


# Rapport interne LPO/15-08

<b>UMR 6523</b> Laboratoire de Physique des Océans 	<b>DELAYED MODE QUALITY CONTROL OF OVIDE ARGO DATA</b>  <b>FLOAT WMO 6900402</b>	
Date : <b>29 octobre 2015</b>	Auteurs : <b>Lagadec Catherine</b> <b>Thierry Virginie</b> <b>Cabanes Cécile</b>	Archivage : <b>LPO</b>

**Liste de diffusion :**

LPO

Carole Despinoy (ODE/LPO)

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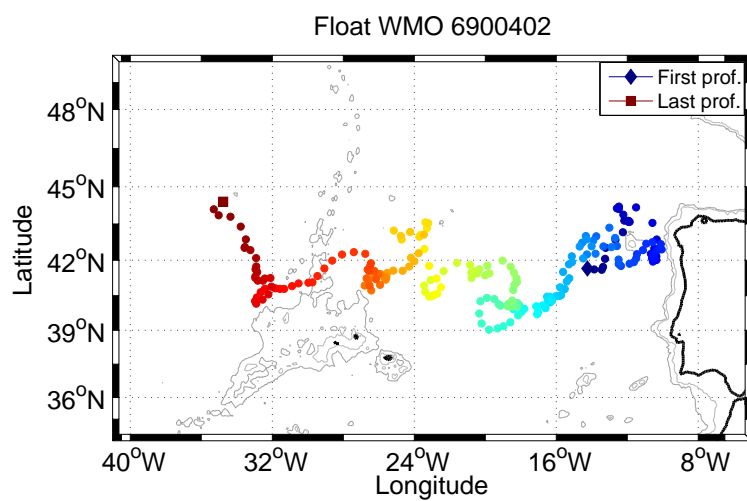
# DELAYED MODE QUALITY CONTROL OF OVIDE ARGO DATA FLOAT WMO 6900402

## Internal Report LPO 15-08

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December 7, 2015



# 1 Presentation and DMQC summary

Number	Deployment (cycle OD) cycle OD	Last cycle 219 (+53,55,56,59,62)
Provor WMO 6900402	30/05/2006 9h25	
OIN-05-S3-33	41.686 N 14.275 W	
Date of control	Float status	Last cycle
March 2010	Active	02/04/2010 (140)
Coriolis transmission		09/04/2010
Date of last control	Float status	Last cycle
October 2015	Dead	31/05/12
Coriolis transmission		29/10/2015

Table 1: Status of the float

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

## 1.1 QC flag checks and interesting profiles

Cycle	Parameter	Vertical level	Old flag	New flag	Comments	Coriolis transmission
all cycles (except 0D)	PSAL	surface (where PRES inf 5)	1	4		06/04/2010
58	TEMP,PSAL	all levels (except first level=4)	1	3		06/04/2010
97	PSAL	all levels (except first level=4)	3	1		06/04/2010
106	TEMP,PSAL	300m	4	4	bad value (OK)	

Table 2: Float 6900402. Summary of the modifications of the real-time QC flags and of the interesting or suspicious data.

Warning : the resolution is equal to 50 dbar from the surface to 500 dbar, then 60 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

We cannot see any evidence of a drift or bias in the salinity measurement. We thus conclude that it is not necessary to correct the salinity data. Errors bars are maximum value between 0.01 and those determined from the OW method with parameters from the OW configuration 129.

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.

## 2 Data

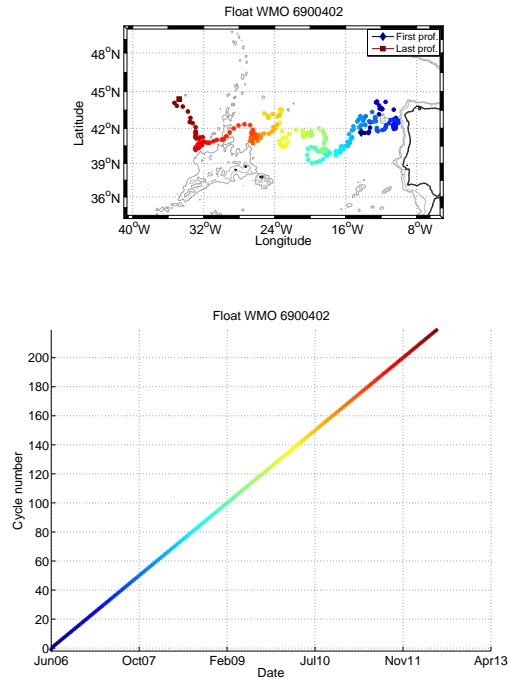


Figure 1: Profiles position and relationship between cycle number, date and color.

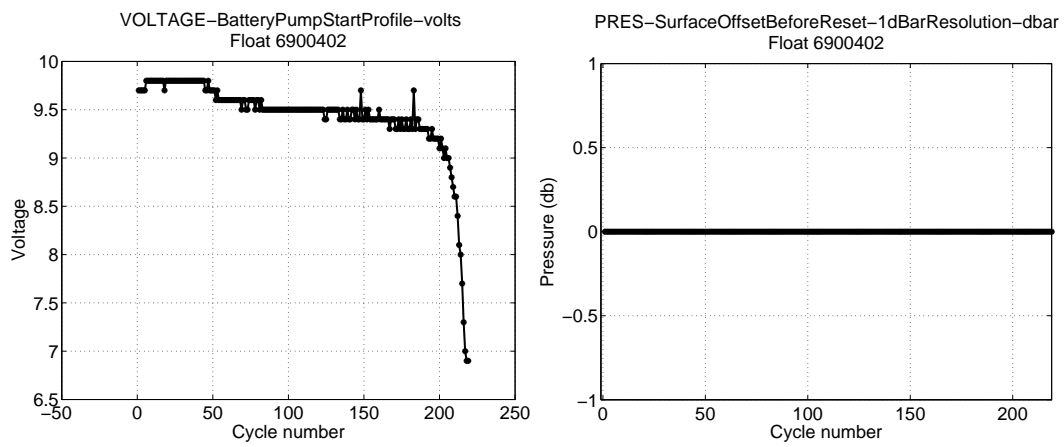


Figure 2: Battery Voltage and Surface Pressure

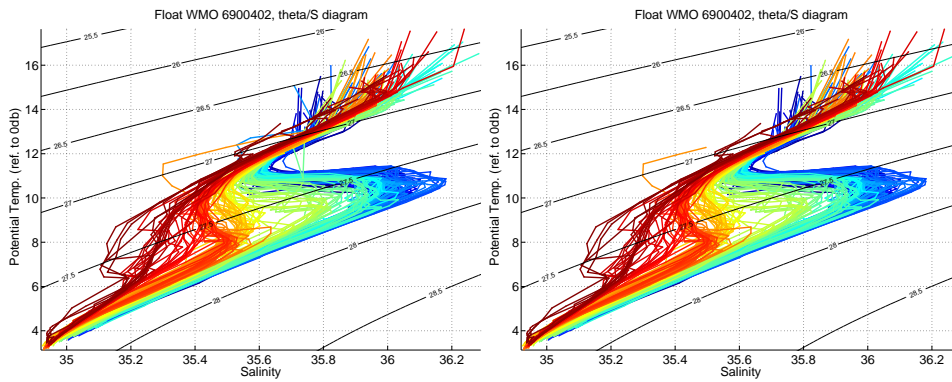


Figure 3:  $\theta/S$  diagrams. (Left panel) Flags are not taken into account. (Right panel) Quality flags are taken into account.

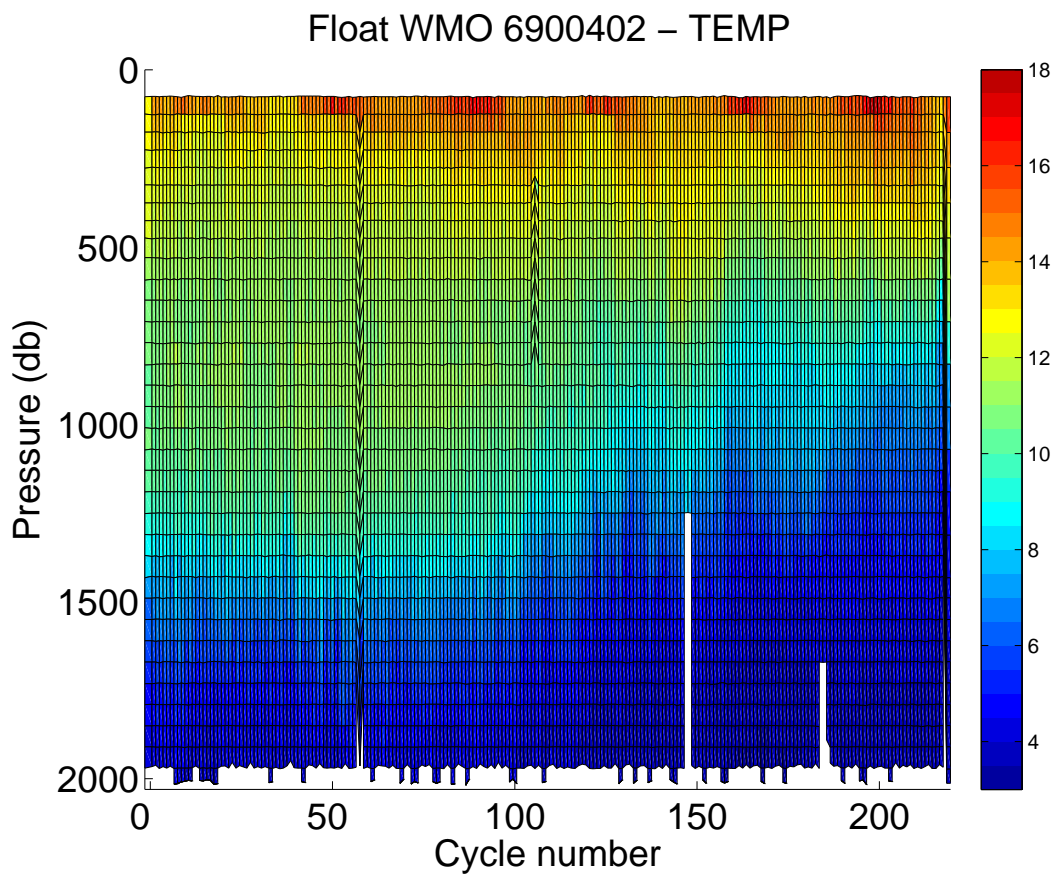


Figure 4: Temperature section along the float trajectory. Quality flags are not taken into account.

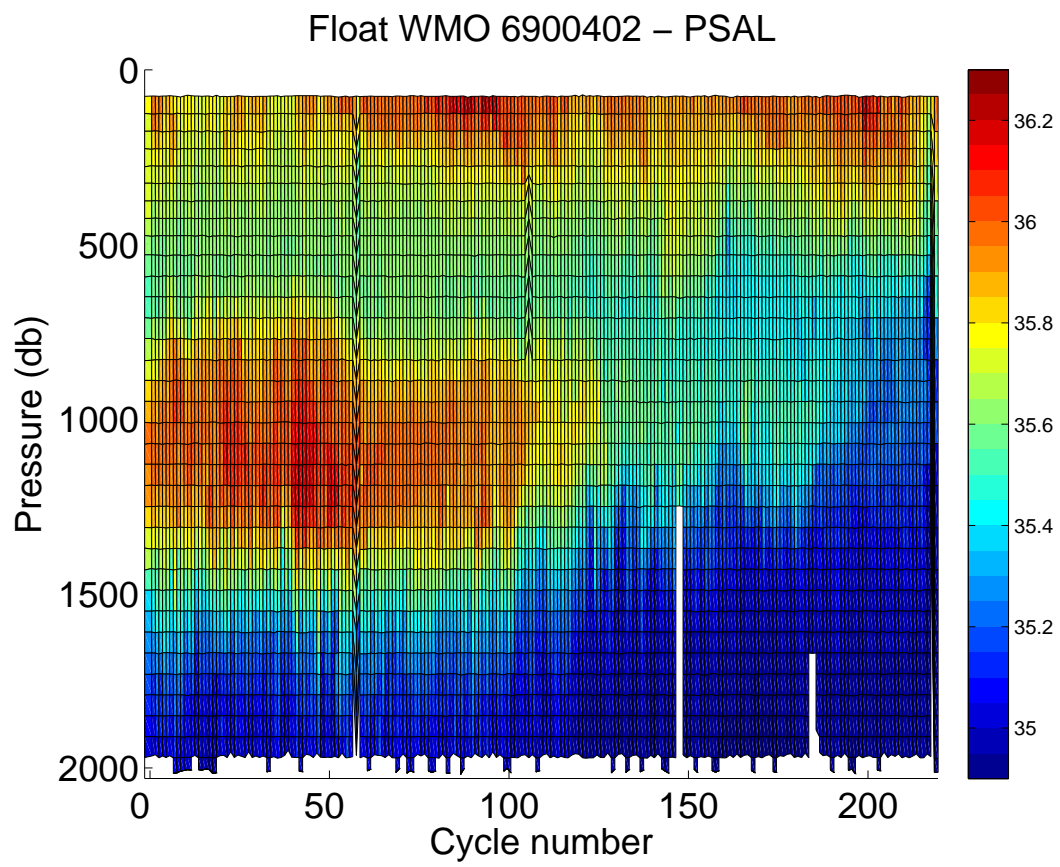


Figure 5: Salinity section along the float trajectory. Quality flags are not taken into account.

Float WMO 6900402 – PRES

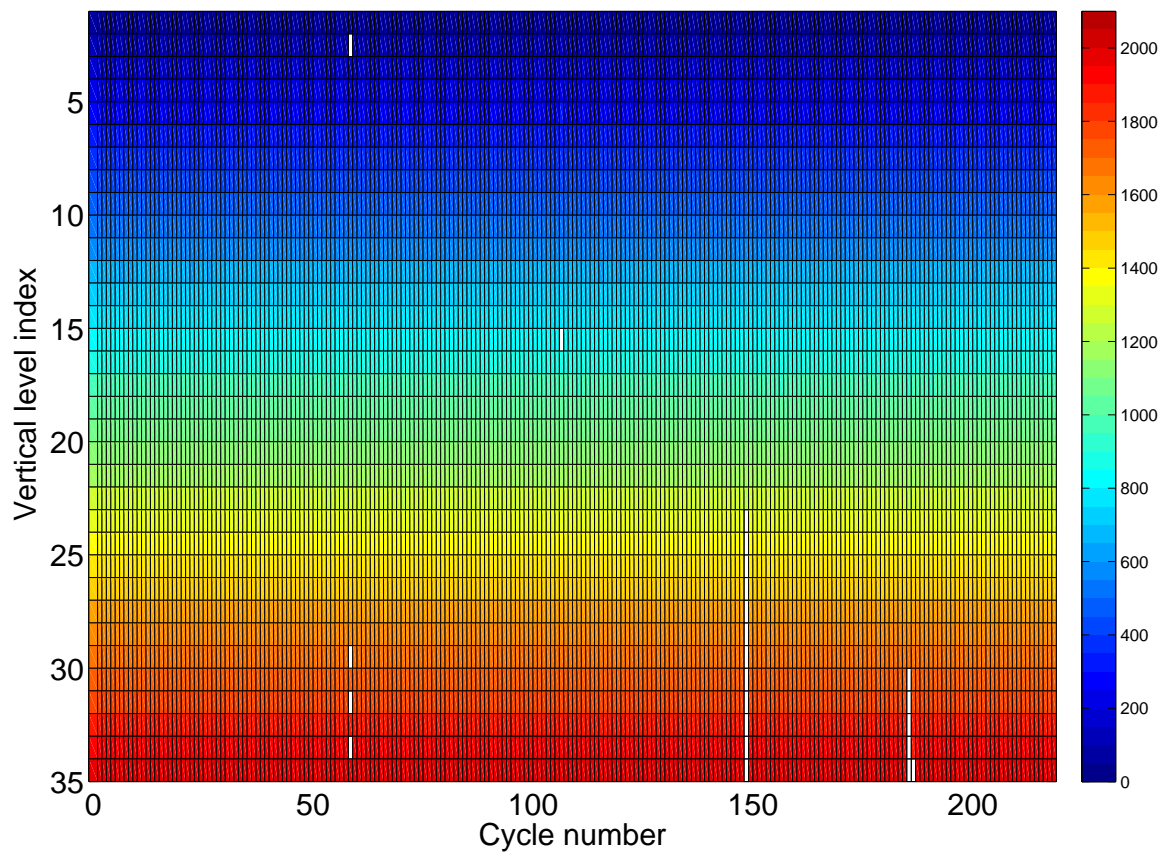


Figure 6: Pression as fonction of cycle number and vertical level index along the float trajectory. Quality flags are taken into account.



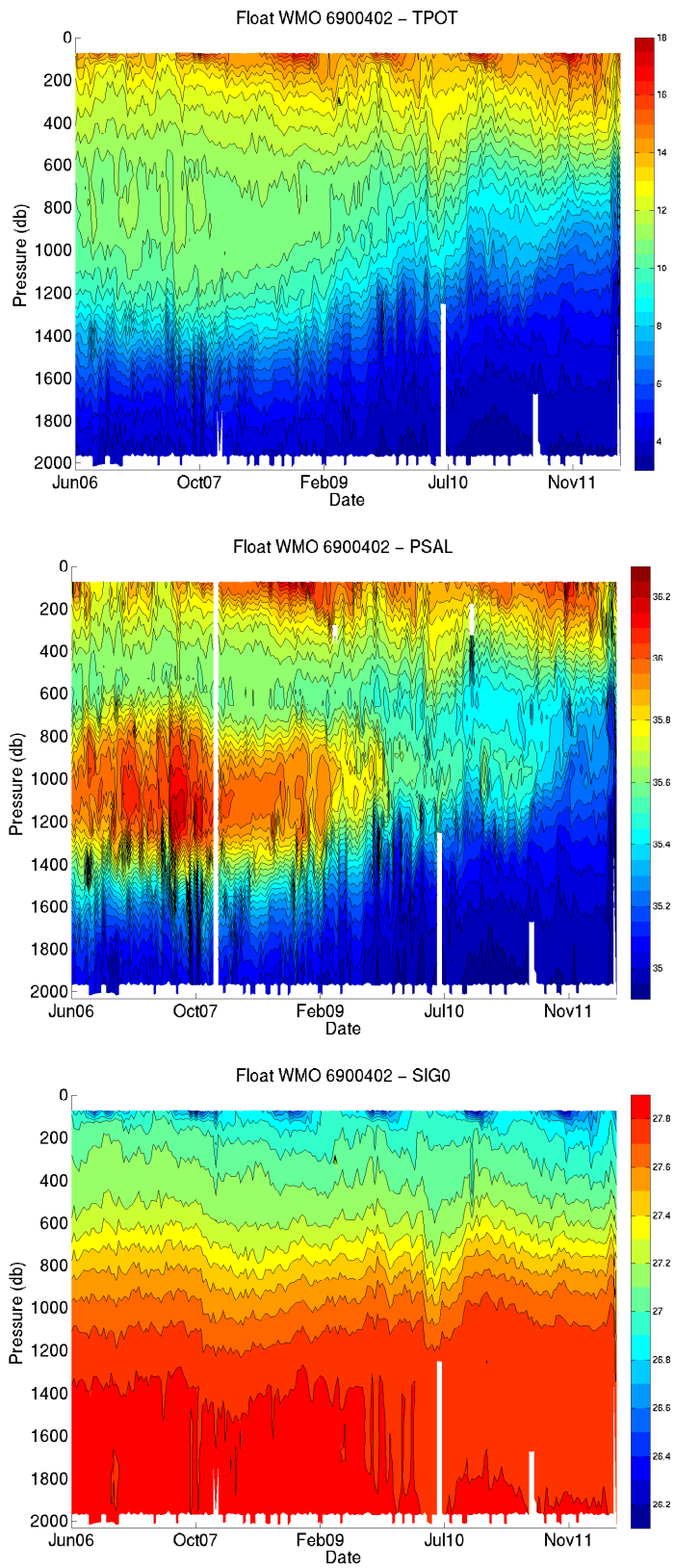


Figure 7: Potential temperature, salinity and potential density sections along the float trajectory (interpolated on standard levels). Quality flags are taken into account.

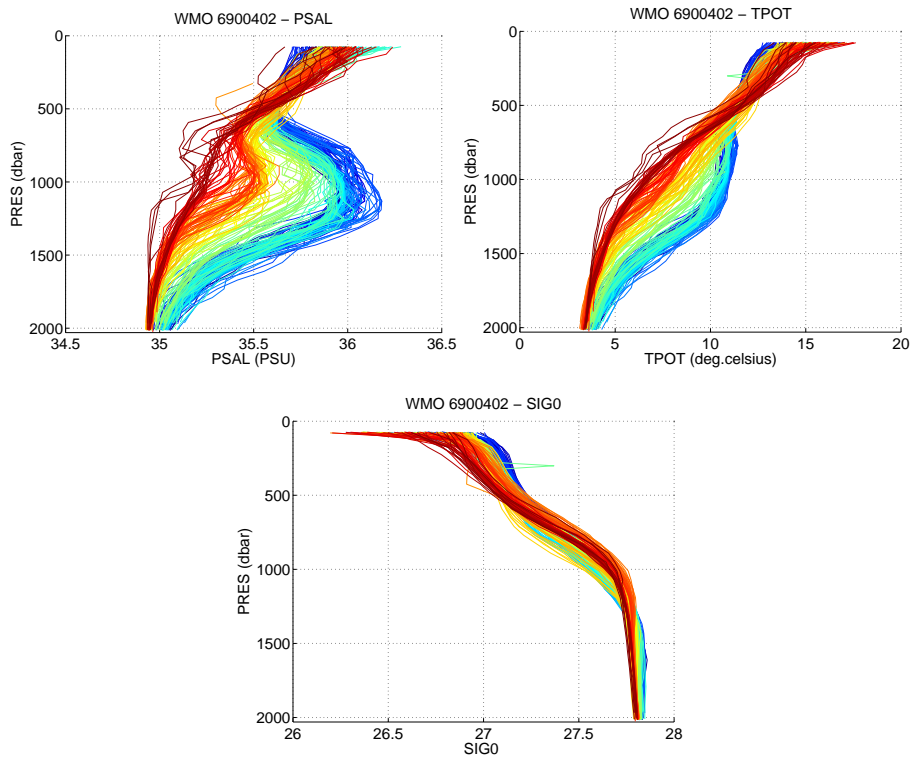


Figure 8: Salinity, Potential Temperature and Potential Density profiles. Quality flags are taken into account.

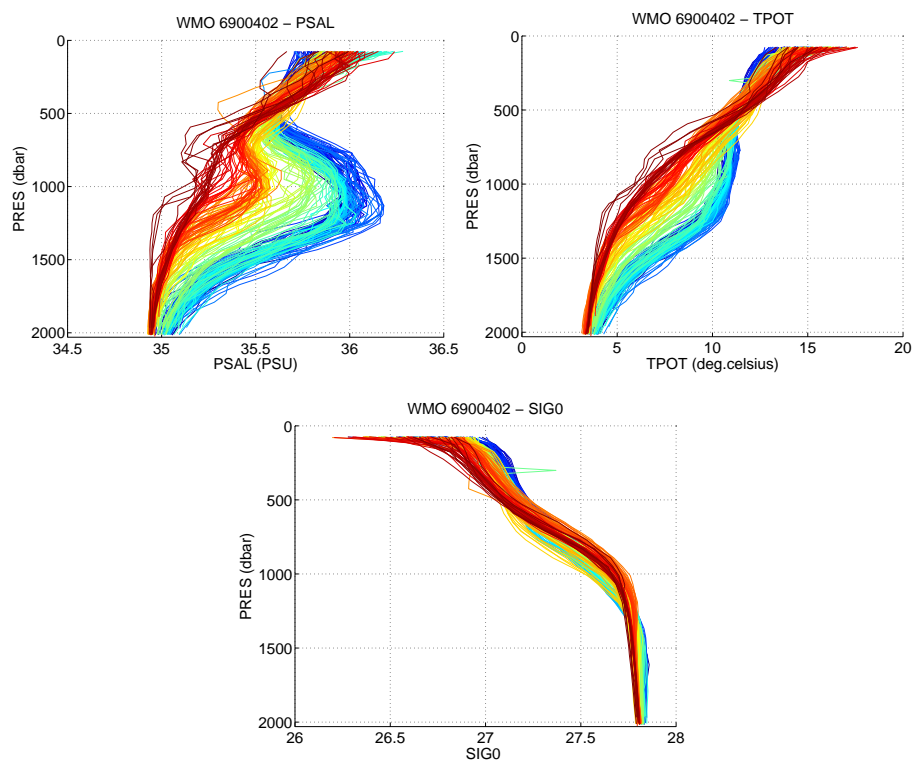


Figure 9: Salinity, Potential Temperature and Potential Density profiles. Quality flags are not taken into account.

### 3 Comparison to the OVIDE 2006 nearest CTD profile

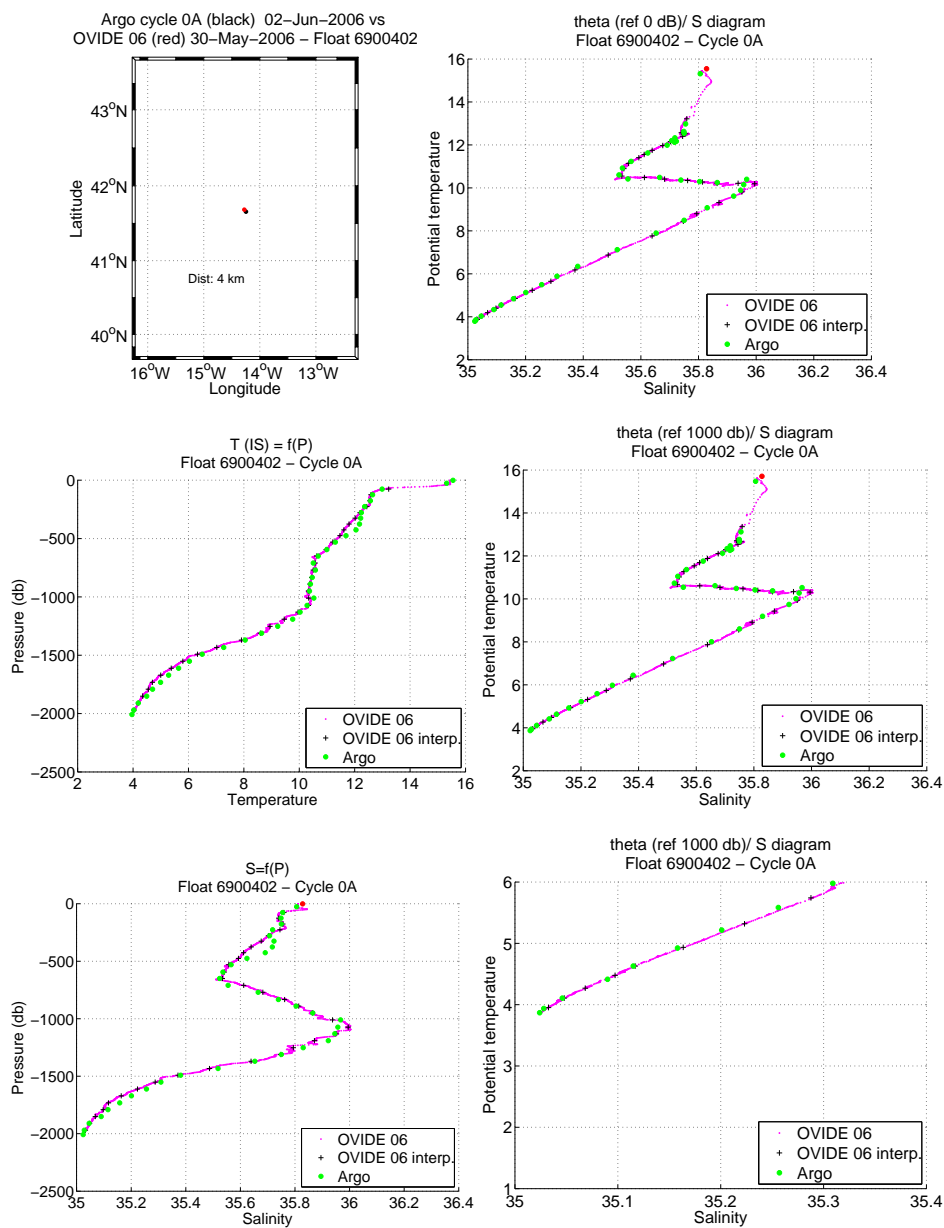


Figure 10: Comparison of the cycle 0A with the nearest CTD profile done after the float deployment.

## 4 Cycle 58 - Comparison to the nearest ARGO profiles

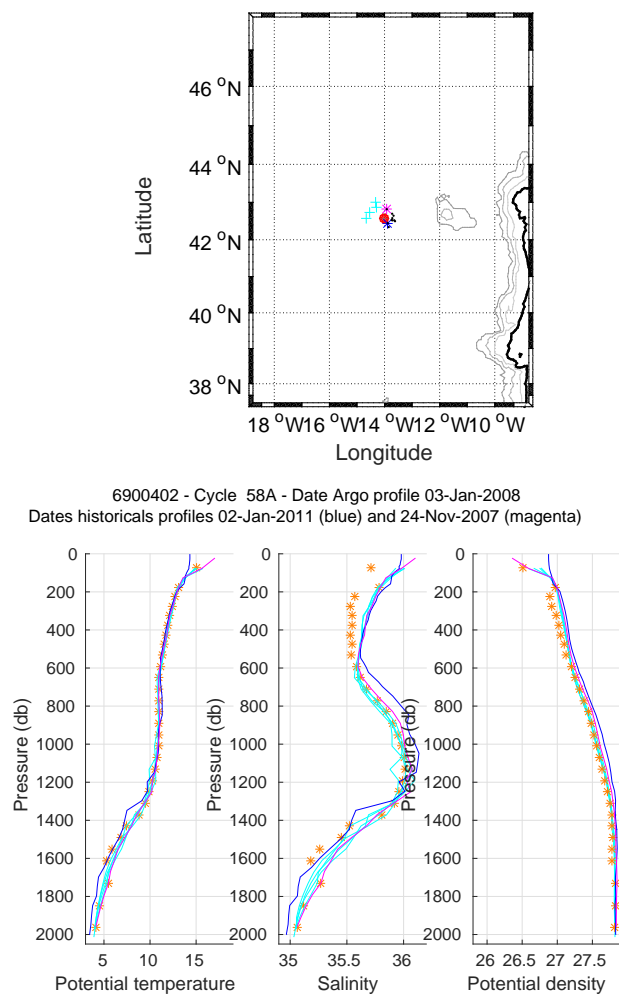
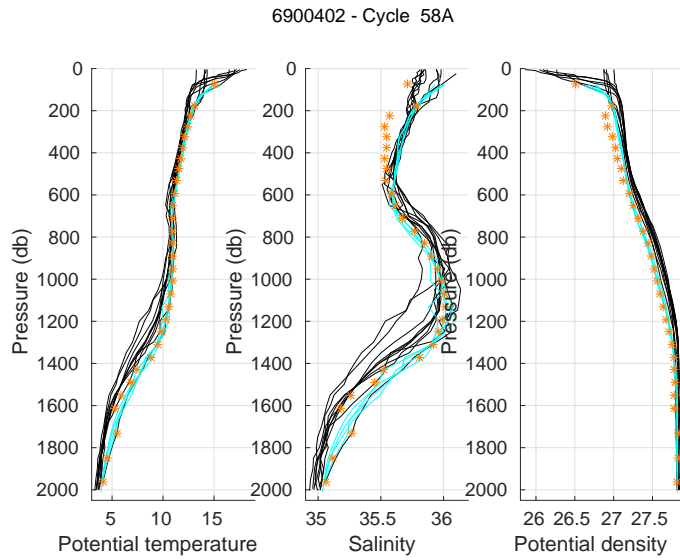


Figure 11: Flotteur 6900402, cycle 58. Upper panel: Position of the analysed Argo profile (red) and of the nearest Argo profiles (black). The nearest Argo profile in time is in magenta while the nearest CTD profile in space is in blue. Lower panels: Temperature, salinity and potential density as function 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).



6900402 - Cycle 58A - Date Argo profile 03-Jan-2008  
 Dates historicals profiles 02-Jan-2011 (blue) and 24-Nov-2007 (magenta)

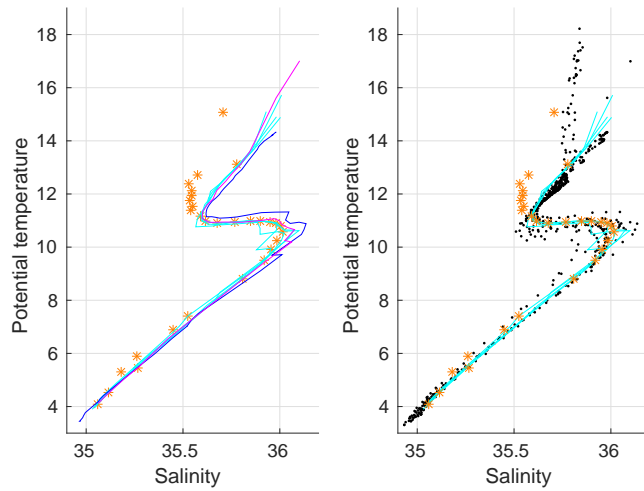


Figure 12: Float 6900402, cycle 58. The analysed Argo profile (stars) is compared to the nearest Argo profiles (black line) and to two specific profiles: the nearest Argo profile in time (magenta) and the nearest Argo profile in space (blue). The color of the analysed Argo profile represents the QC flag (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)  $\theta/S$  diagrams.

## 5 Cycle 58 - Comparison to the nearest ARGO profiles

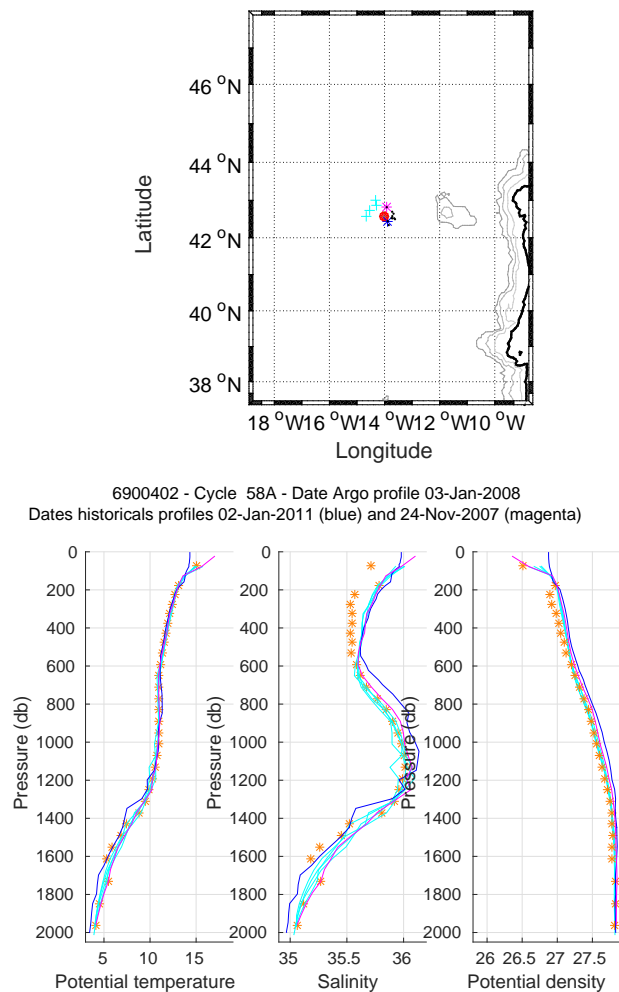
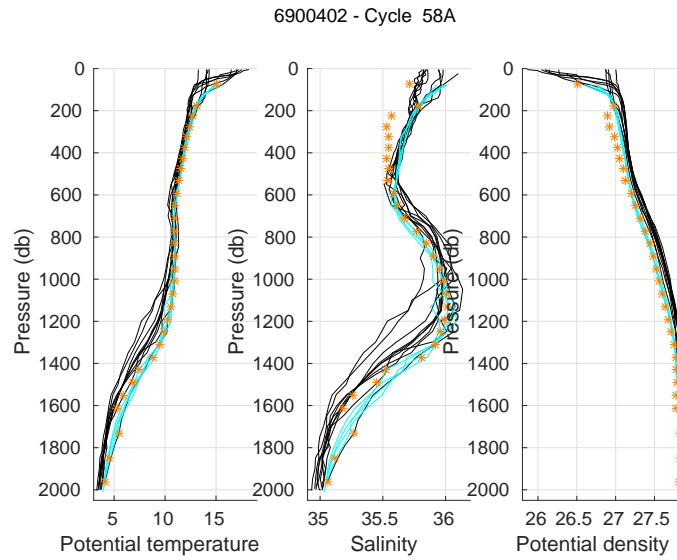


Figure 13: Flotteur 6900402, cycle 58. Upper panel: Position of the analysed Argo profile (red) and of the nearest Argo profiles (black). The nearest Argo profile in time is in magenta while the nearest CTD profile in space is in blue. Lower panels: Temperature, salinity and potential density as function 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).



6900402 - Cycle 58A - Date Argo profile 03-Jan-2008  
 Dates historicals profiles 02-Jan-2011 (blue) and 24-Nov-2007 (magenta)

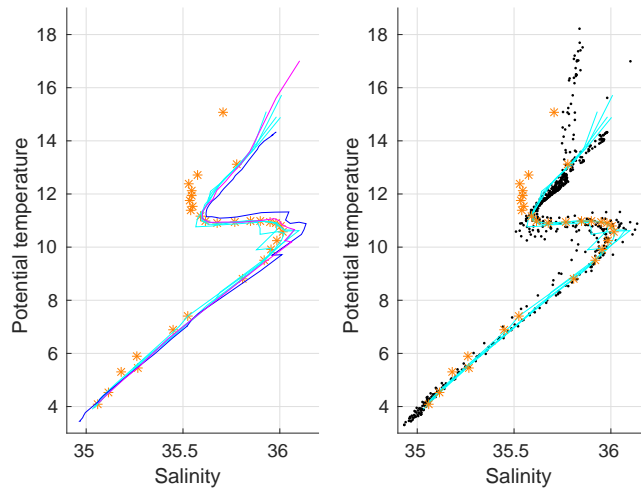


Figure 14: Float 6900402, cycle 58. The analysed Argo profile (stars) is compared to the nearest Argo profiles (black line) and to two specific profiles: the nearest Argo profile in time (magenta) and the nearest Argo profile in space (blue). The color of the analysed Argo profile represents the QC flag (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)  $\theta/S$  diagrams.



## 6 Cycle 97 - Comparison to the nearest ARGO profiles

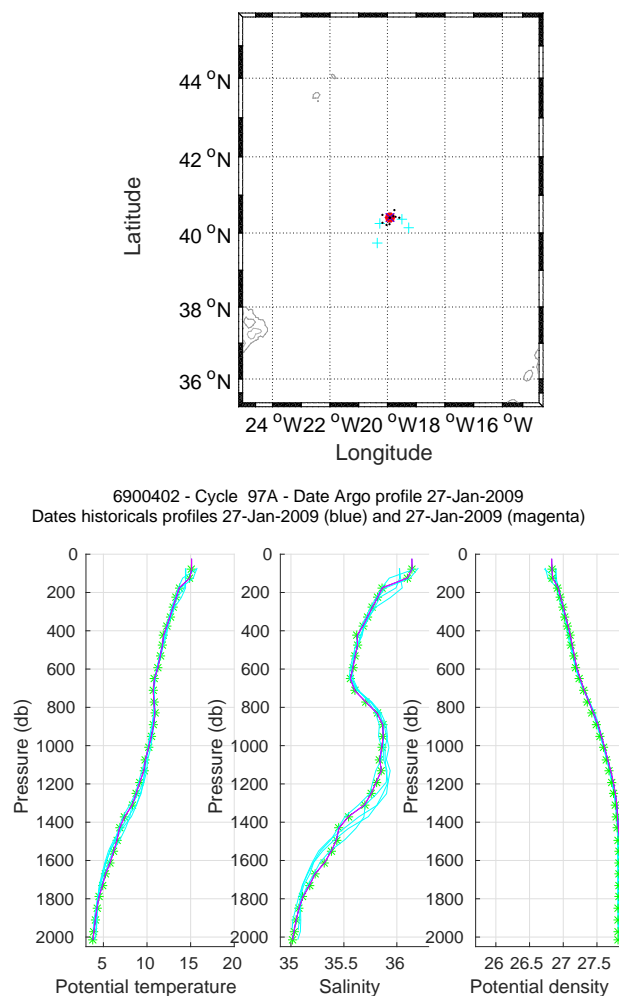
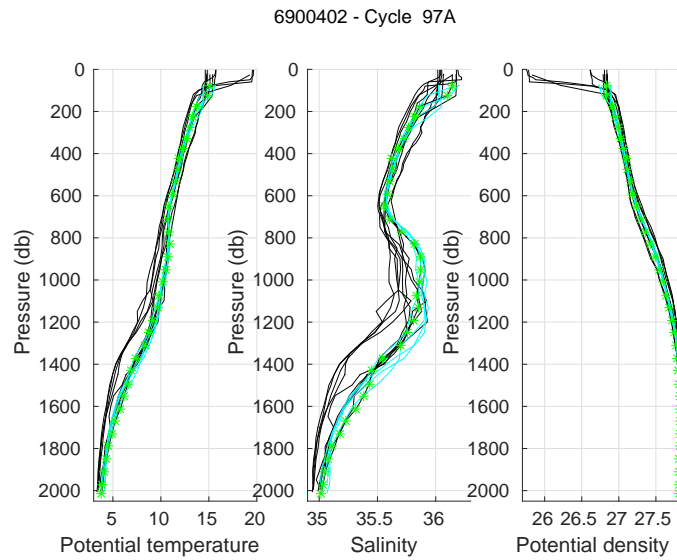


Figure 15: Flotteur 6900402, cycle 97. Upper panel: Position of the analysed Argo profile (red) and of the nearest Argo profiles (black). The nearest Argo profile in time is in magenta while the nearest CTD profile in space is in blue. Lower panels: Temperature, salinity and potential density as function 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).



6900402 - Cycle 97A - Date Argo profile 27-Jan-2009  
 Dates historicals profiles 27-Jan-2009 (blue) and 27-Jan-2009 (magenta)

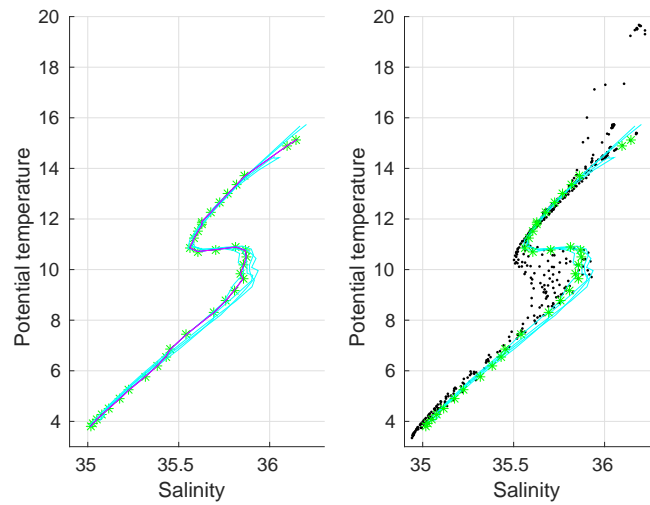


Figure 16: Float 6900402, cycle 97. The analysed Argo profile (stars) is compared to the nearest Argo profiles (black line) and to two specific profiles: the nearest Argo profile in time (magenta) and the nearest Argo profile in space (blue). The color of the analysed Argo profile represents the QC flag (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)  $\theta/S$  diagrams.

## 7 Cycle 97 - Comparison to the nearest ARGO profiles

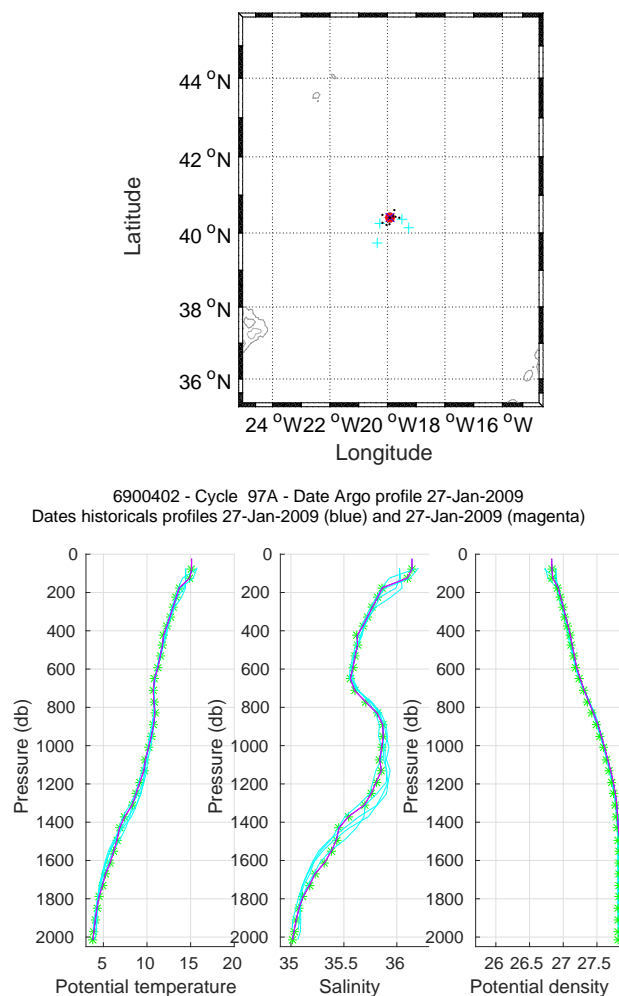
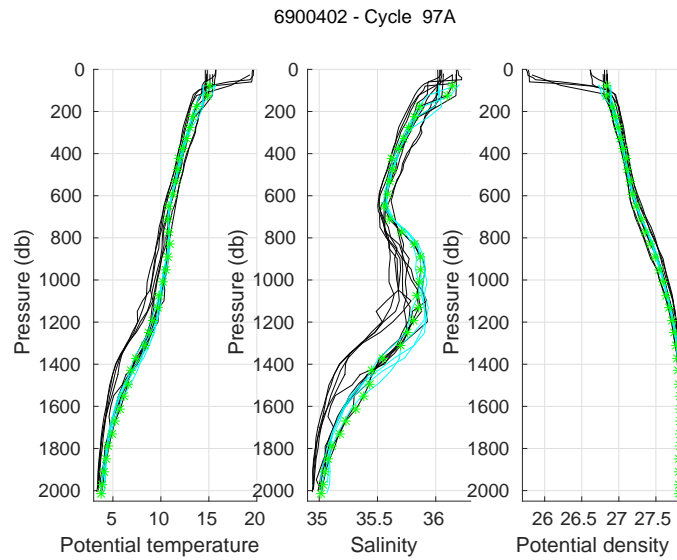


Figure 17: Flotteur 6900402, cycle 97. Upper panel: Position of the analysed Argo profile (red) and of the nearest Argo profiles (black). The nearest Argo profile in time is in magenta while the nearest CTD profile in space is in blue. Lower panels: Temperature, salinity and potential density as function 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).



6900402 - Cycle 97A - Date Argo profile 27-Jan-2009  
 Dates historicals profiles 27-Jan-2009 (blue) and 27-Jan-2009 (magenta)

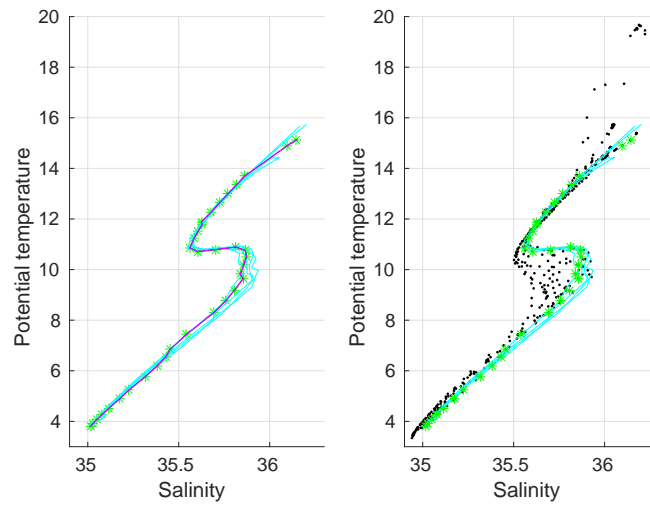


Figure 18: Float 6900402, cycle 97. The analysed Argo profile (stars) is compared to the nearest Argo profiles (black line) and to two specific profiles: the nearest Argo profile in time (magenta) and the nearest Argo profile in space (blue). The color of the analysed Argo profile represents the QC flag (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)  $\theta/S$  diagrams.

## 8 Cycle 106 - Comparison to the nearest ARGO profiles

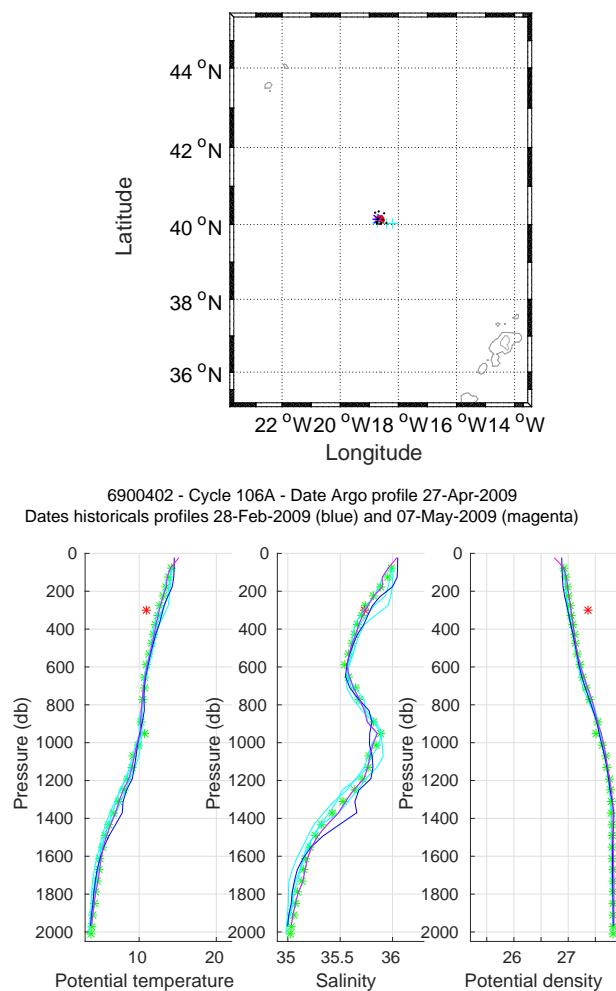


Figure 19: Flotteur 6900402, cycle 106. Upper panel: Position of the analysed Argo profile (red) and of the nearest Argo profiles (black). The nearest Argo profile in time is in magenta while the nearest CTD profile in space is in blue. Lower panels: Temperature, salinity and potential density as function 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).

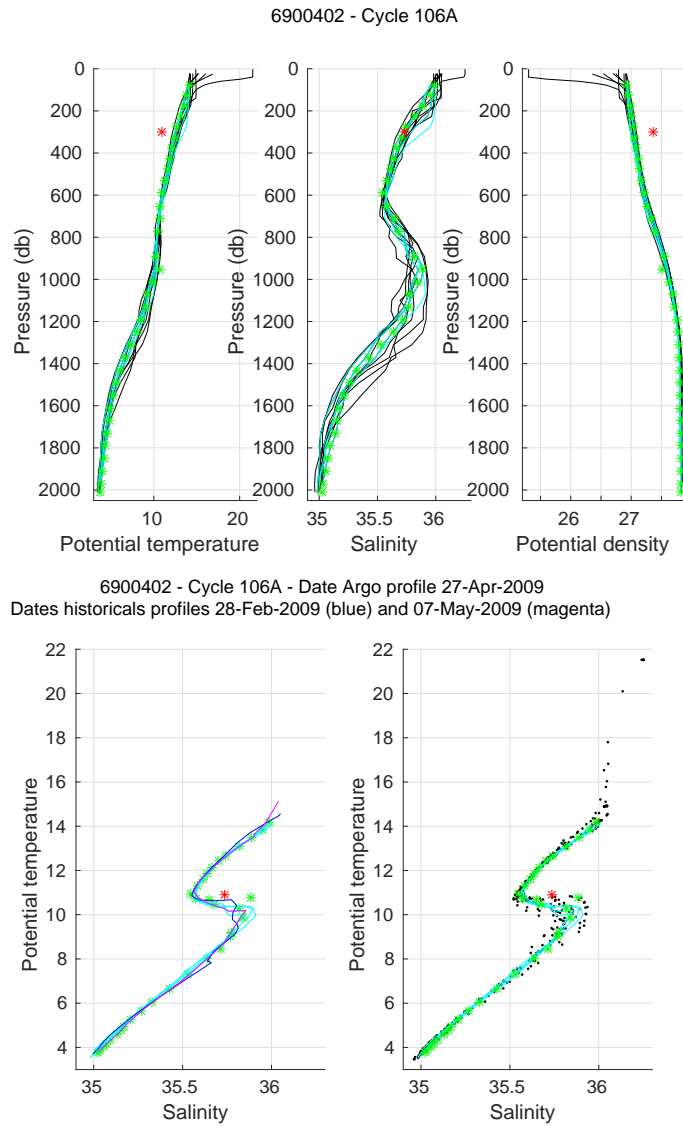


Figure 20: Float 6900402, cycle 106. The analysed Argo profile (stars) is compared to the nearest Argo profiles (black line) and to two specific profiles: the nearest Argo profile in time (magenta) and the nearest Argo profile in space (blue). The color of the analysed Argo profile represents the QC 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)  $\theta/S$  diagrams.

## 9 Cycle 106 - Comparison to the nearest ARGO profiles

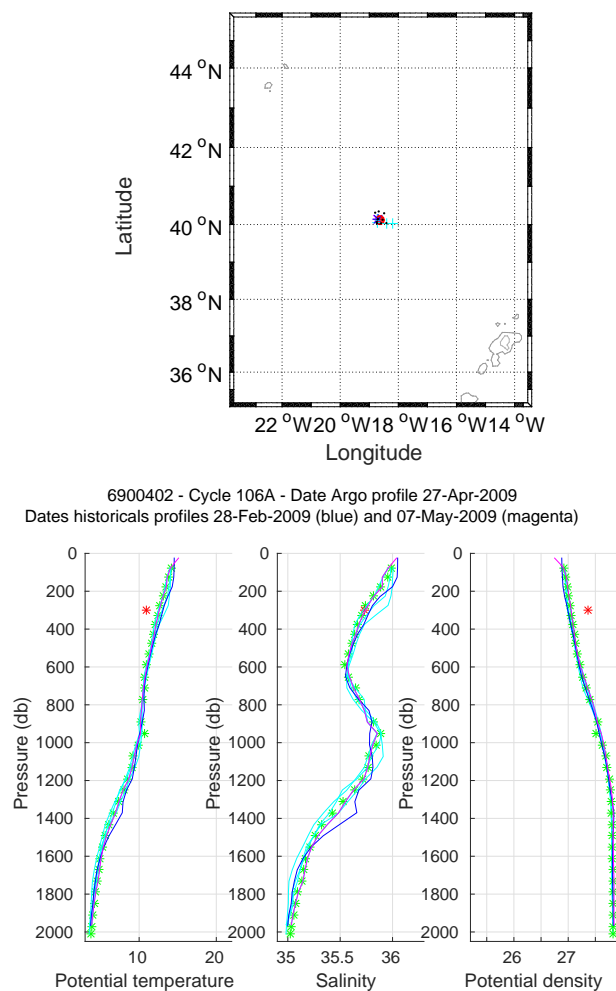


Figure 21: Flotteur 6900402, cycle 106. Upper panel: Position of the analysed Argo profile (red) and of the nearest Argo profiles (black). The nearest Argo profile in time is in magenta while the nearest CTD profile in space is in blue. Lower panels: Temperature, salinity and potential density as function 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).

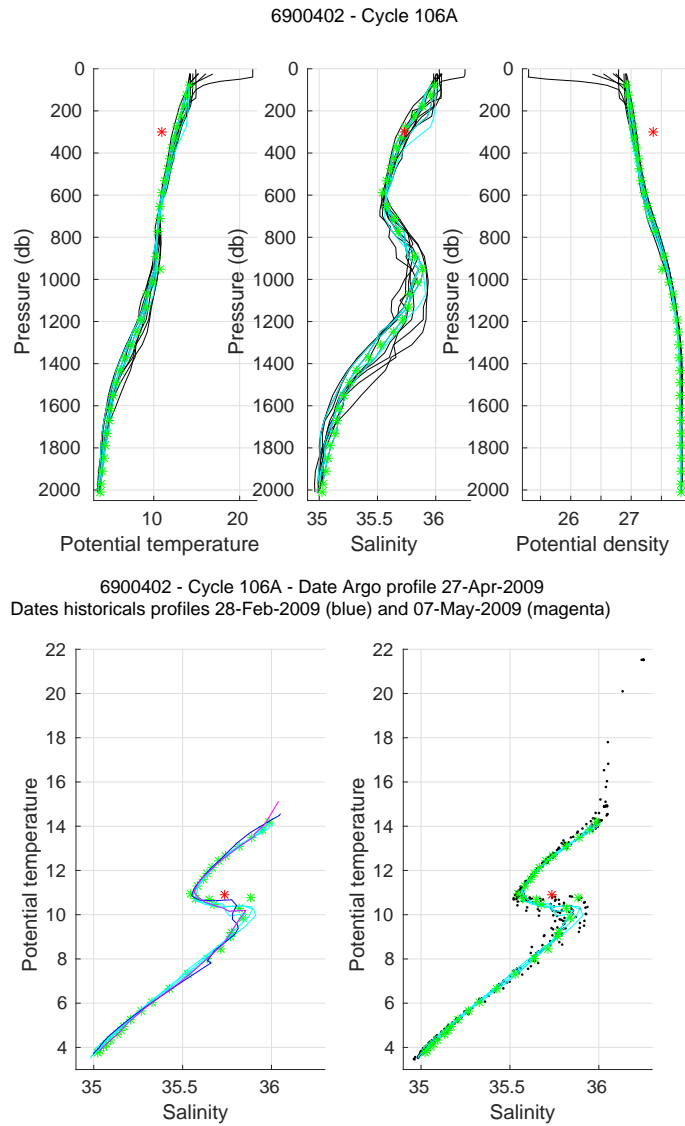


Figure 22: Float 6900402, cycle 106. The analysed Argo profile (stars) is compared to the nearest Argo profiles (black line) and to two specific profiles: the nearest Argo profile in time (magenta) and the nearest Argo profile in space (blue). The color of the analysed Argo profile represents the QC 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)  $\theta/S$  diagrams.



## 10 OW method, CONFIGURATION # 129

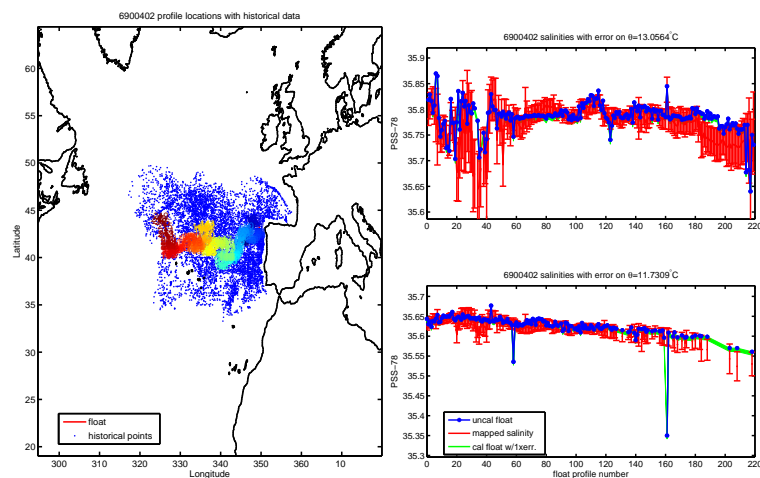


Figure 23: Figures from the OW method. (Left) Position of the historical and float data. (Right) Comparison, on various  $\theta$  levels, between the float data and the historical data interpolated at the float position.

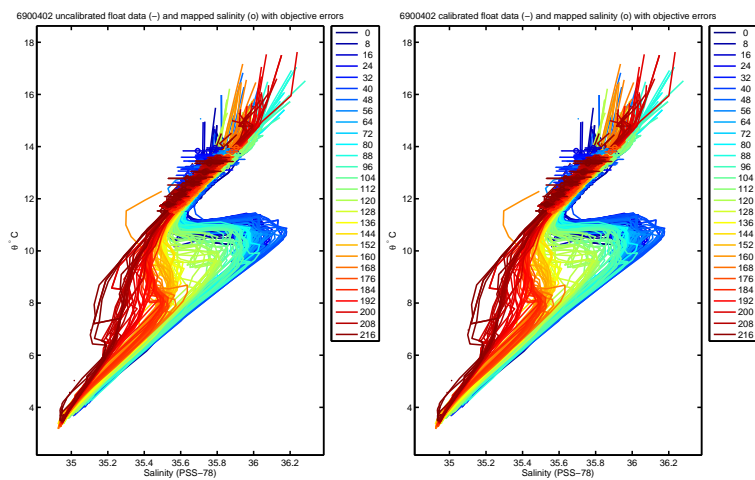


Figure 24: Figures from the OW method. Comparison of the  $\theta/S$  diagram of the float with the historical database. (left) raw data; (right) corrected data using the OW correction.

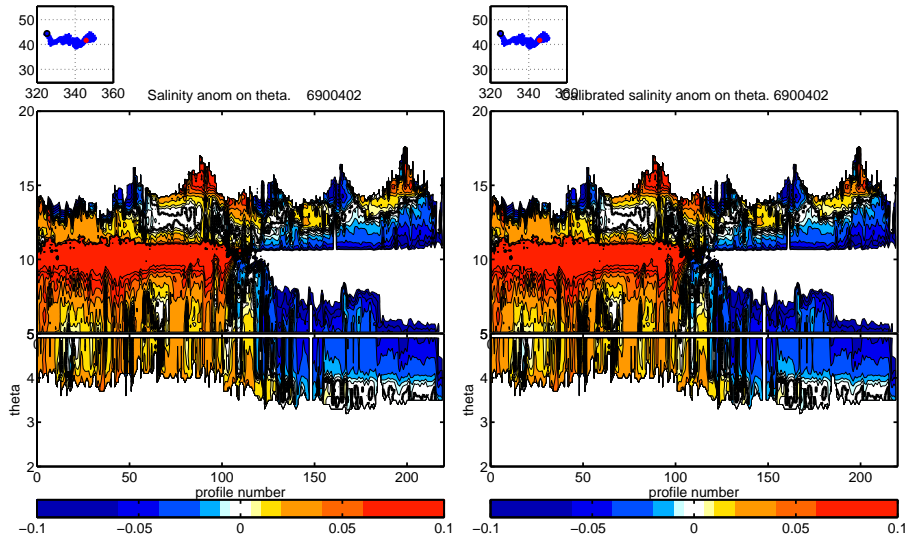


Figure 25: Figures from the OW method. Salinity anomaly:(left) raw data; (right) corrected data using the OW correction.

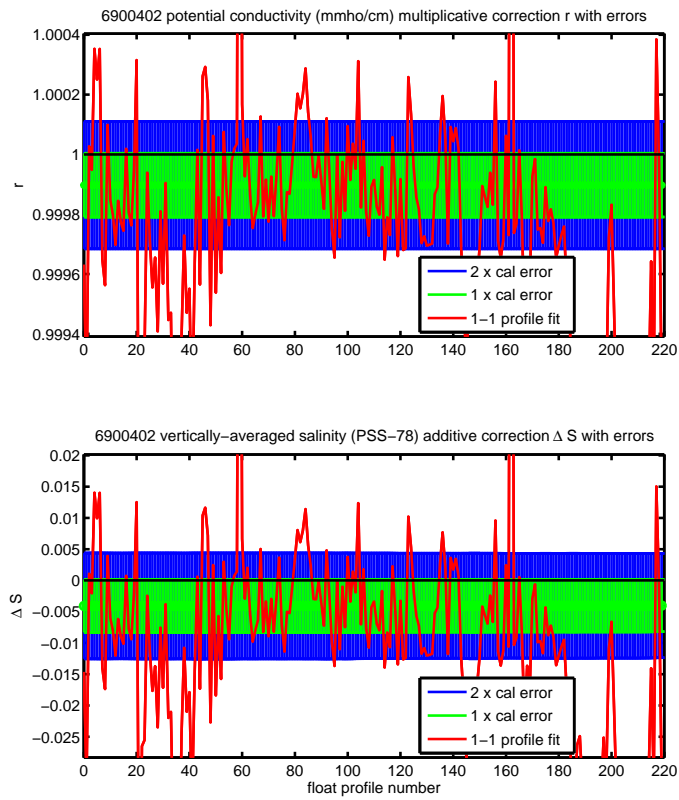


Figure 26: Correction proposed by the OW method.

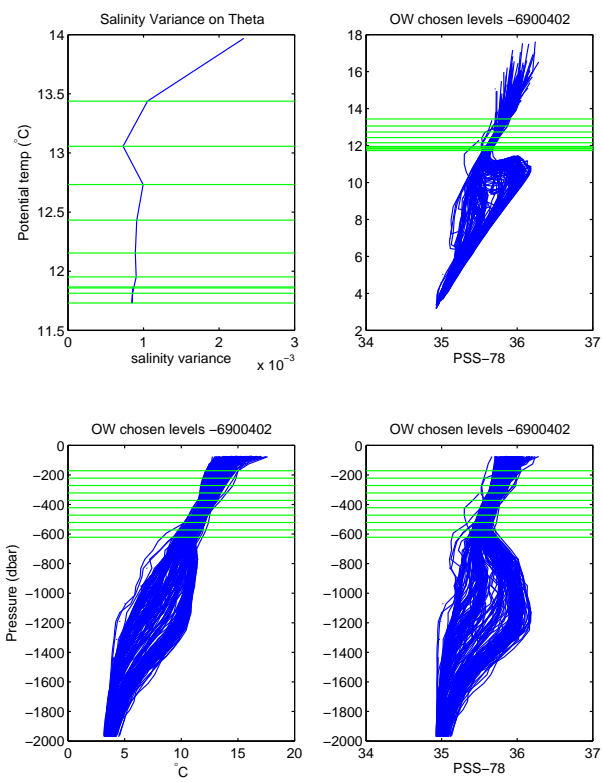


Figure 27: Chosed levels by the OW method.