Delayed mode quality control of MOCCA Argo float 3901886

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Summary

The assessed error of salinity for cycles 1-79 is 0.02; For profiles from 79 to 103, there was detected drift and the OWC correction was applied. The QC for these data is 1 with error 0.02.

WMO number	DM correction
3901886	Drift detected

Table 1: Correction applied in delayed mode.

Contents

1 Introduction

Delayed mode analysis was performed for float number 360718i (3901886) where salinity and temperature values were separately compared to nearby historical CTD profiles and nearby Argo profiles as a reference database. The OWC (Cabanes et al., 2016) method was run to estimate a salinity offset and/or a salinity drift. For more information about float 360718i (3901886) click on the following link: http://www.ifremer.fr/argoMonitoring/float/3901886

2 Quality Check of Argo Float Data

2.1 Time Series of Vertical Distribution of Data

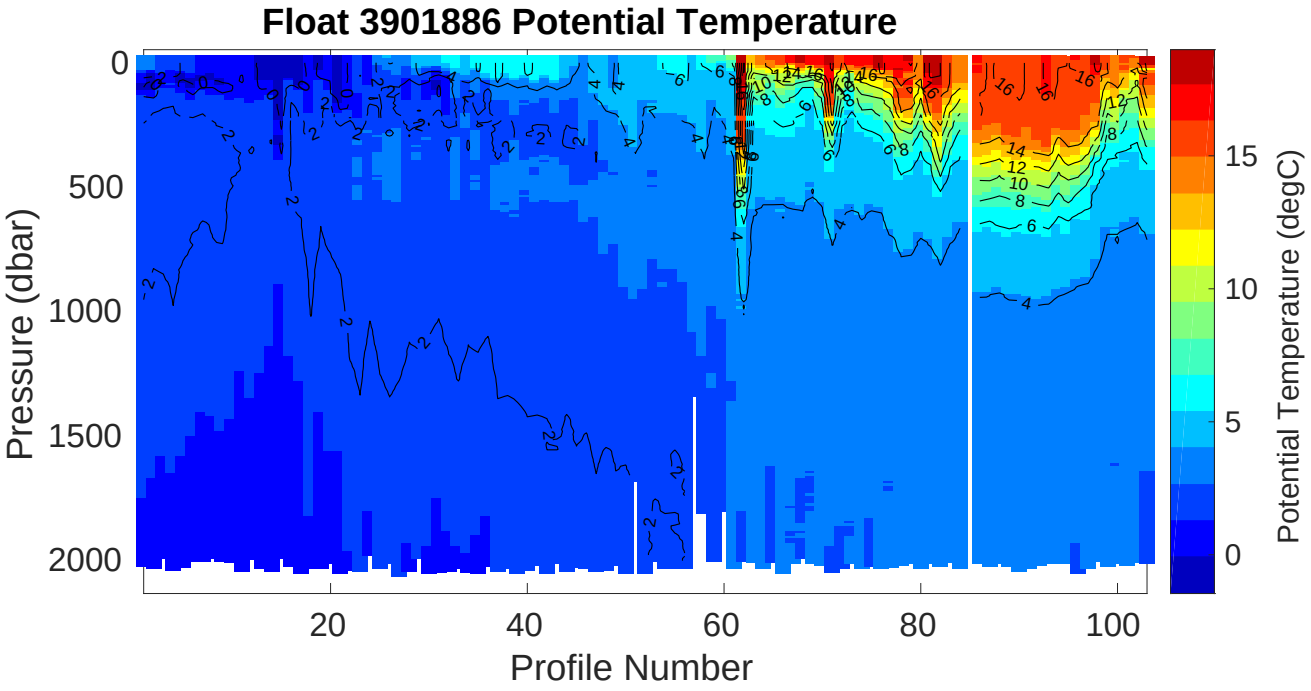

Figure 1: Float 3901886. Time series of the vertical distribution of potential temperature (°C).

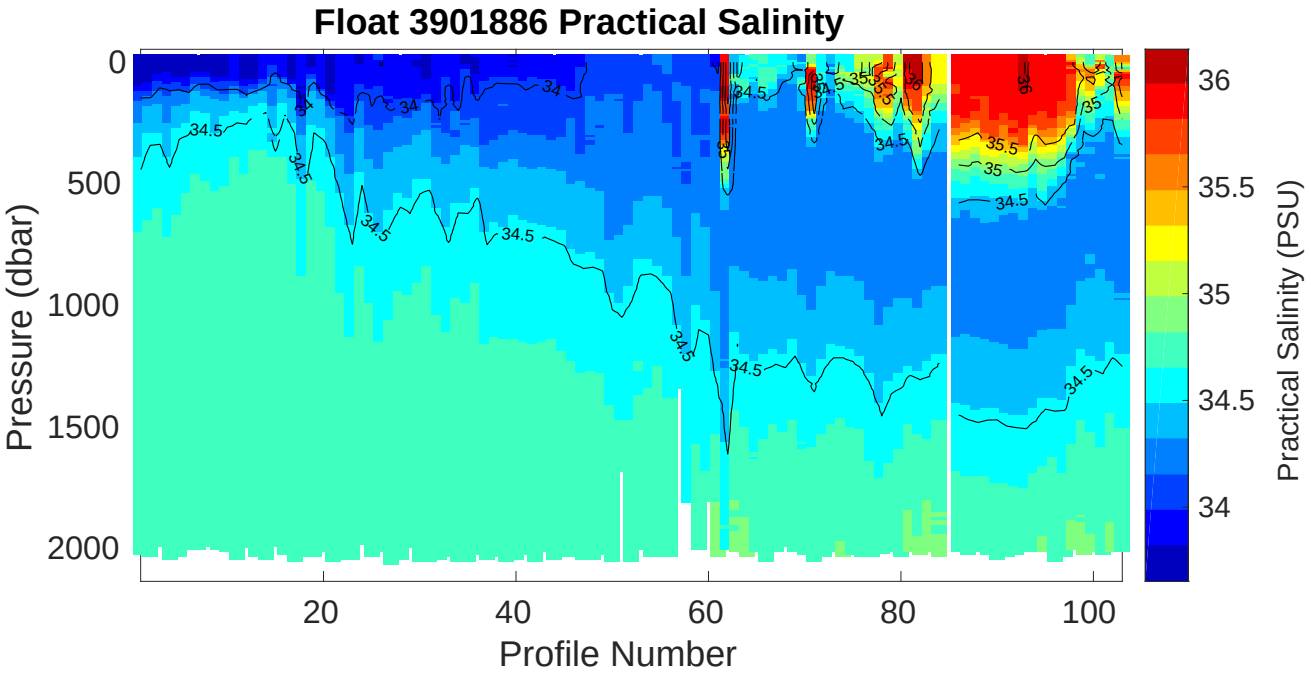

Figure 2: Float 3901886. Time series of the vertical distribution of practical salinity (PSU).

2.2 Comparison between Argo Float and Climatology

The comparison between float 3901886 and data from WMO boxes +/- 10°of latitude and longitude shows that the Argo profiles fit within the expected ranges (Figures 3, 4 and 5). This result confirms that float 3901886 represents relatively stable and consistent with the expected physical conditions in this region.

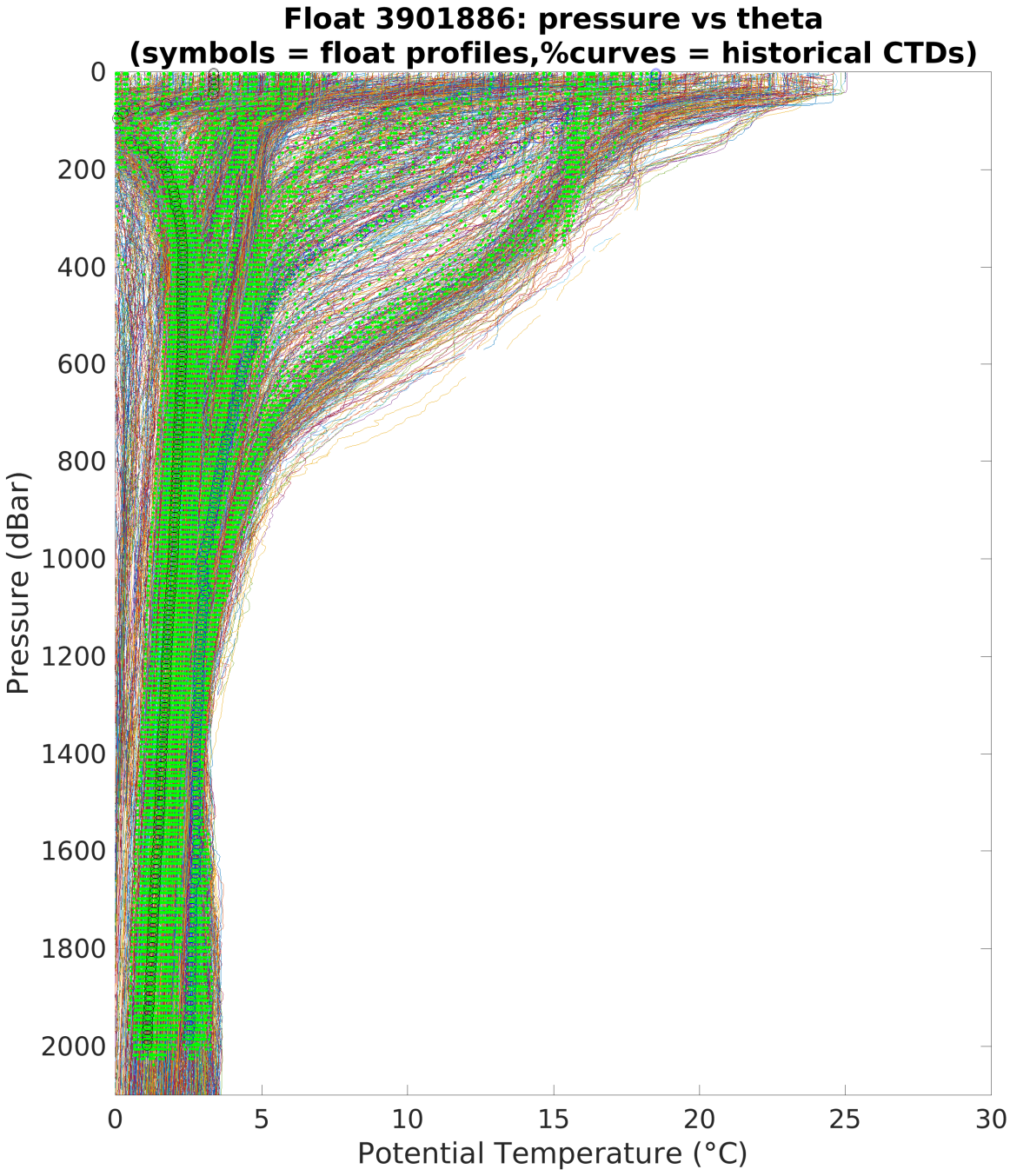

Figure 3: Float 3901886. Float profile of potential temperature (˚C) plotted with climatology from the spatial range of 10 ˚. The black and blue cycles indicates the first and the last Argo profile, respectively. Green symbols represent other Argo profiles.

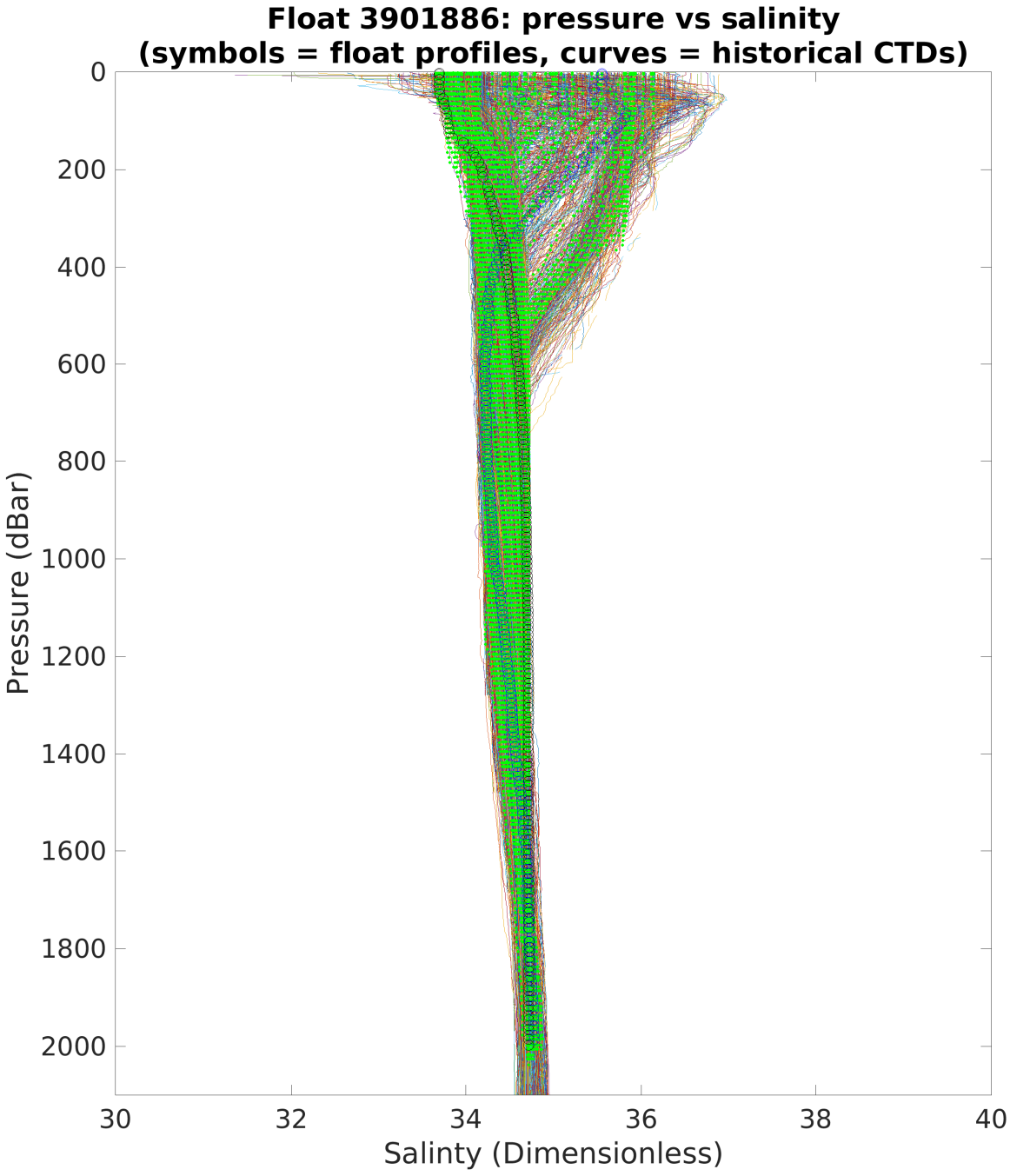

Figure 4: Float 3901886. Float profile of salinity (dimensionless) plotted with climatology from the spatial range of 10 ˚. The black and blue cycles indicates the first and the last Argo profile, respectively. Green symbols represent other Argo profiles.

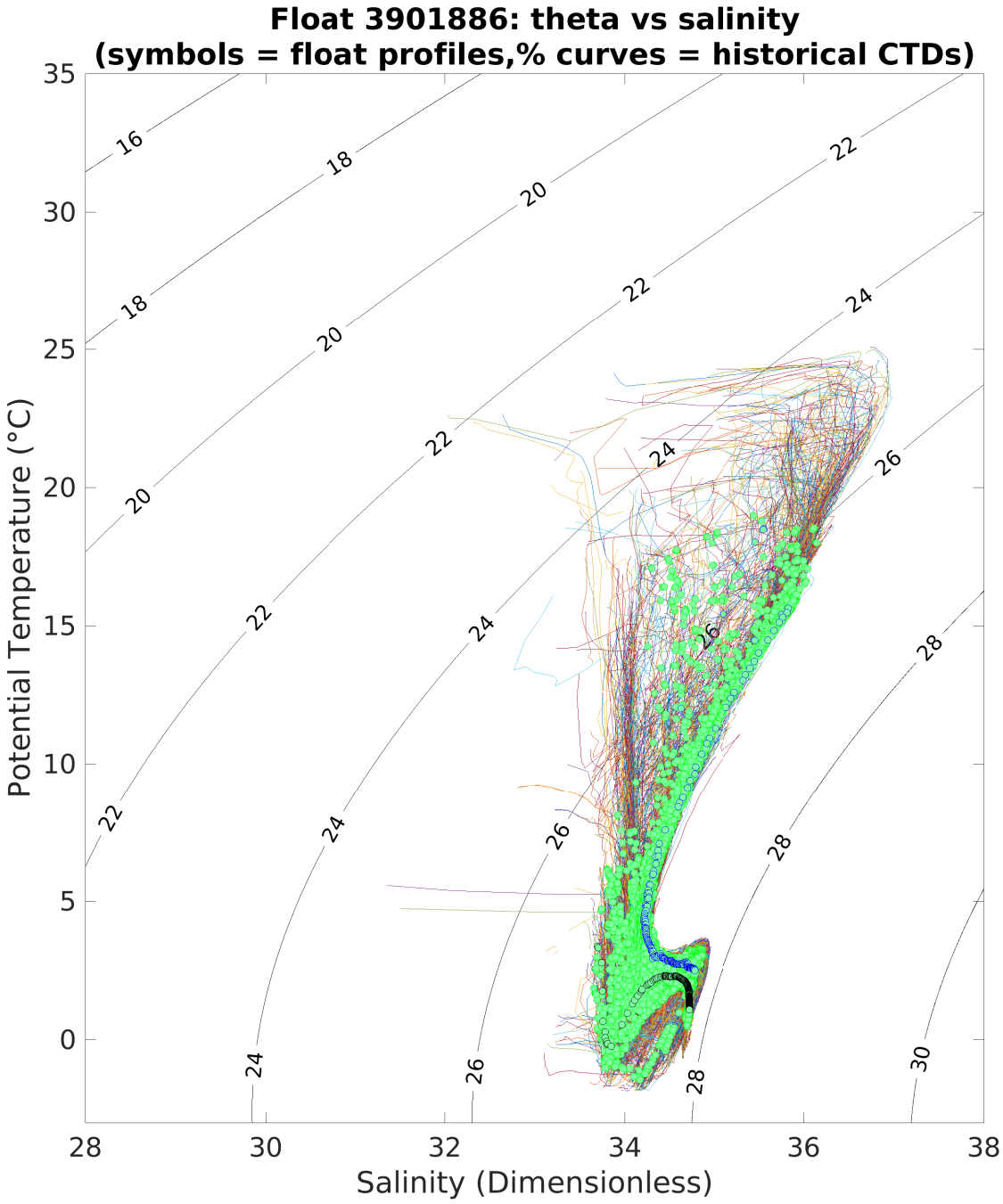

Figure 5: Float 3901886. Theta/S plotted with climatology from the spatial range of 10 °. The black and blue cycles indicates the first and the last Argo profile, respectively. Green symbols represent other Argo profiles.

2.3 Satellite Altimeter comparison

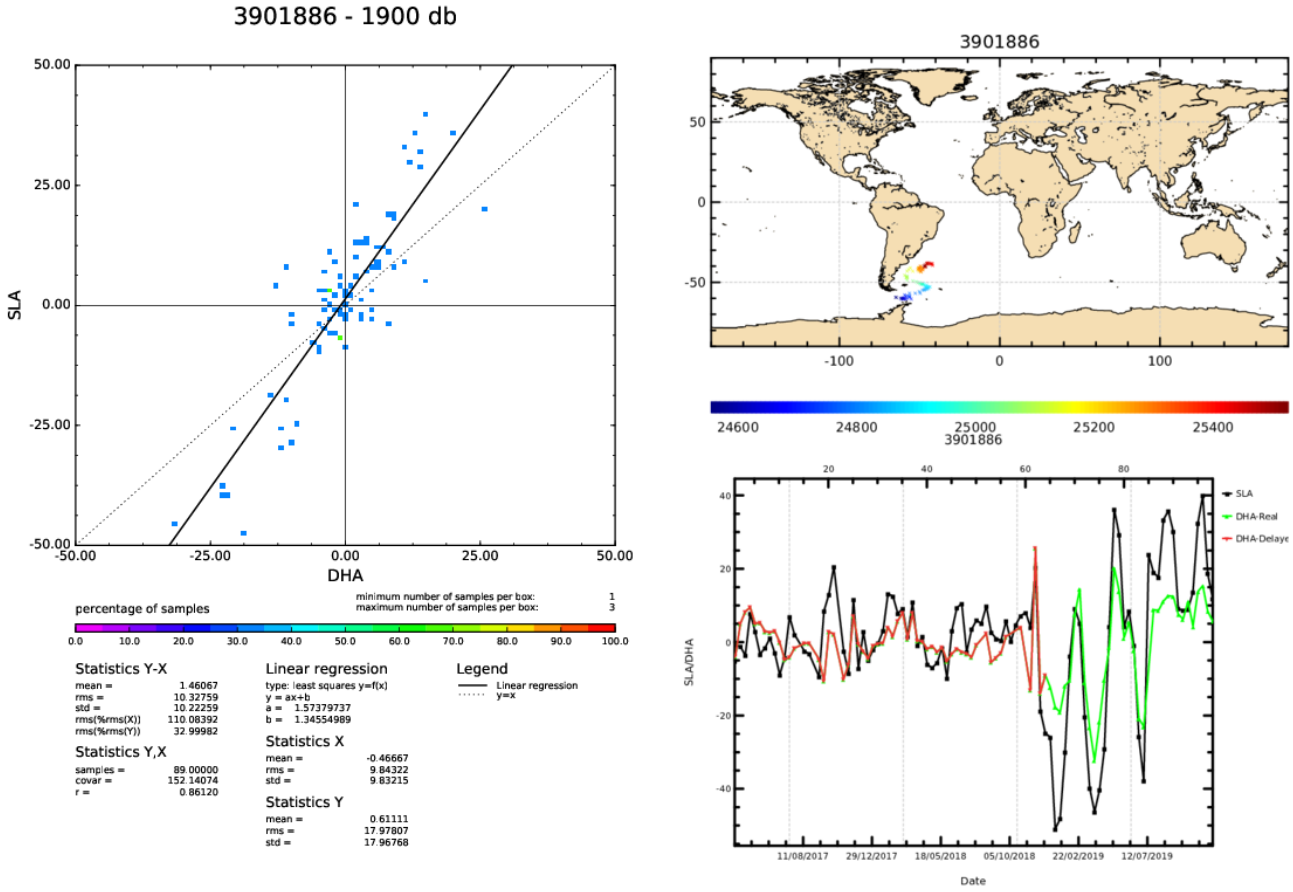

Figure 6: Float 3901886. The comparison betweeen the Sea Surface Height(SSH) from the satellite altimetry and Dynamic Height Anomaly(DHA)extracted from the Argo float temperature and salinity data

3 Correction of Salinity Data

3.1 Comparison between Argo floats and CTD Climatlogy

3.1.1 Configuration

3.1.2 Results

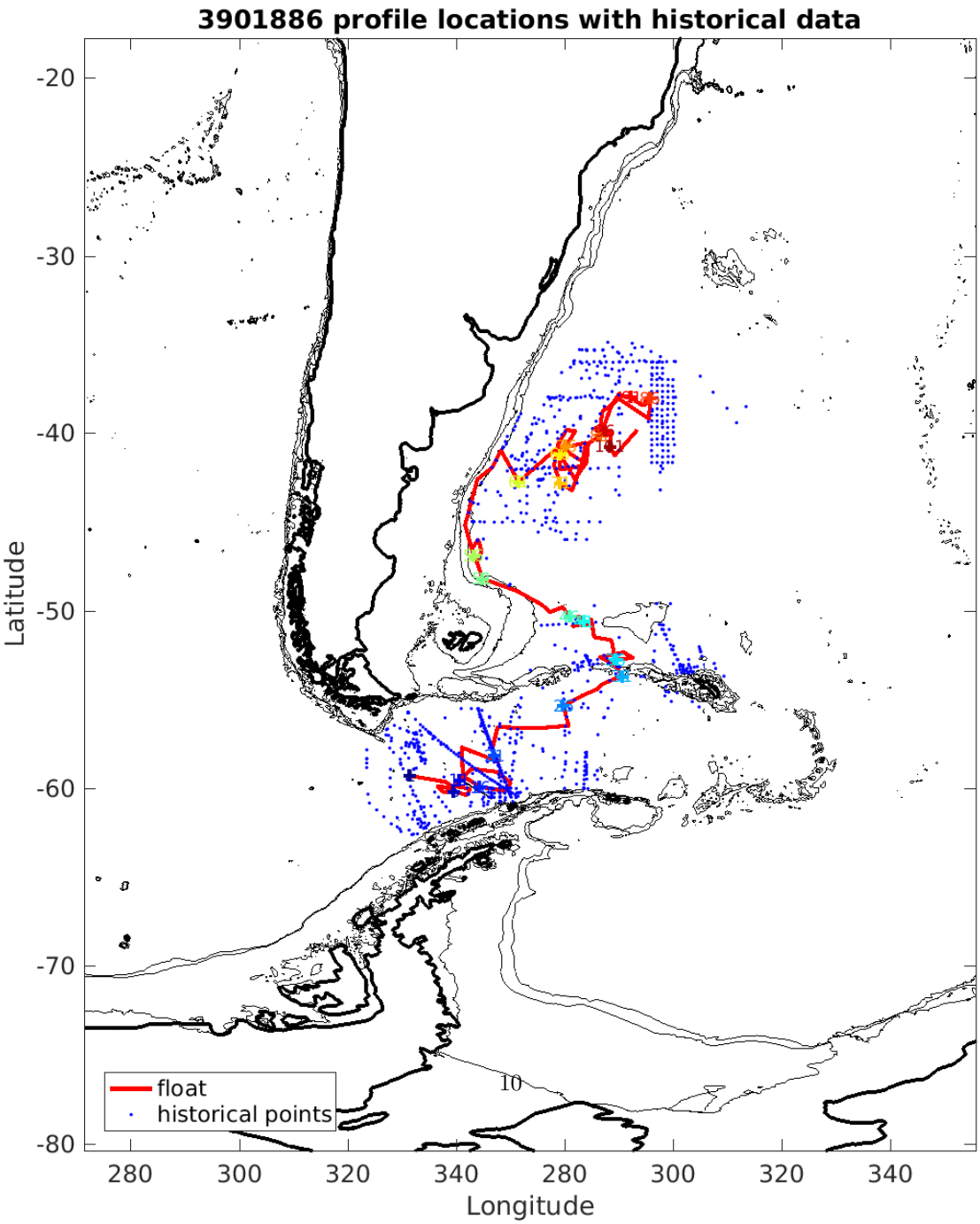

Figure 7: Float 3901886. Trajectory of the float with historical CTD data. The black contours indicate the bathymetry at 0, 200, 1000 and 2000 m.

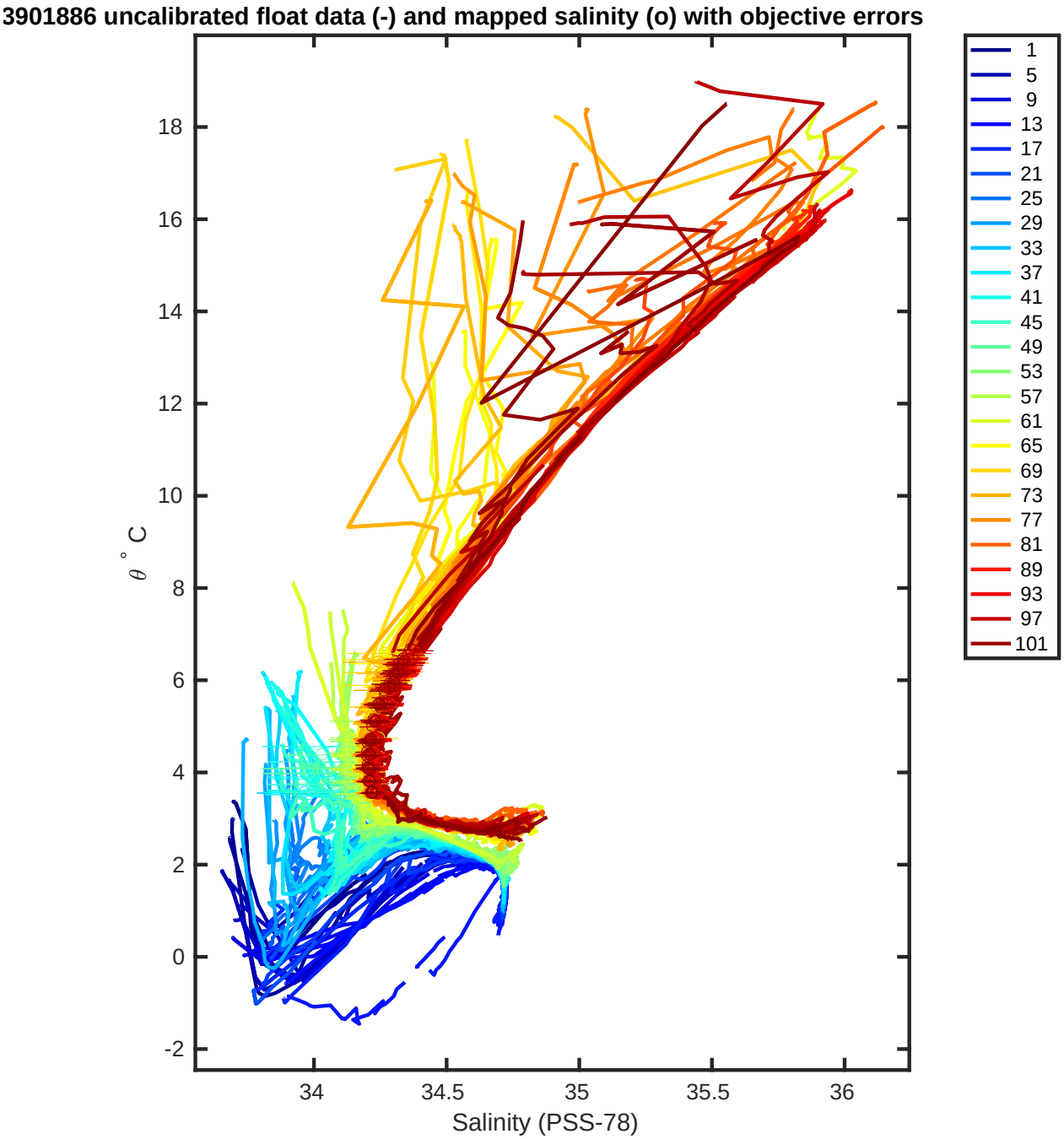

Figure 8: Float 3901886. Uncalibrated float data and mapped salinity.

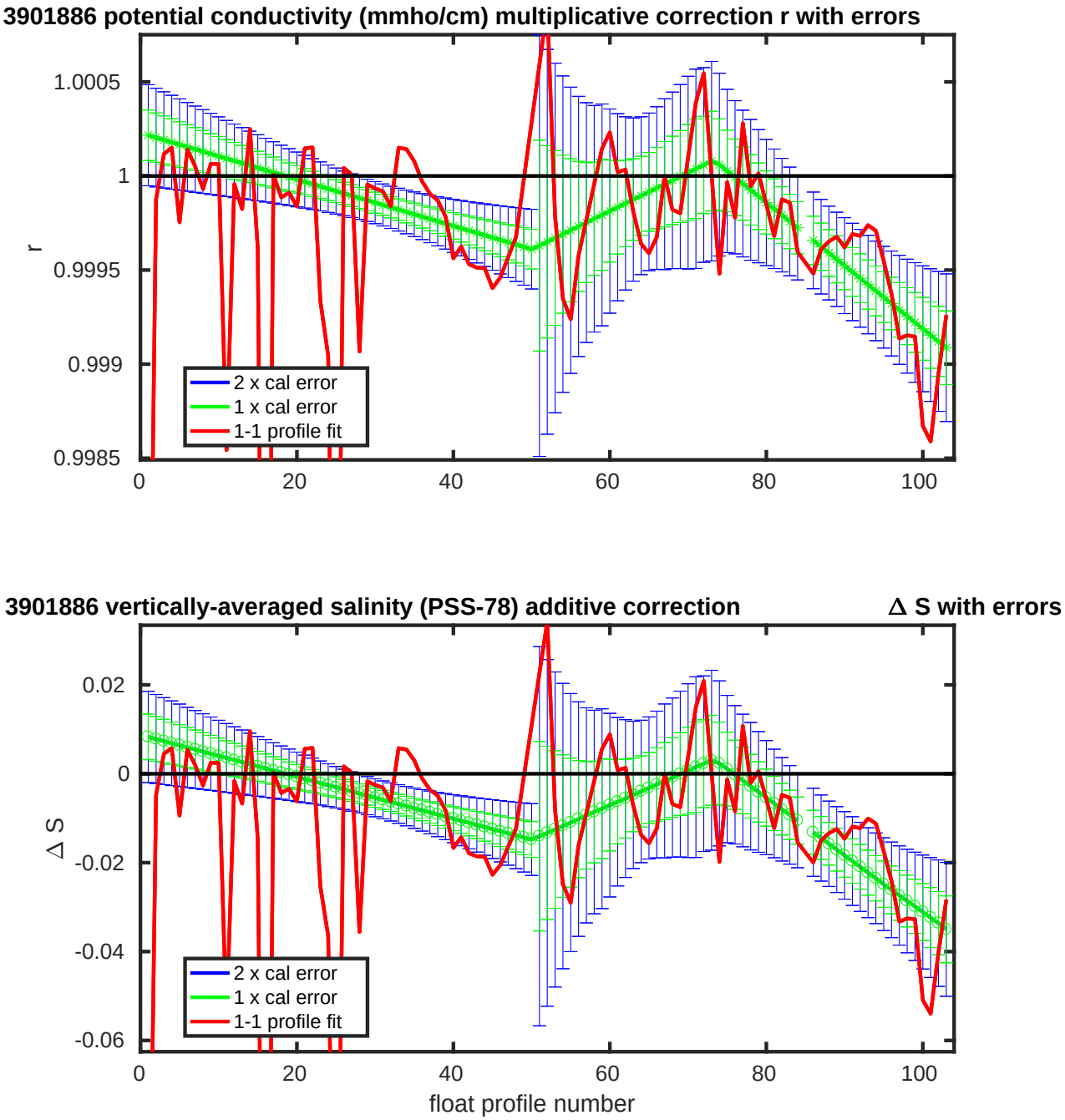

Figure 9: Float 3901886. Potential conductivity (top) and vertically averaged salinity (bottom) with errors.

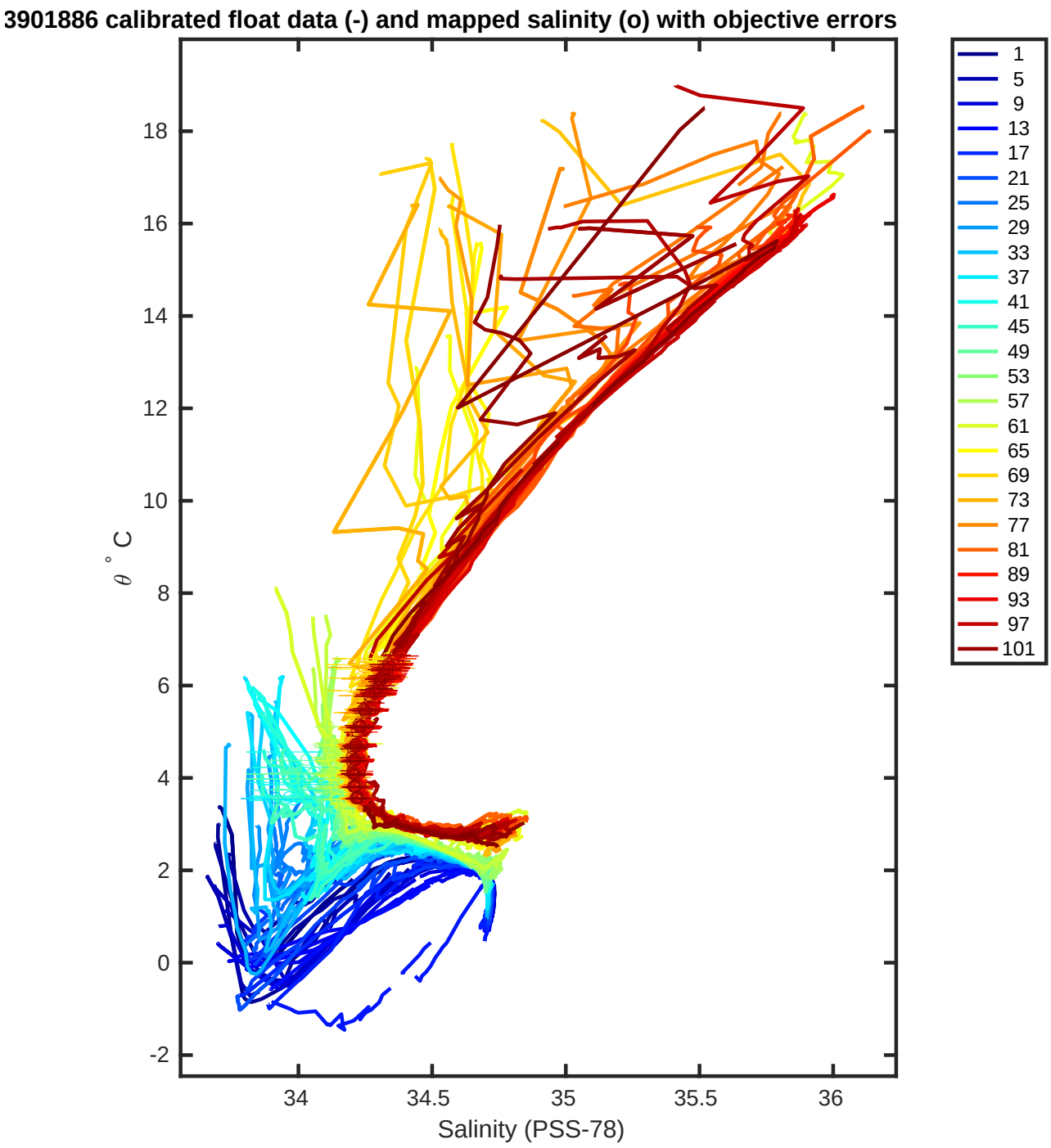

Figure 10: Float 3901886. Calibrated float data and mapped salinity.

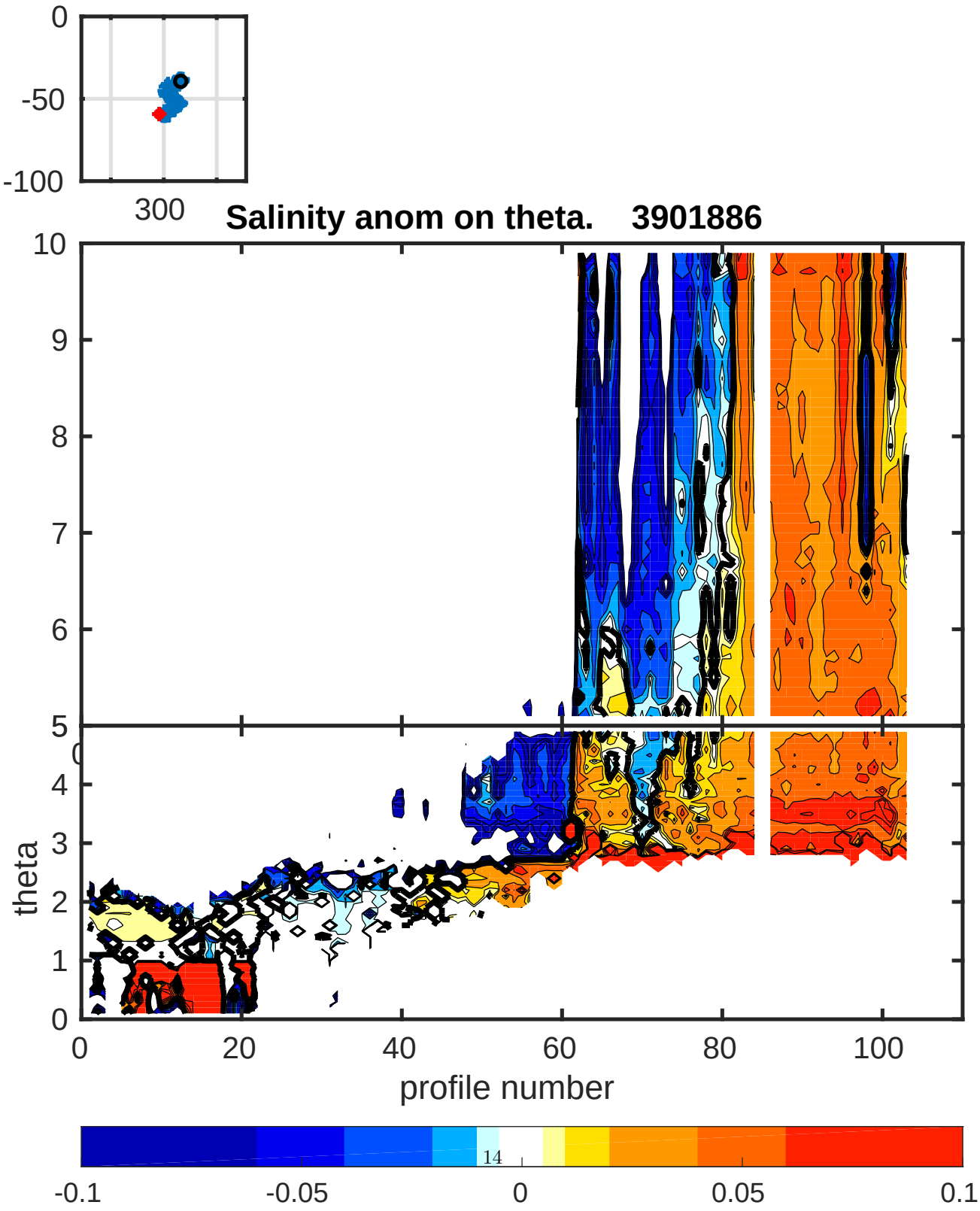

Figure 11: Float 3901886. Salinity anomaly on θ levels.

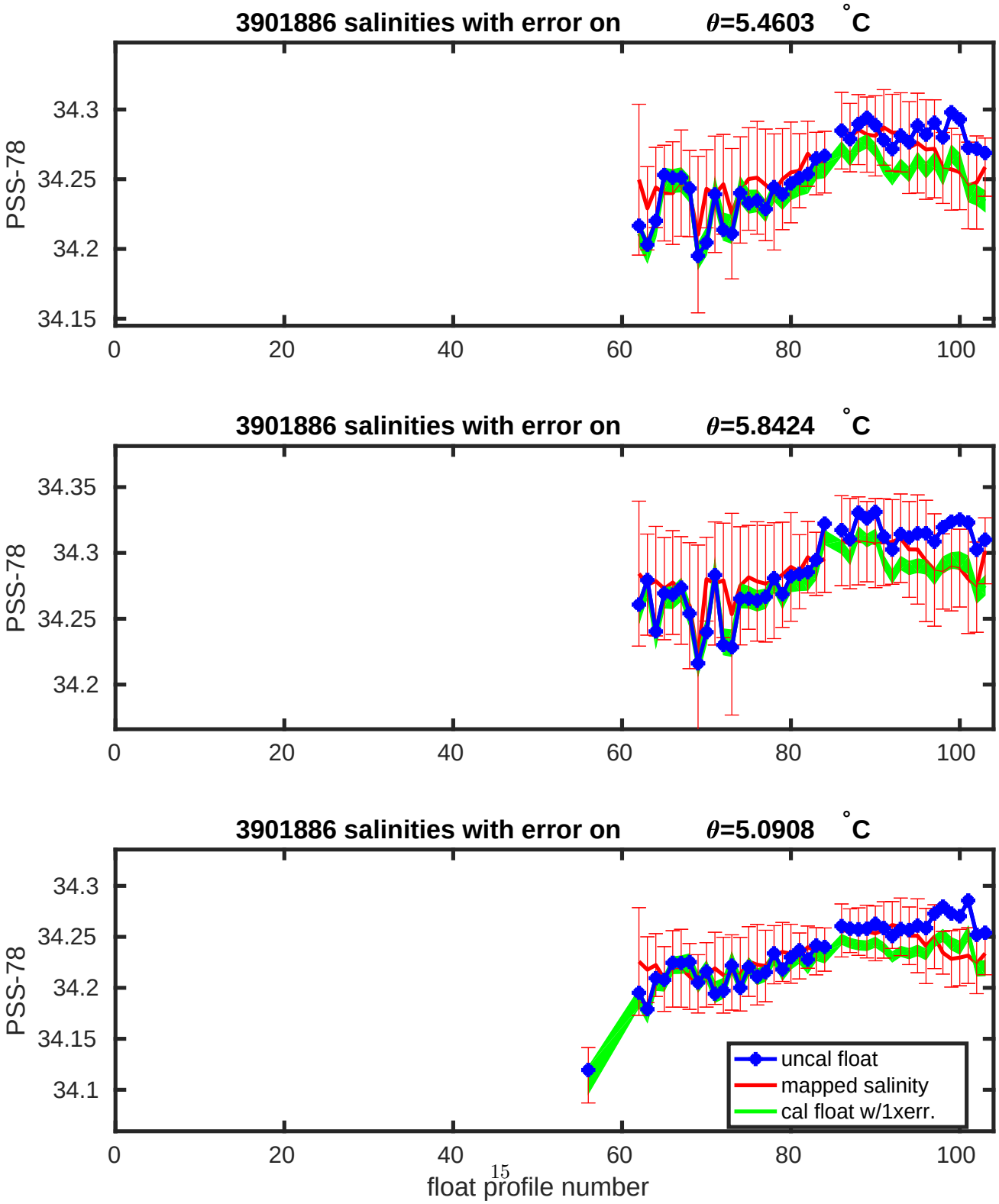

Figure 12: Float 3901886. Salinities with errors on θ levels.

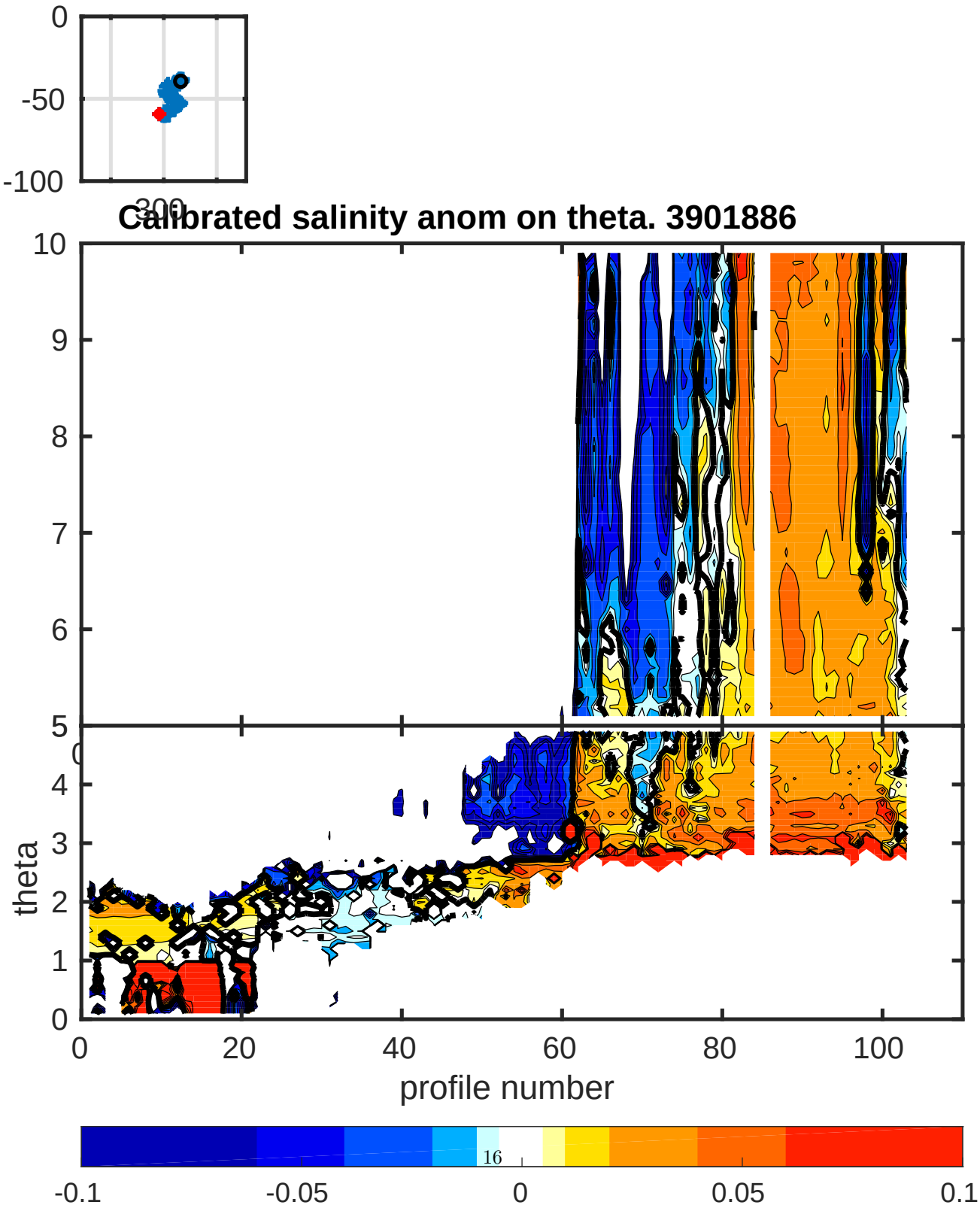

Figure 13: Float 3901886. Calibrated salinity anomaly on θ levels.

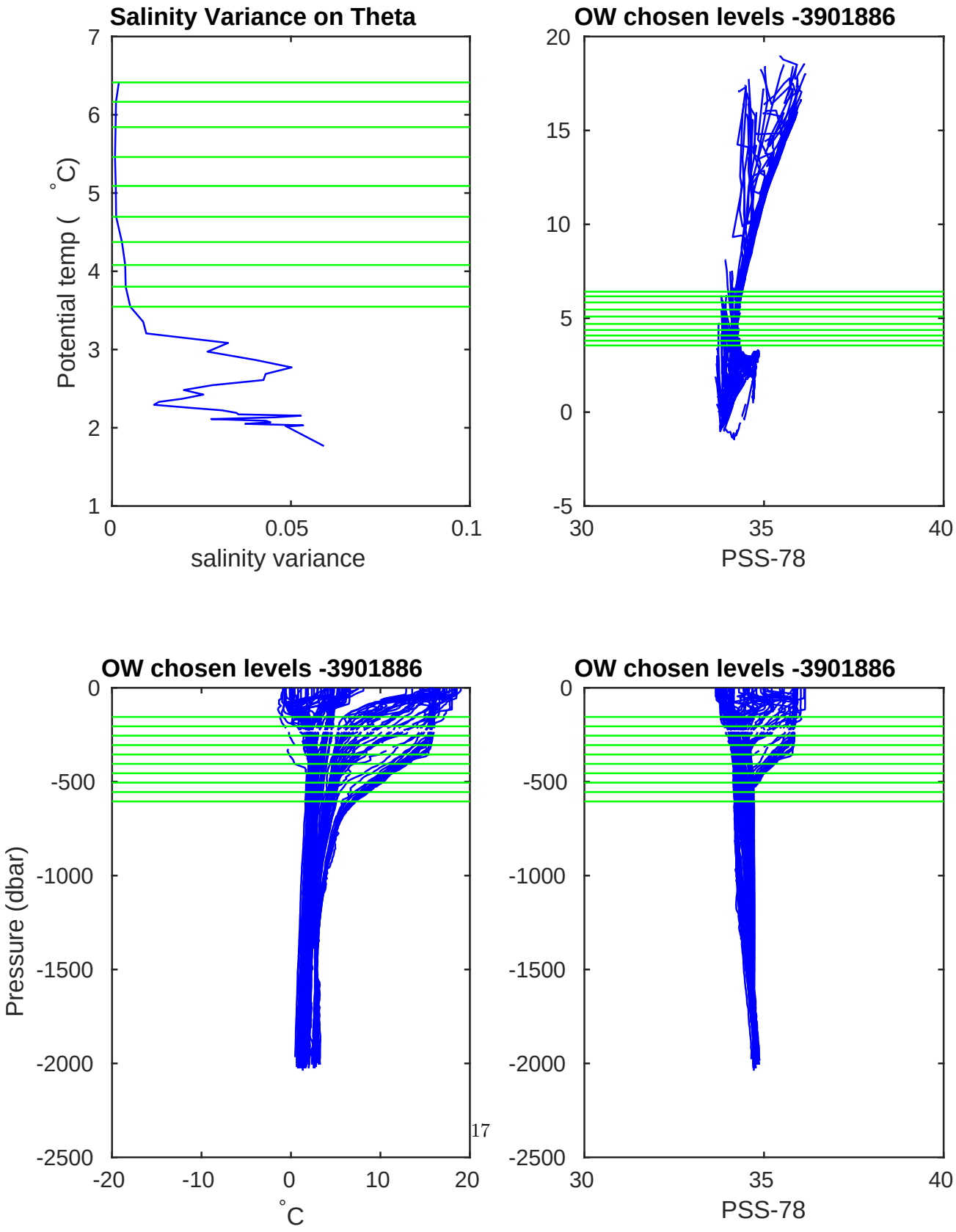

Figure 14: Float 3901886. Salinity, salinity variance on theta and OW chosen levels.

3.2 Comparison between Argo floats and Argo Climatlogy

3.2.1 Configuration

3.2.2 Results

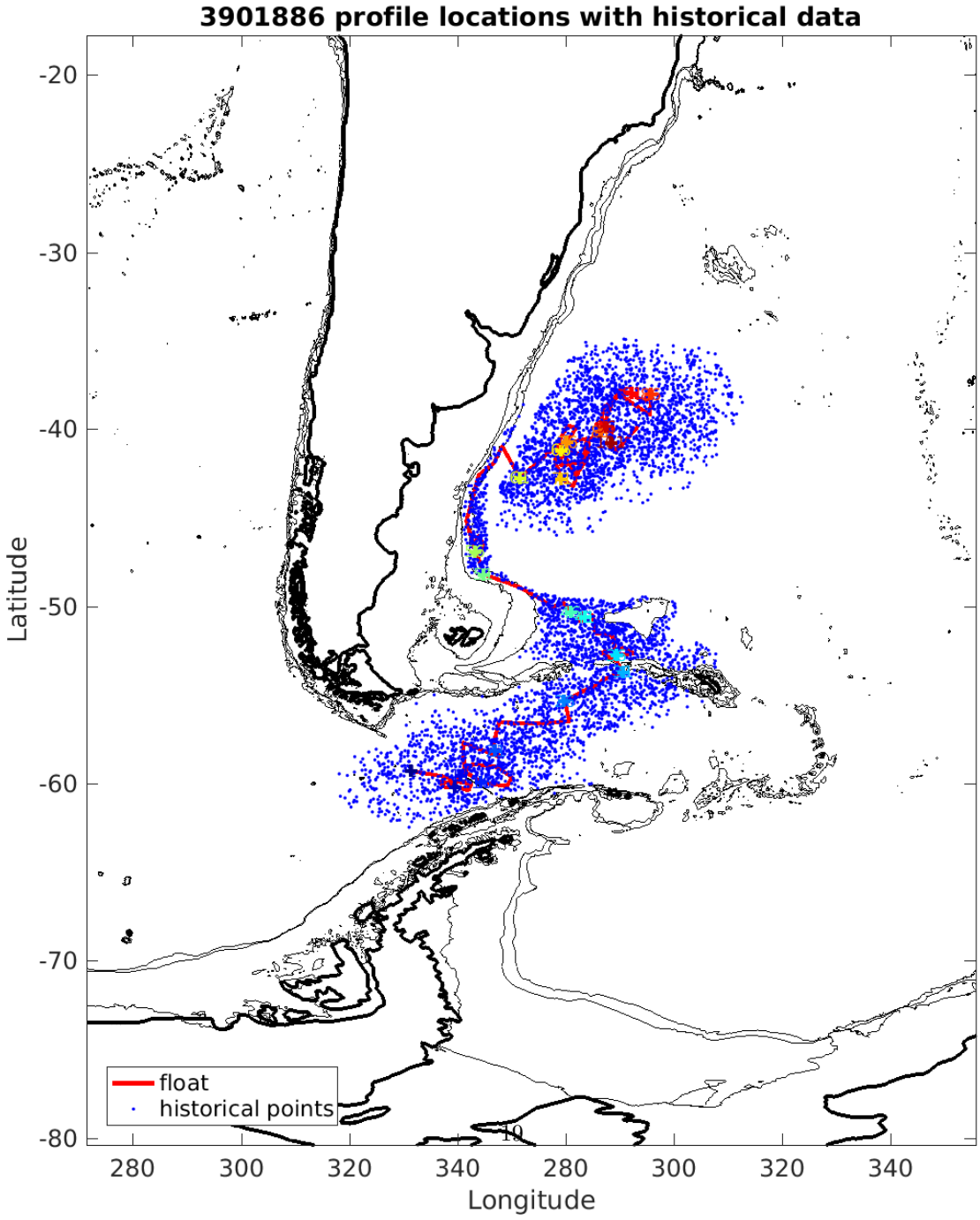

Figure 15: Float 3901886. Trajectory of the float with historical CTD data. The black contours indicate the bathymetry at 0, 200, 1000 and 2000 m.

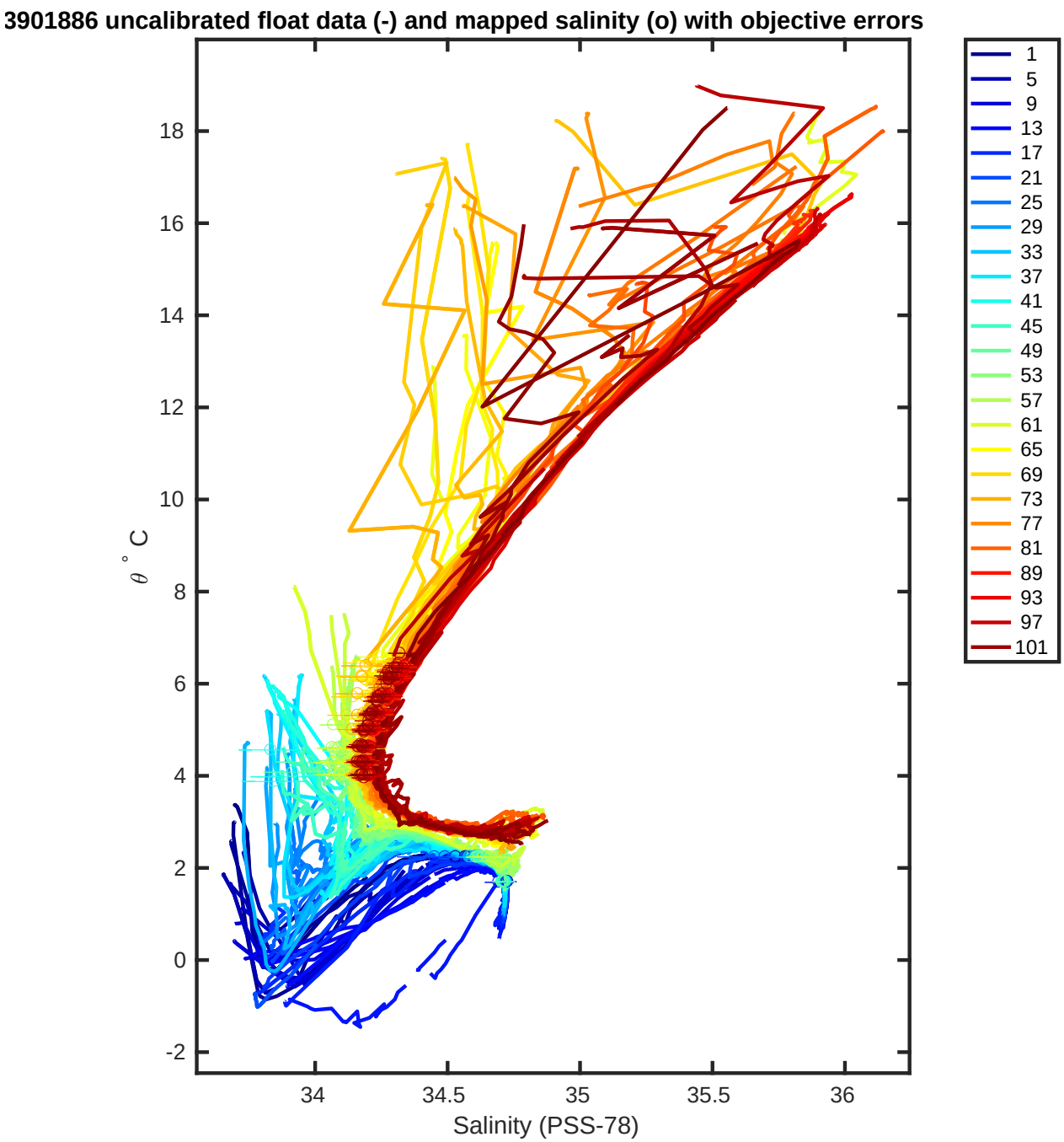

Figure 16: Float 3901886. Uncalibrated float data and mapped salinity.

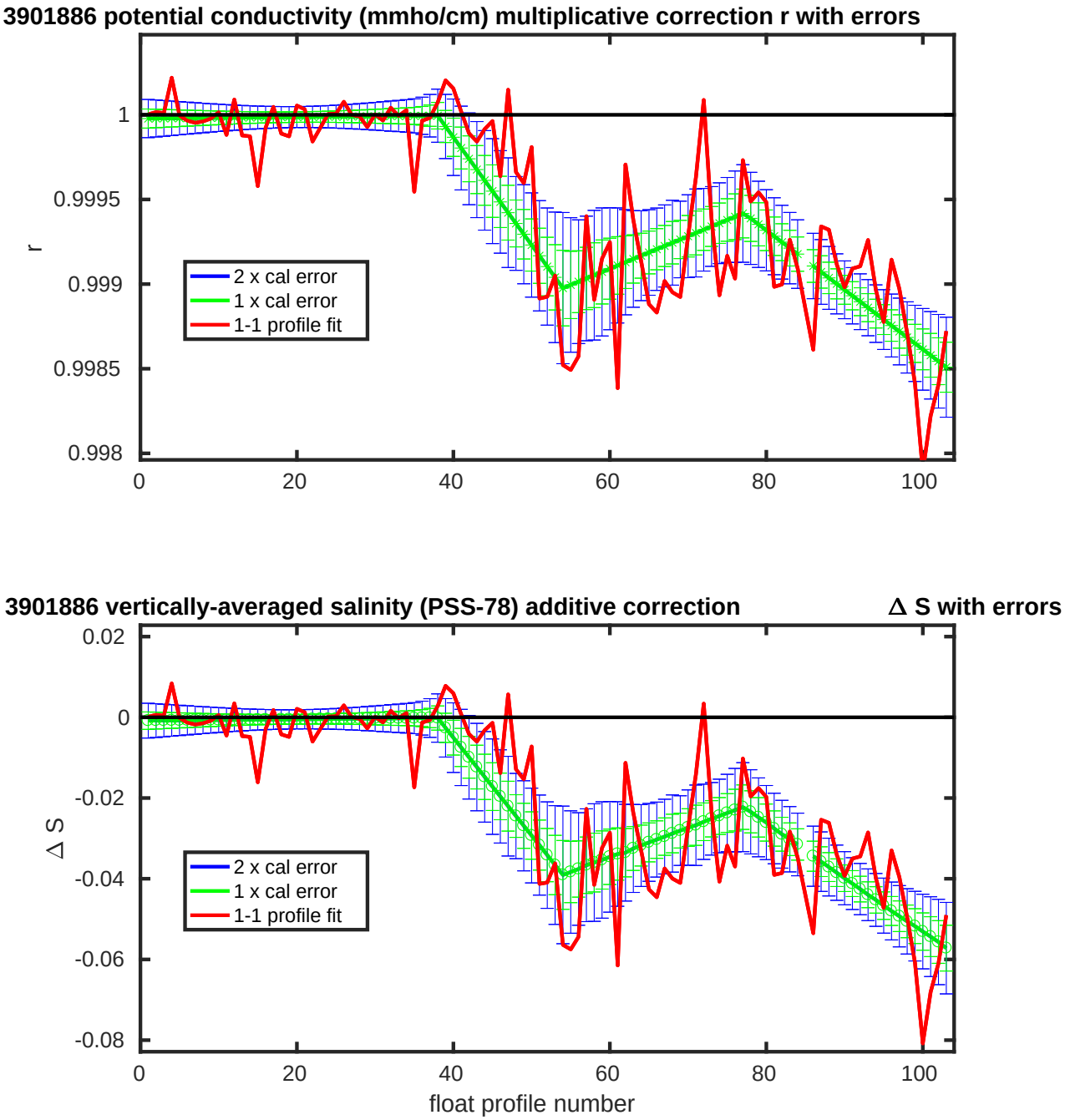

Figure 17: Float 3901886. Potential conductivity (top) and vertically averaged salinity (bottom) with errors.

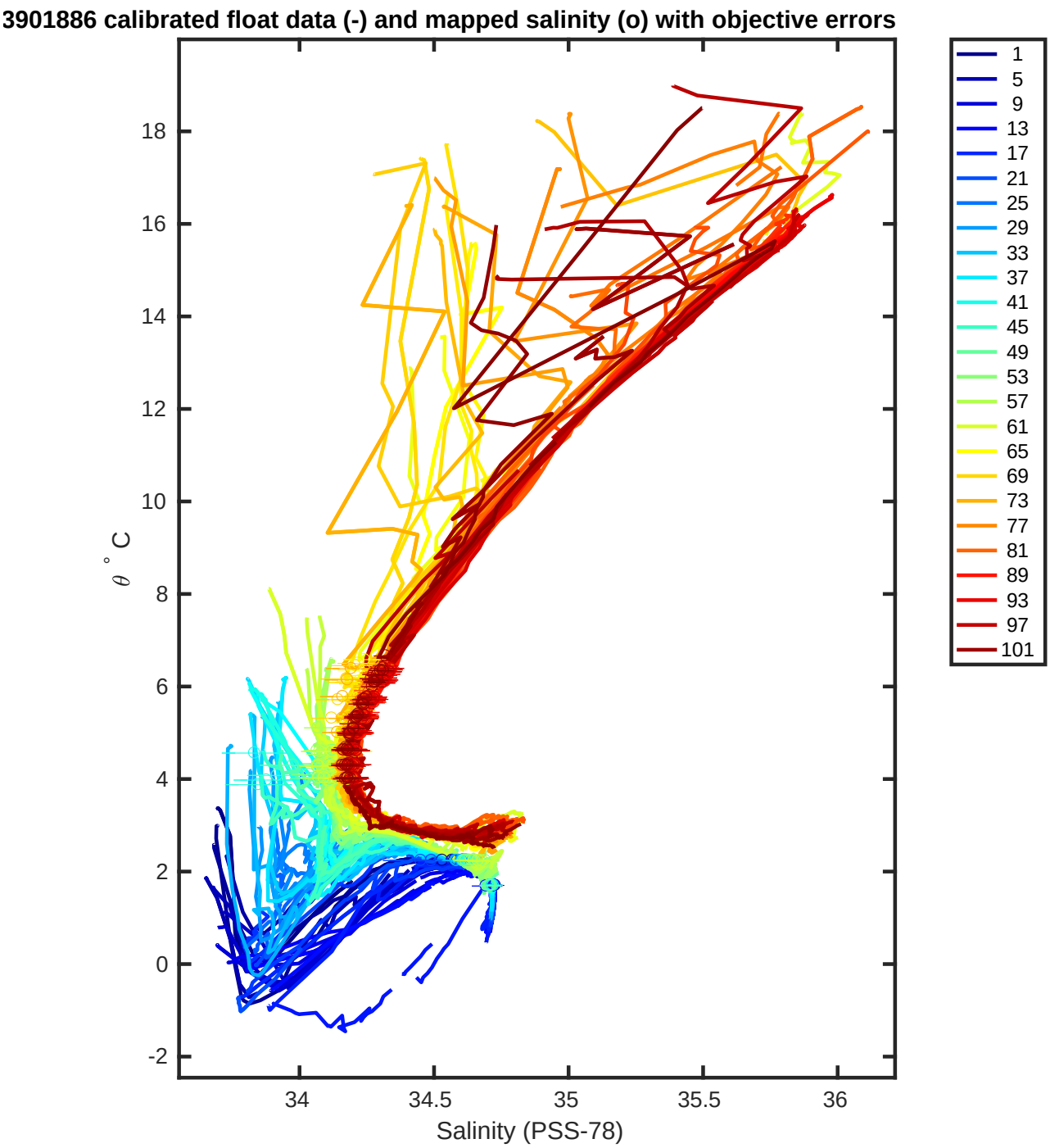

Figure 18: Float 3901886. Calibrated float data and mapped salinity.

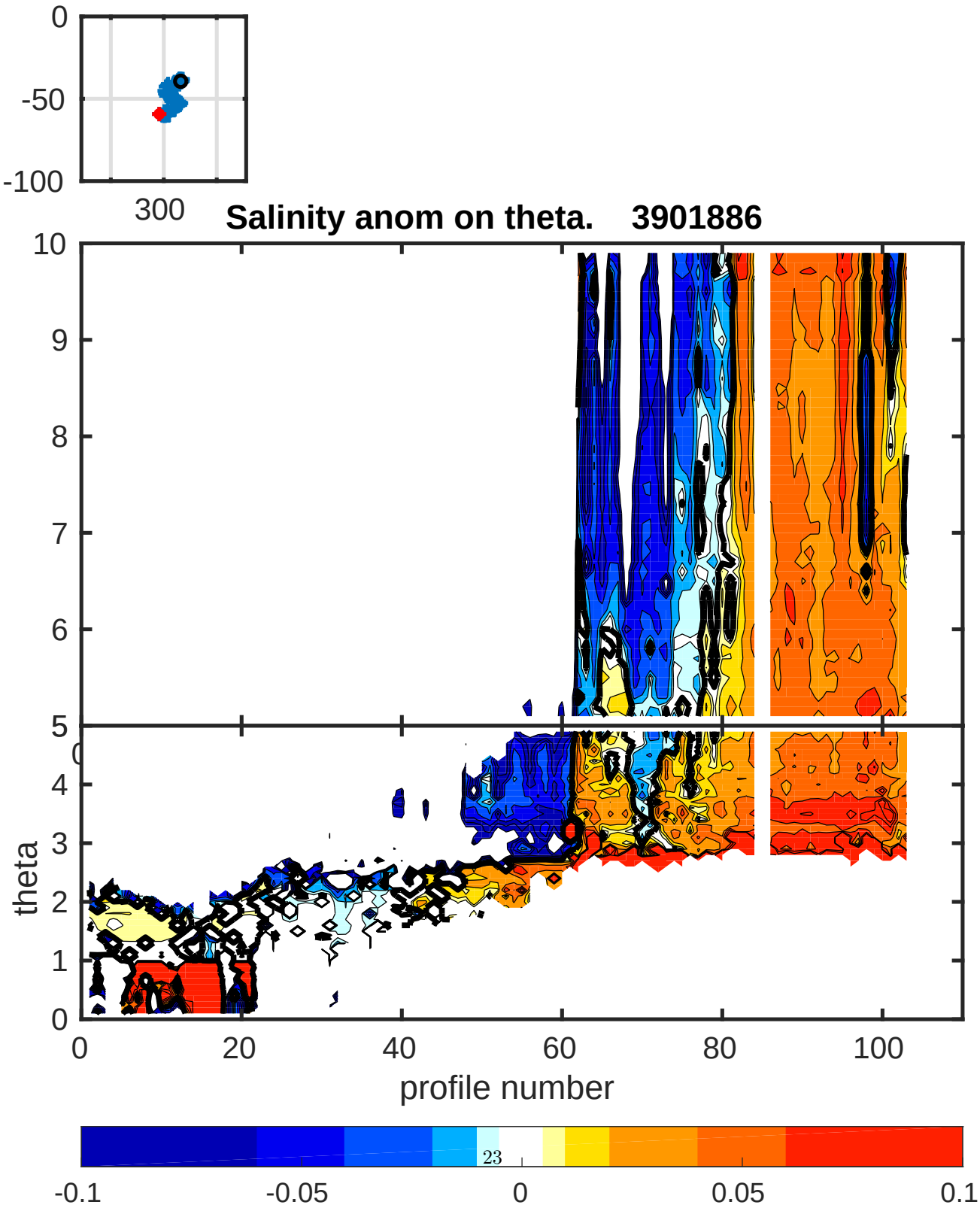

Figure 19: Float 3901886. Salinity anomaly on Theta

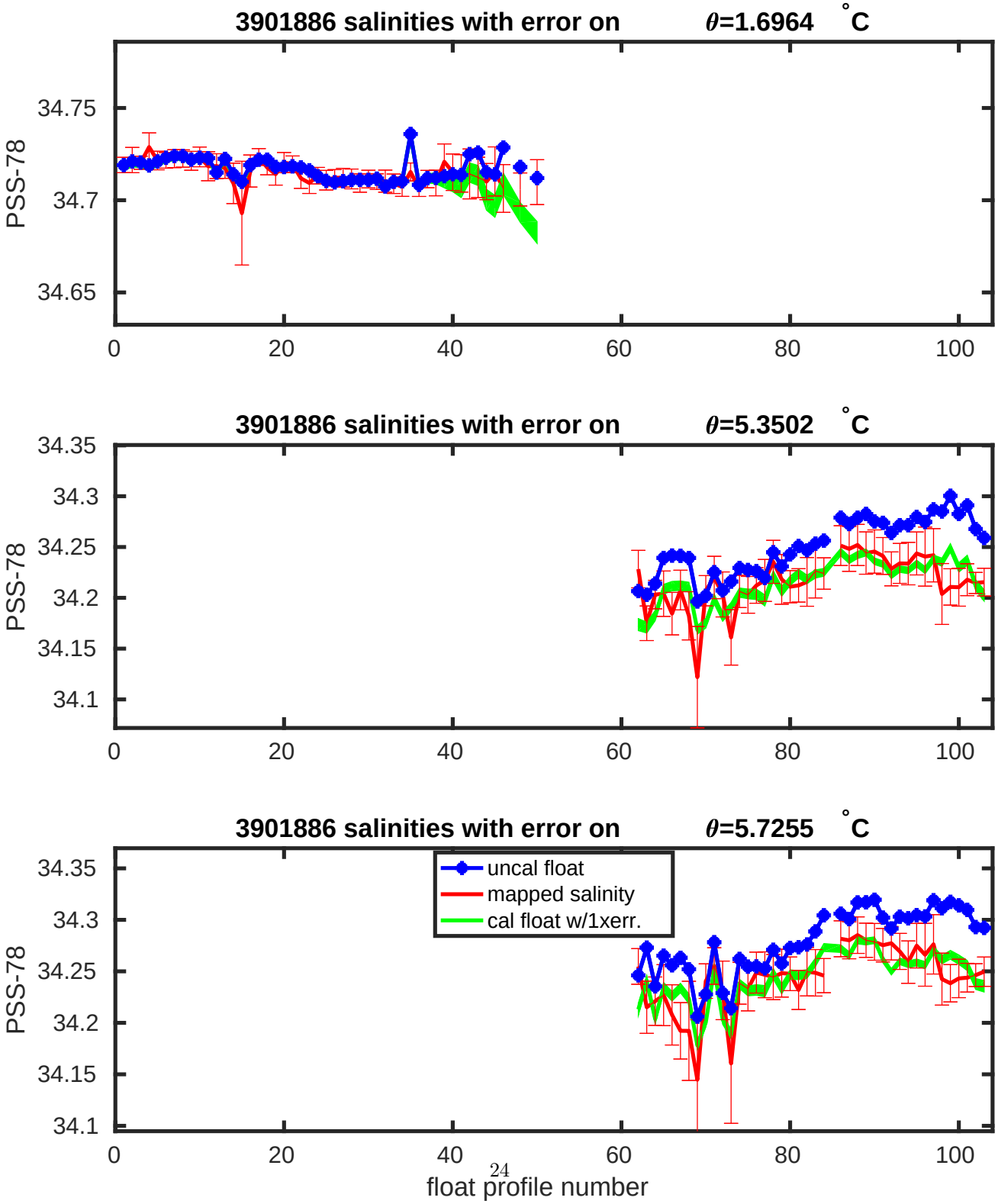

Figure 20: Float 3901886. Salinities with errors on θ.

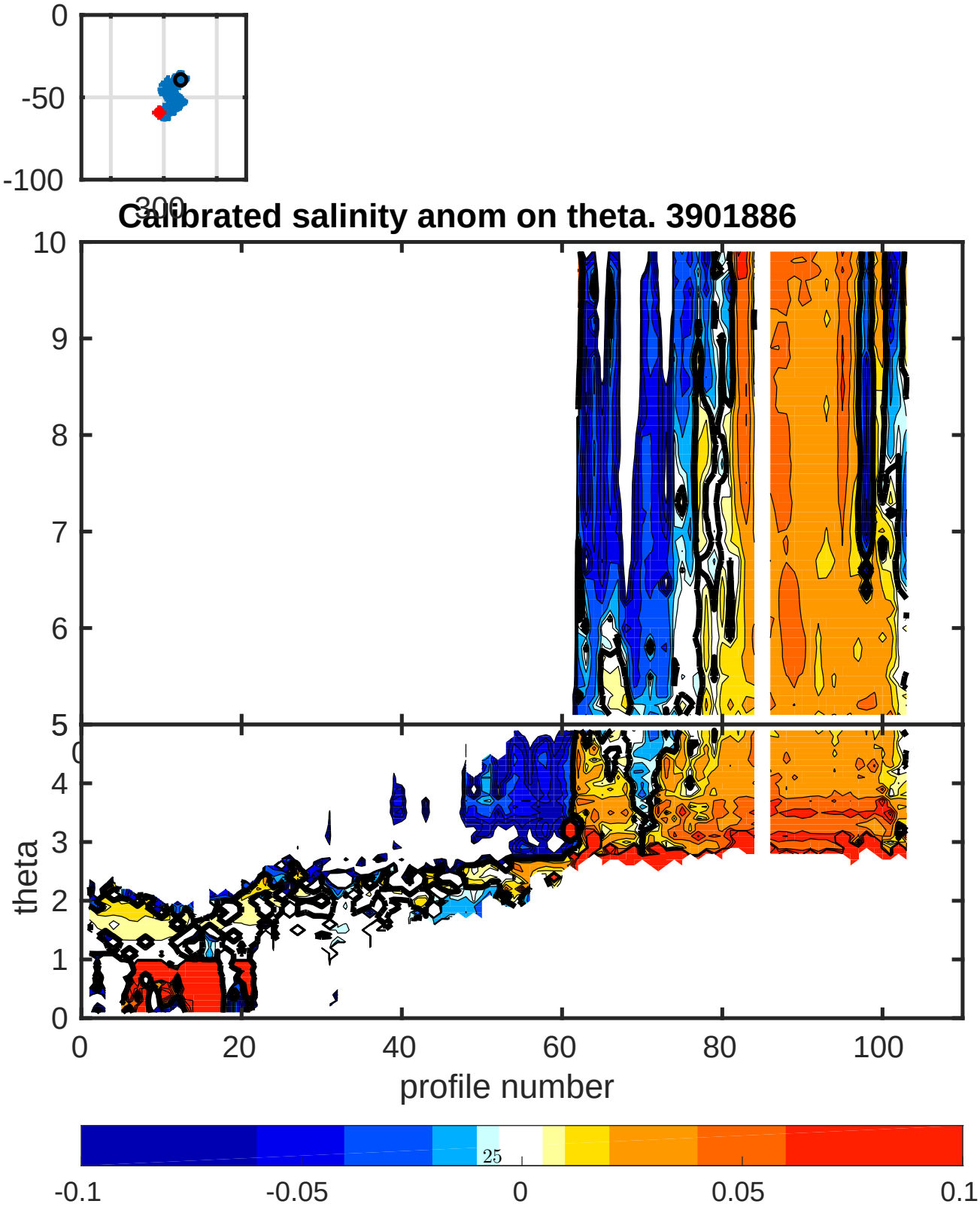

Figure 21: Float 3901886. Calibrated salinity anomaly on θ.

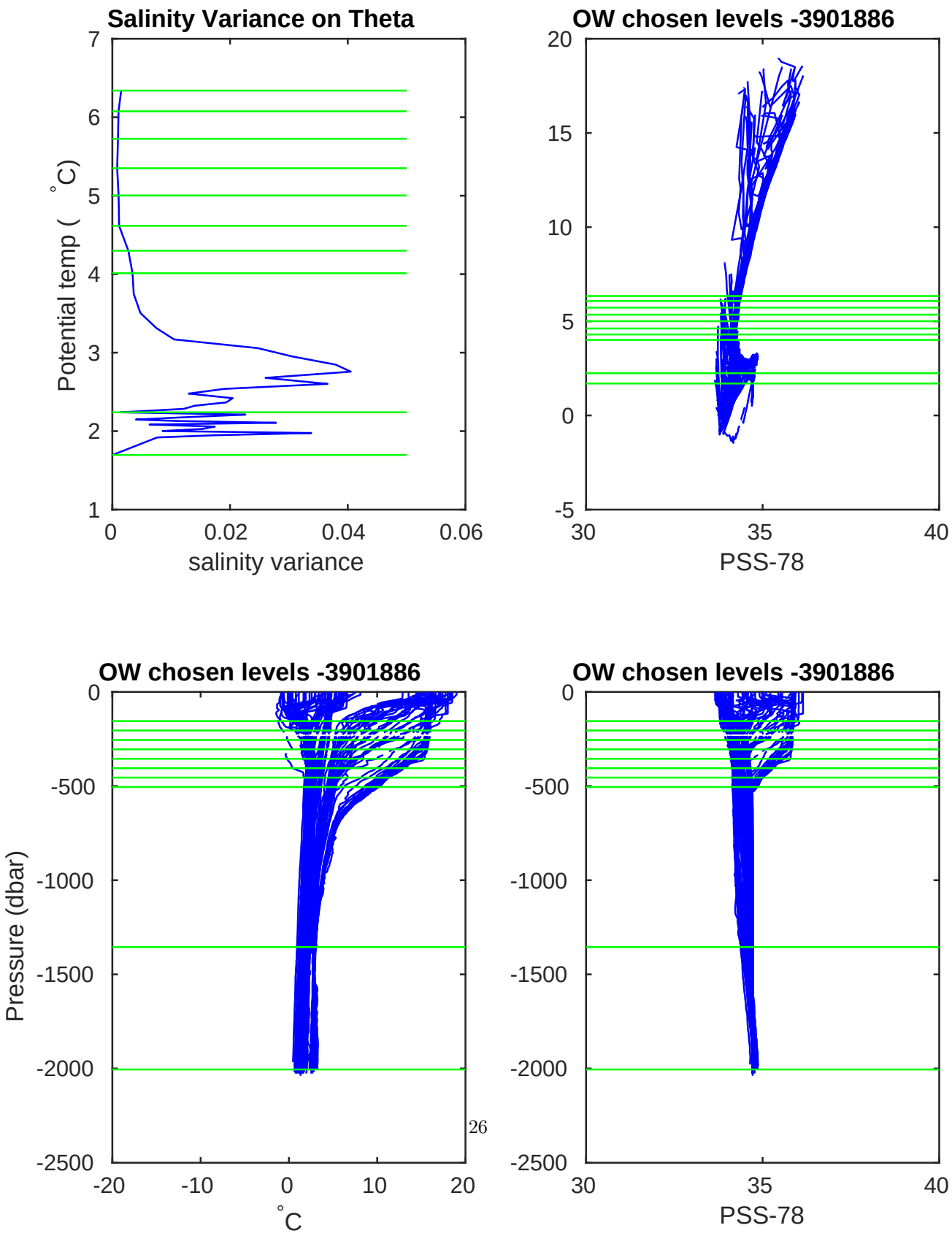

Figure 22: Float 3901886. Salinity, salinity variance on theta and OW chosen levels.

3.3 Summary and Conclusions

Float is characterised by two different regimes. From profiles 1 to 50 float is int the Drake Passage region. These data are behaving well compare with the climatology. From profiles 51 to 104 float is strongly moved northward and its properties has strongly changed. There is a large differences of OWC results between the CTD and Argo reference data. The d CTD data are relatively well distributed and shows a high variability with a large error due to a lack of data between profiles 50 and 80 (along the coast). The output from the Argo reference data also was very variable for profiles from 50 to 80, however, here it showed a large differences of around 0.05. Further, when both Argo and CTD reference data showed more data (from cycle 60), the comparison with Argo float showed a strong drift from cycle 80. The assessed error of salinity for cycles 1-79 is 0.02; For profiles from 79 to 103, there was detected drift and the OWC correction was applied. The QC for these data is 1 with error 0.02.

4 Final Checks

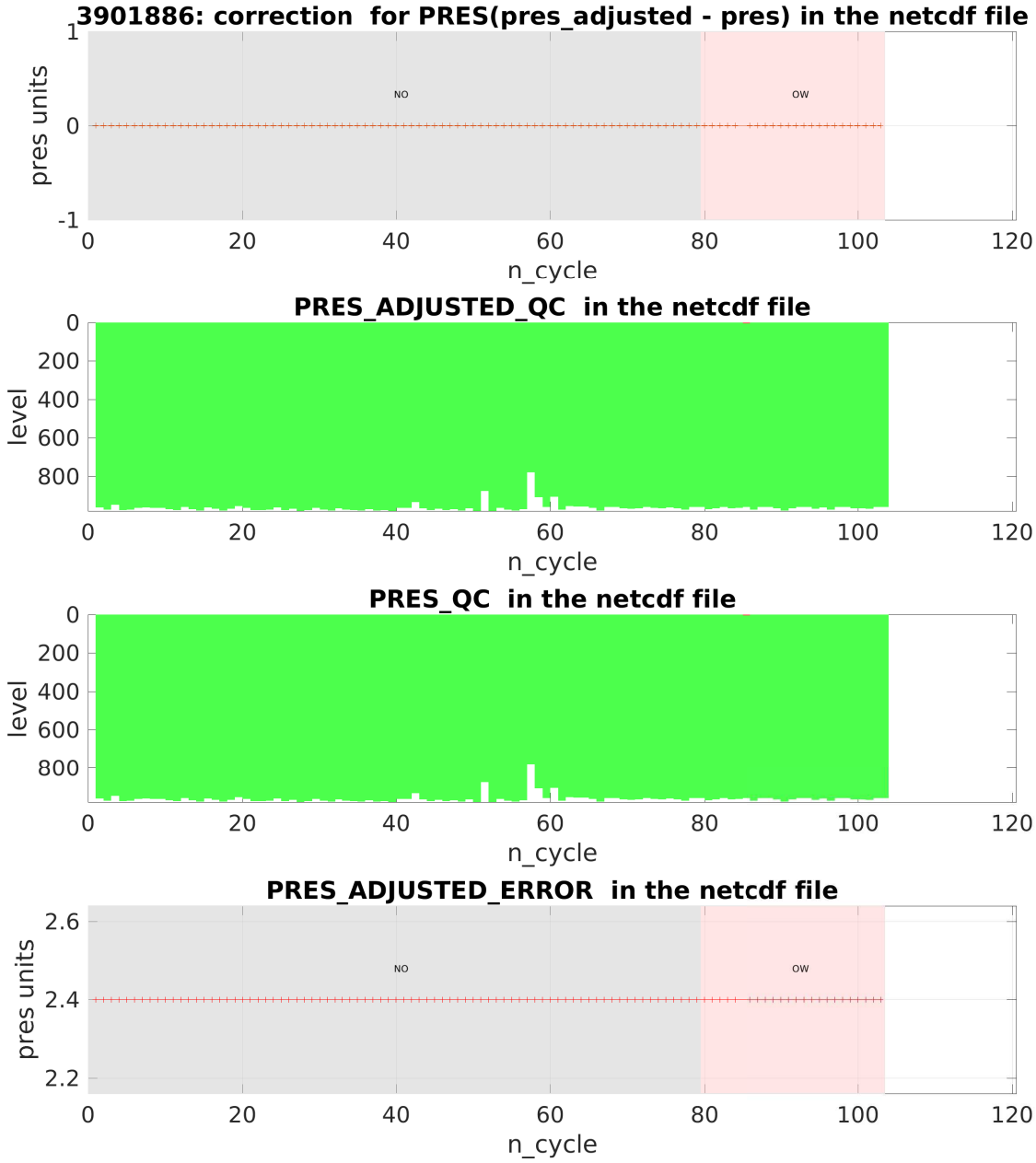

Figure 23: Float 3901886. Time series of applied pressure corrections.

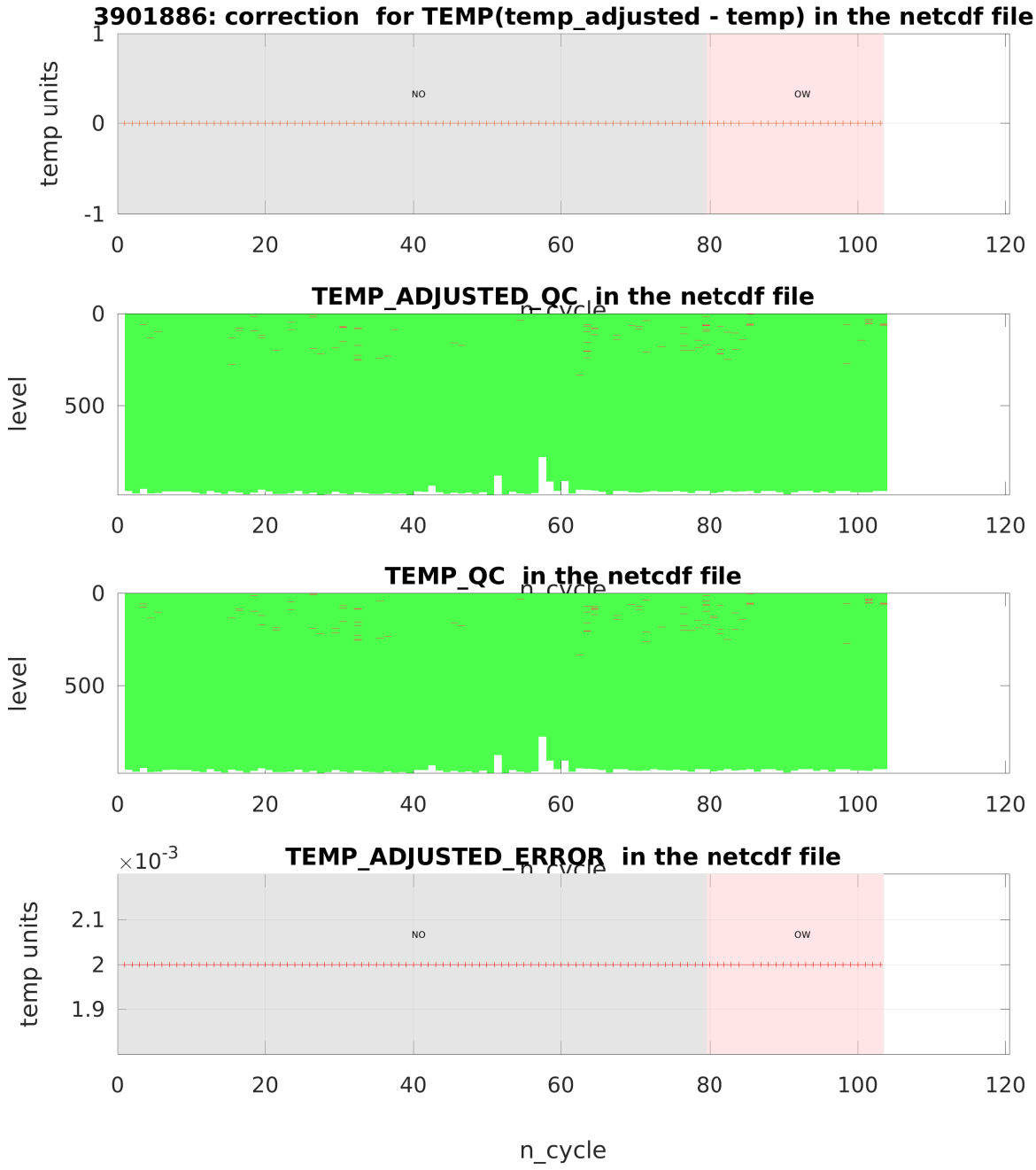

Figure 24: Float 3901886. Time series of applied temperature corrections.

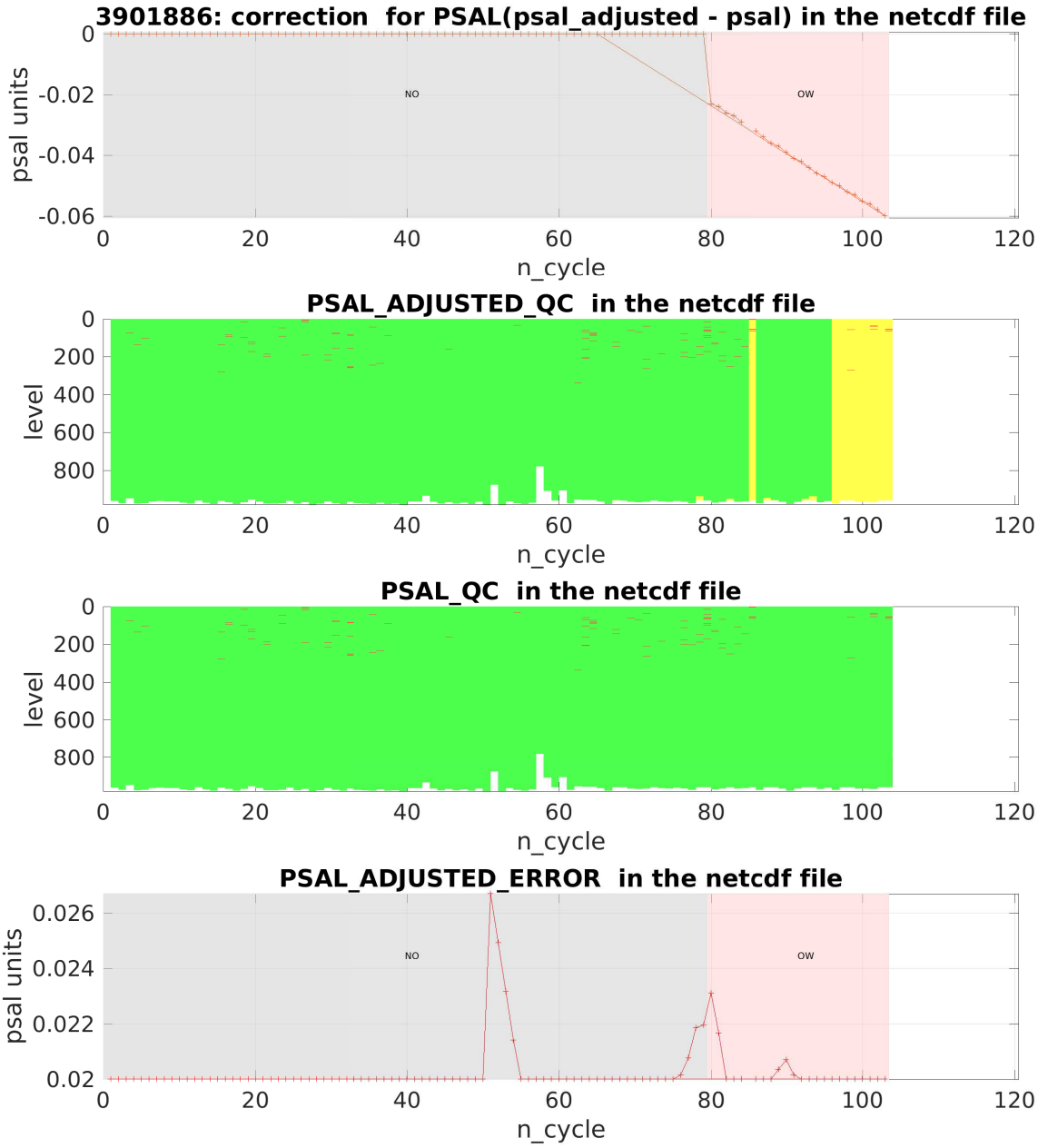

Figure 25: Float 3901886. Time series of applied salinity corrections.