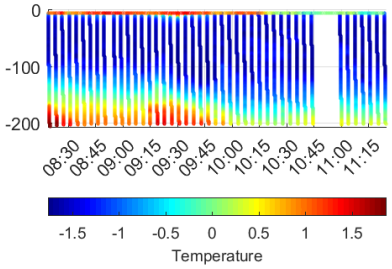
- Transect 7

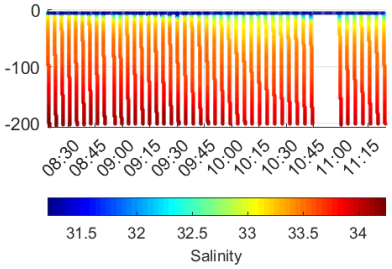


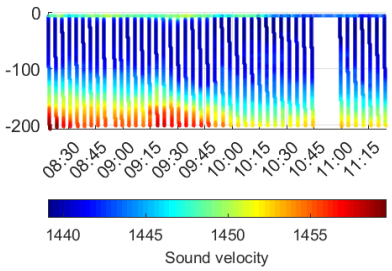
- Transect 8

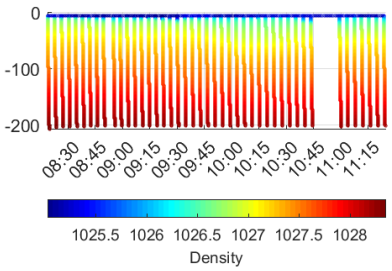


- Transect 9

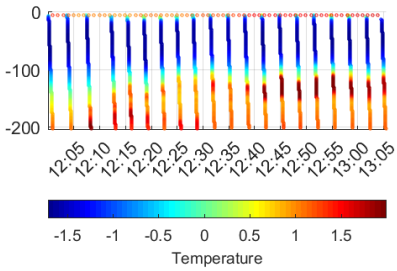


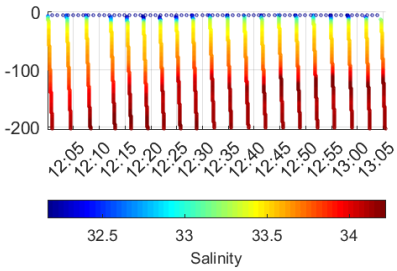


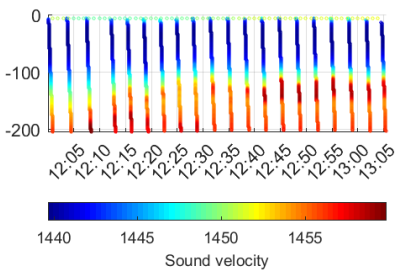


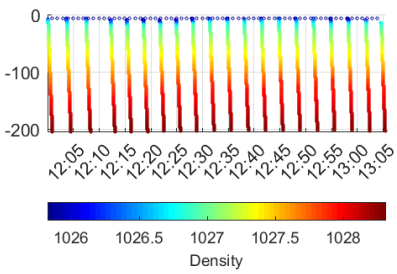


- Transect 10

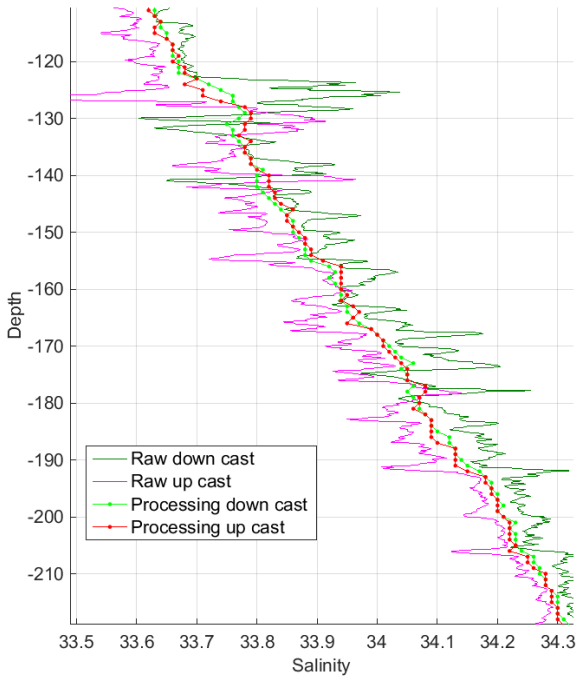






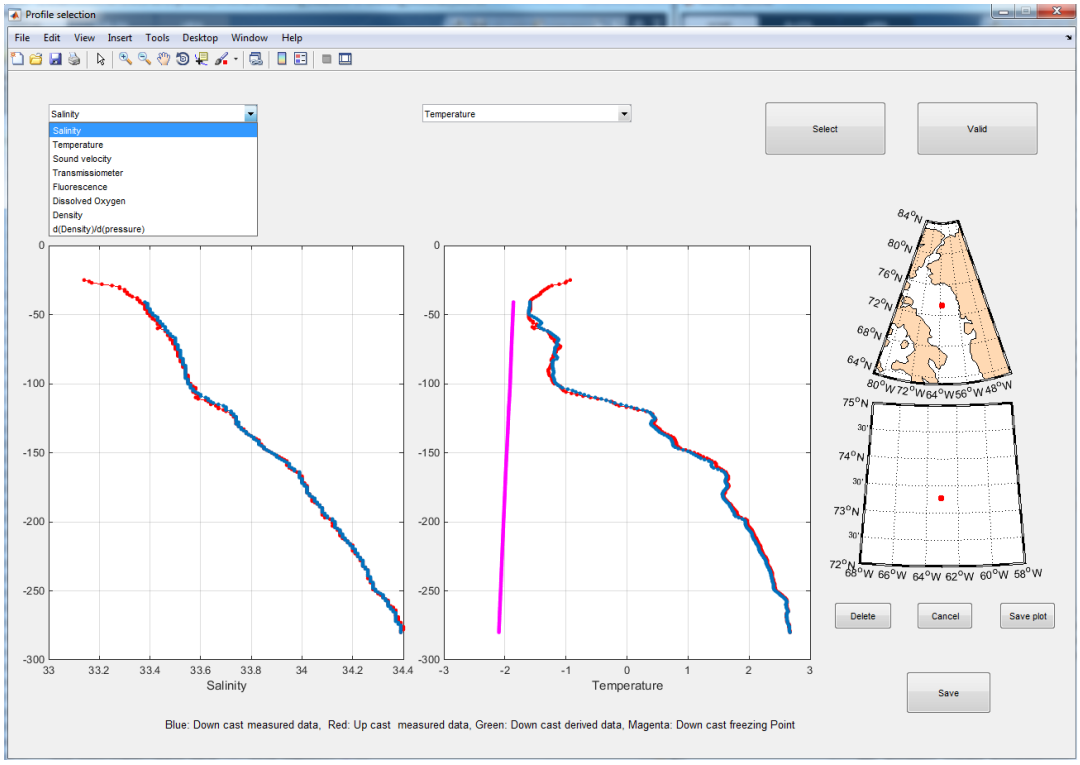


Annex 5: Filter comparison

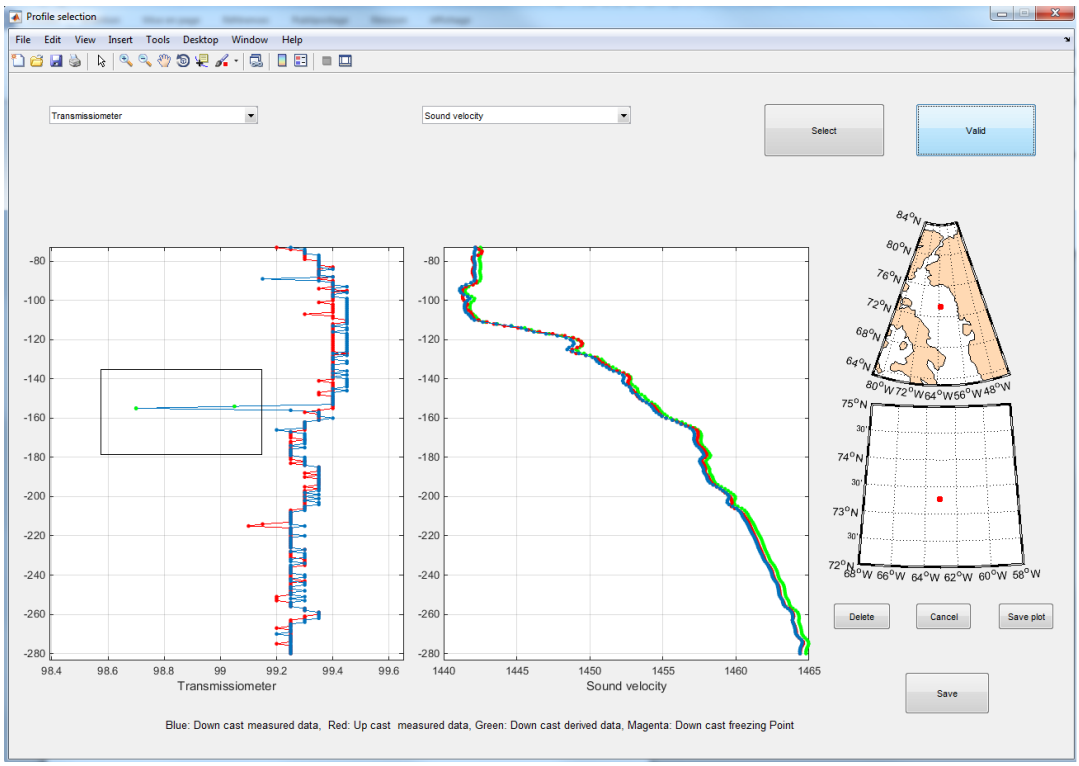


Comparison of raw and processed after application of the Low pass filter and Align sensor filter.

Annex 6: Data visualizer



Selection of the variable to observe



Selection and flag of bad points