DMQC Report on Dissolved Oxygen

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October 12, 2021

1 Float 4900494

Gain (WOA): 0.995 ± 0.020 SAGE Gain: 1.035 ± 0.025

- 0 flags should perhaps still be resolved, but assume visual QC is sufficient
- Removed one anomalous point that had very high O2sat

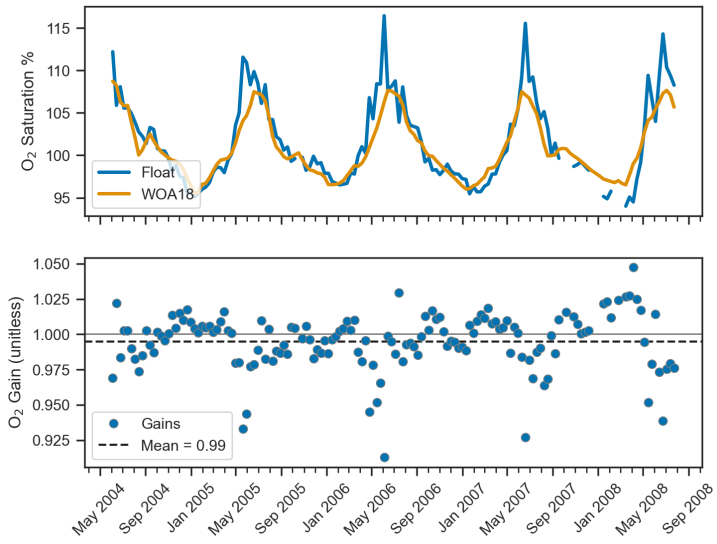

Figure 1

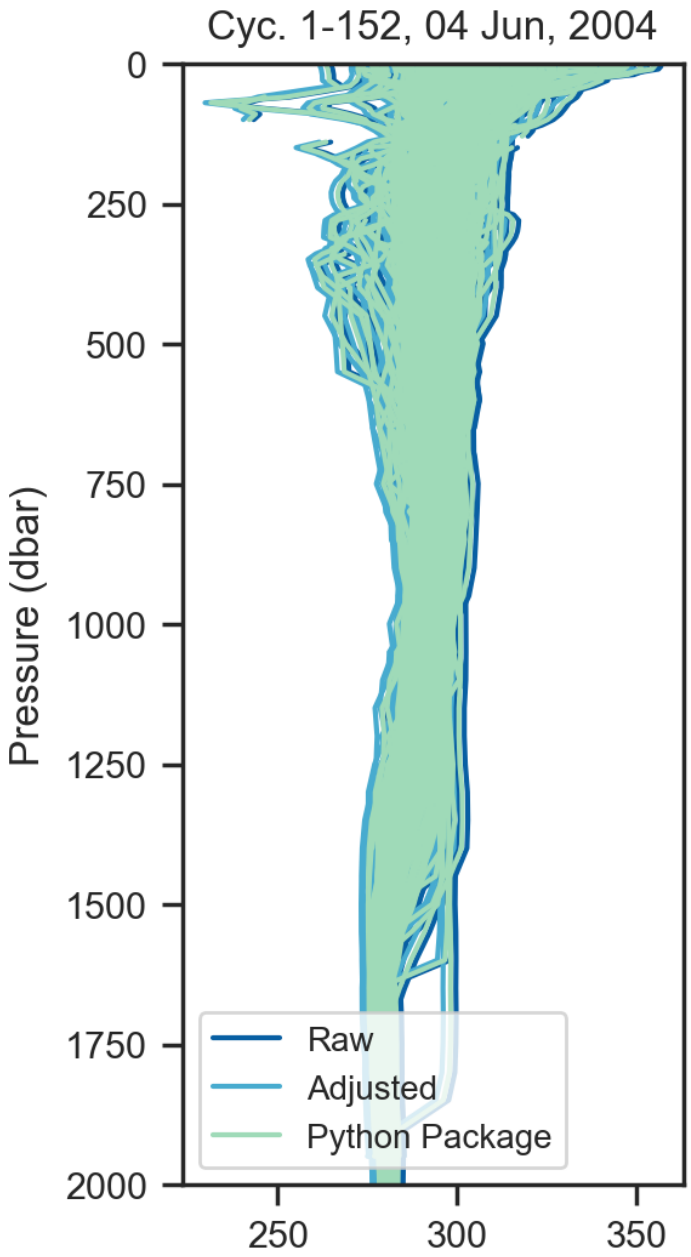
Cyc. 1-152, 04 Jun, 2004
Pressure (dbar)
0
250
500
750
1000
1250
1500
1750
2000
250
300
350
Raw
Adjusted
Python Package

Figure 2

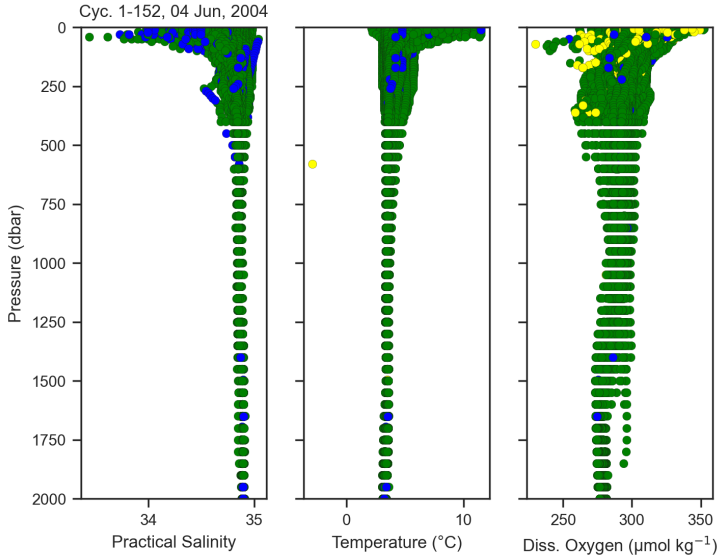

Figure 3

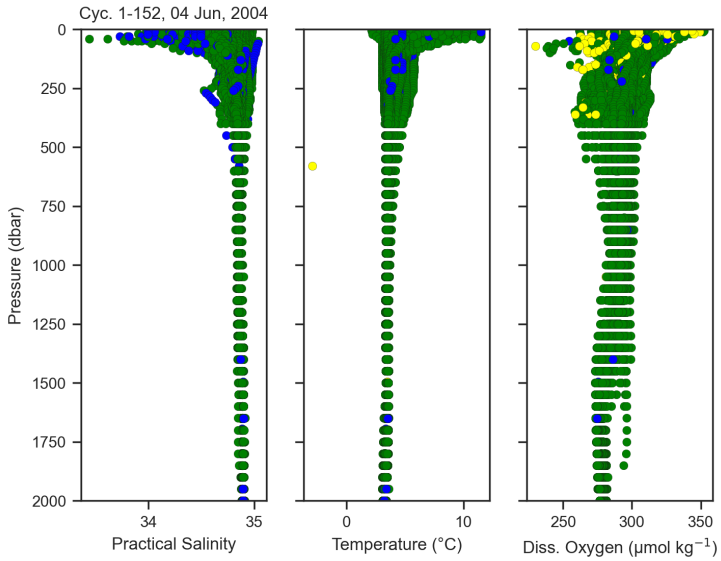

Figure 4

2 Float 4900497

Gain (WOA): 1.031 ± 0.024

- Various errors in FileChecker of forbidden attribute "_ChunkSize", but I can't find that when I load the actual netcdf file
- 0 flags should perhaps still be resolved, but assume visual QC is sufficient
- In-air DOXY is in BRtraj file, but as DOXY, not PPOX_DOXY. Upon further inspection BRtraj DOXY are all FillValues, so no in-air gain calculated.

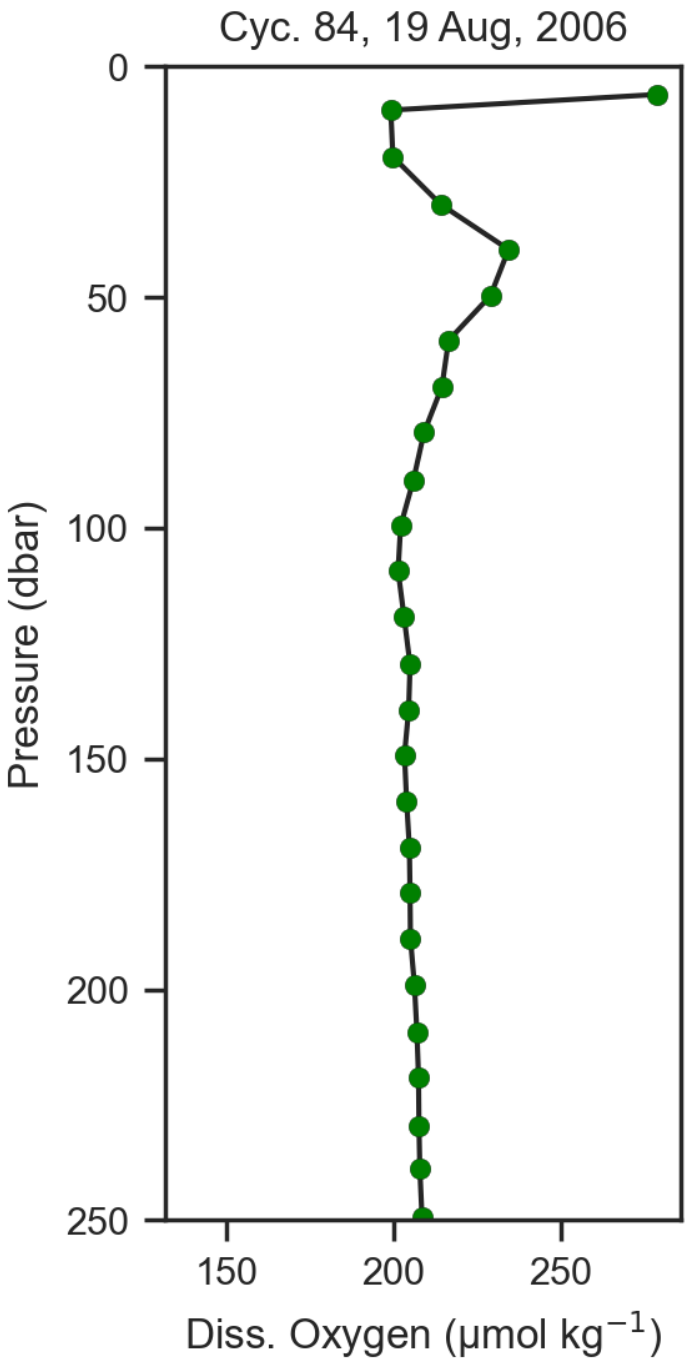
Cyc. 84, 19 Aug, 2006
0
50
100
150
200
250
Pressure (dbar)
150
200
250
Diss. Oxygen (µmol kg^{-1})

Figure 5

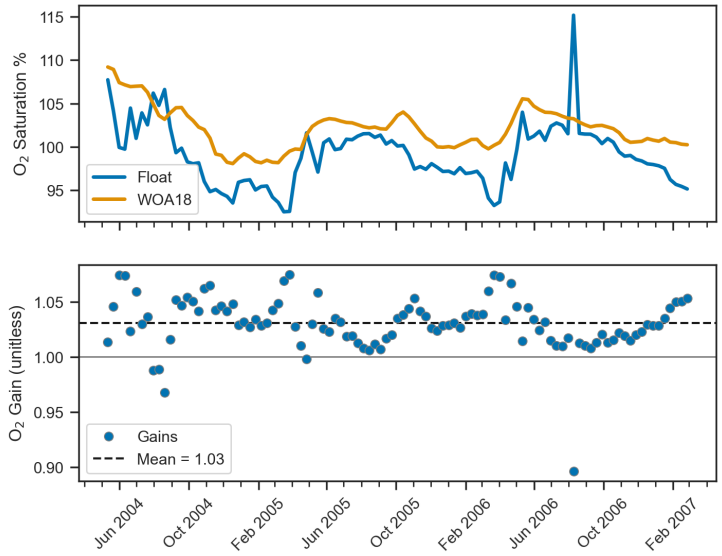

Figure 6

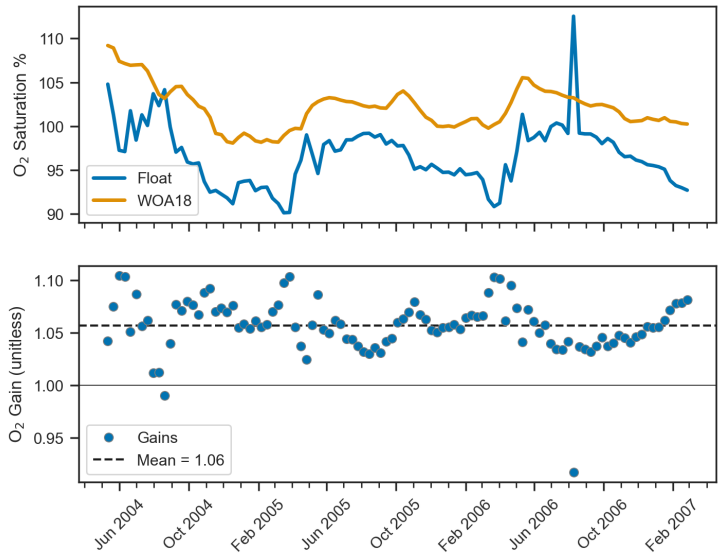

Figure 7

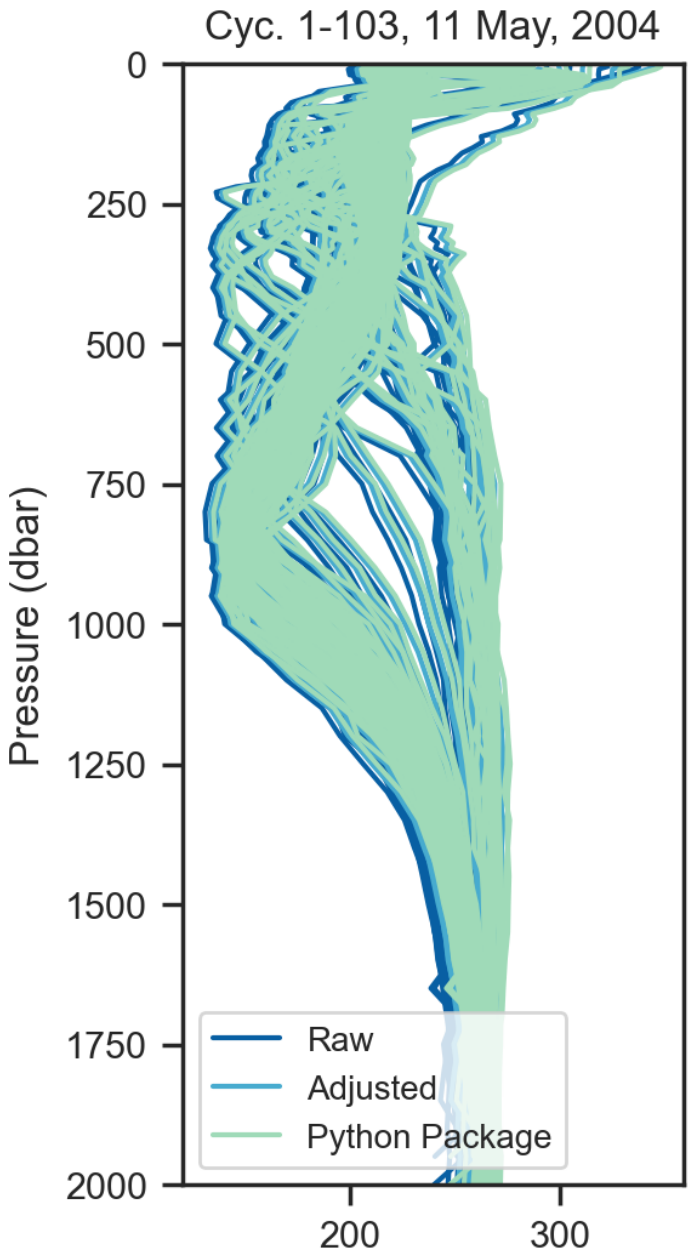
Cyc. 1-103, 11 May, 2004
Pressure (dbar)
0
250
500
750
1000
1250
1500
1750
2000
200
300
Raw
Adjusted
Python Package

Figure 8

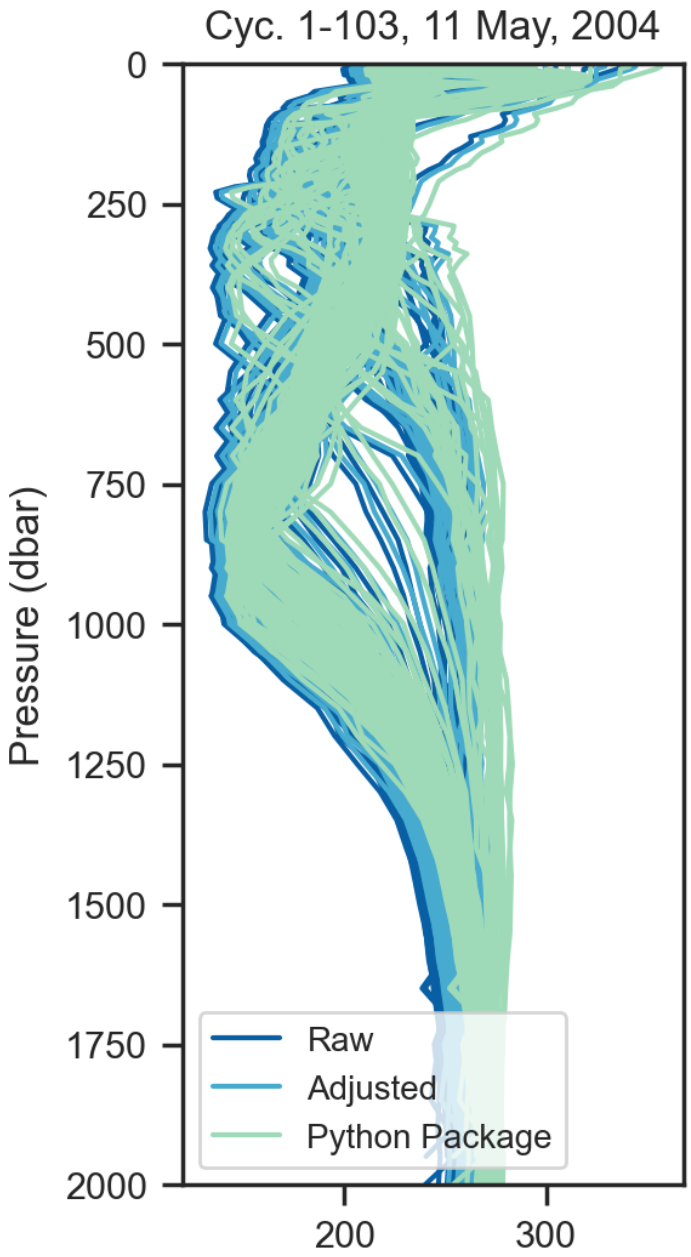
Cyc. 1-103, 11 May, 2004
Pressure (dbar)
0
250
500
750
1000
1250
1500
1750
2000
200
300
Raw
Adjusted
Python Package

Figure 9

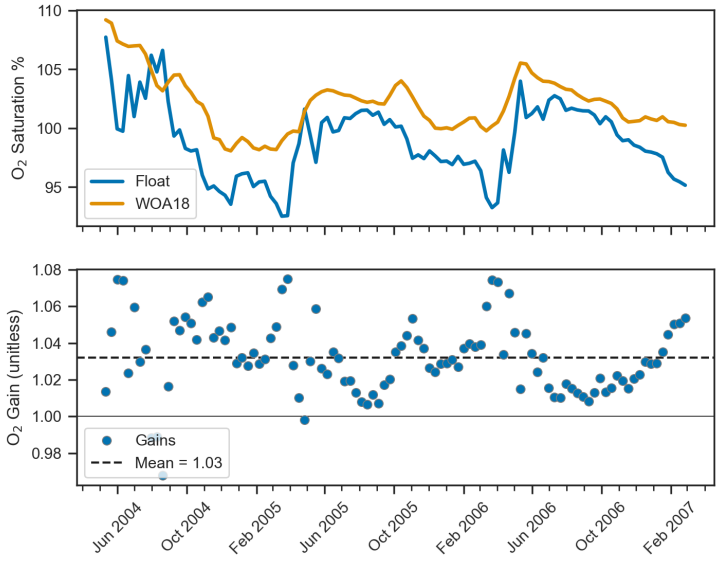

Figure 10

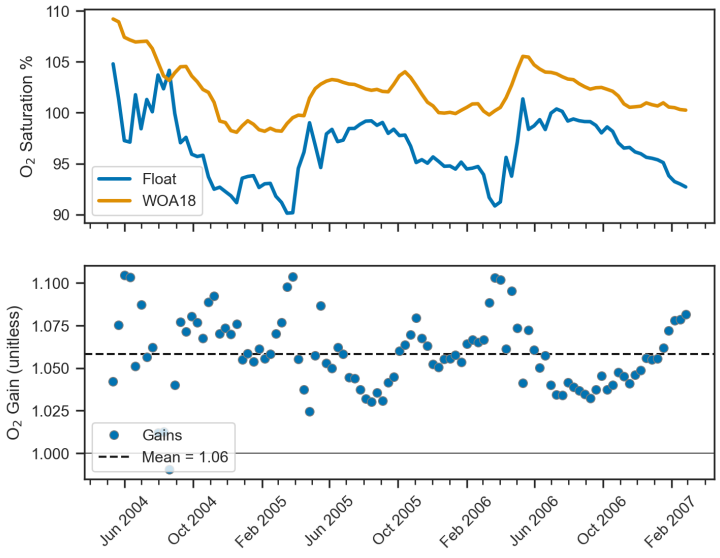

Figure 11

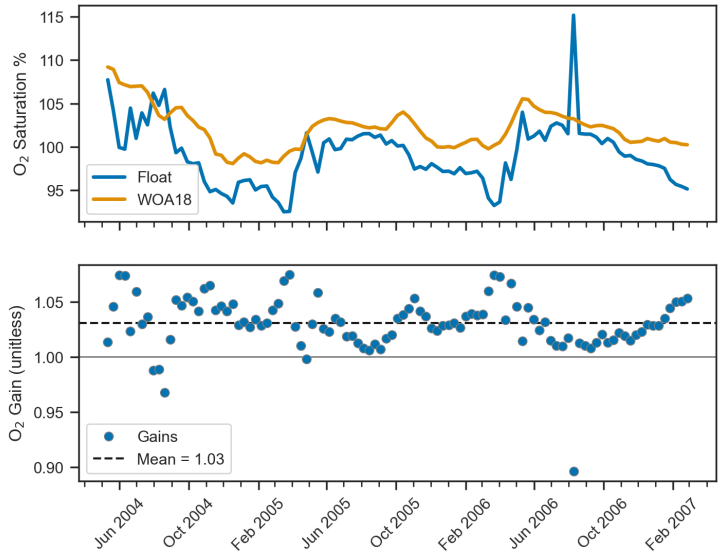

Figure 12

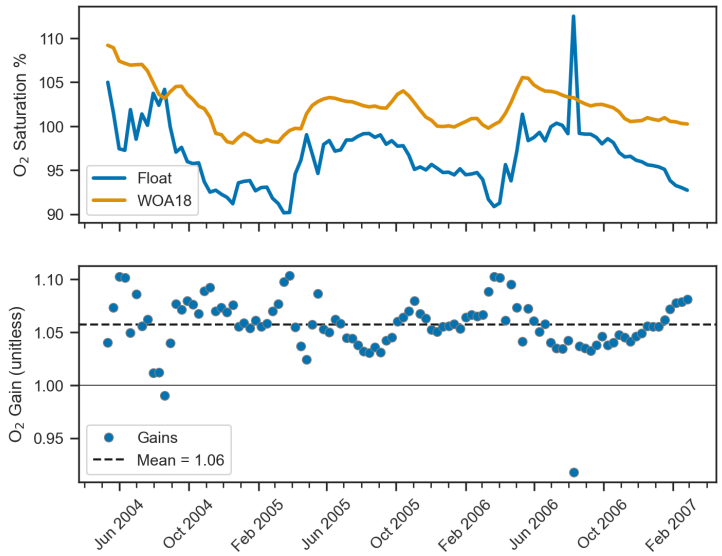

Figure 13

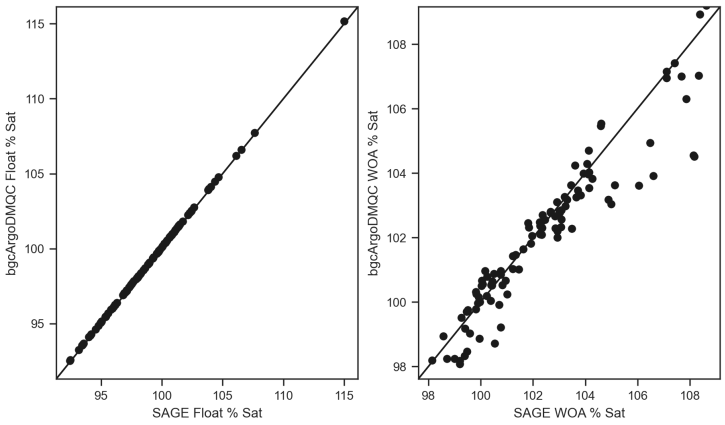

Figure 14

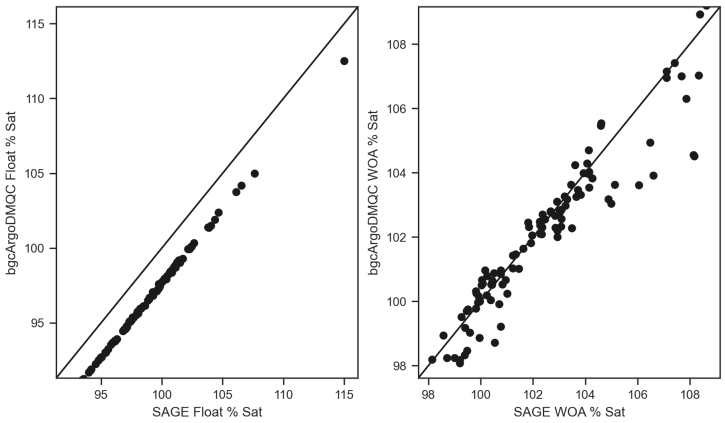

Figure 15

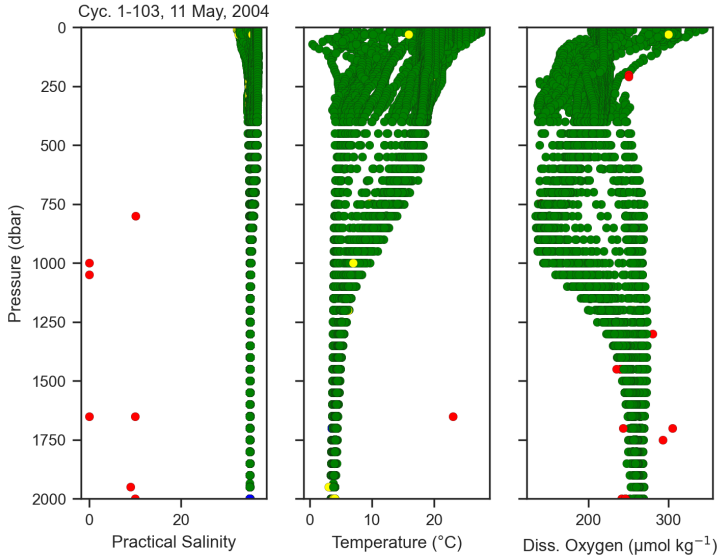

Figure 16

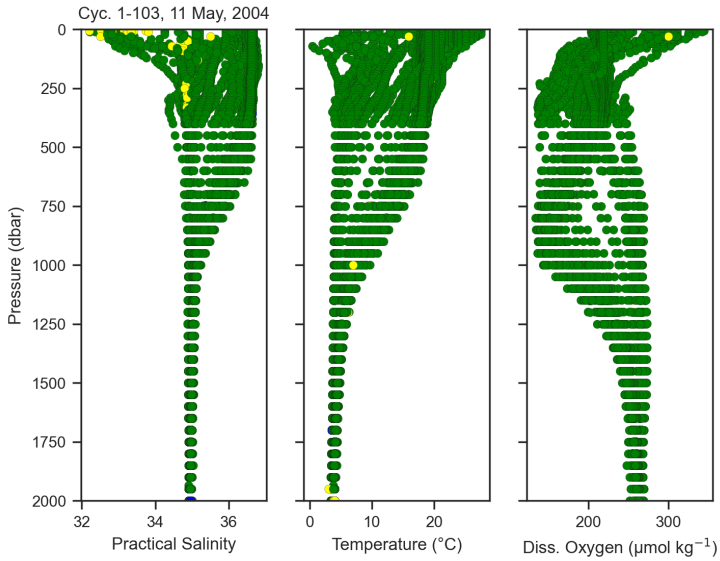

Figure 17

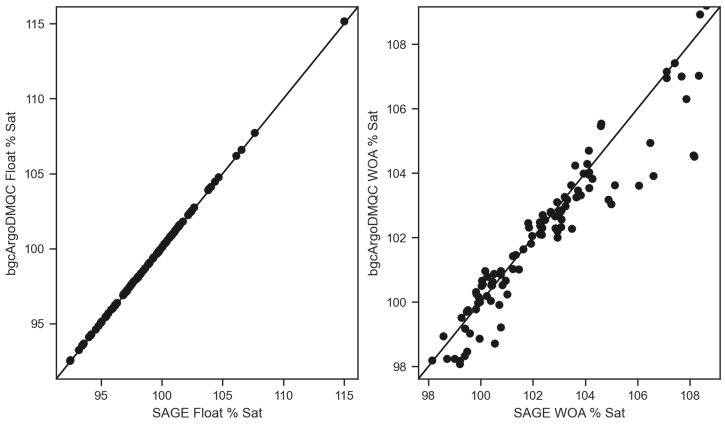

Figure 18

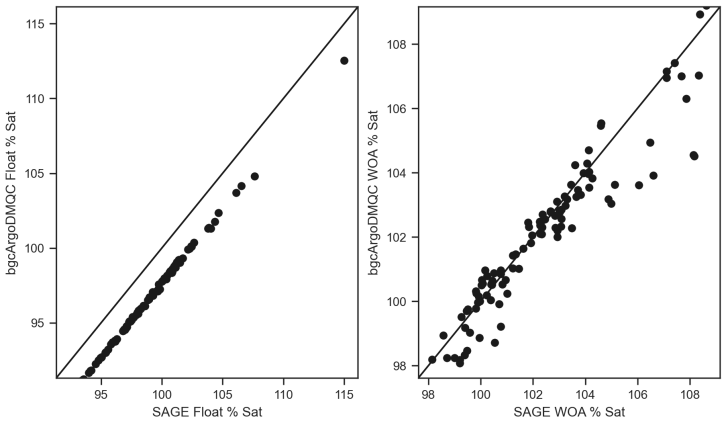

Figure 19

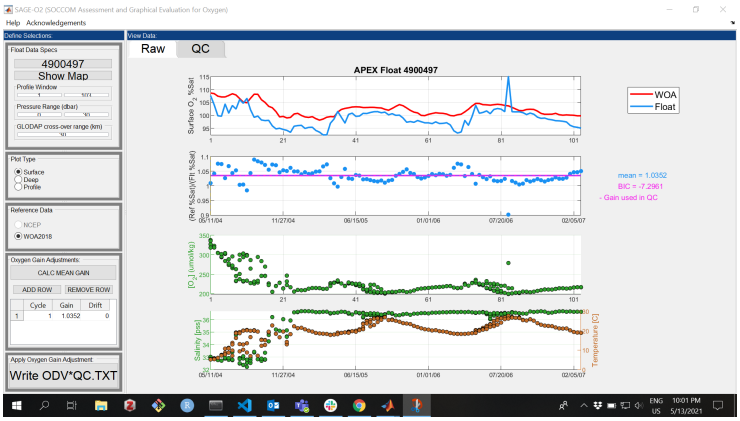

Figure 20

3 Float 4900523

Gain (WOA): 1.045 ± 0.015 SAGE Gain: 1.043 ± 0.025

- Upon inspection of profiles, there are one point for salinity and one for oxygen that seem to be anomalous
  - interpolated salinity point, cycle 112, P ¡ 94dbar and S ¿ 33.80psu
  - oxygen point, the same as the salinity point where O2 ¡ 69mmol m^{-3}
- There is one point with a significant divergence from SAGE, but I do not believe that is in error, but rather a point that should be flagged as bad, and SAGE did not. Therefore in SAGE the point has a much higher O2Sat than in the python package.

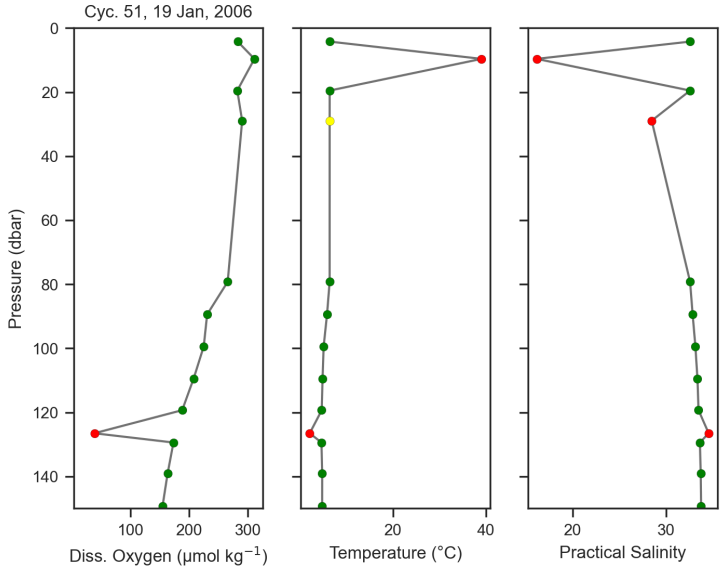

Figure 21

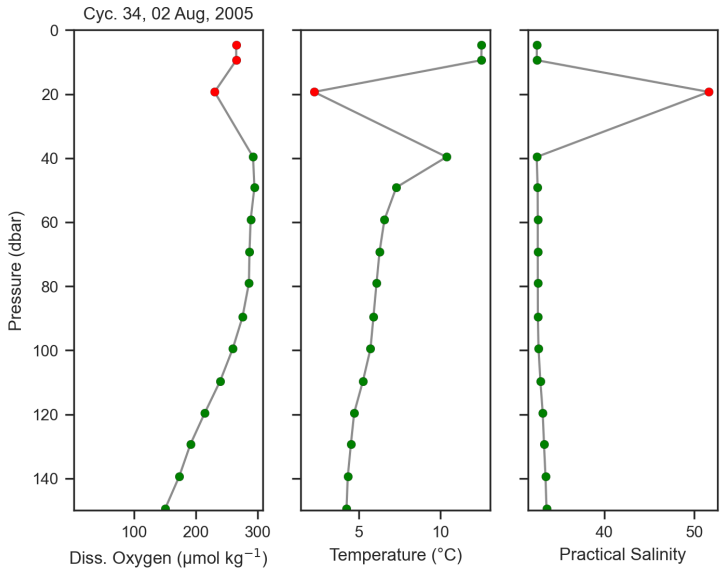

Figure 22

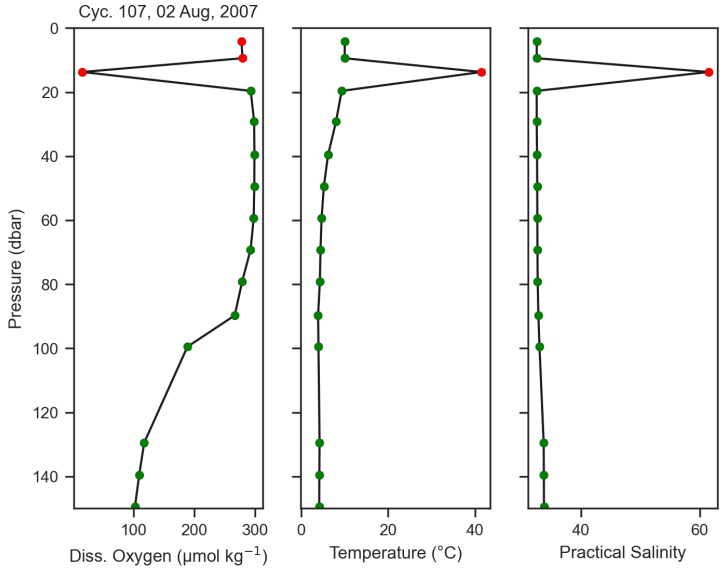

Figure 23

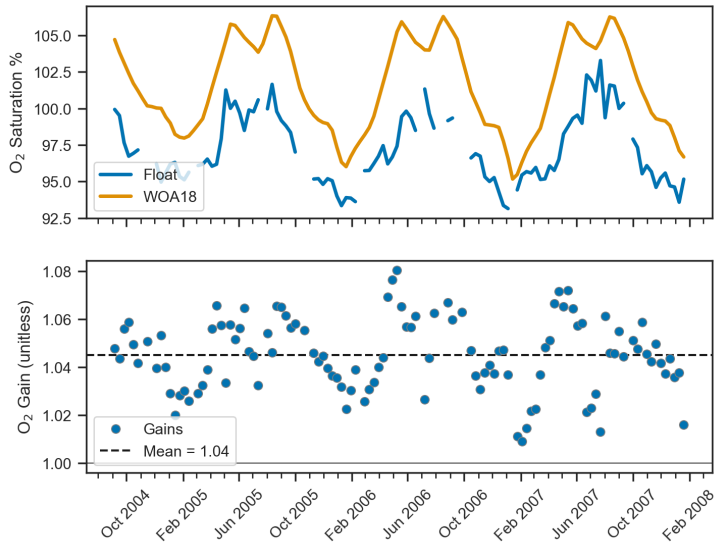

Figure 24

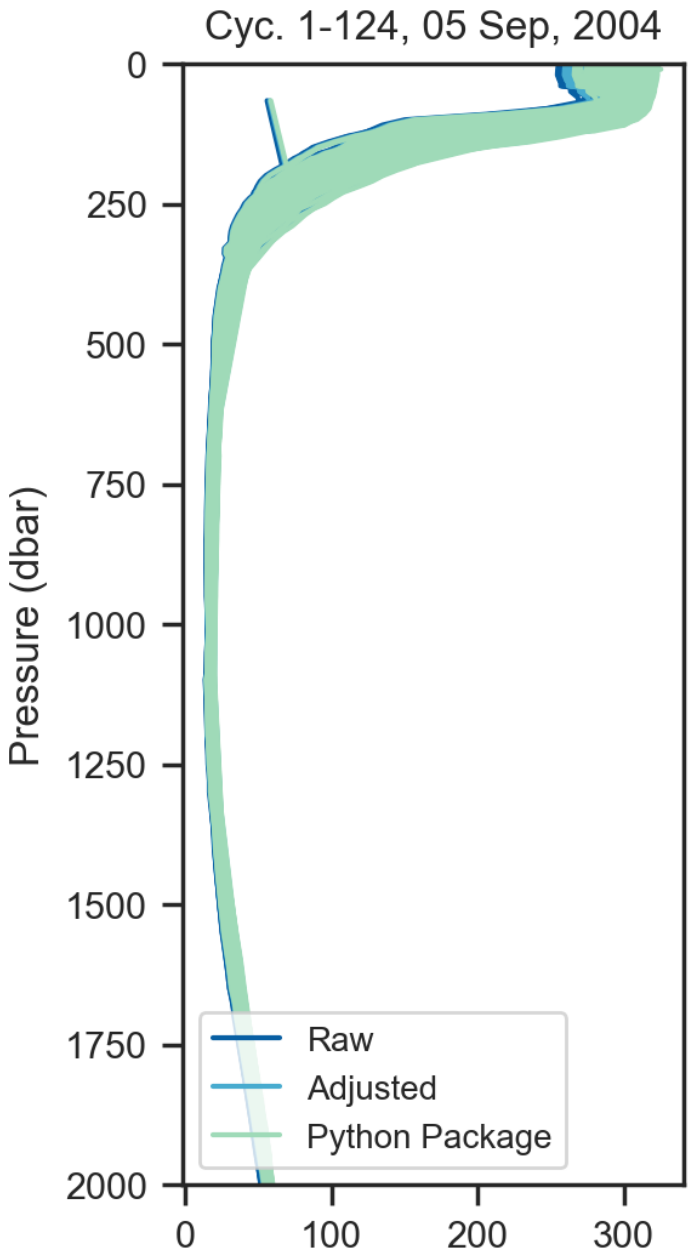
Cyc. 1-124, 05 Sep, 2004
Pressure (dbar)
0
250
500
750
1000
1250
1500
1750
2000
0
100
200
300
Raw
Adjusted
Python Package

Figure 25

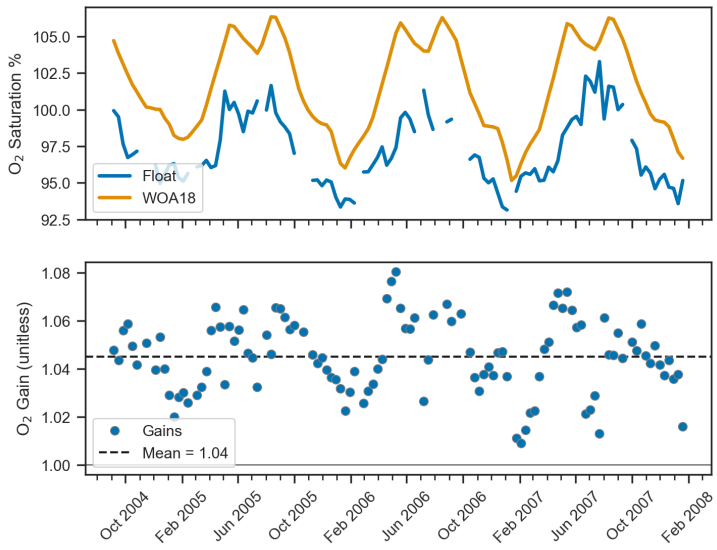

Figure 26

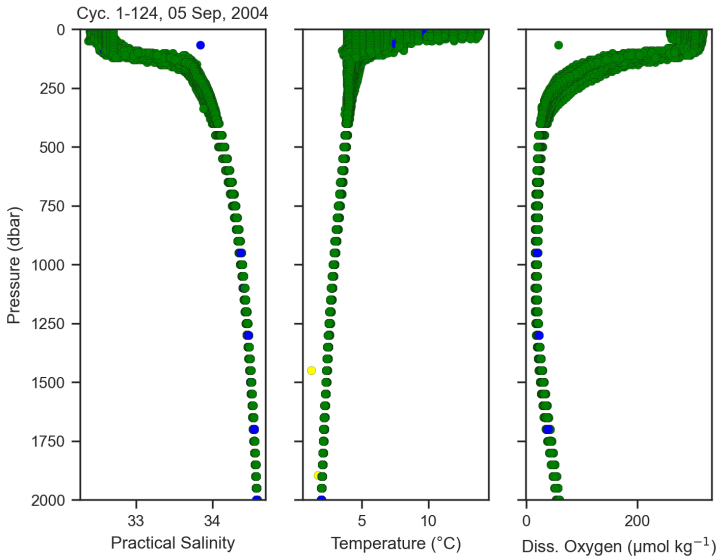

Figure 27

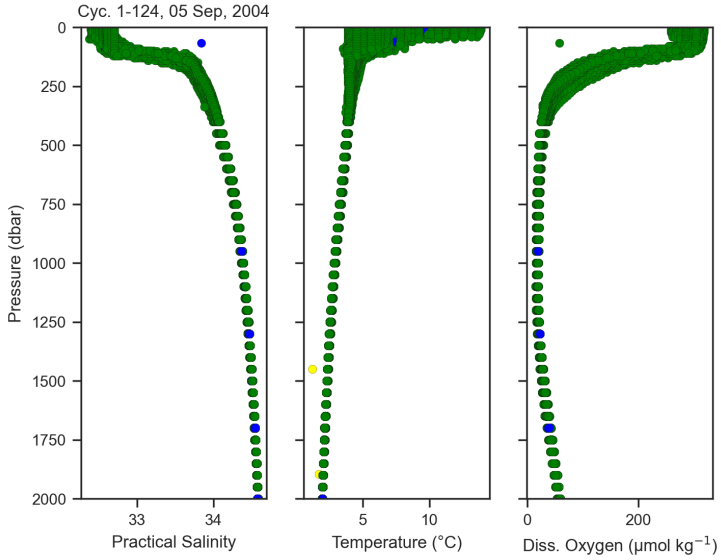

Figure 28

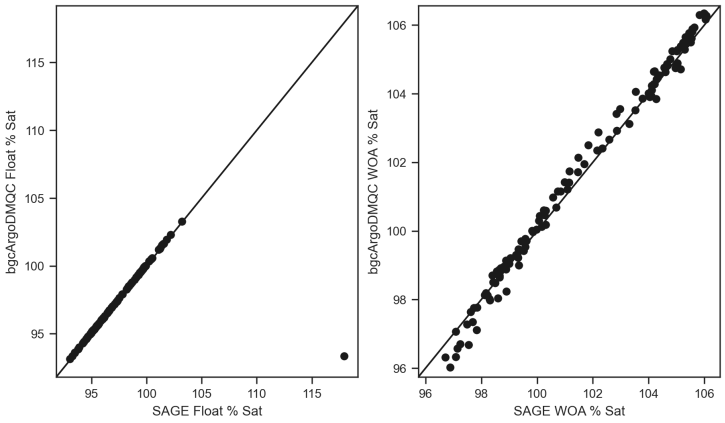

Figure 29

4 Float 4900524

Gain (WOA): 1.052 ± 0.018

- Only 6 cycles, but ready to go.

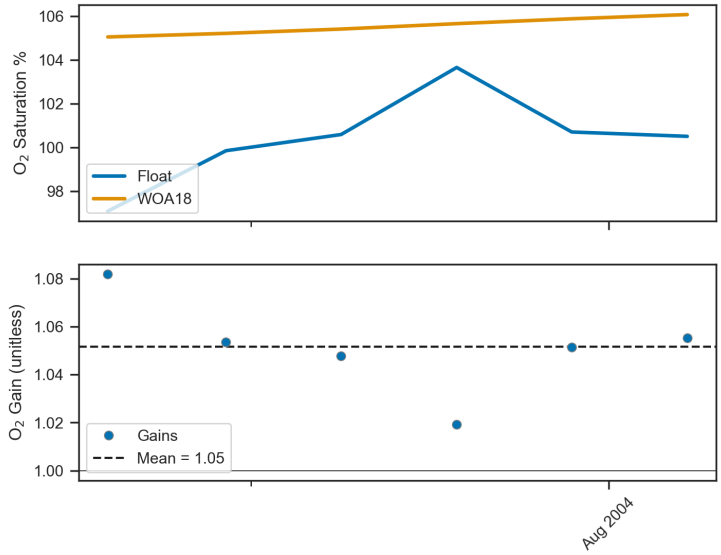
106
104
102
100
98
O_2 Saturation %
Float
WOA18
1.08
1.06
1.04
1.02
1.00
O_2 Gain (unitless)
Gains
Mean = 1.05
Aug 2004

Figure 30

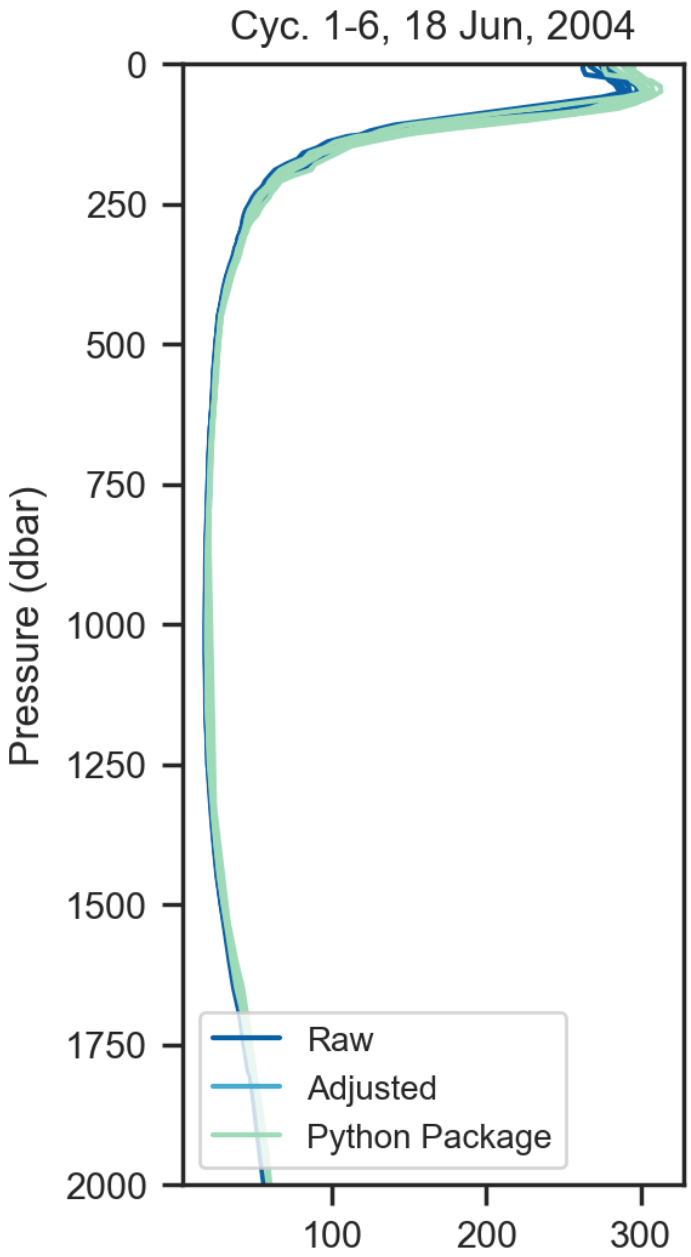
Cyc. 1-6, 18 Jun, 2004
Pressure (dbar)
0
250
500
750
1000
1250
1500
1750
2000
100
200
300
Raw
Adjusted
Python Package

Figure 31

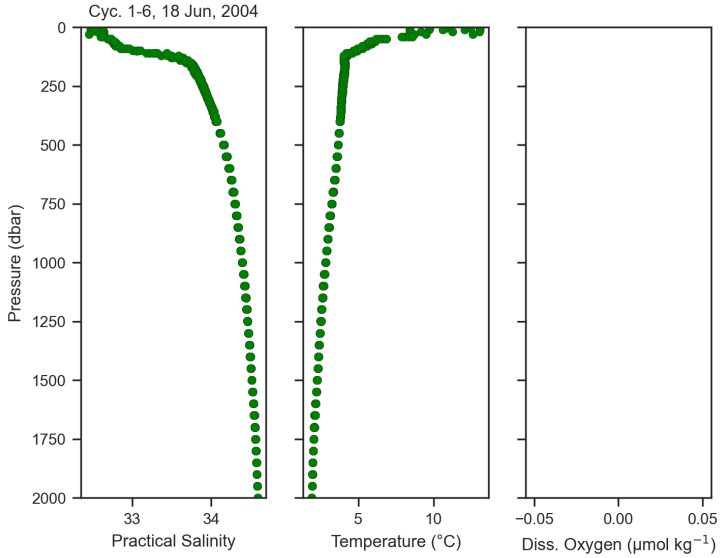

Figure 32

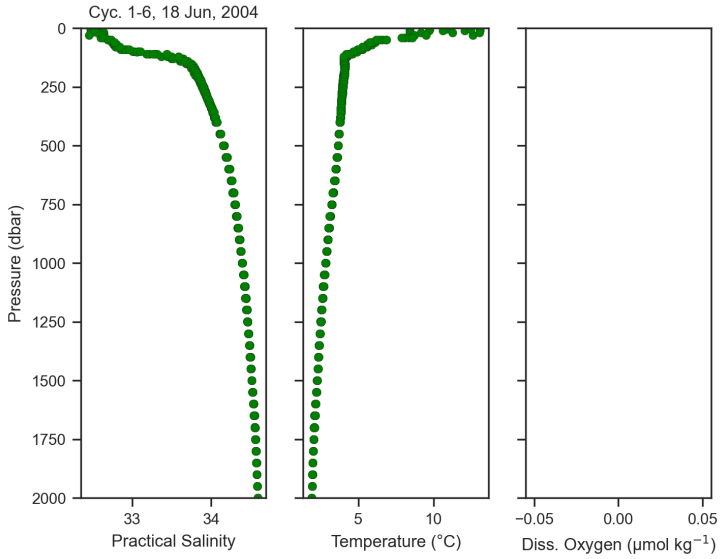

Figure 33

5 Float 4900627

Gain (WOA): 1.004 ± 0.024 SAGE Gain: 1.006 ± 0.024

- DOXY exists in Brtraj file but is all FillValues.

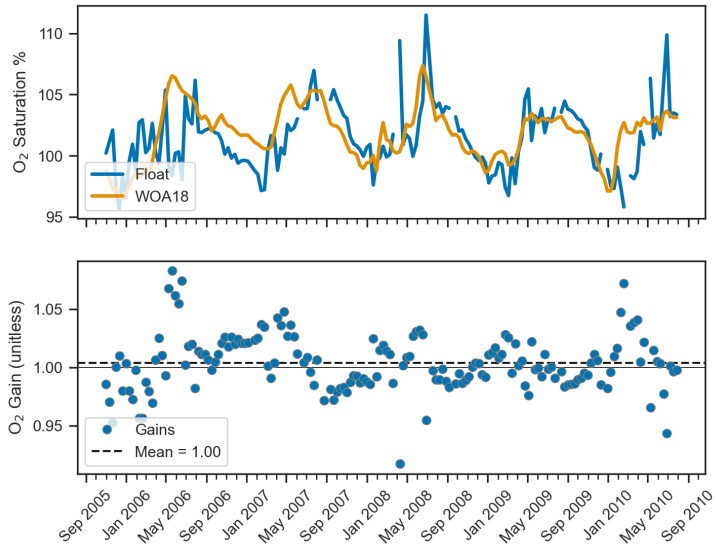

Figure 34

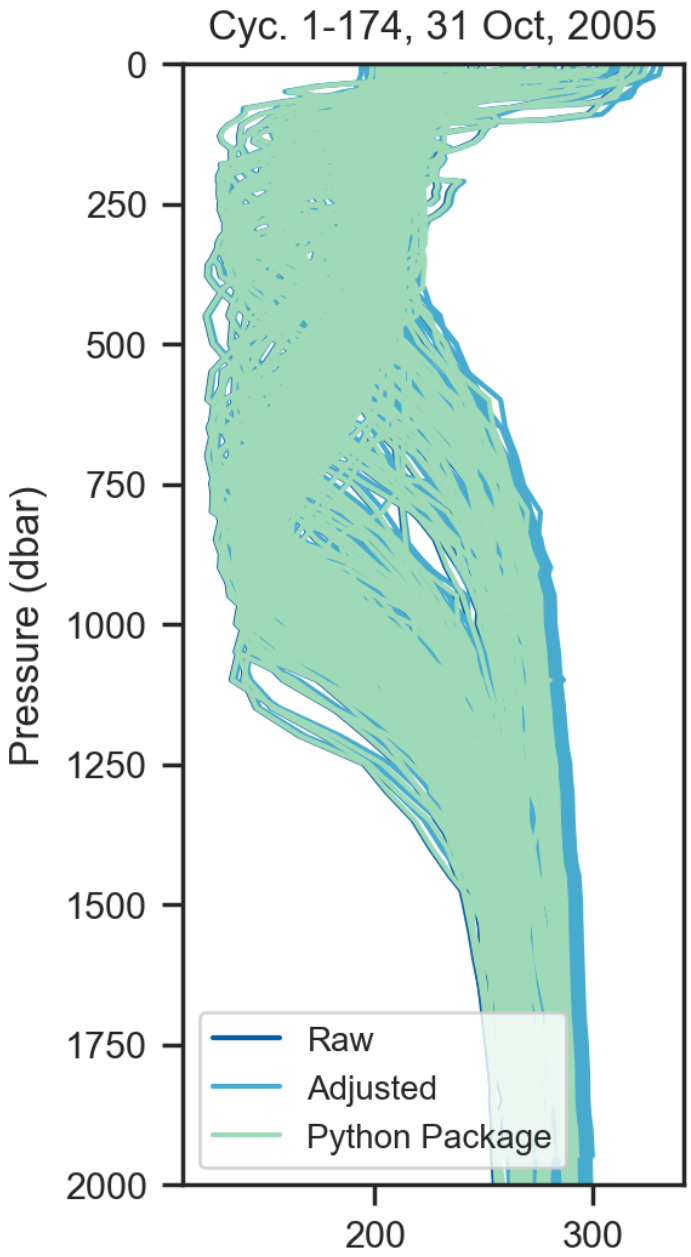
Cyc. 1-174, 31 Oct, 2005
Pressure (dbar)
0
250
500
750
1000
1250
1500
1750
2000
200
300
Raw
Adjusted
Python Package

Figure 35

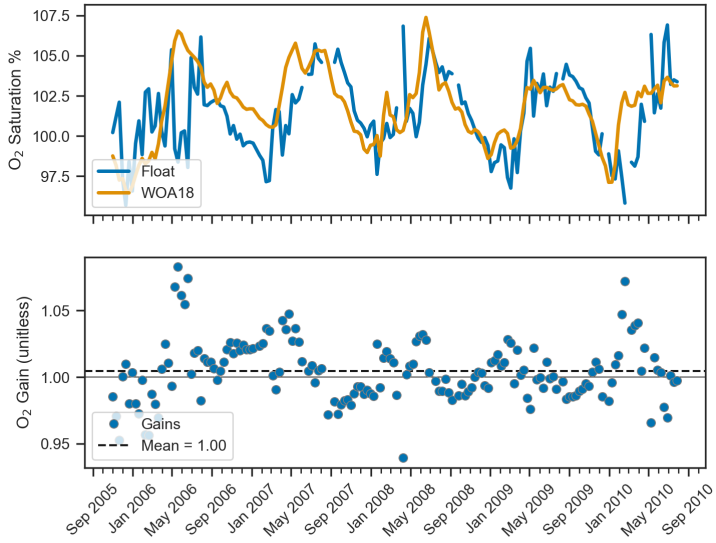

Figure 36

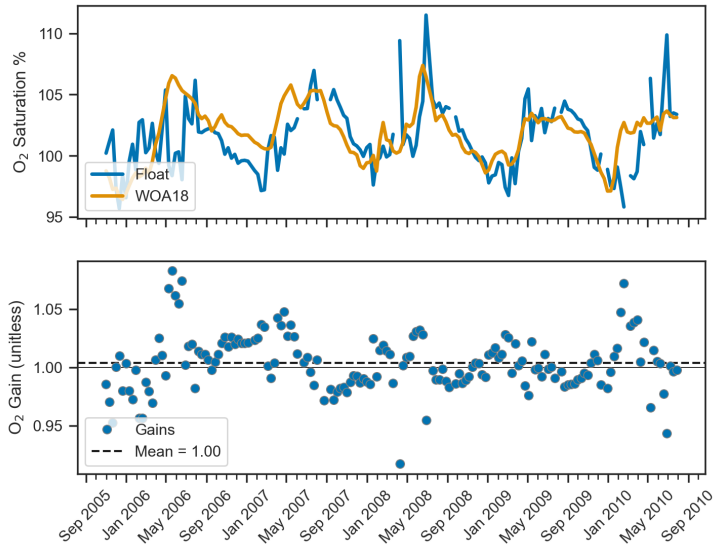

Figure 37

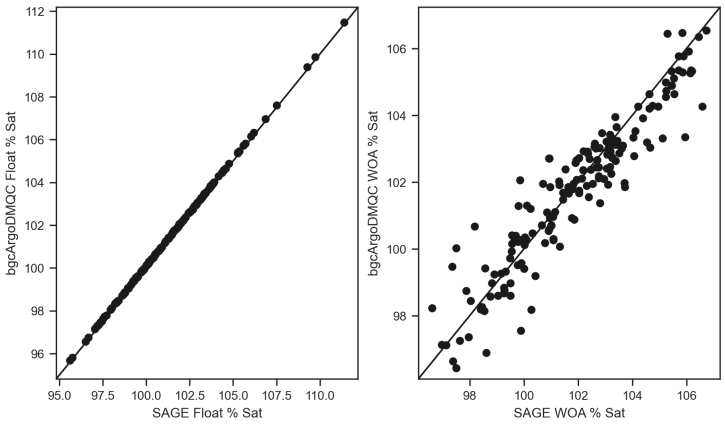

Figure 38

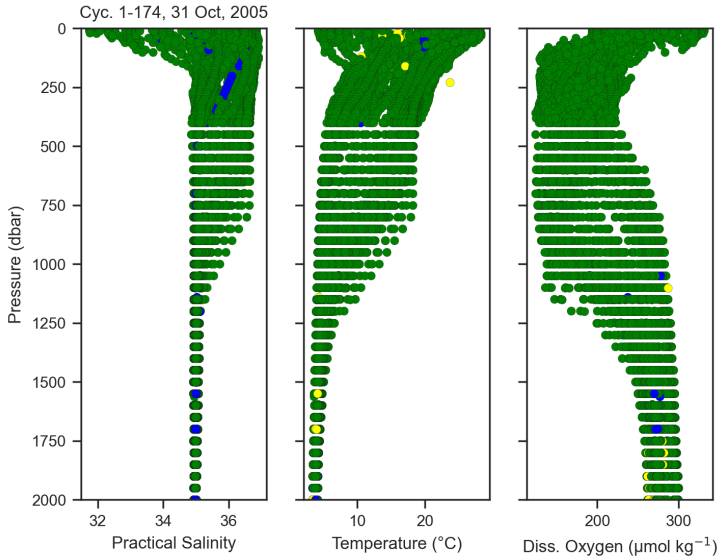

Figure 39

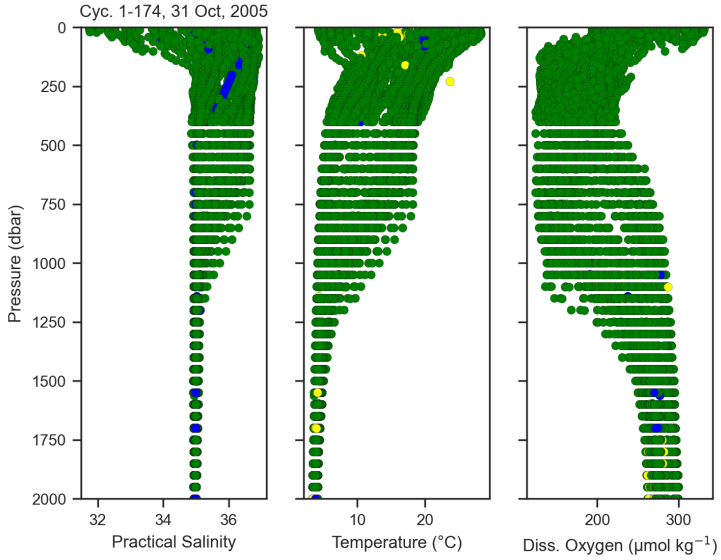

Figure 40

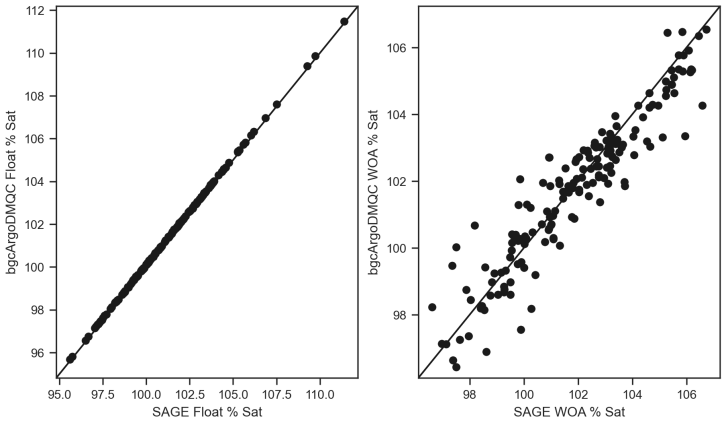

Figure 41

6 Float 4900637

Gain (WOA): 0.989 ± 0.013

- The last 3 profiles of salinity are flagged as 3, and then for the remaining lifetime of the float are 4. There are two issues here
  - the salinity that is flagged as 3 I believe should be flagged as 4, as it is quite low (about 15) and throws off density enough that the

O2 saturation percent is off significantly where salinity is flagged 4, oxygen should be flagged 3, but is currently flagged 1

- Since salinity is 4 after July 2007, there are only valid O2sat values for the first half of the floats life. The O2sat values where PSAL_QC = 3 were excluded from the gain calculation.

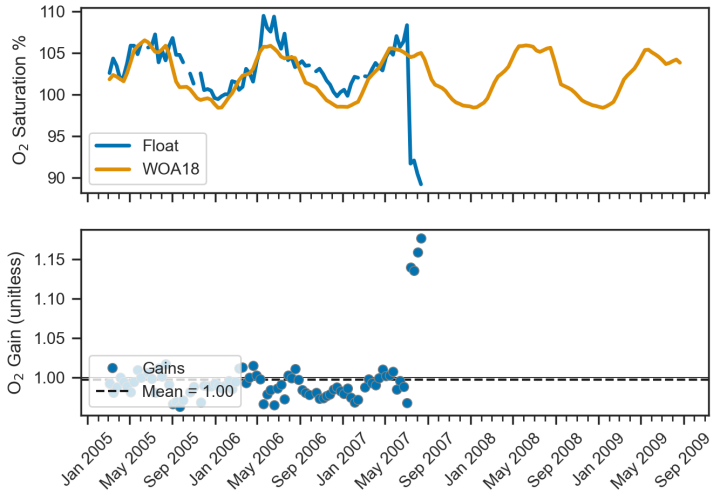

Figure 42

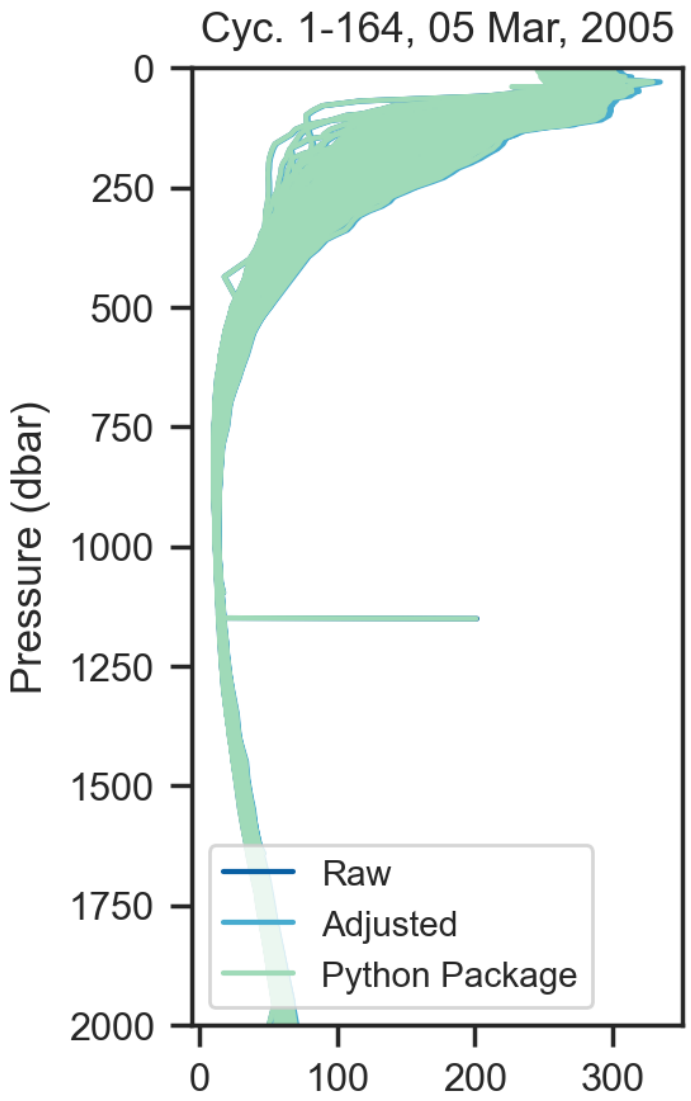
Cyc. 1-164, 05 Mar, 2005
Pressure (dbar)
0
250
500
750
1000
1250
1500
1750
2000
0
100
200
300
Raw
Adjusted
Python Package

Figure 43

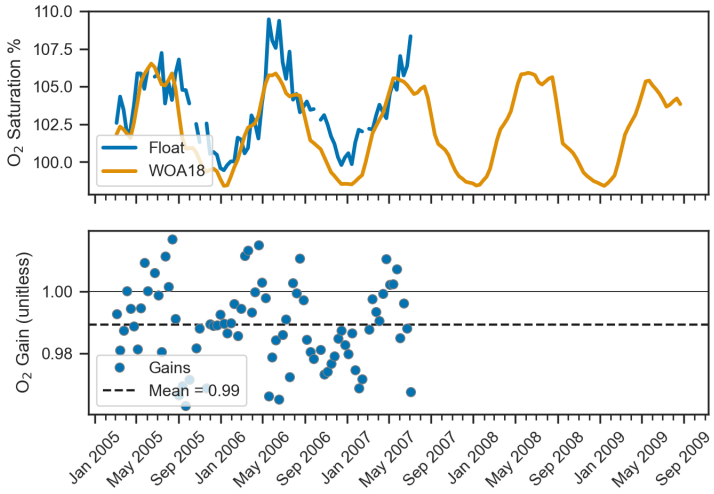

Figure 44

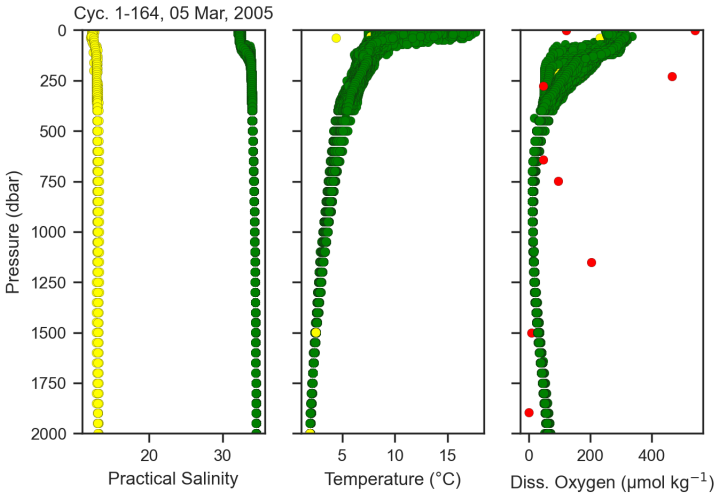

Figure 45

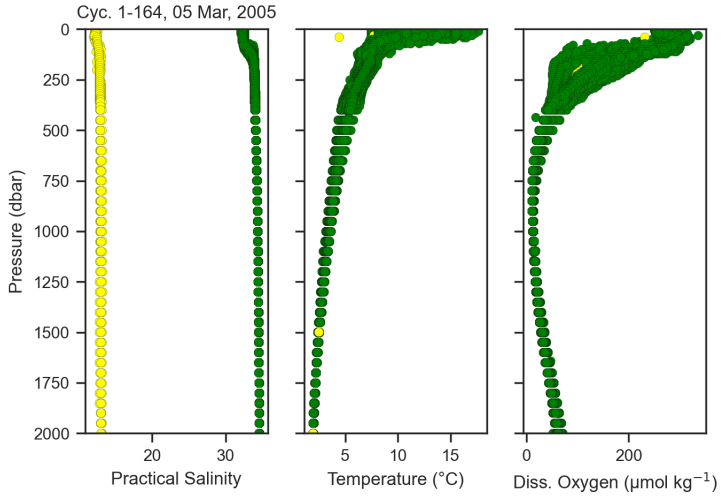
Cyc. 1-164, 05 Mar, 2005
Pressure (dbar)
0
250
500
750
1000
1250
1500
1750
2000
20
30
Practical Salinity
5
10
15
Temperature (°C)
0
200
Diss. Oxygen (µmol kg^{-1})

Figure 46