Report prepared by Vincent Taillandier
(taillandier@obs-vlfr.fr)

TONGA
Bottle files from CTD and TMR: CORRECTIONS APPLIED FOR SALINITY,
TEMPERATURE and OXYGEN

(fluorescence data are still RAW data: calibration will be done when HPLC
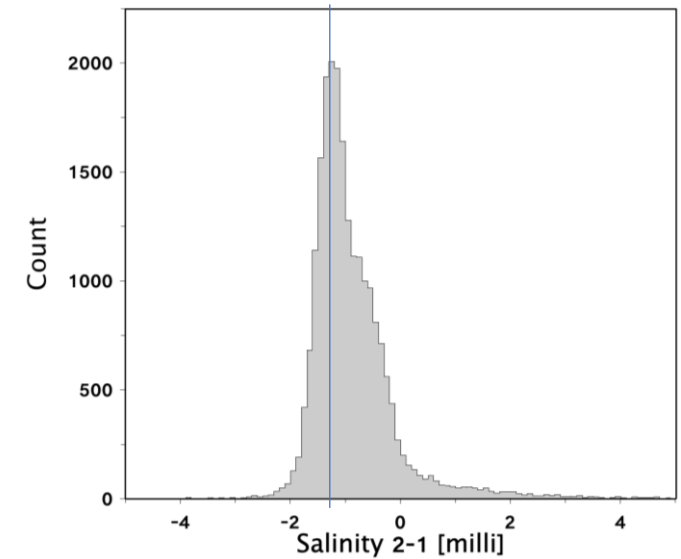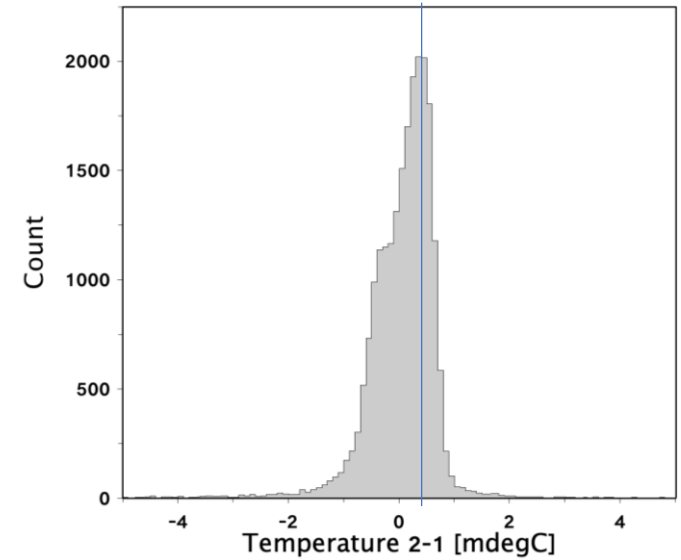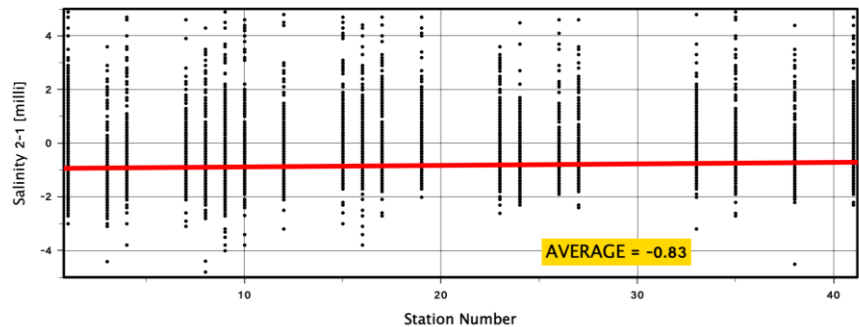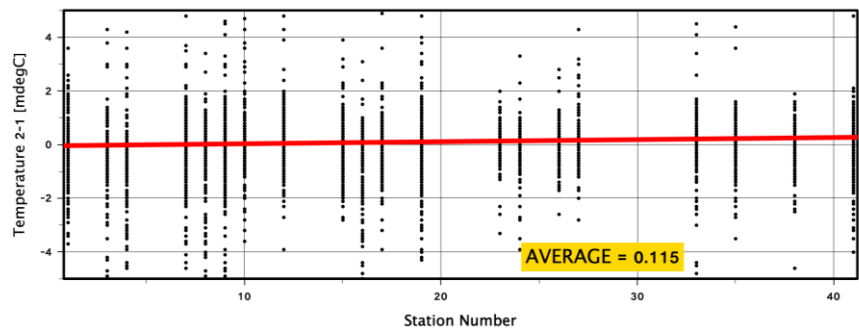data will be available)

CTD system TEMPERATURE SALINITY

Slight offsets but no drift

No bad profiles

Post-processing with T1 and S1

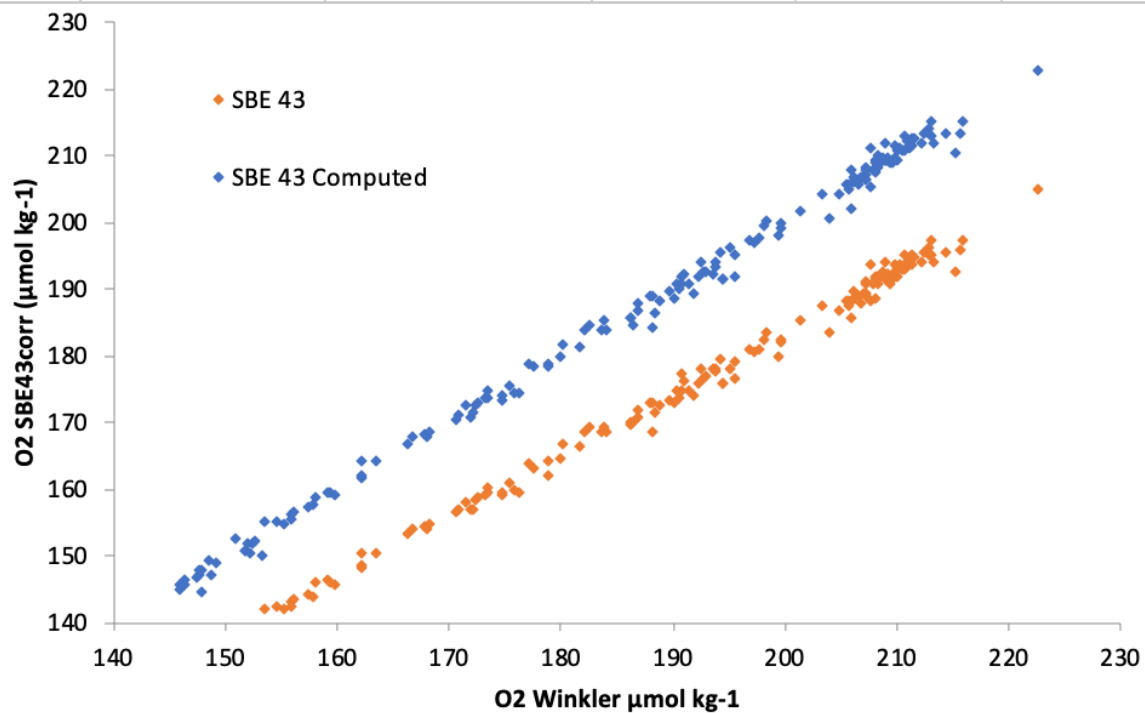When post-cruise calibration available: final check

CTD system OXYGEN

One sensor

Calibration followed by Winkler analysis

Shift of about -10 uM, no drift

Correction applied on post-processing following Dominique's new coefficients

|	New	Original
Soc	**5.8384E-01**	5.3485E-01
Offset	**-5.0603E-01**	-5.0370E-01
A	-4.3659E-03	-4.3659E-03
B	2.2225E-04	2.2225E-04
C	-3.2343E-06	-3.2343E-06
D0_TONGA	2.5826E+00	2.5826E+00
D1_TONGA	1.9263E-04	1.9263E-04
D2_TONGA	-4.6480E-02	-4.6480E-02
E_TONGA	**3.5632E-02**	3.6000E-02
Tau20_TONGA	2.2600E+00	2.2600E+00
H1_TONGA	-3.3000E-02	-3.3000E-02
H2_TONGA	5.0000E+03	5.0000E+03
H3_TONGA	1.4500E+03	1.4500E+03

TWO system TEMPERATURE SALINITY

Slight offsets and no drift for T

Changing offsets for S: between -0.003 and 0.003

No bad profiles
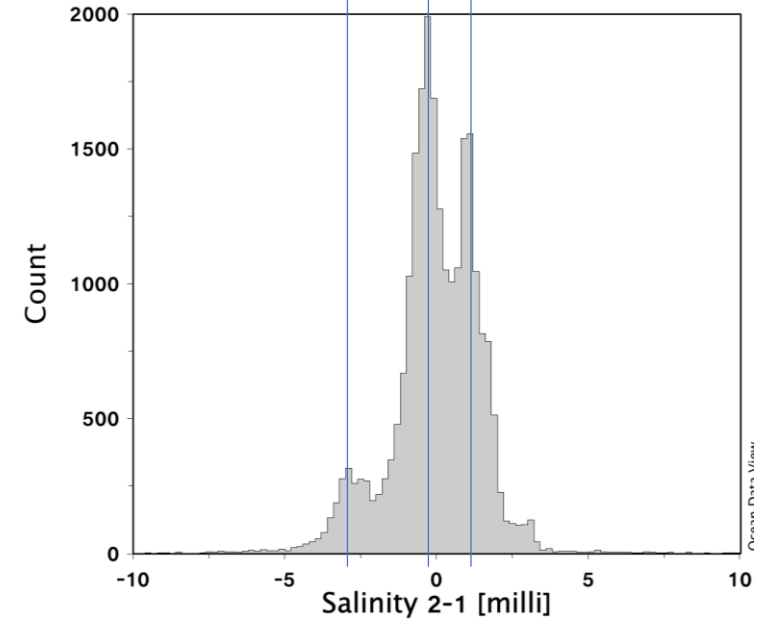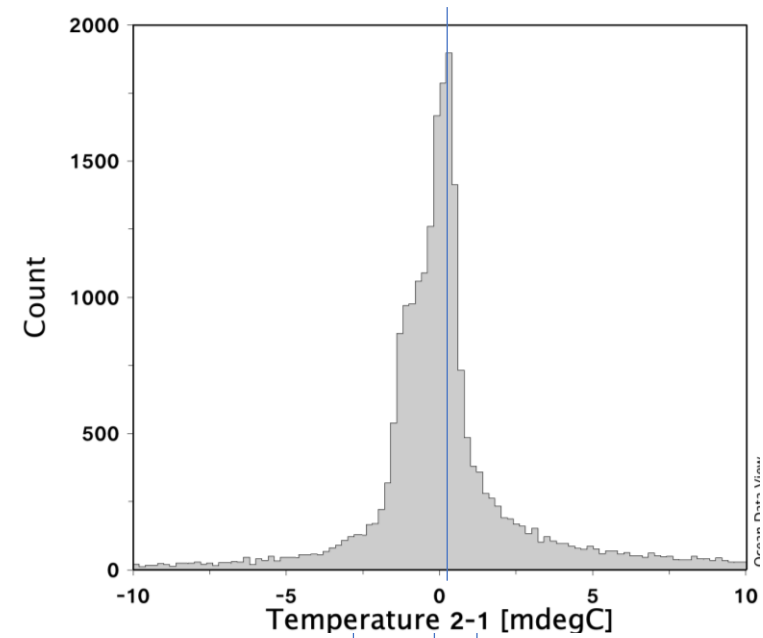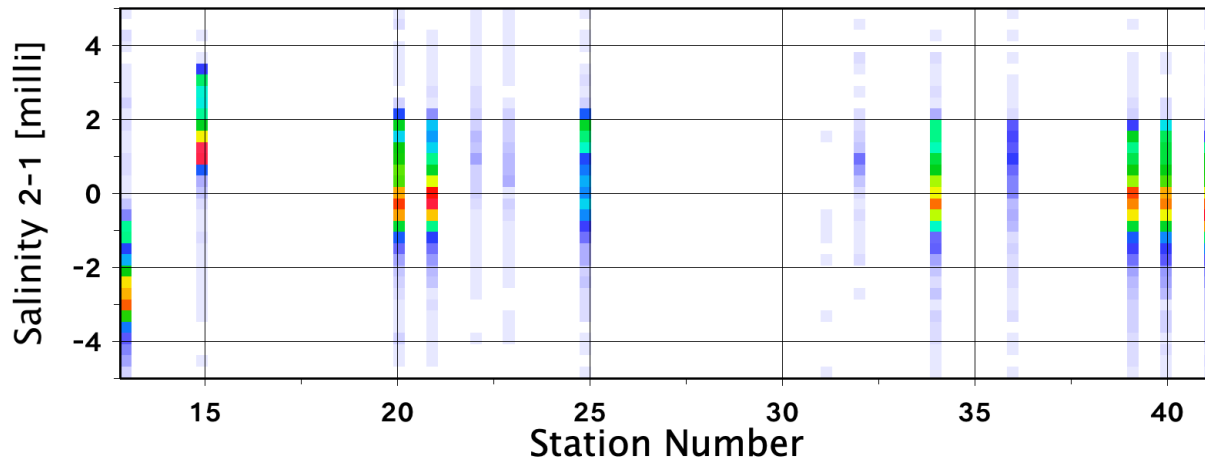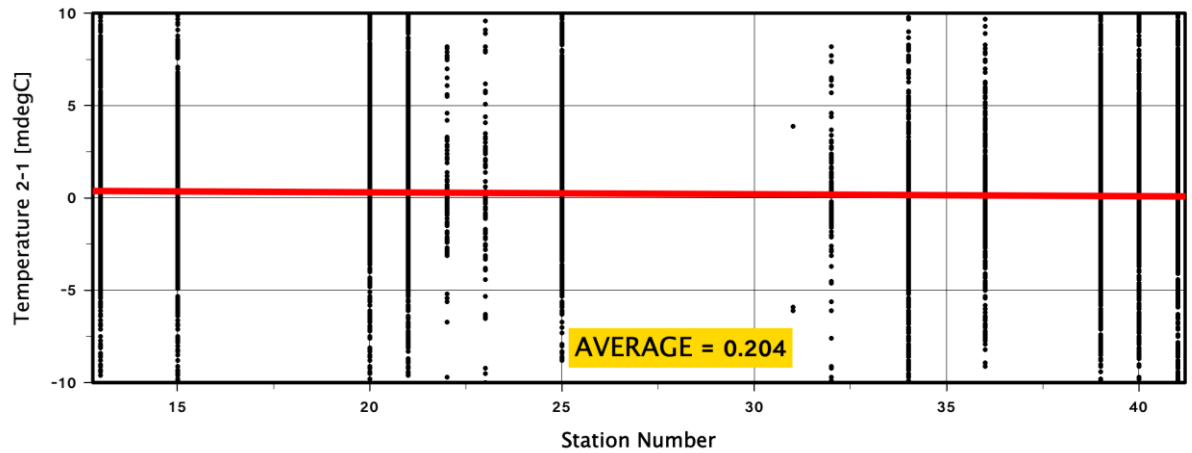
TWO system TEMPERATURE SALINITY
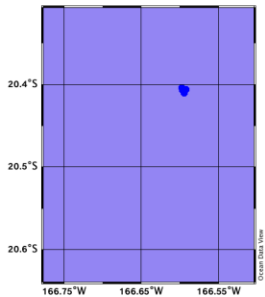
Harmonisation with CTD at easternmost station

T1, T2: no offset with CTD

S1: offset with CTD of 0.005

S2: offset with CTD of +0.007
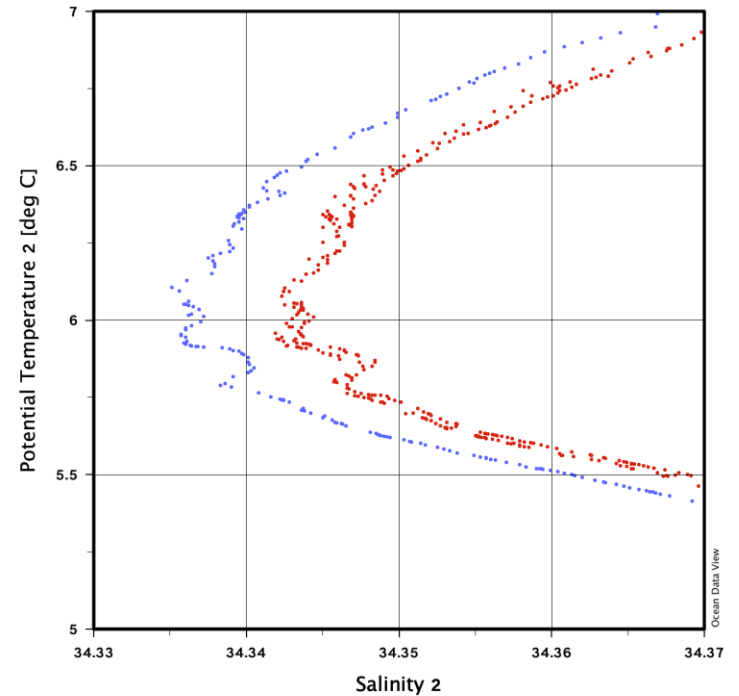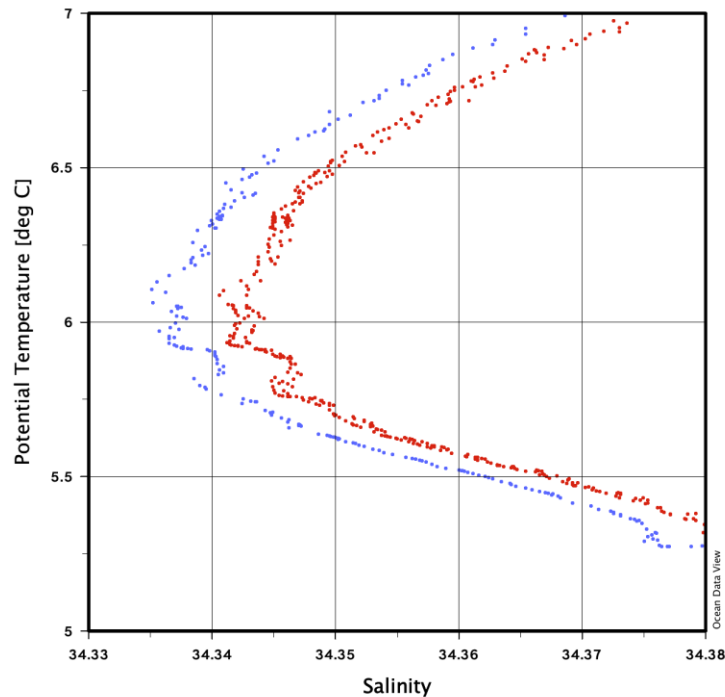
Post-processing with T1 and (S1 – 0.005)

When post-cruise calibration available: final check

RED = TWO
SALINITY MINIMUM
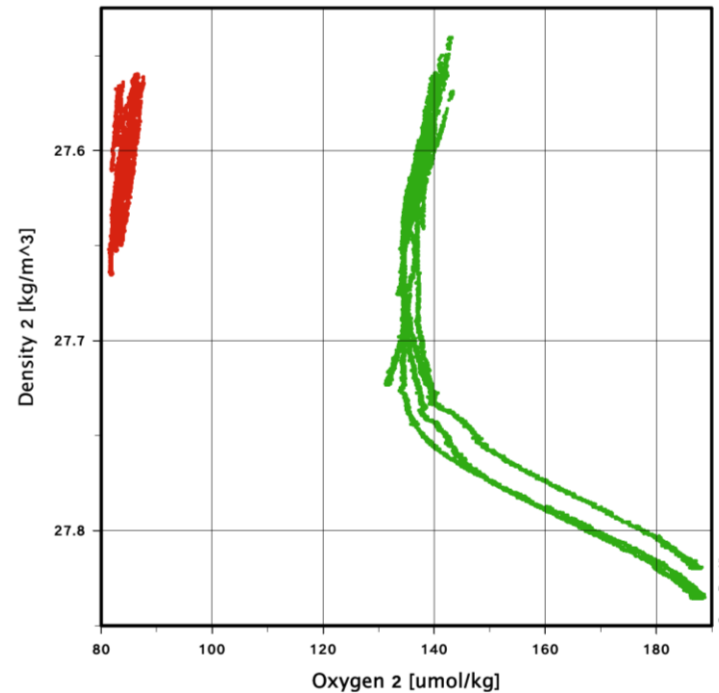BLUE = CTD

TWO system OXYGEN
Bad Oxygen 2
Approx offset with Winkler CTD:
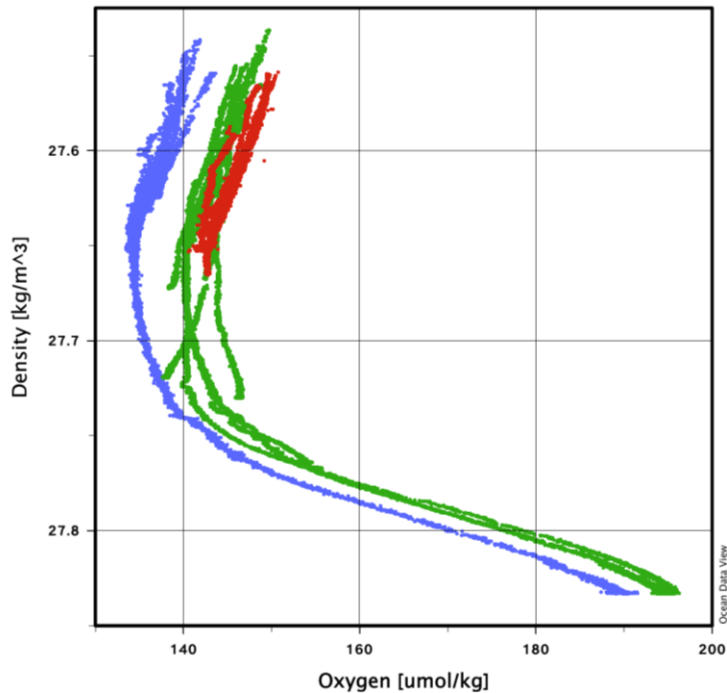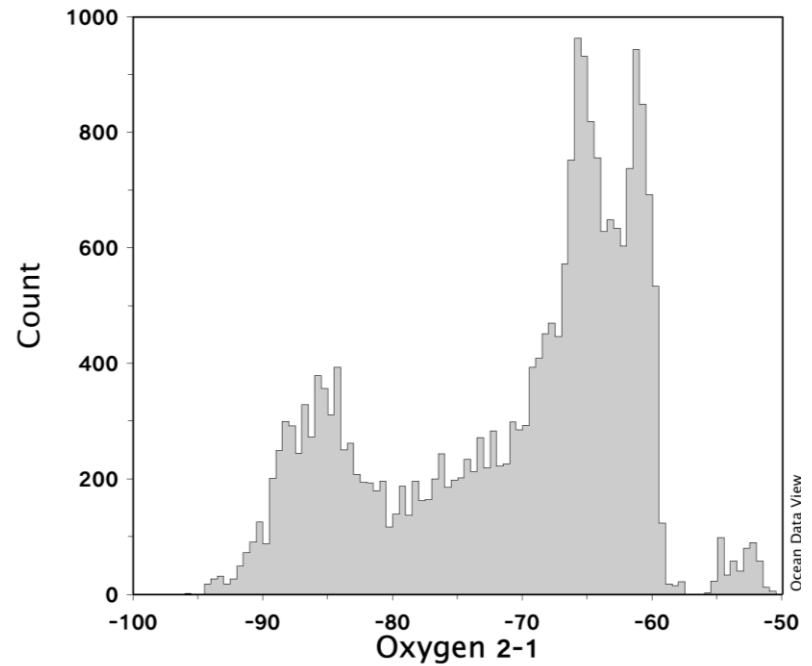(TWO_O1 - CTD_Oxy) + (CTD_Oxy – CTD_Winkler)
= 10 uM - 10 uM = 0 uM
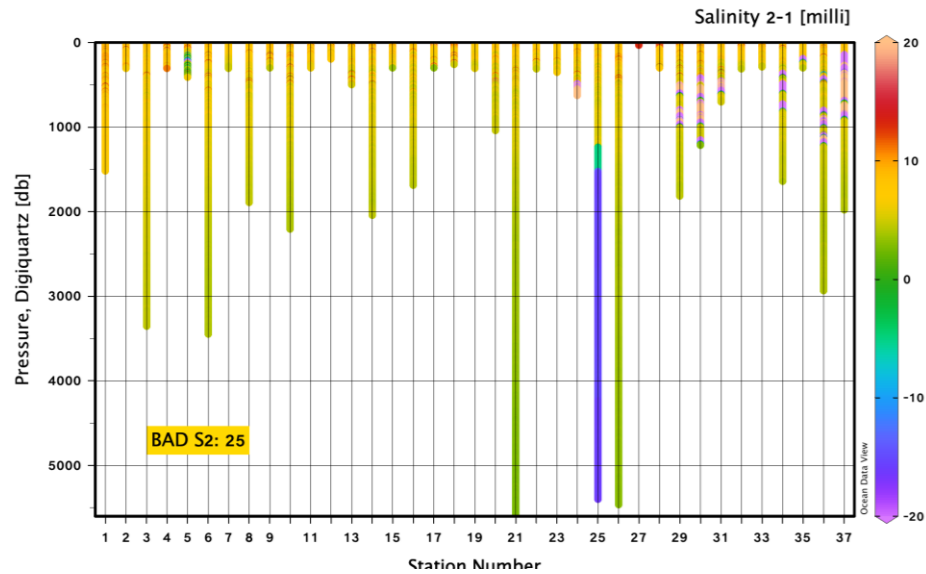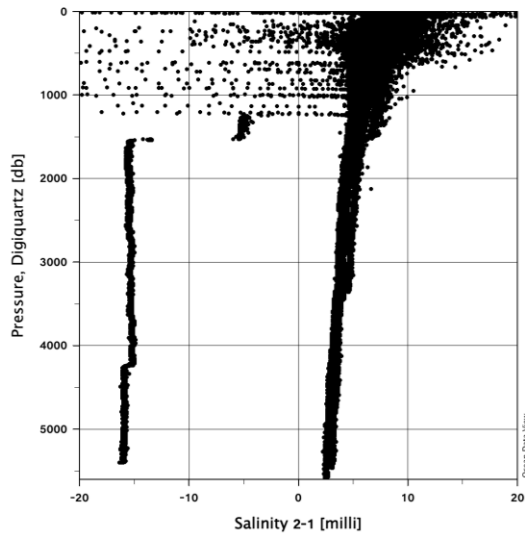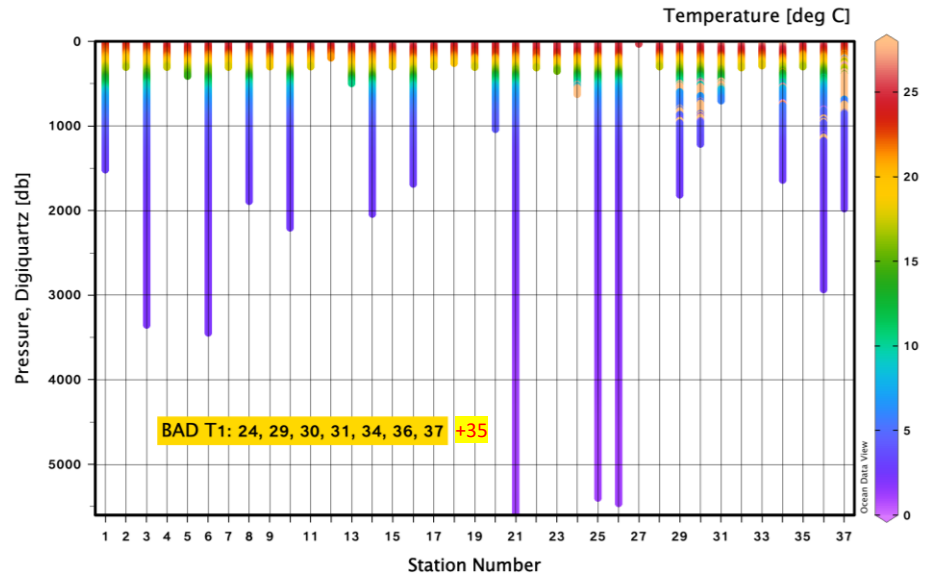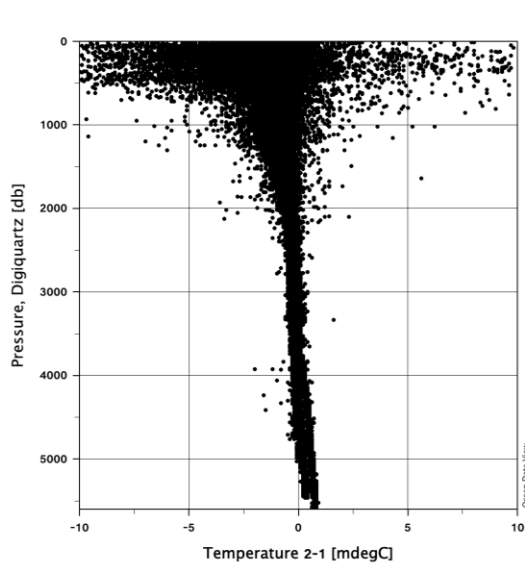No bad profiles
Post-processing with OXY1

PRESSURE > 1500 DBAR
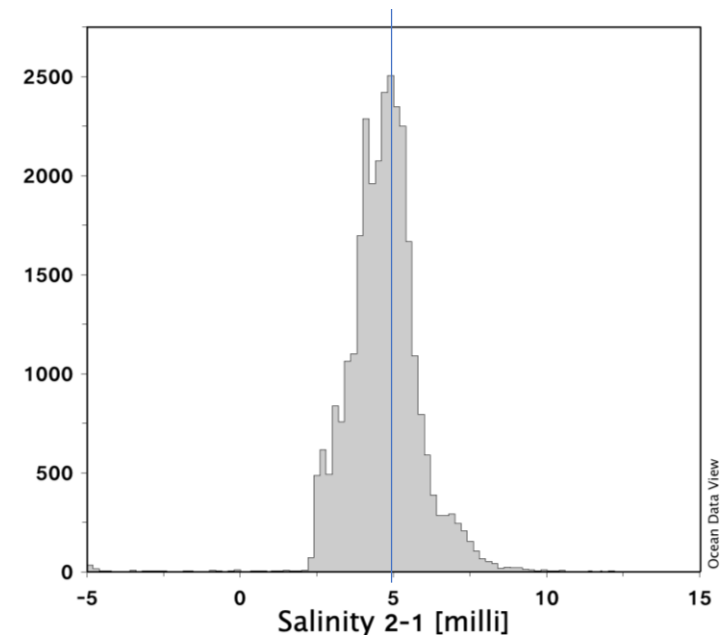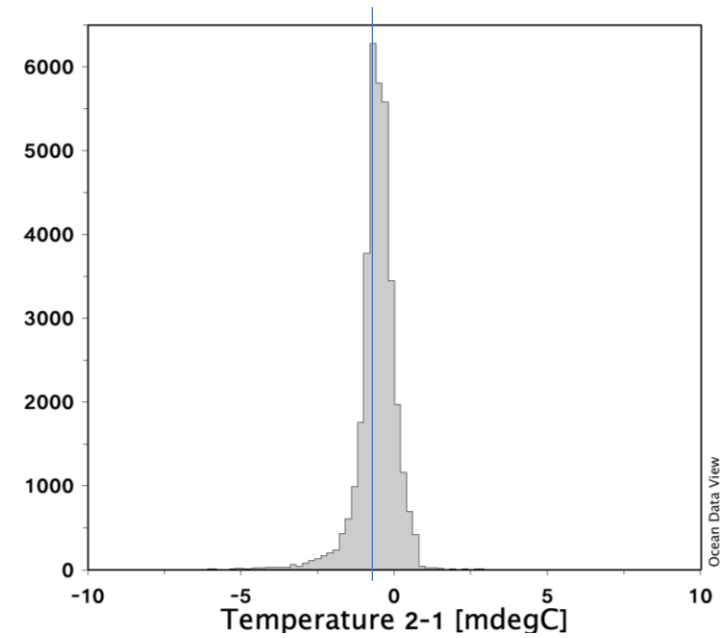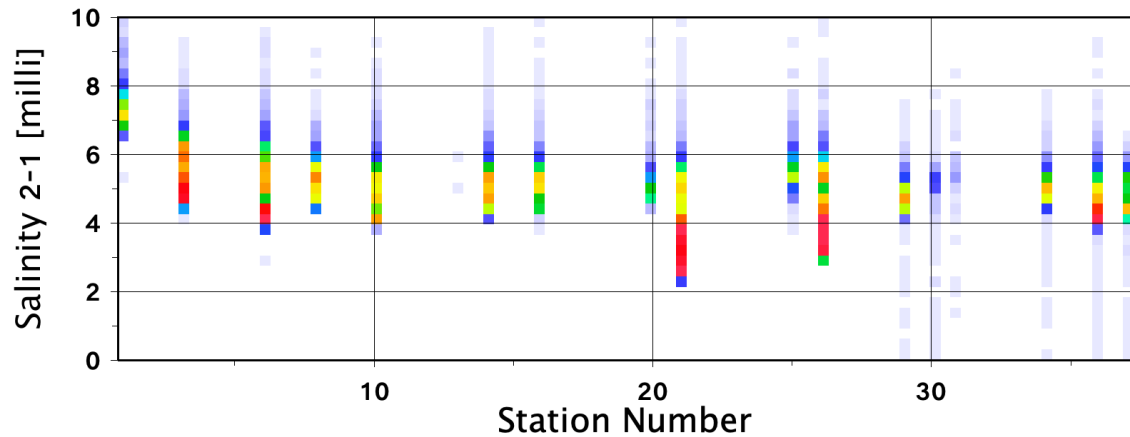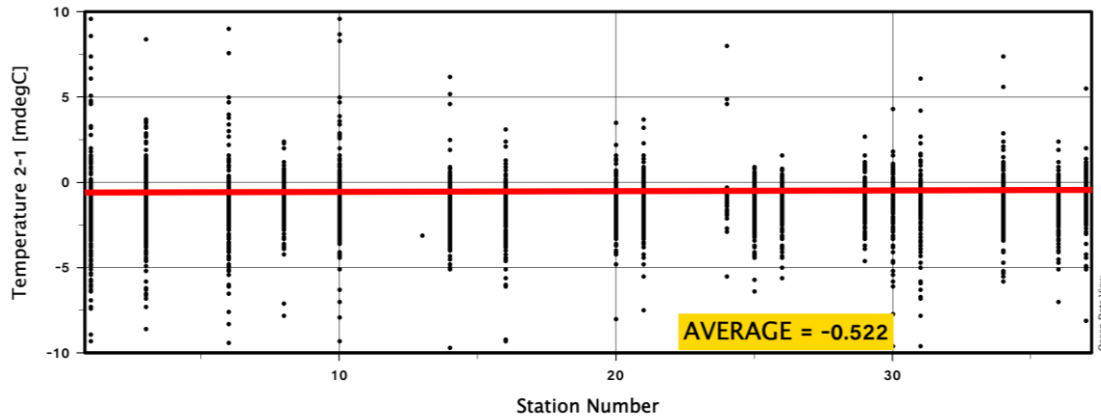
BLUE = CTD

GREEN = TMC

RED = TWO

TMC system TEMPERATURE SALINITY
Bad profiles for T1 and S2

BAD T1: 24, 29, 30, 31, 34, 36, 37 +35

BAD S2: 25

TMC system TEMPERATURE SALINITY
Slight offset and no drift for T
Average offset of 0.005 and slight drift for S

TMC system TEMPERATURE SALINITY

Harmonisation with CTD at deep stations (> 3500 dbar)
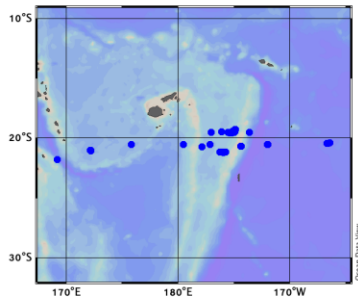
T1, T2: no offset with CTD

S1: no offset with CTD

S2: offsets with CTD
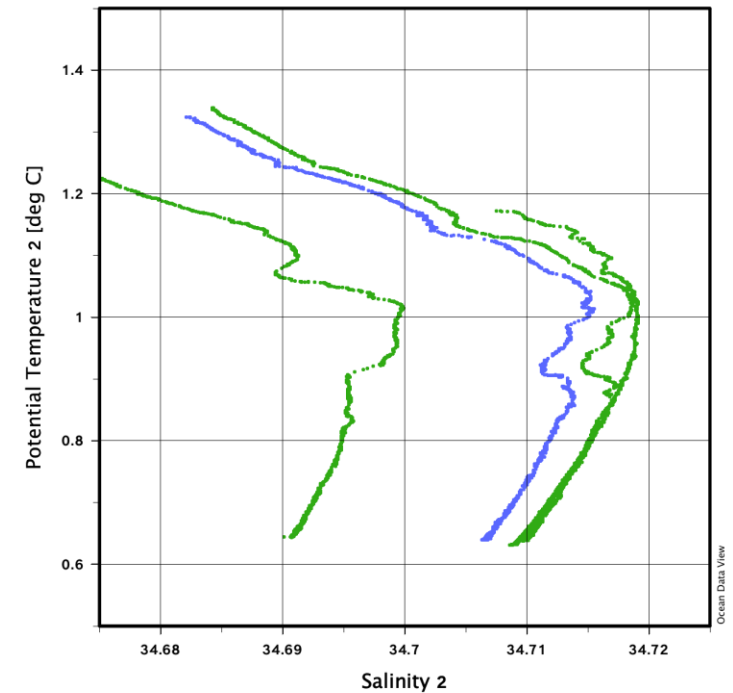
Postprocessing with T1and S1 in 1-23,25-28,32-33

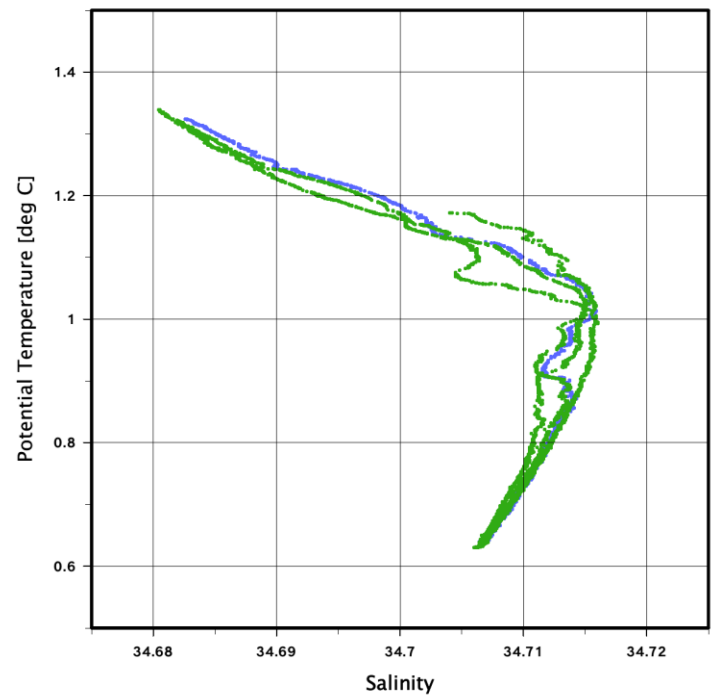Postprocessing with T2 and (S2-0.005) only in 24,29-31,34-37

PRESSURE > 3500 DBAR

BLUE = CTD

GREEN = TMC

TMC system OXYGEN

OXY2 ms OXY1 = -7 uM

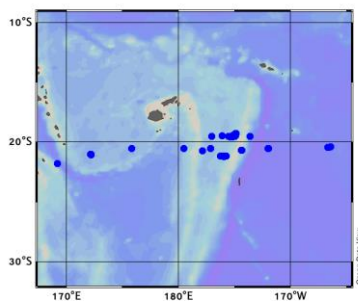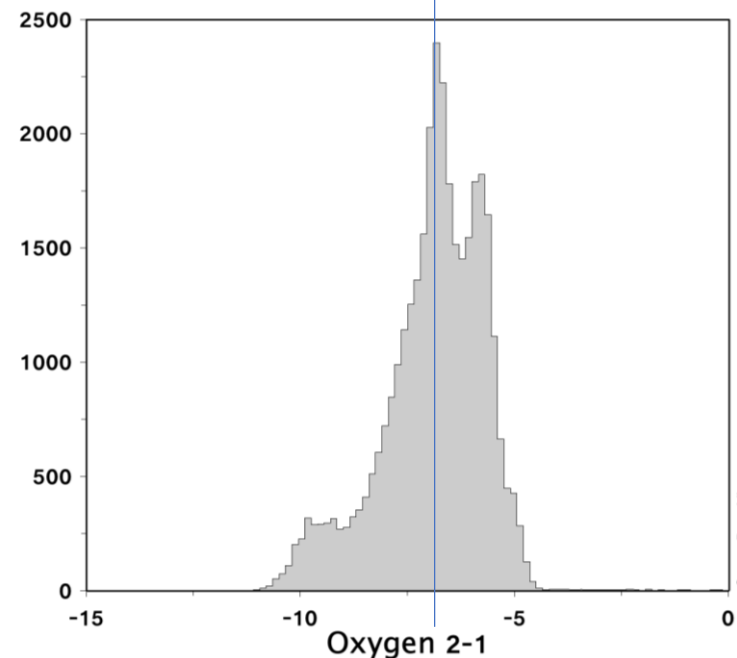Approx offset with Winkler CTD:

(TMC_O1 - CTD_Oxy) + (CTD_Oxy – CTD_Winkler)

= 5 uM - 10 uM = -5 uM

Postprocessing with (OXY1+ 5uM) in 1-23,25-28,32-33
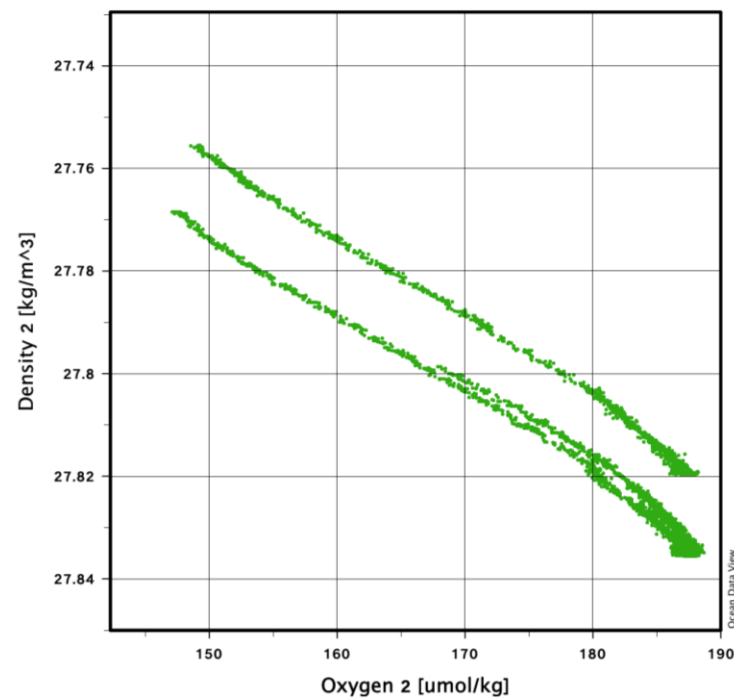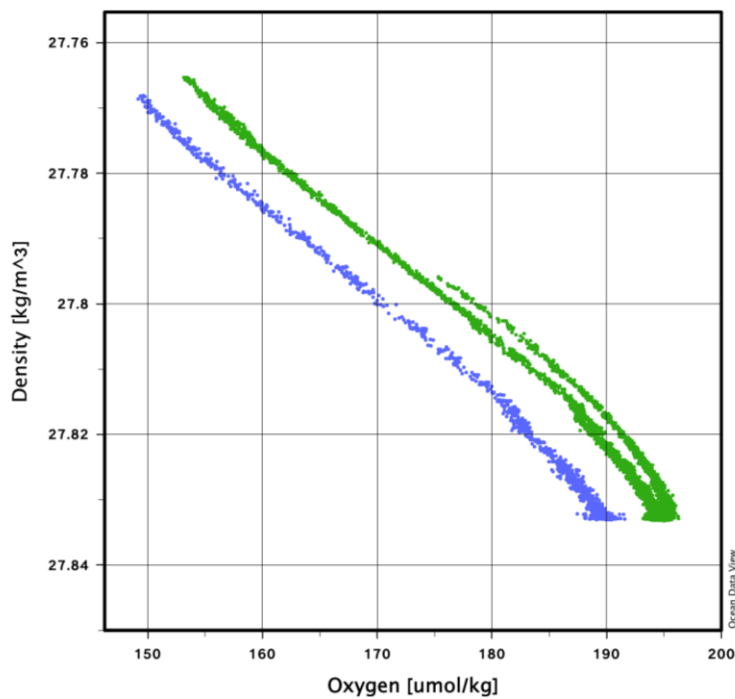
Postprocessing with (OXY2-12uM) only in 24,29-31,34-37

PRESSURE > 3500 DBAR

BLUE = CTD

GREEN = TMC

SUMMARY FOR THE FIRST POST-PROCESSING STAGE

CTD all casts (41 casts)
Temperature and salinity using T1 and S1
Oxygen: apply Dom's coefficients

TWO all casts (41 casts)
Temperature and salinity using T1 and (S1-0.005)
Oxygen using OXY1

TMC "good" casts 1-23,25-28,32-33 (29 casts)
Temperature and salinity using T1 and S1
Oxygen using OXY1-5uM

TMC "bad" casts 24,29-31,34-37 (8 casts)
Temperature and salinity using T2 and (S2-0.005)
Oxygen using OXY2-12uM

Uncertainties of measurements
CTD < TMC good casts < TWO and TMC bad casts
Temperature: $0.001 < \ldots < 0.003$ degC
Salinity: $0.003 < \ldots < 0.008$
Oxygen: $3 < \ldots < 10$ uM

TO BE DONE FOR THE SECOND POST-PROCESSING STAGE

Account for users feedbacks

Check absolute drifts in T,S using post-cruise bath calibration reports of the sensors

Post-processing FChl data of CTD and TMC
- Adjustment of offsets using dark measurements of fluorometers
- Adjustment of amplitude with TChla from HPLC data
- NPQ correction is applicable