DELAYED MODE QUALITY CONTROL

OF OVIDE ARGO DATA

FLOAT WMO 6901570

Auteurs

Lagadec Catherine

Thierry Virginie
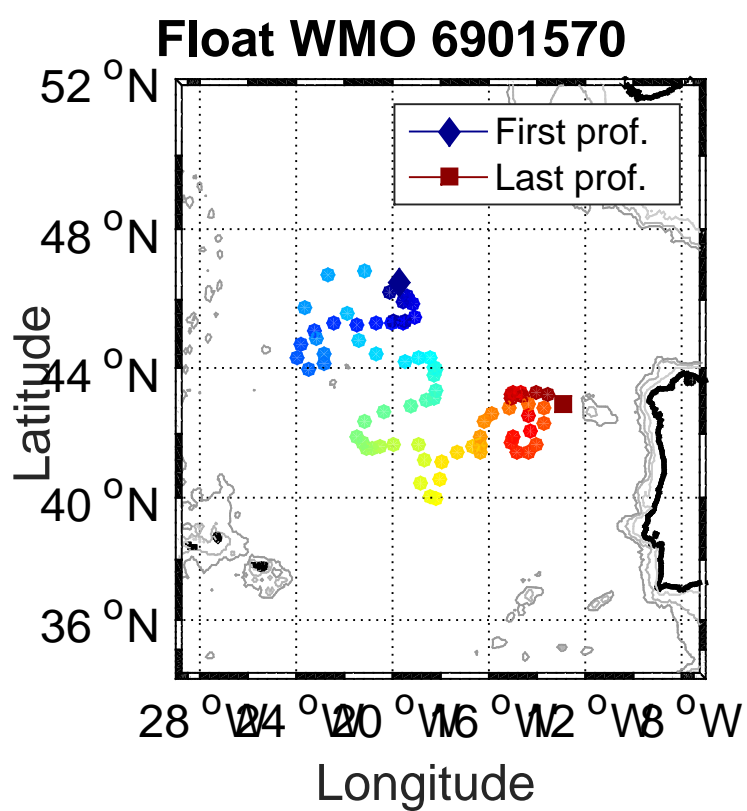
Cabanes Cécile

October 2017

Reference : Internal report **LOPS 2017**

DELAYED MODE QUALITY CONTROL OF OVIDE ARGO DATA FLOAT WMO 6901570

Internal Report LOPS 2017

C. Lagadec - V. Thierry - C. Cabanes

October 24, 2017

1 Presentation and DMQC summary

Number	Deployment (cycle 1D) cycle 1D	Last cycle 79
Provor WMO 6901570	31/05/2014 7h55	
ARVOR/NKE OIN-013-AR-034	N 46.5146 W 19.6495	
Date of control	Float status	Last cycle
December 2016	DEAD	21/07/2016
Coriolis transmission		05/01/17

Table 1: Status of the float

Warning : Note that all the figures are plotted with the latest QC flag values (the modifications mentionned table 2 are taken into account).

1.1 QC flag checks and interesting profiles

Cycle	Para-meter	Vertical level	Old flag	New flag	Comments	Coriolis transmission
79A	PSAL	1,2,8,9	1	4		13/12/16
79A	TEMP	3 to 7	4	1		13/12/16
30A	PSAL				historical data	

Table 2: Float 6901570. Summary of the modifications of the real-time QC flags and of the interesting or suspicous data.

Warning : the resolution is equal to 10 dbar from the surface to 500 dbar, then 25 dbar from 500 to 2000 dbar. Salinity data between 0 and 5 dbar are suspicious because they are acquired when the pump of the CTD is turned off.

1.2 Salinity correction from the OW method

According to the results from the OW method and to the comparison between the first profile and shipboard CTD measurements done during the float deployment, the float salinity is obviously biaised. There is a constant negative offset in salinity around of 0.011 PSU. It is thus necessary to correct the data of all cycles. Corrections are deduced from the configuration 129 of the OW method.

2 Data

OW CONFIGURATION	129
CONFIG_MAX_CASTS	250
MAP_USE_PV	1
MAP_USE_PV_ELLIPSE	1
MAP_USE_FACTEUR	1
MAPSCALE_LONGITUDE_LARGE	3.2
MAPSCALE_LONGITUDE_SMALL	0.8
MAPSCALE_LATITUDE_LARGE	2
MAPSCALE_LATITUDE_SMALL	0.5
MAPSCALE_PHI_LARGE	0.1
MAPSCALE_PHI_SMALL	0.02
MAPSCALE_AGE	0.69
MAP_P_EXCLUDE	500
MAP_P_DELTA	250
Reference data base	CTD and ARGO

Table 3: Parameters of the OW method.
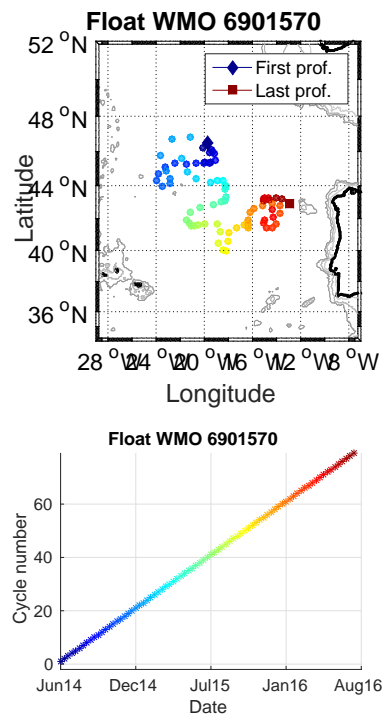
Figure 1: Profiles position and relationship between cycle number, date and color.
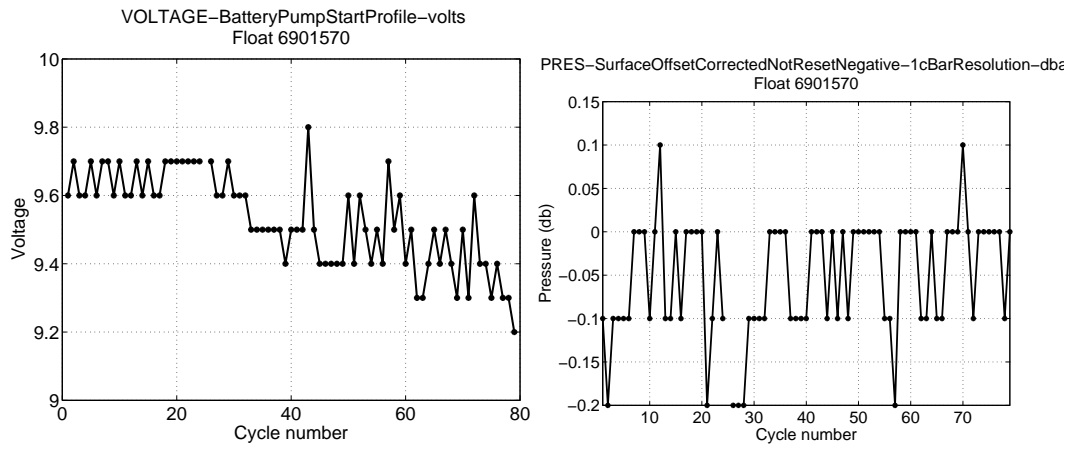
Figure 2: Battery Voltage and Surface Pressure
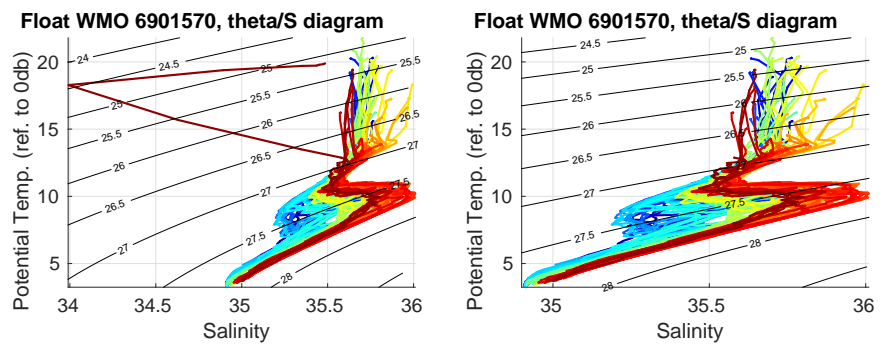
Figure 3: θ/S diagrams. (Left panel) Flags are not taken into account. (Right panel) Quality flags are taken into account.
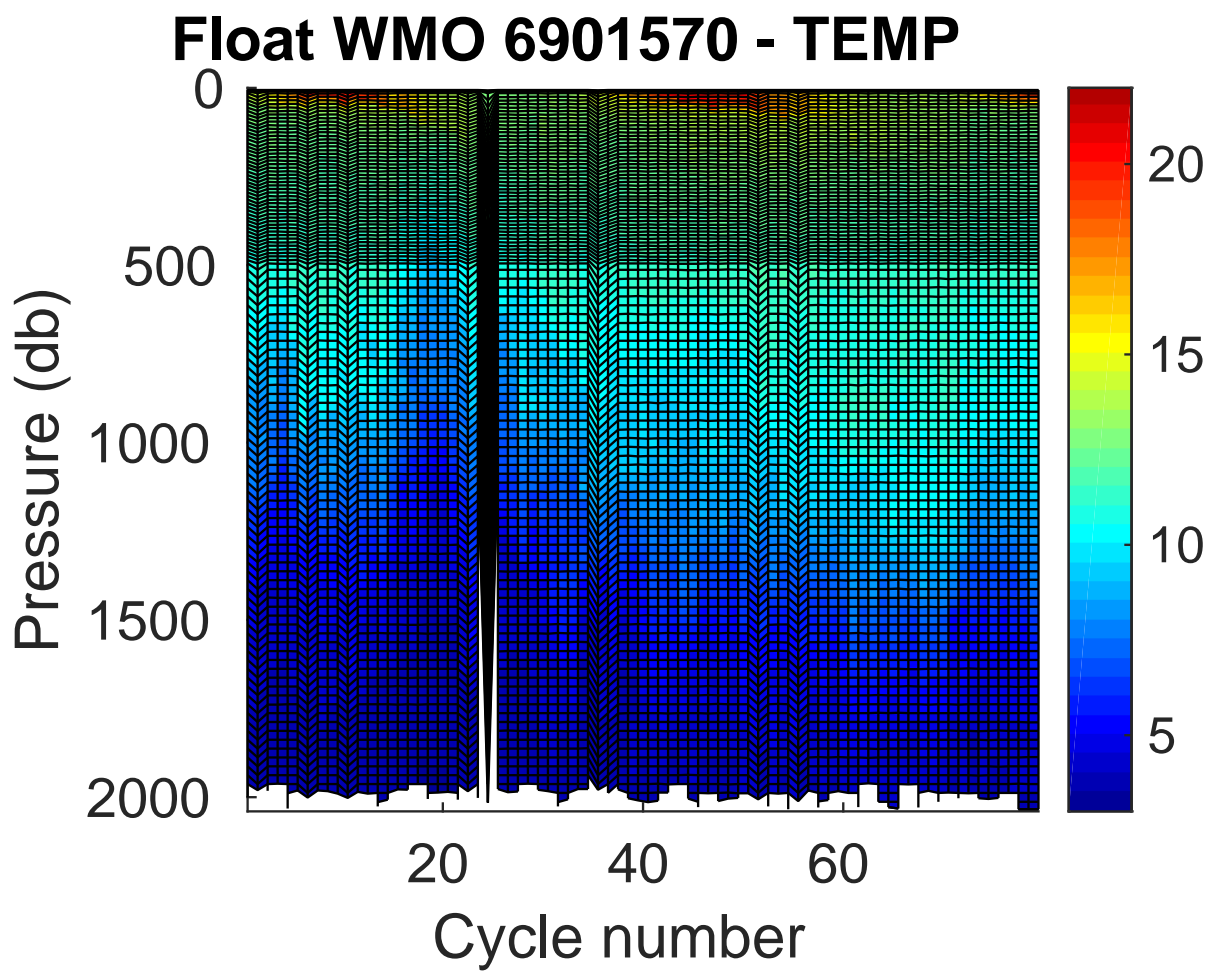
Figure 4: Temperature section along the float trajectory. Quality flags are not taken into account.
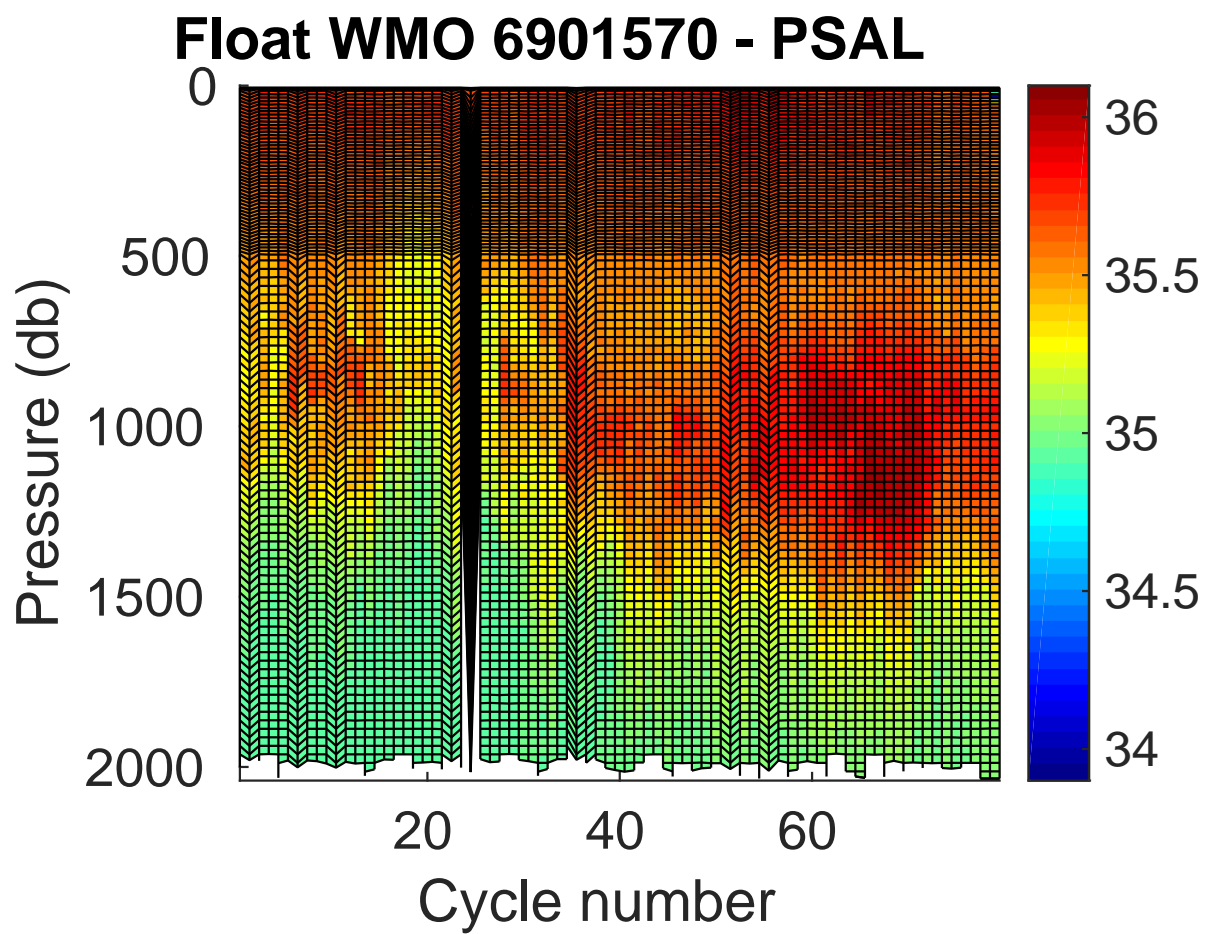
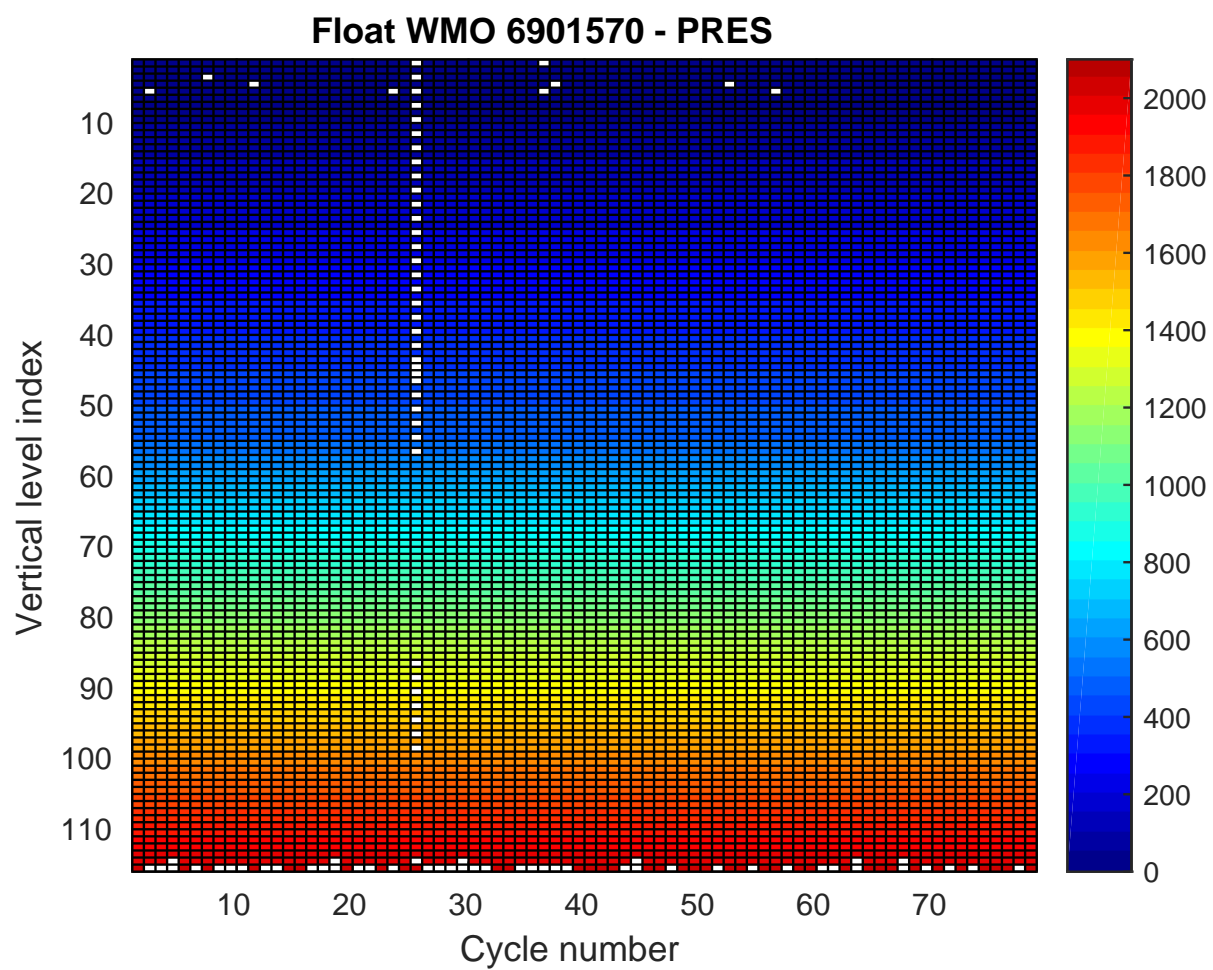Figure 5: Salinity section along the float trajectory. Quality flags are not taken into account.

Figure 6: Pression as fonction of cycle number and vertical level index along the float trajectory. Quality flags are taken into account.
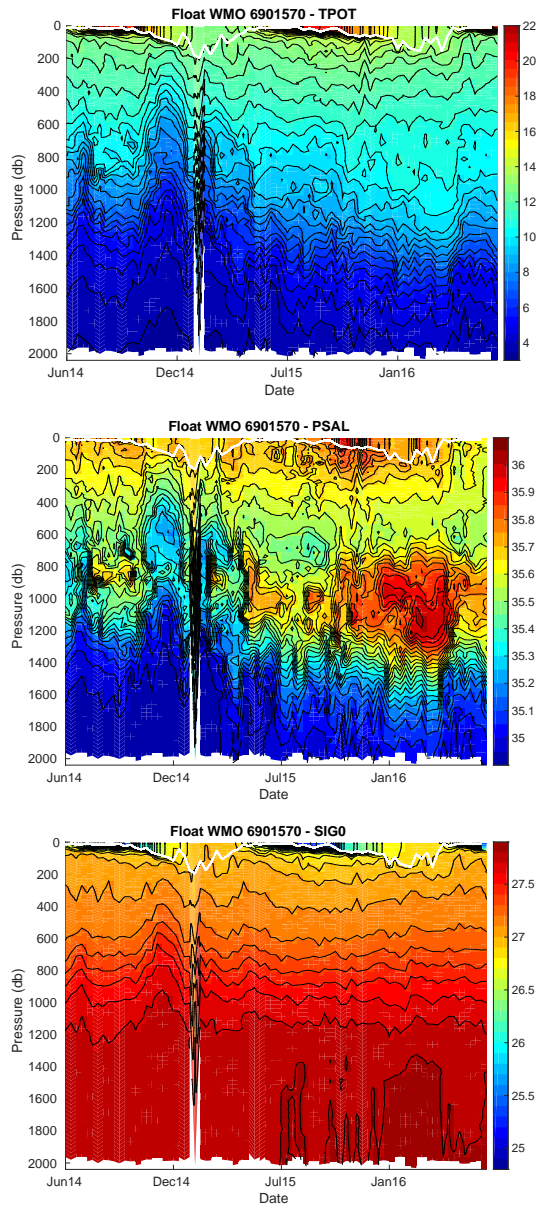
Figure 7: Potential temperature, salinity and potential density sections along the float trajectory (interpolated on standard levels). Quality flags are taken into account.
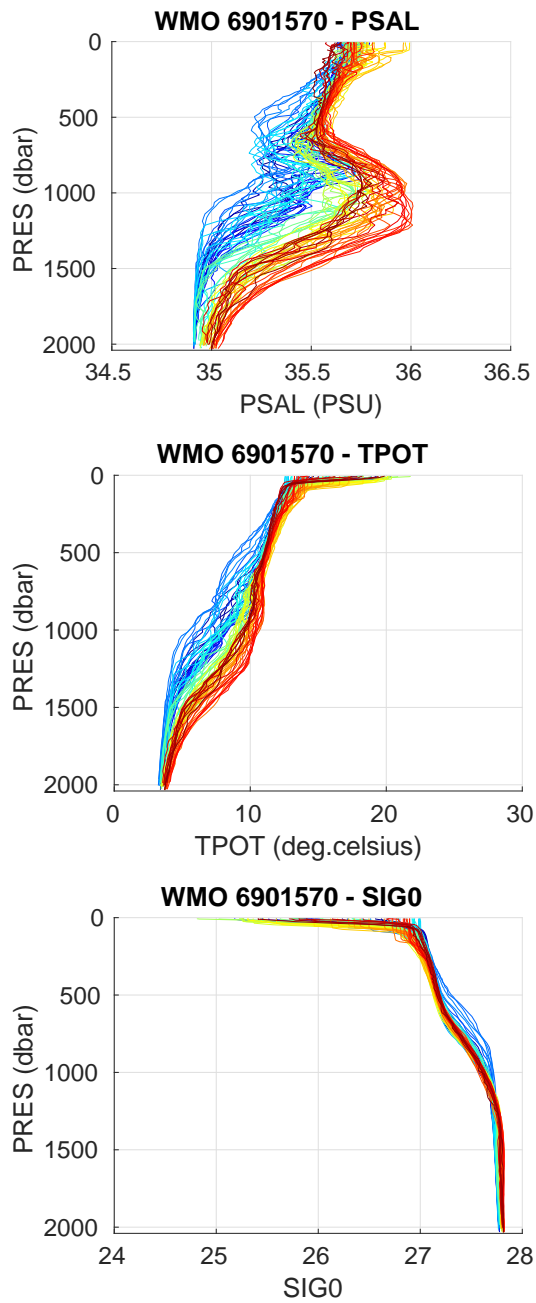
Figure 8: Salinity, Potential Temperature and Potential Density profiles. Quality flags are taken into account.

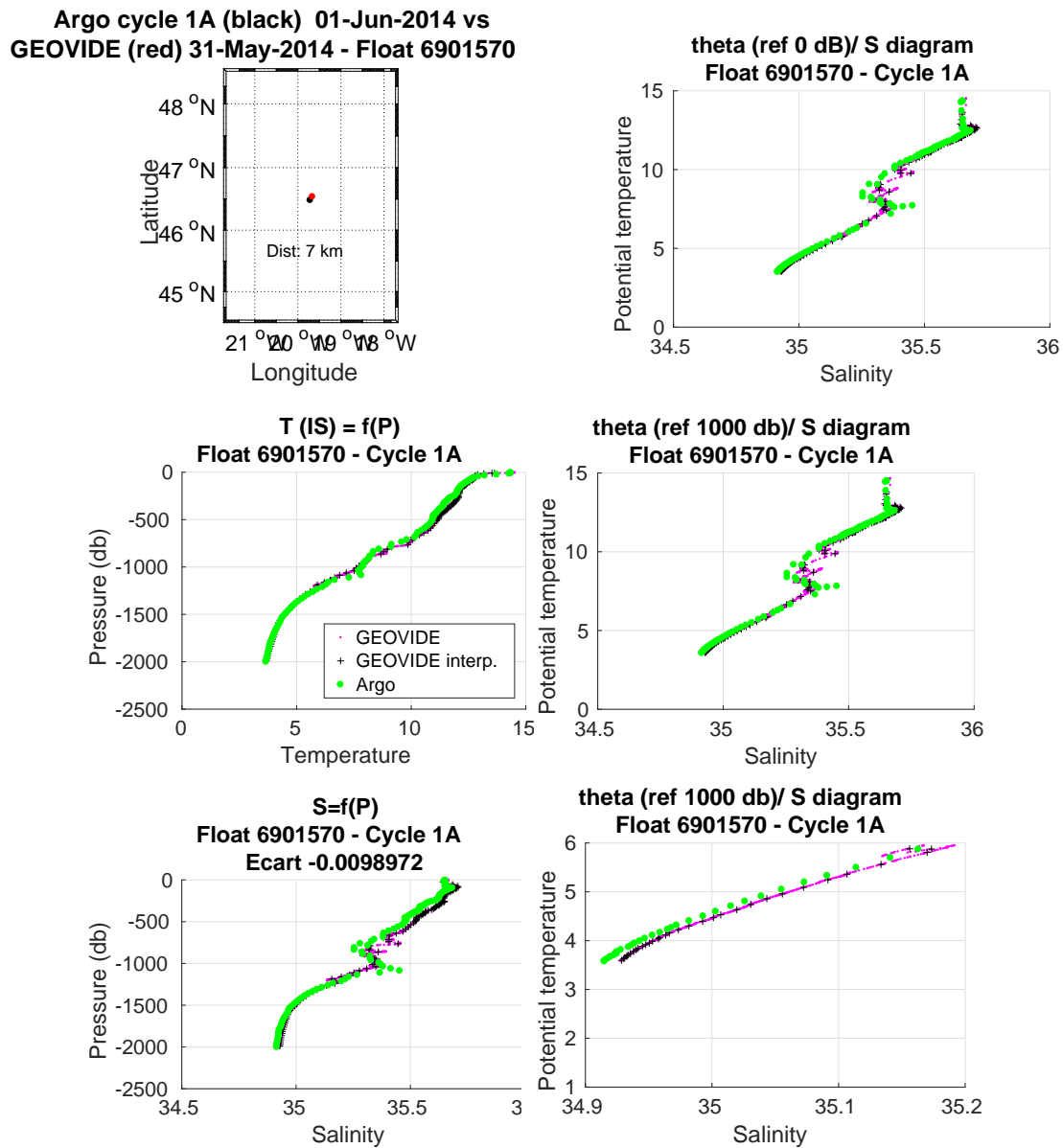# 3 Comparison to the OVIDE 2010 nearest CTD profile

Figure 9: Comparison of the cycle 0A with the nearest CTD profile done after the float deployment.

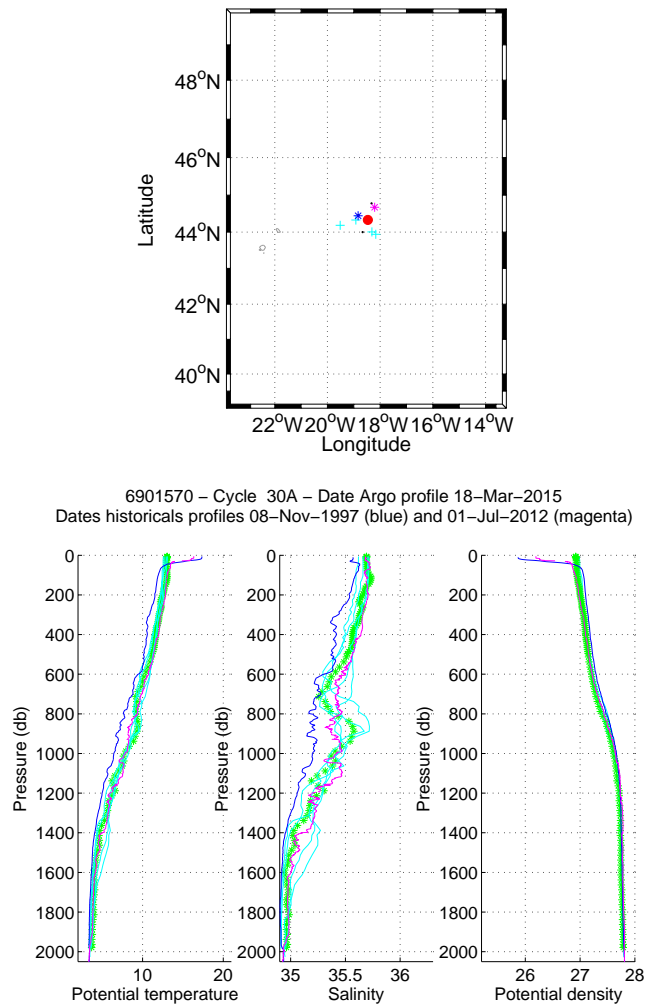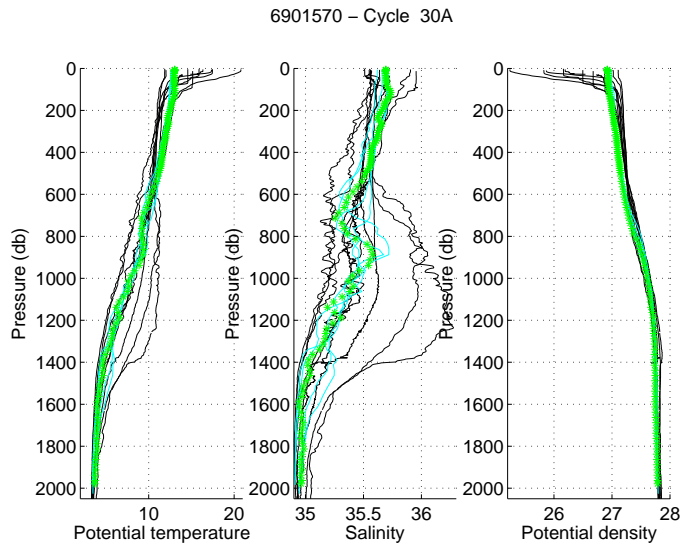# 4 Cycle 30 - Comparison to the nearest historical CTD profiles

Figure 10: Flotteur 6901570, cycle 30. Upper panel: Position of the analysed CTD profile (red) and of the nearest CTD profiles (black). The nearest CTD profile in time is in magenta while the nearest CTD profile in space is in blue. Lower panels: Temperature, salinity and potential density as function of pressure for the analysed CTD profile (stars) and for the nearest CTD profile in time (magenta line) and for the nearest CTD profile in space (blue line). The color of the analysed CTD profile represents the QC flag (green for a QC=1; blue for a QC=2; orange for a QC=3 and red for a QC=4).
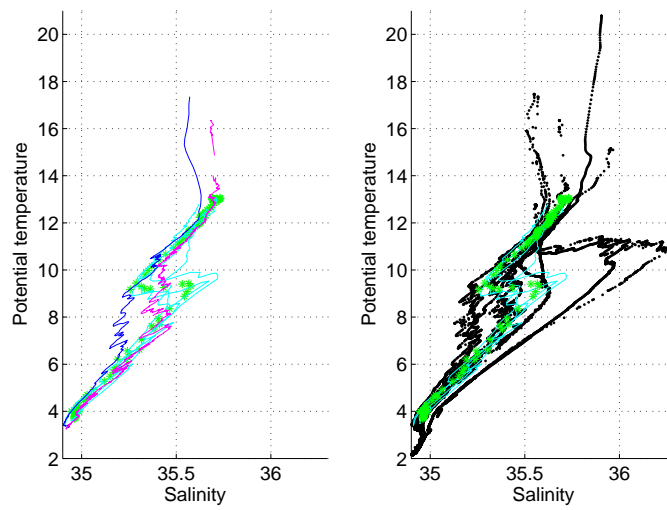
Figure 11: Float 6901570, cycle 30. The analysed CTD profile (stars) is compared to the nearest CTD profiles (black line) and to two specific profiles: the nearest CTD profile in time (magenta) and the nearest CTD profile in space (blue). The color of the analysed CTD profile represents the QC flag (green for a QC=1; blue for a QC=2; orange for a QC=3 and red for a QC=4). (Upper panels) Temperature (left panel), salinity (middle panel) and potential density (right panel) as function of pressure. (Lower panels) θ/S diagrams.

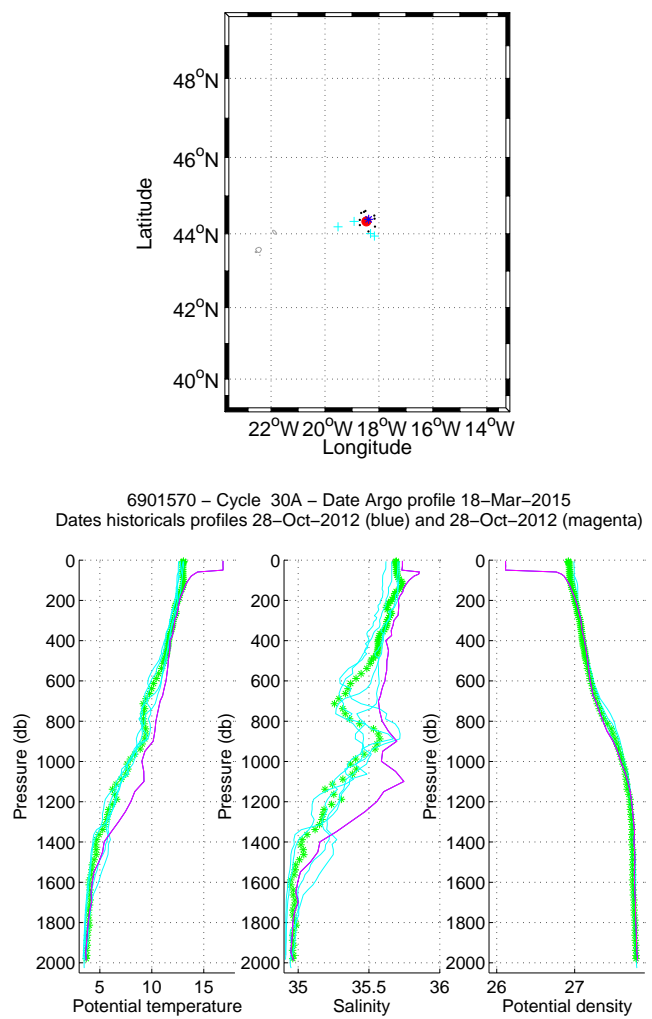# 5 Cycle 30A - Comparison to the nearest ARGO profiles

Figure 12: Flotteur 6901570, cycle 30A. Upper panel: Position of the analysed Argo profile (red) and of the nearest Argo profiles (black). The nearest Argo profile in time is in magenta while the nearest CTD profile in space is in blue. Lower panels: Temperature, salinity and potential density as function of pressure for the analysed Argo profile (stars) and for the nearest Argo profile in time (magenta line) and for the nearest Argo profile in space (blue line). The color of the analysed Argo profile represents the QC flag (green for a QC=1; blue for a QC=2; orange for a QC=3 and red for a QC=4).
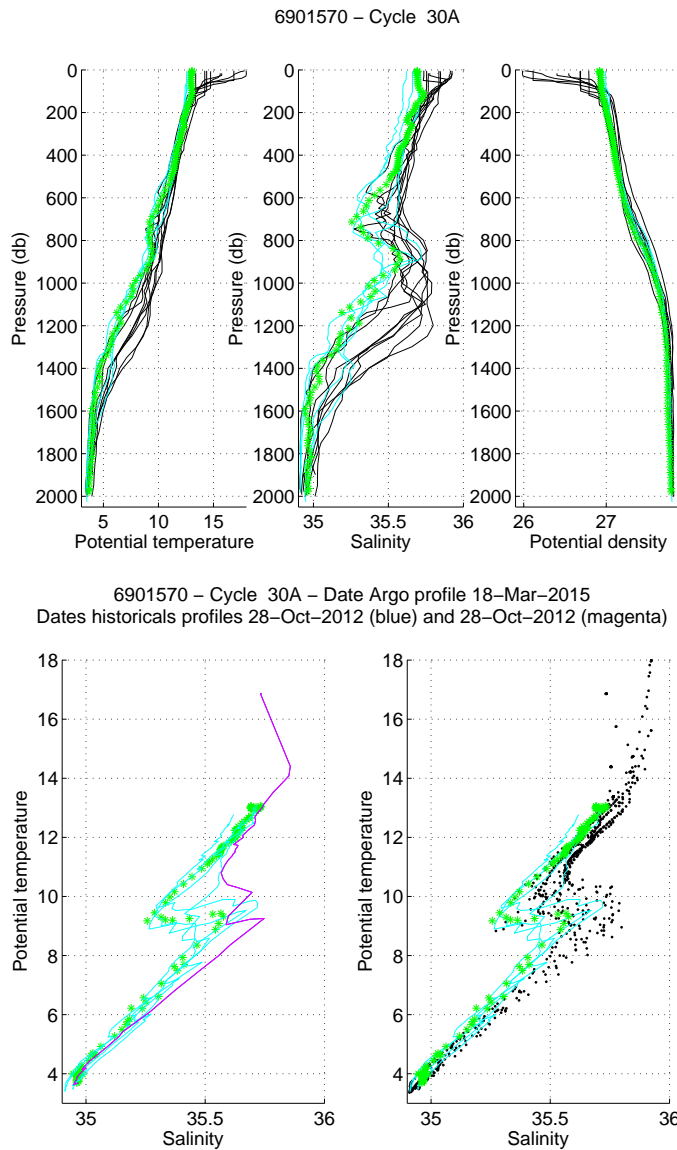
Figure 13: Float 6901570, cycle 30A. The analysed Argo profile (stars) is compared to the nearest Argo profiles (black line) and to two specific profiles: the nearest Argo profile in time (magenta) and the nearest Argo profile in space (blue). The color of the analysed Argo profile represents the QC flag (green for a QC=1; blue for a QC=2; orange for a QC=3 and red for a QC=4). (Upper panels) Temperature (left panel), salinity (middle panel) and potential density (right panel) as function of pressure. (Lower panels) θ/S diagrams.

13

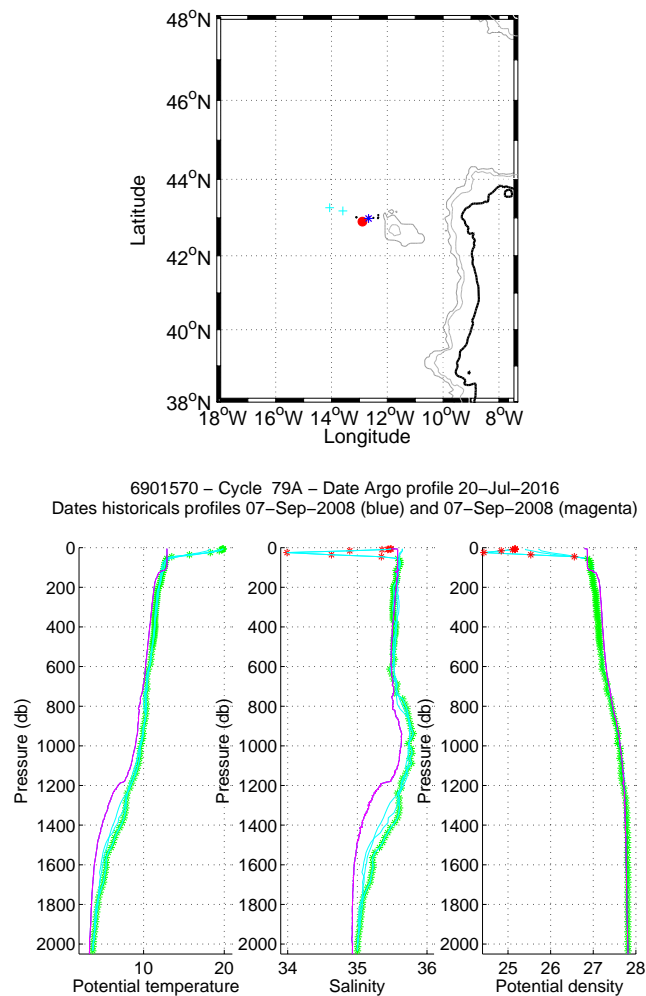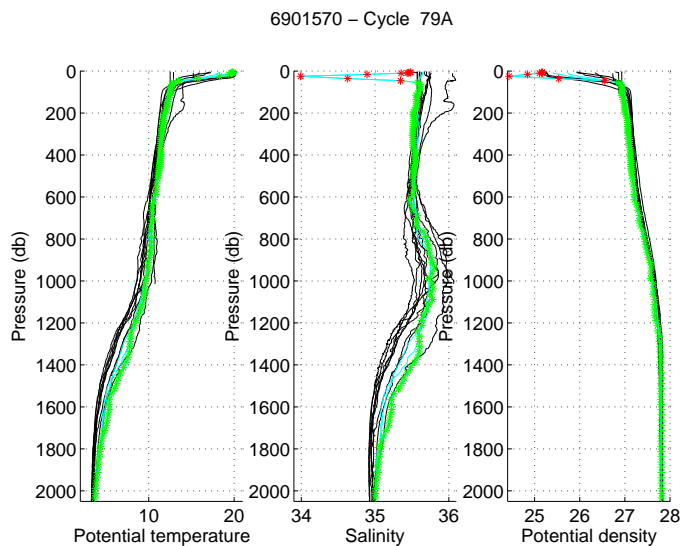# 6 Cycle 79A - Comparison to the nearest historical CTD profiles

Figure 14: Flotteur 6901570, cycle 79A. Upper panel: Position of the analysed CTD profile (red) and of the nearest CTD profiles (black). The nearest CTD profile in time is in magenta while the nearest CTD profile in space is in blue. Lower panels: Temperature, salinity and potential density as function of pressure for the analysed CTD profile (stars) and for the nearest CTD profile in time (magenta line) and for the nearest CTD profile in space (blue line). The color of the analysed CTD profile represents the QC flag (green for a QC=1; blue for a QC=2; orange for a QC=3 and red for a QC=4).
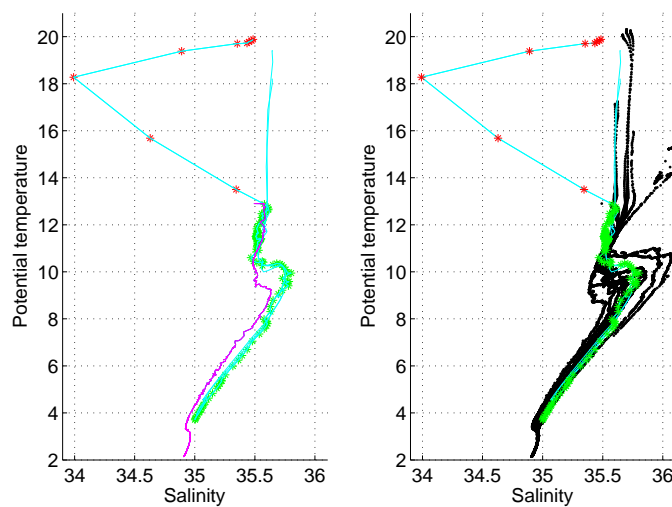
Figure 15: Float 6901570, cycle 79A. The analysed CTD profile (stars) is compared to the nearest CTD profiles (black line) and to two specific profiles: the nearest CTD profile in time (magenta) and the nearest CTD profile in space (blue). The color of the analysed CTD profile represents the QC flag (green for a QC=1; blue for a QC=2; orange for a QC=3 and red for a QC=4). (Upper panels) Temperature (left panel), salinity (middle panel) and potential density (right panel) as function of pressure. (Lower panels) θ/S diagrams.

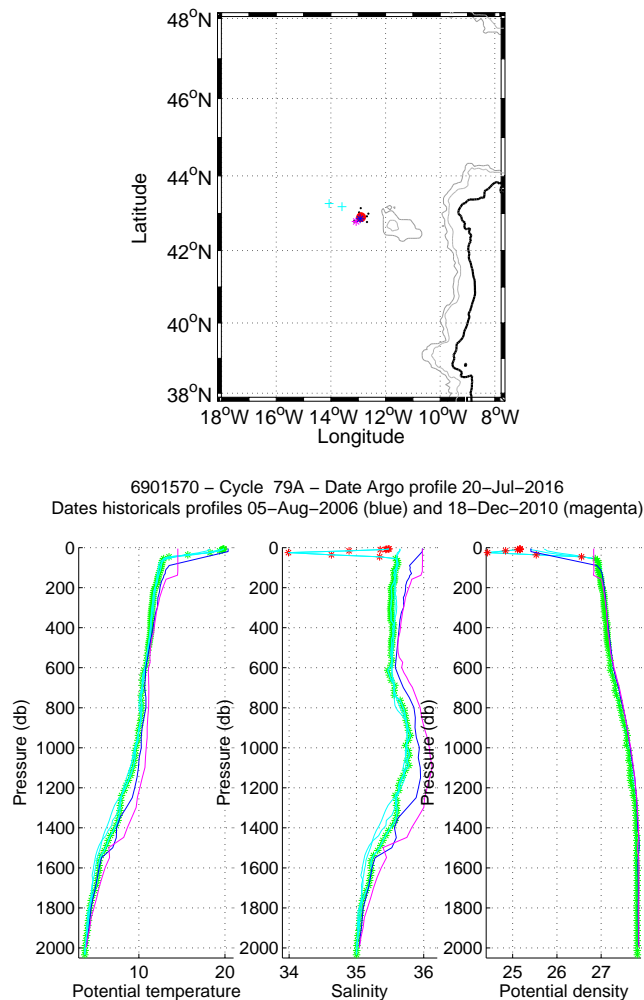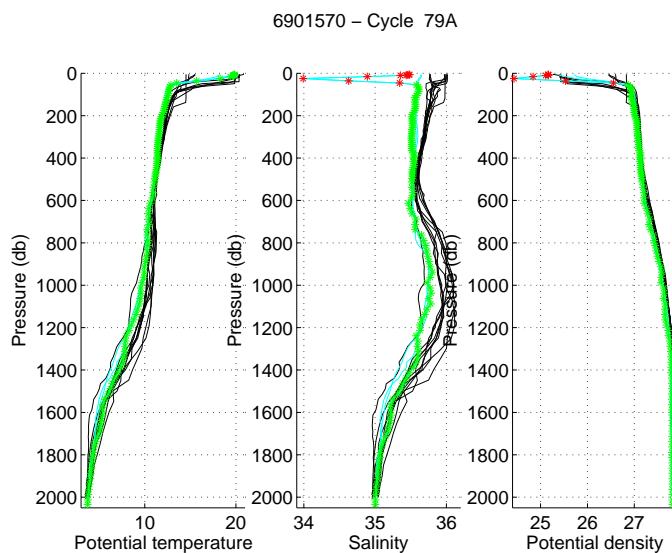# 7 Cycle 79A - Comparison to the nearest ARGO profiles

Figure 16: Flotteur 6901570, cycle 79A. Upper panel: Position of the analysed Argo profile (red) and of the nearest Argo profiles (black). The nearest Argo profile in time is in magenta while the nearest CTD profile in space is in blue. Lower panels: Temperature, salinity and potential density as function of pressure for the analysed Argo profile (stars) and for the nearest Argo profile in time (magenta line) and for the nearest Argo profile in space (blue line). The color of the analysed Argo profile represents the QC flag (green for a QC=1; blue for a QC=2; orange for a QC=3 and red for a QC=4).
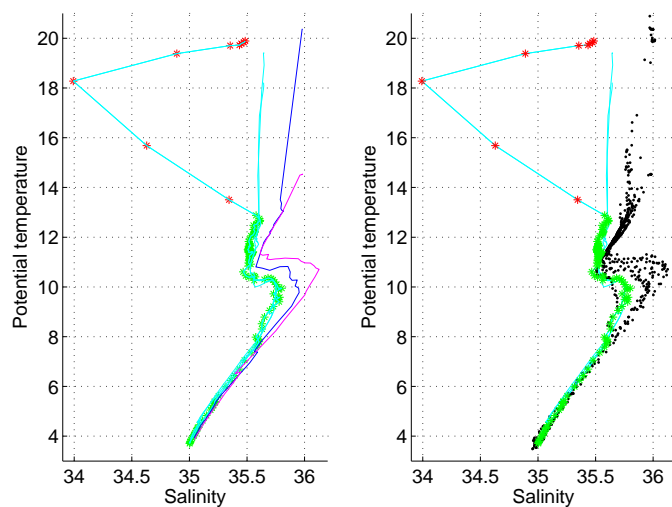
Figure 17: Float 6901570, cycle 79A. The analysed Argo profile (stars) is compared to the nearest Argo profiles (black line) and to two specific profiles: the nearest Argo profile in time (magenta) and the nearest Argo profile in space (blue). The color of the analysed Argo profile represents the QC flag (green for a QC=1; blue for a QC=2; orange for a QC=3 and red for a QC=4). (Upper panels) Temperature (left panel), salinity (middle panel) and potential density (right panel) as function of pressure. (Lower panels) θ/S diagrams.
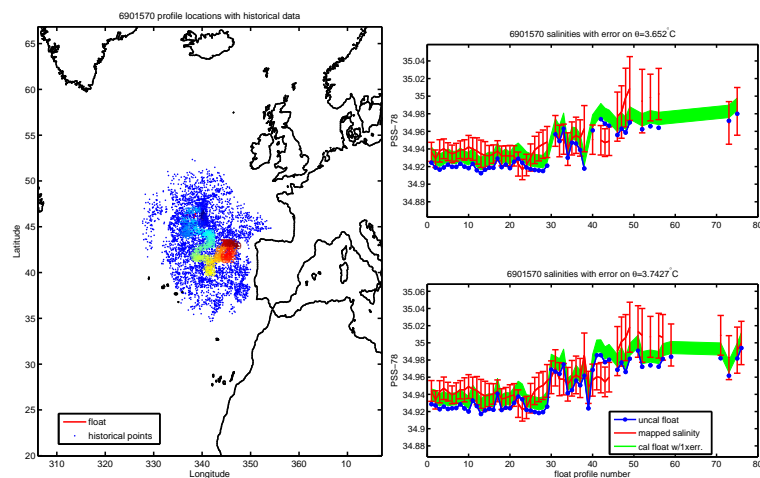
8 OW method, CONFIGURATION # 129

Figure 18: Figures from the OW method. (Left) Position of the historical and float data. (Right) Comparison, on various θ levels, between the float data and the historical data interpolated at the float position.
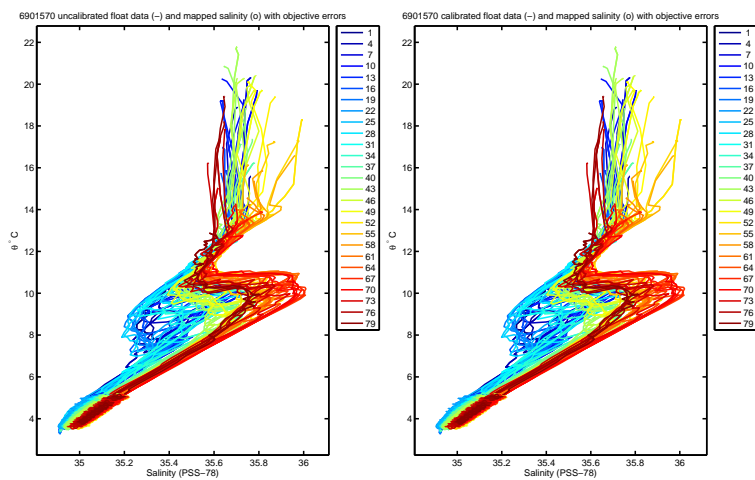

Figure 19: Figures from the OW method. Compararison of the θ/S diagram of the float with the historial database. (left) raw data; (right) corrected data using the OW correction.
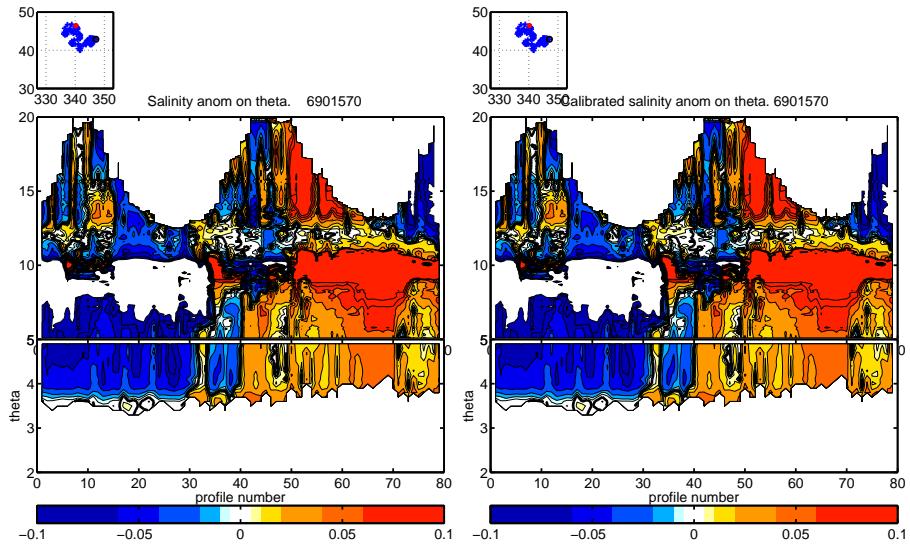
Figure 20: Figures from the OW method. Salinity anomaly:(left) raw data; (right) corrected data using the OW correction.
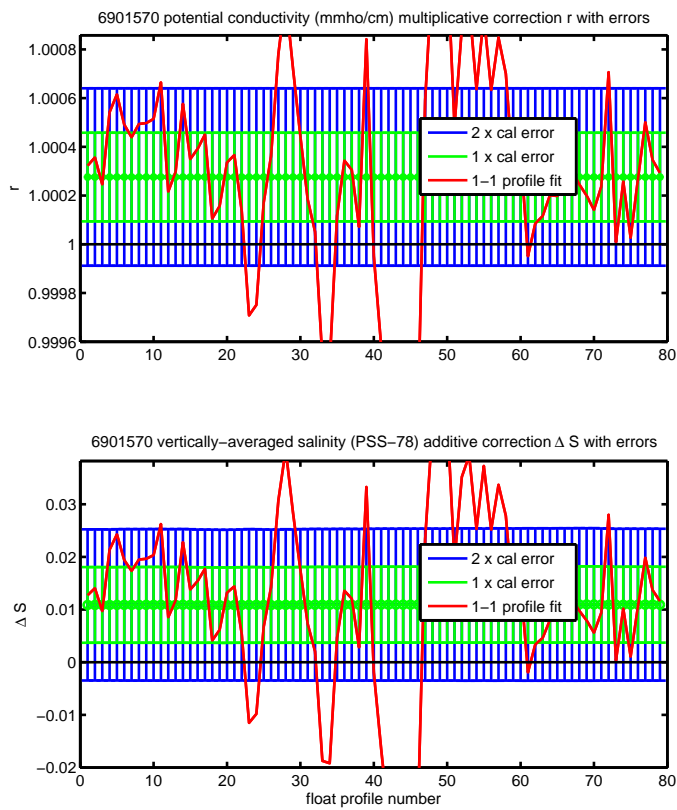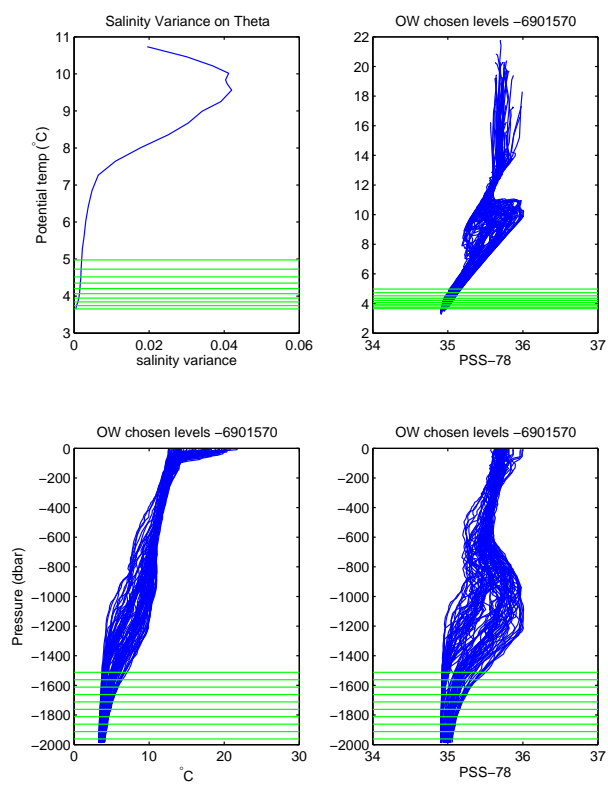

Figure 21: Correction proposed by the OW method.

19

Figure 22: Chosed levels by the OW method.