

Overview and prospects for BGC-Argo QC efforts at CSIRO

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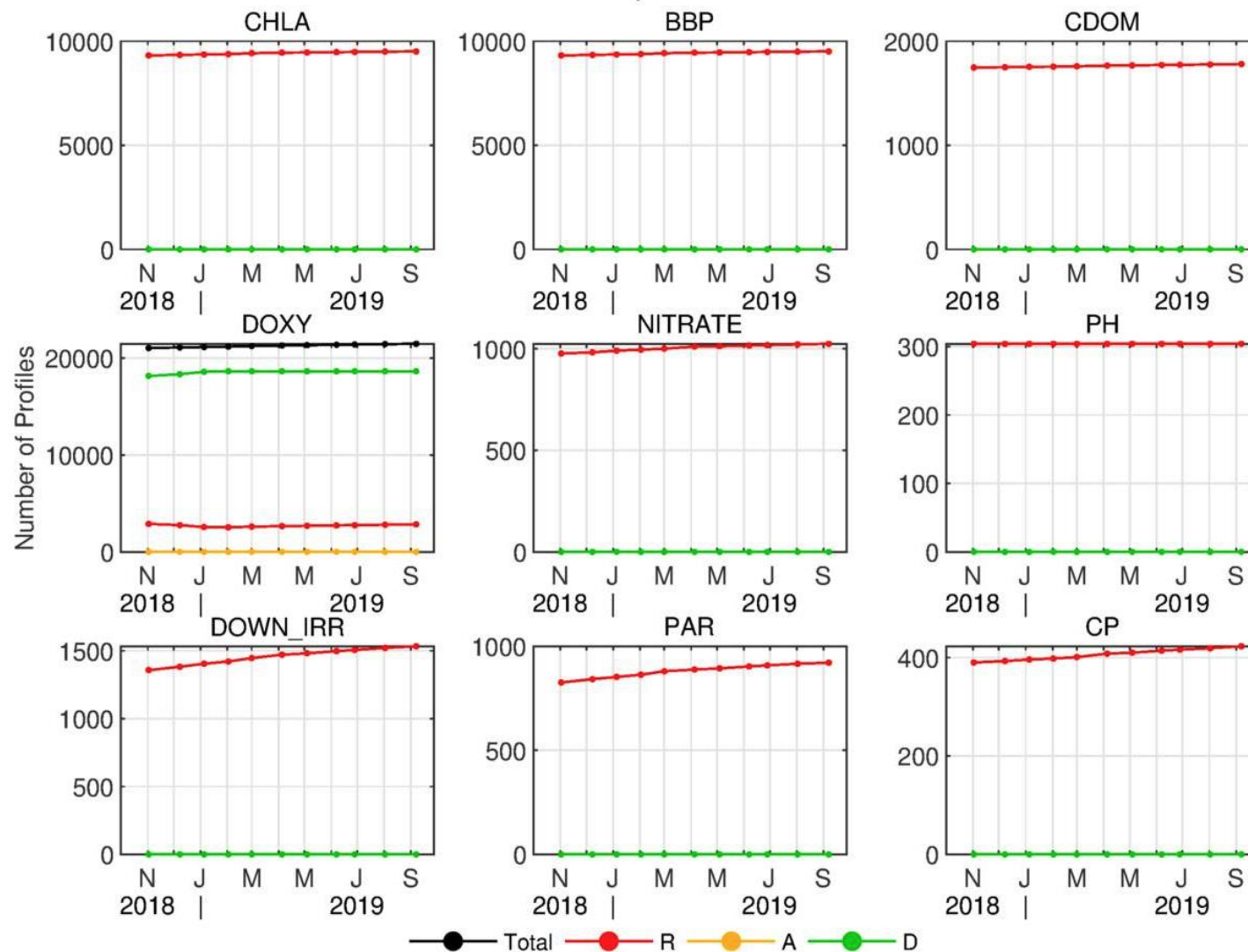


Current status of BGC QC at CSIRO

Sensor type	Number of floats	Alive	Number of profiles	RT-QC'ed	DM-QC'ed
DOXY	79	11	22,000	0	19,000
CHL	30	7	10,000	0	0
BBP	30	7	10,000	0	0
NITRATE	6	At least 2	1000	0	0
PH	3	At least 2	300	0	0
Radiometers/ PAR	5	1	1000	0	0
CP	1	1	400	0	0
CDOM	3	0	2000	0	0



Evolution of R/A/D-profiles for CSIRO DAC



Areas of priority (as we currently see it):

- Start RTQC for DOXY (gain correction)
- Update our DMQC software to keep up with DMQC for DOXY (more on that)
- Develop and implement DMQC for CHL and BBP (and RTQC?)
- Develop and implement QC for other sensors....

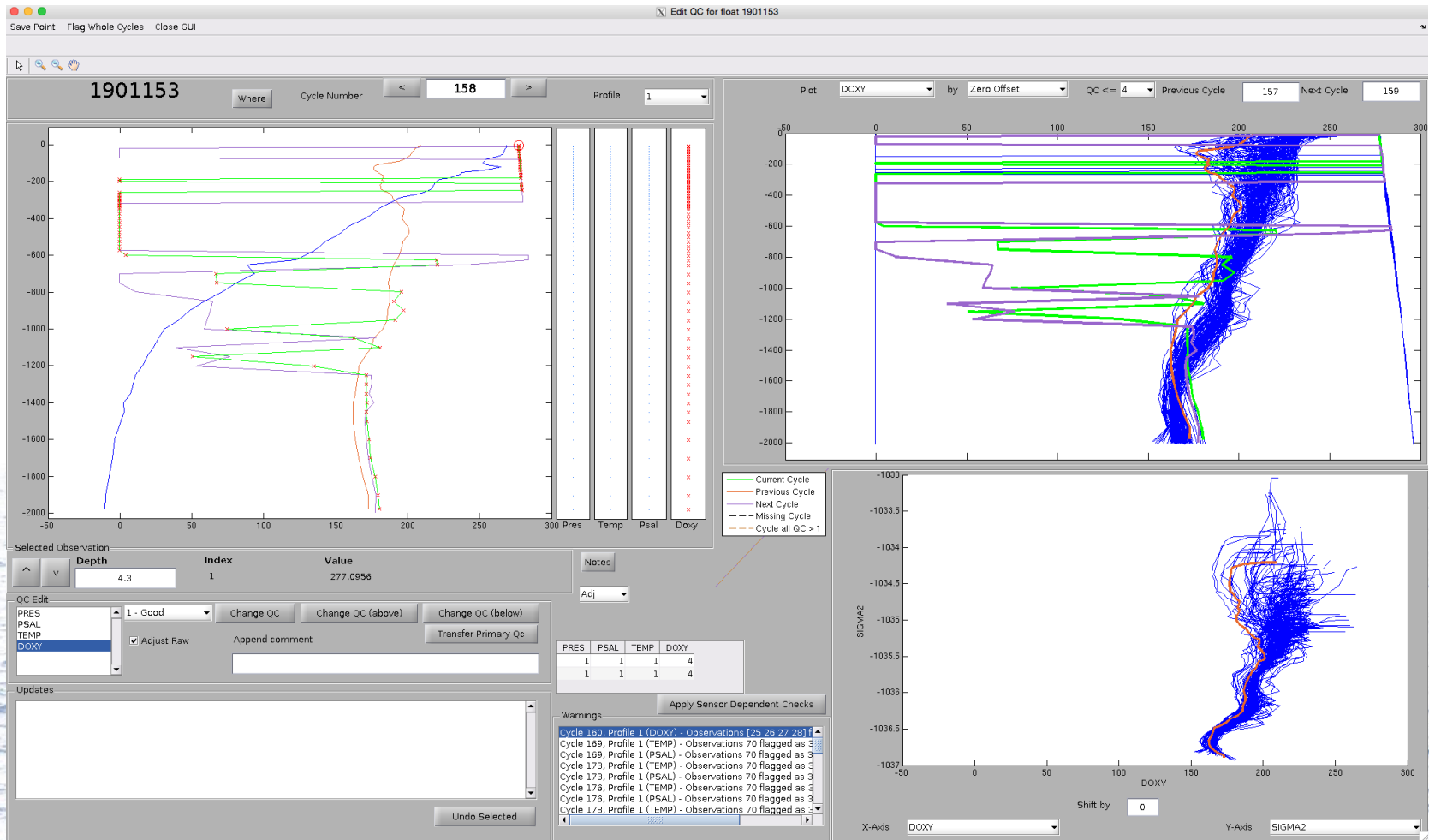


An introduction to our DOXY DMQC software

- One important difference to SAGE: we use the individual profile files, not the synthetic ones
 - What is the future for the synthetic profile?
 - How often are synthetic profile files updated at GDAC?



GUI 1: identification and flagging of bad profiles, and also the flagging of “DOXY hooks”



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Where

Cycle Number

^

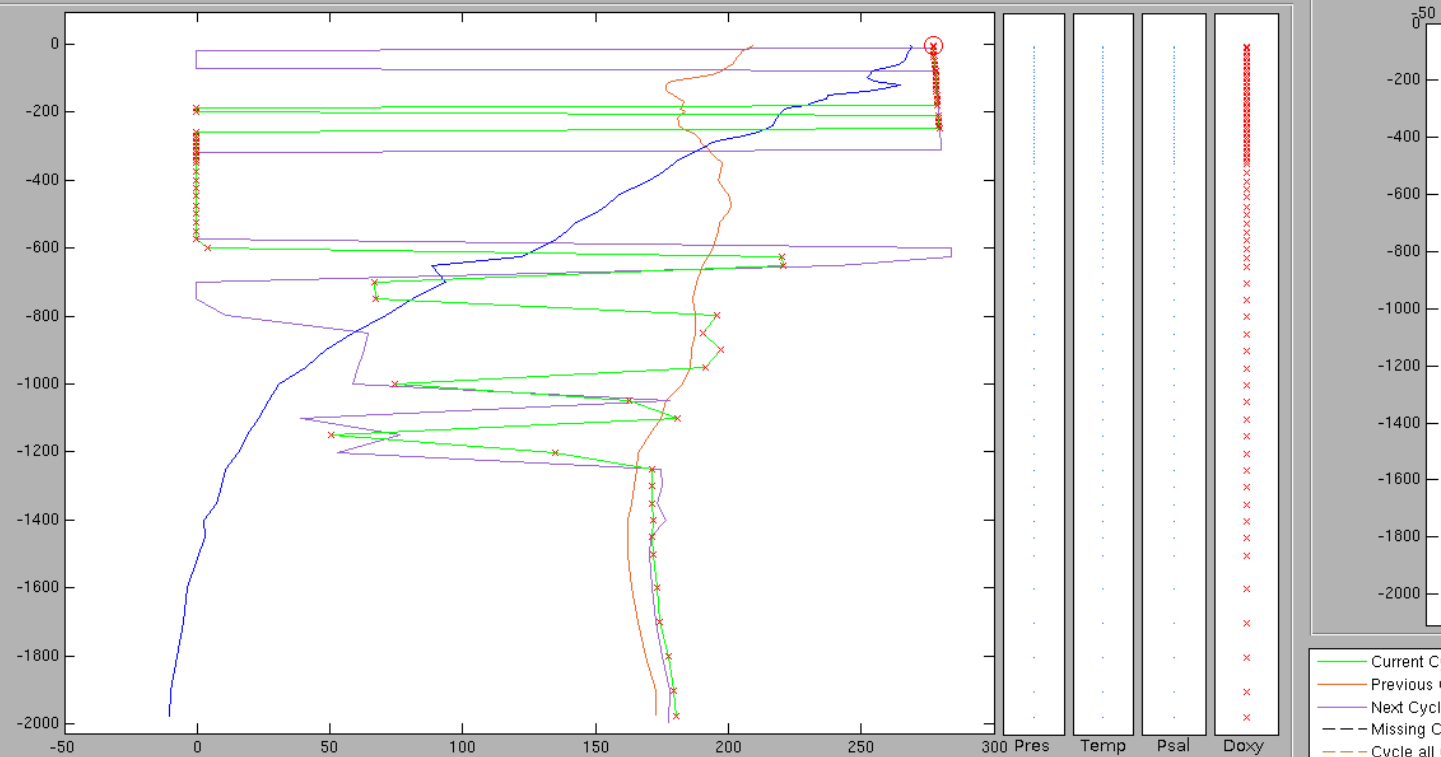
158

v

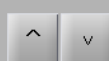
Profile

1

Plot



Selected Observation



Depth

4.3

Index

1

Value

277.0956

Notes

Adj

QC Edit

PRES
PSAL
TEMP
DOXY

1 - Good

☒ Adjust Raw

Change QC

Change QC (above)

Change QC (below)

Append comment

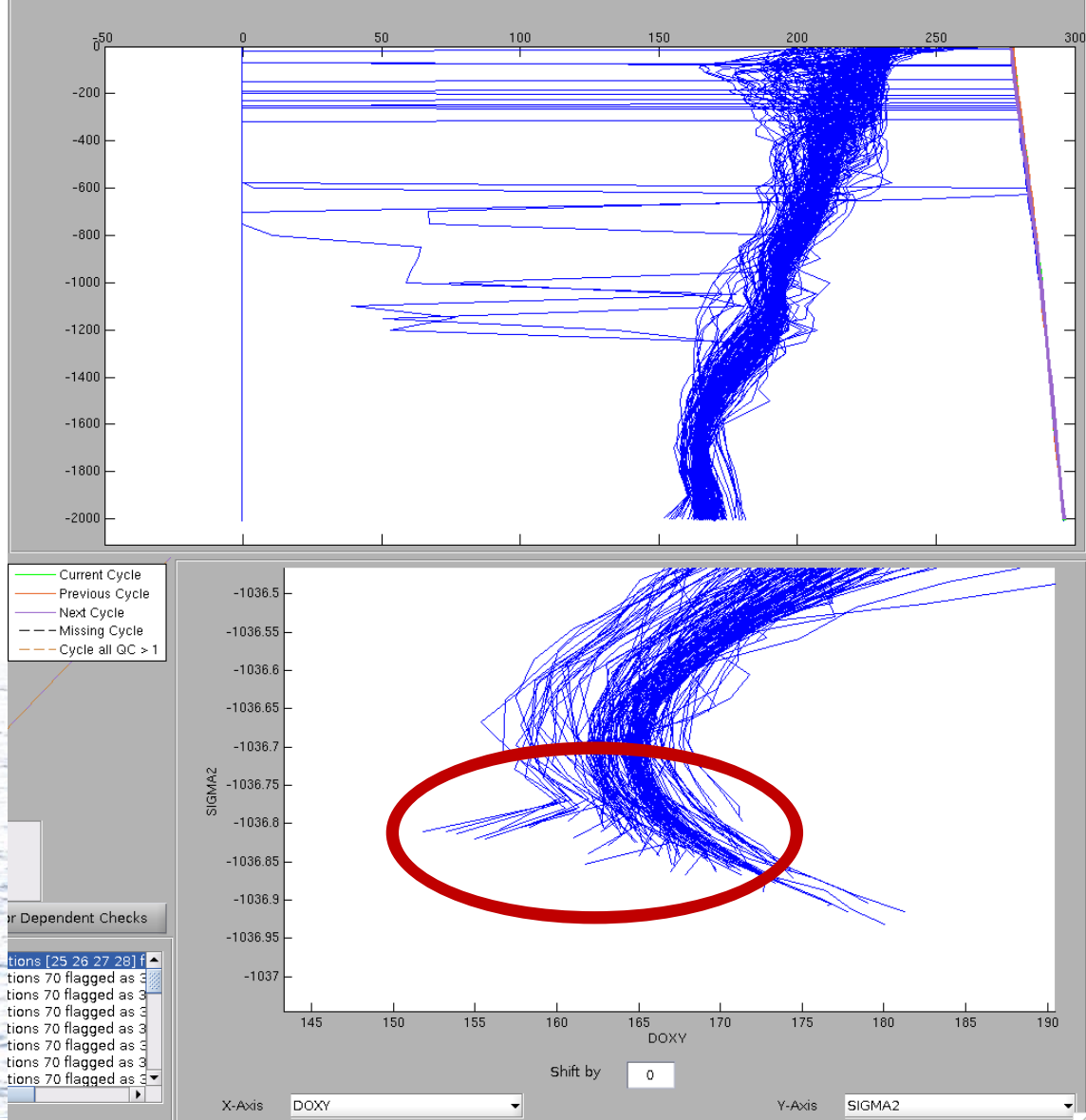
Transfer Primary Qc

PRES	PSAL	TEMP	DOXY
1	1	1	4
1	1	1	4

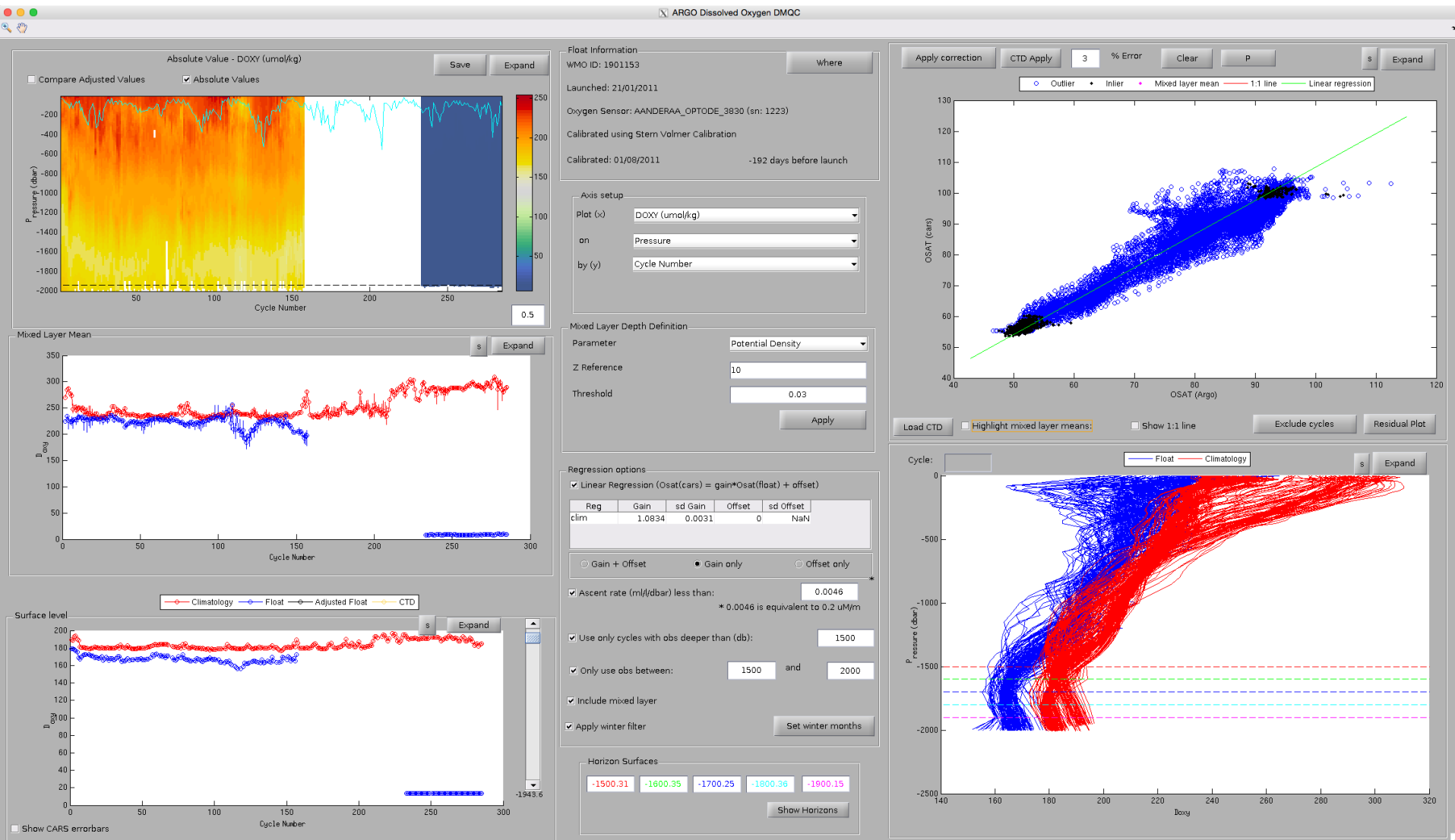
Updates

Apply Sensor Dependent Checks

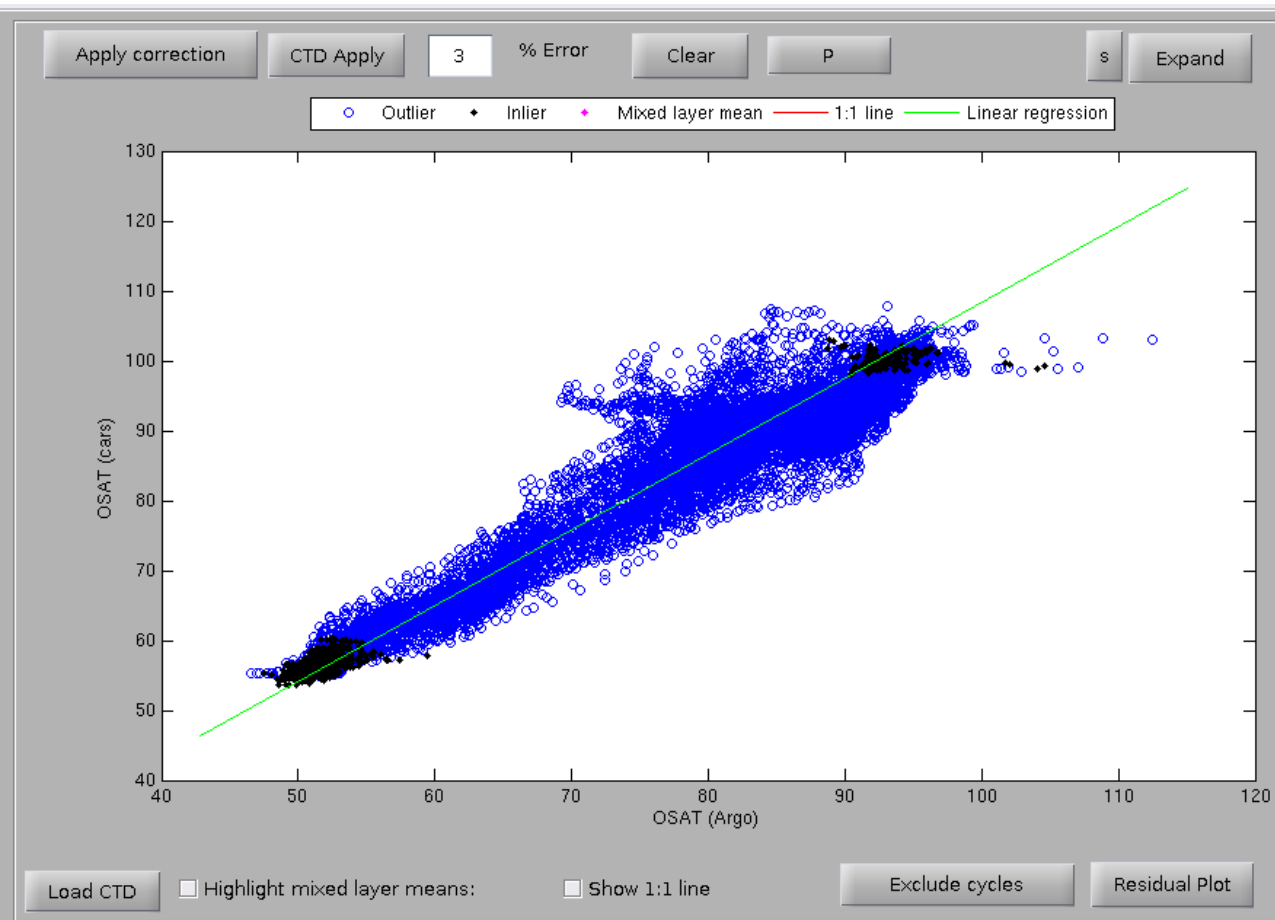




GUI 2 (DOXY only): Comparison to climatology and/or CTD data (Winklers)



Choices to be made... (in-air calibration currently not possible)



Regression options

☒ Linear Regression ($\text{Osat}(\text{cars}) = \text{gain} \cdot \text{Osat}(\text{float}) + \text{offset}$)

Reg	Gain	sd Gain	Offset	sd Offset
clim	1.0834	0.0031	0	NaN

☐ Gain + Offset ☒ Gain only ☐ Offset only

☒ Ascent rate (ml/dbar) less than:
* 0.0046 is equivalent to 0.2 $\mu\text{M}/\text{m}$

☒ Use only cycles with obs deeper than (db):

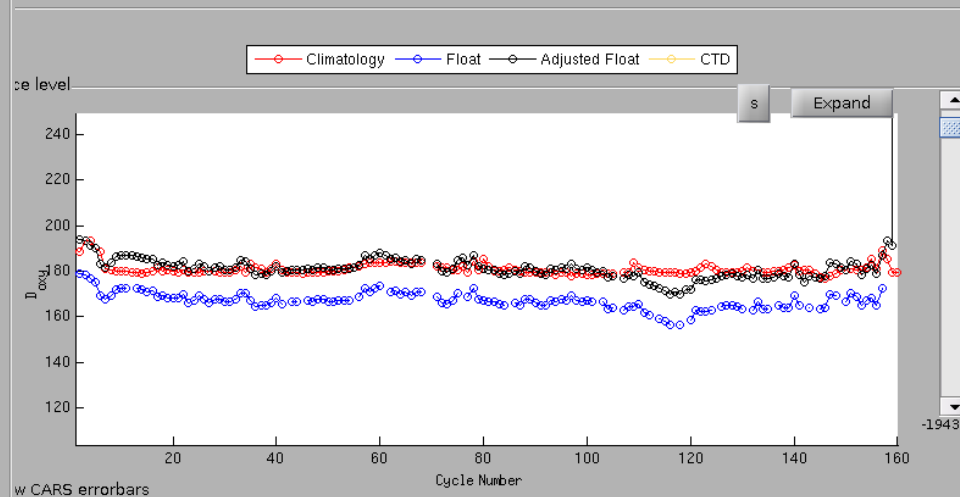
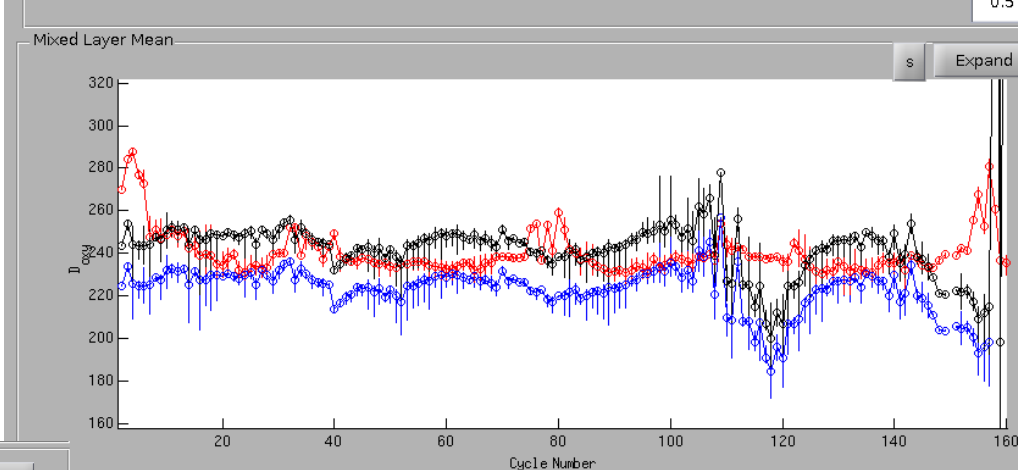
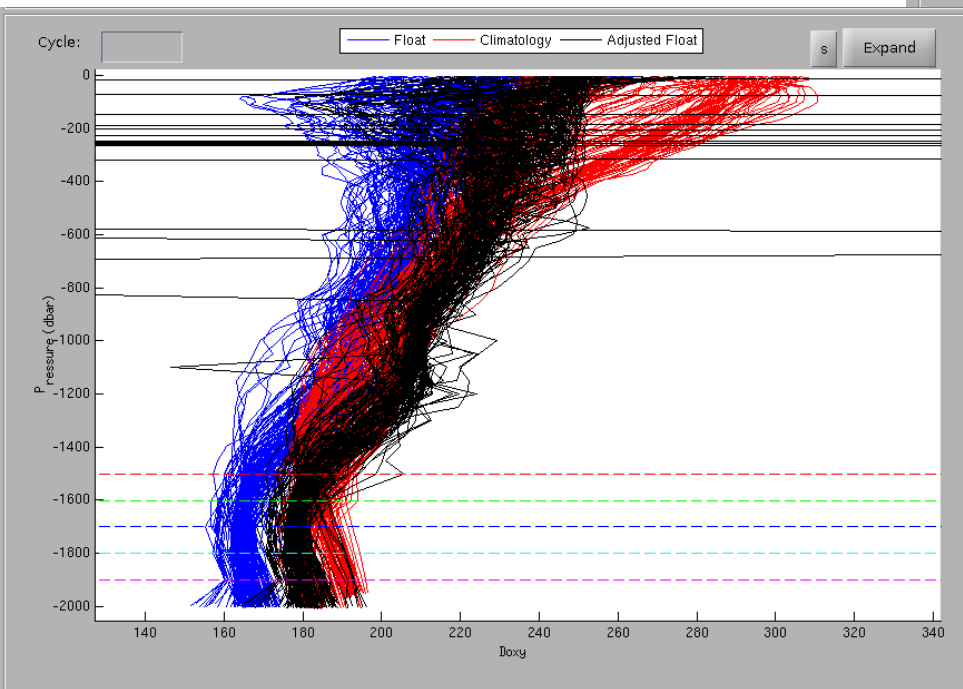
☒ Only use obs between: and

☒ Include mixed layer

☒ Apply winter filter



Post-correction checks



DOXY Proposal (for CSIRO):

- Implement SAGE QC for DOXY to do RT gain corrections
 - Continue DMQC with in-house software once software has been updated
- looking to have conversations about what should be implemented

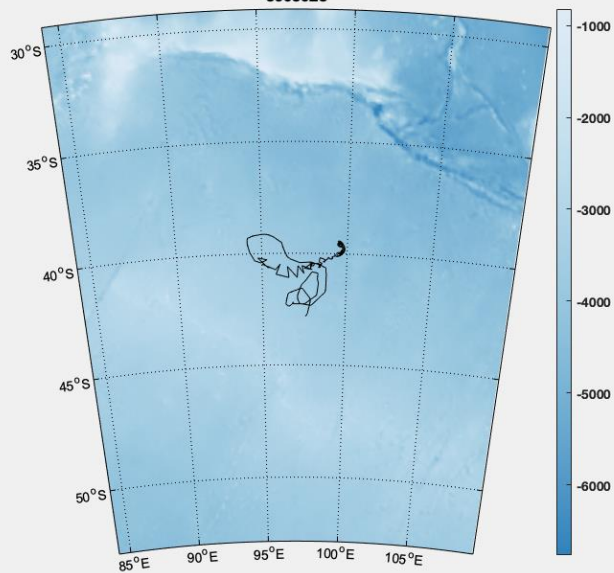


CHL and BBP

- Some examples of issues encountered with our floats
- Areas of concern:
 - Bio-fouling
 - NPQ correction (what's best?)
 - “Best” calibration for a given float (Roesler factor)
→ How close are we to coming up with a “final” recommendation?

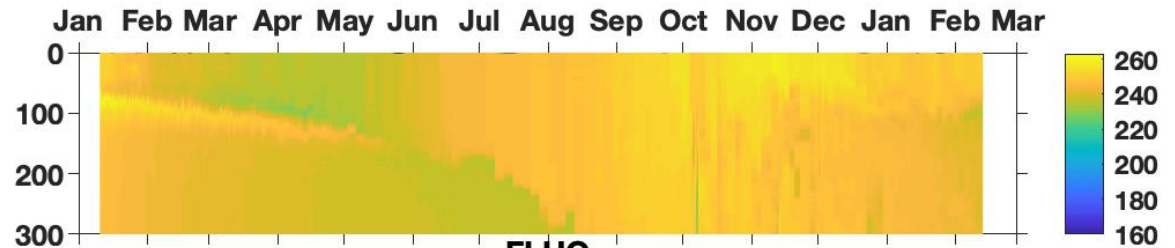


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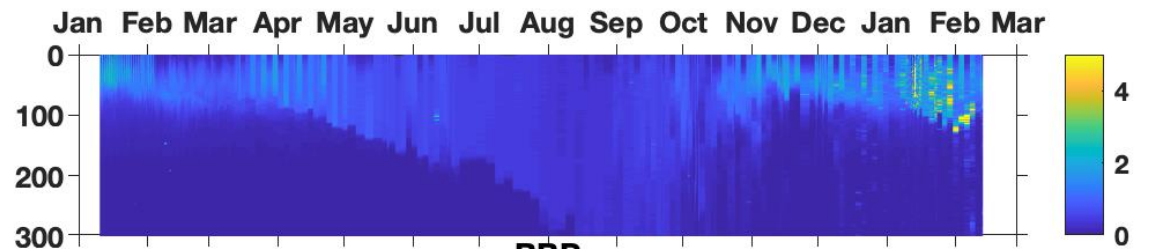


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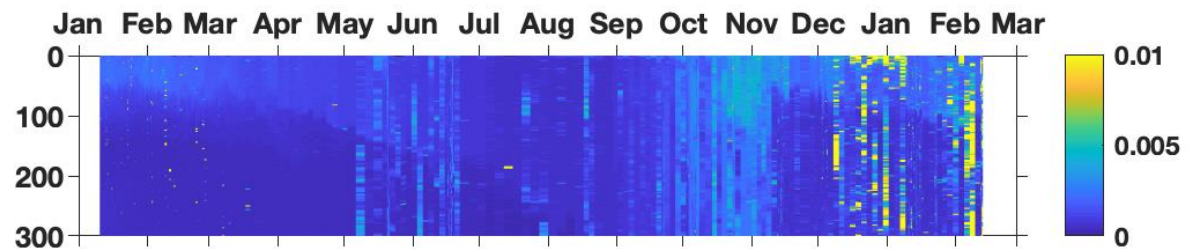
DOXY



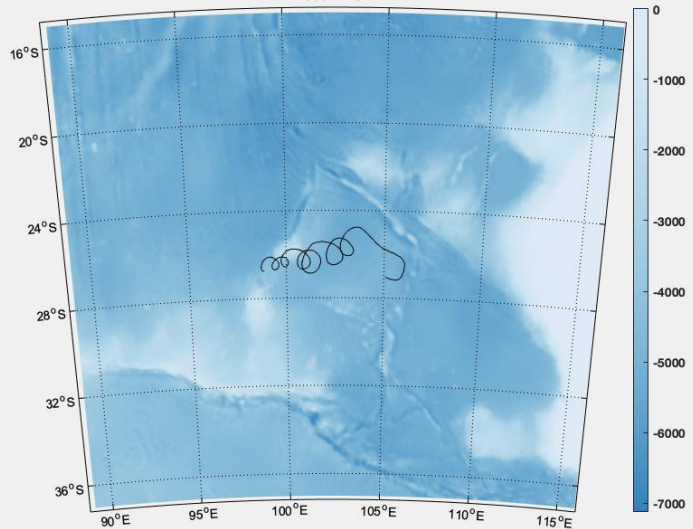
FLUO



BBP

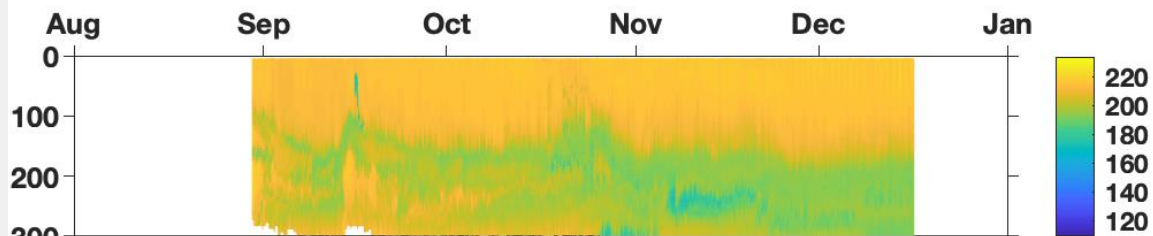


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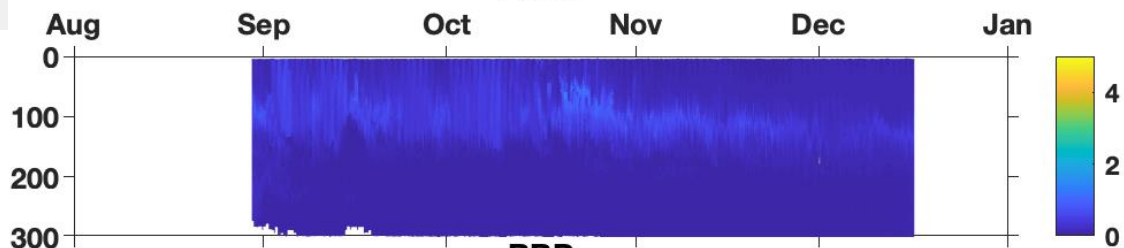


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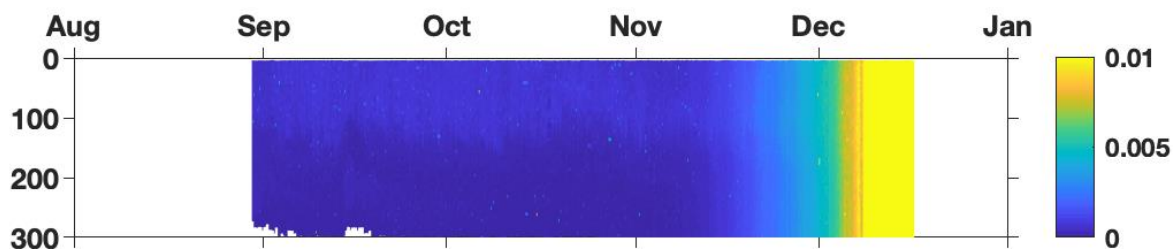
DOXY

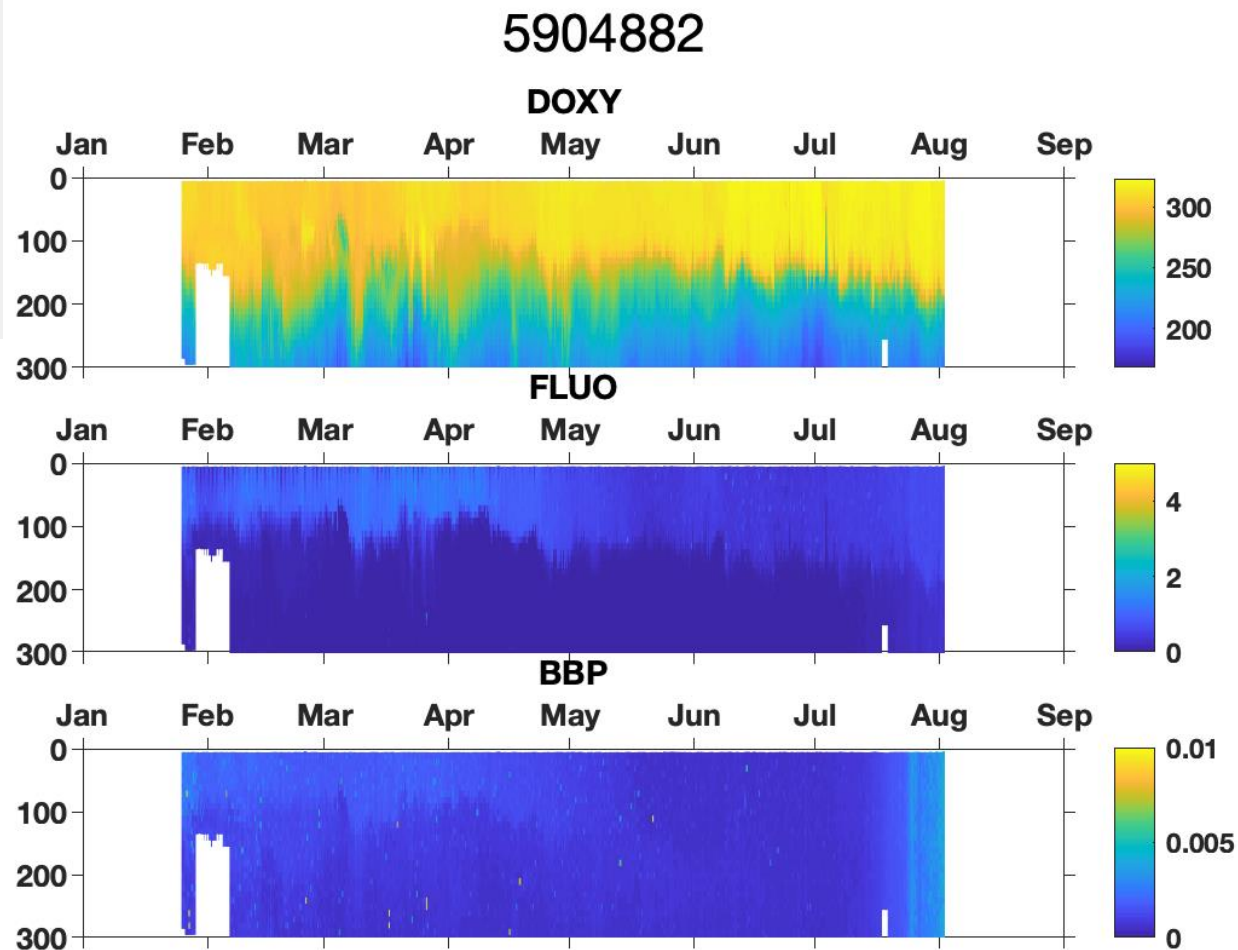
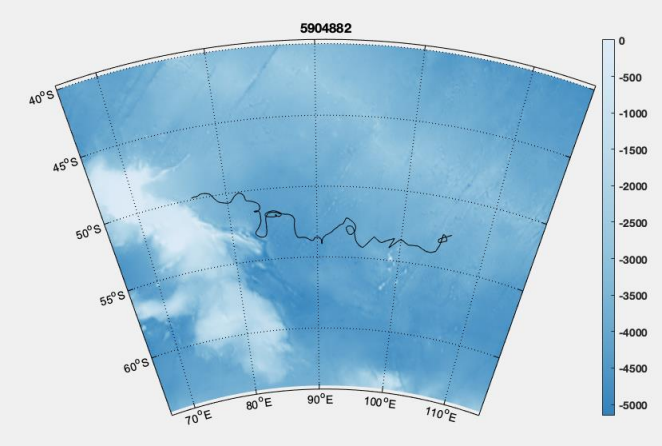


FLUO



BBP





Conclusions

- DOXY QC on track (at 86%) and with a plan to stay on top of it
- CHL/BBP in the works
- Other sensors to follow
- Open questions remain regarding best practices for CHL, **especially in the Southern Ocean** (NPQ correction, Roesler factor, bio-fouling etc.)
- Decisions to be made: QC to be done on synthetic profiles or individual ones or both?
 - workflows, priorities, what do end users need to know...

