

UK and Japan Deep APEX experience 2017/2018

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UK Deep APEX experience 2017/2018

Summary by B King for AST-19

Deep 22,23,24,25 awaiting deployment in N Atlantic, possibly 24N fall 2018.

Deep 12,13,14,15 (all with Aanderaa O2) Planned for Atlantic 24S in March 2018, but still being rebuilt at TWR after leaking in Drake Passage in Nov 2016.

Deeps 18,19,20,21 (all with Aanderaa O2) Deployed Drake Passage Dec 2017, all deployed in p-activate mode

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Deep 20 (comm 00052, dep 16 Dec 2017)

Dead/missing

No telemetry of any kind.

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Deep 18 (comm 00056, dep 17 Dec 2017)

Dead/missing

Successful P-activation, test telemetry cycle 0 from surface.

No other cycles.

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Dead/missing

No telemetry of any kind.

Deep 18 (comm 00056, dep 17 Dec 2017)

Dead/missing

Successful P-activation, test telemetry cycle 0 from surface.

No other cycles.

Deep 19 (comm 00057, dep 16 Dec 2017) – notes follow

Deep 21 (comm 00058, dep 17 Dec 2017) – notes follow

Deep 19 (comm 00057, deployed 16 Dec 2017)

3-day cycles, park at 3500 which is also deep descent level.

22 cycles up to 18 Feb. 2 dbar CP for whole water column.

Working mechanically OK.

One 'reset' to default mission at cycle 11, after which it re-learned the correct buoyancy counts.

Wildly bad salinity above 250m on cycle 3 – possibly pump flow rate problem or pump completely off.

Bad salinity from 3000m to 2300m on cycle 11, possibly pump flow rate problem rather than fouling.

Salinity otherwise behaving 'normally', but about 0.005 fresh compared with cruise deployment CTDs.

Deep 21 (comm 00058, deployed 17 Dec 2017)

3-day cycles, park at 3500 which is also deep descent level.

21 cycles up to 16 Feb. 2 dbar CP for whole water column

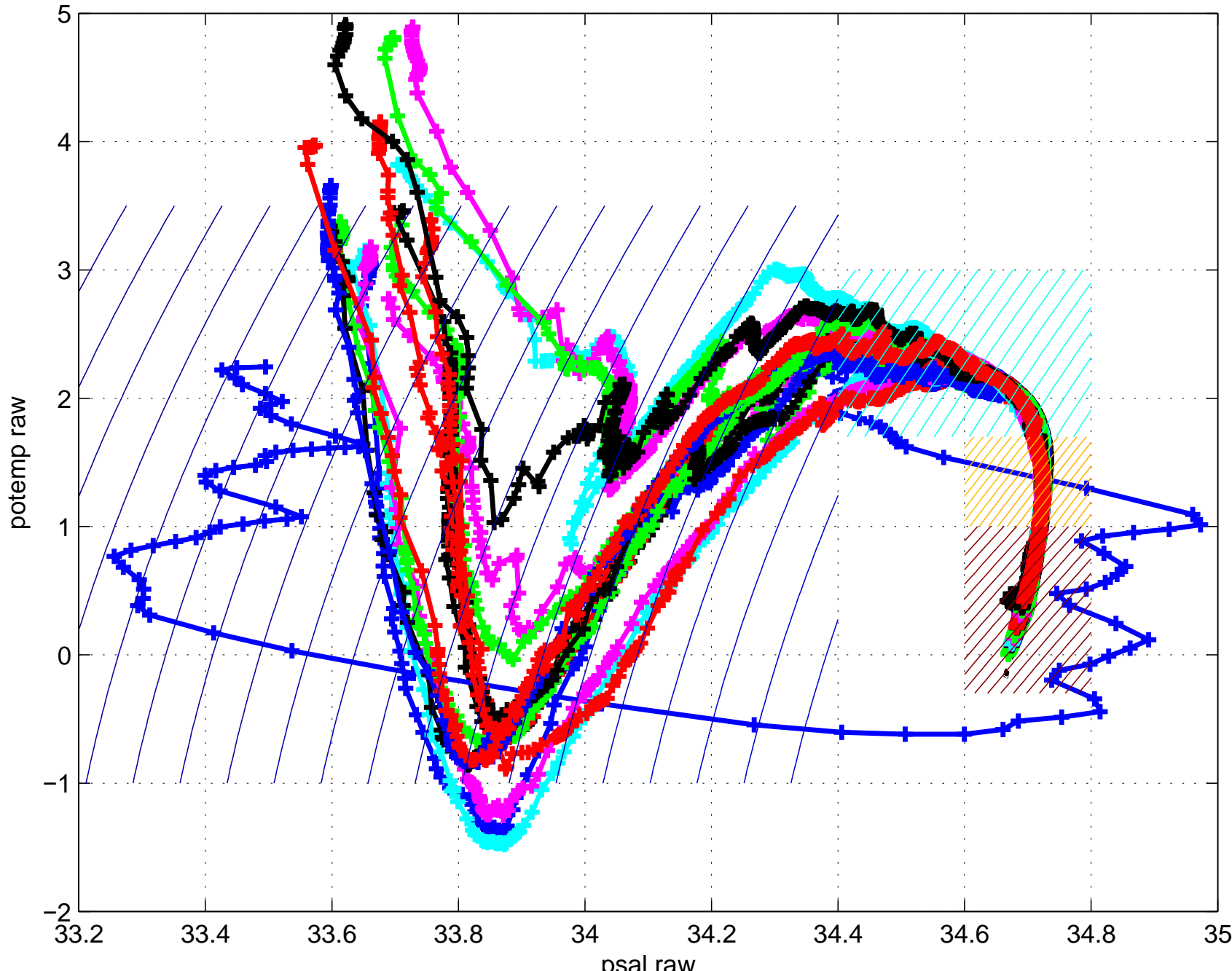
Working mechanically OK.

'OK' salinity cycles 1 and 2

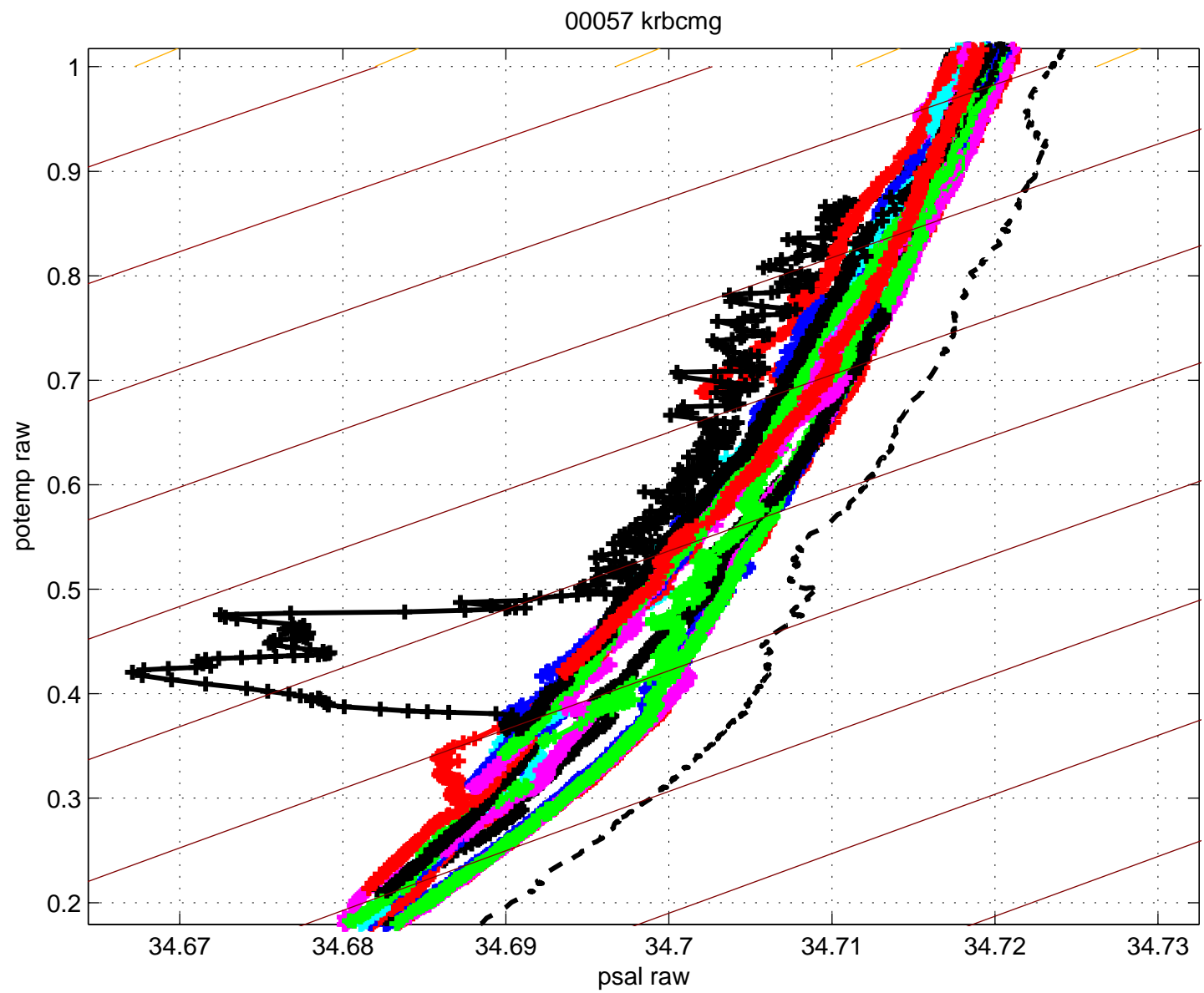
Very noisy salinity from cycle 3 onwards at all depths – looks like pump flow rate or time-constant problem. T and C are individually smooth, S is spiky.

S is about 0.005 fresh compared with cruise deployment CTDs.

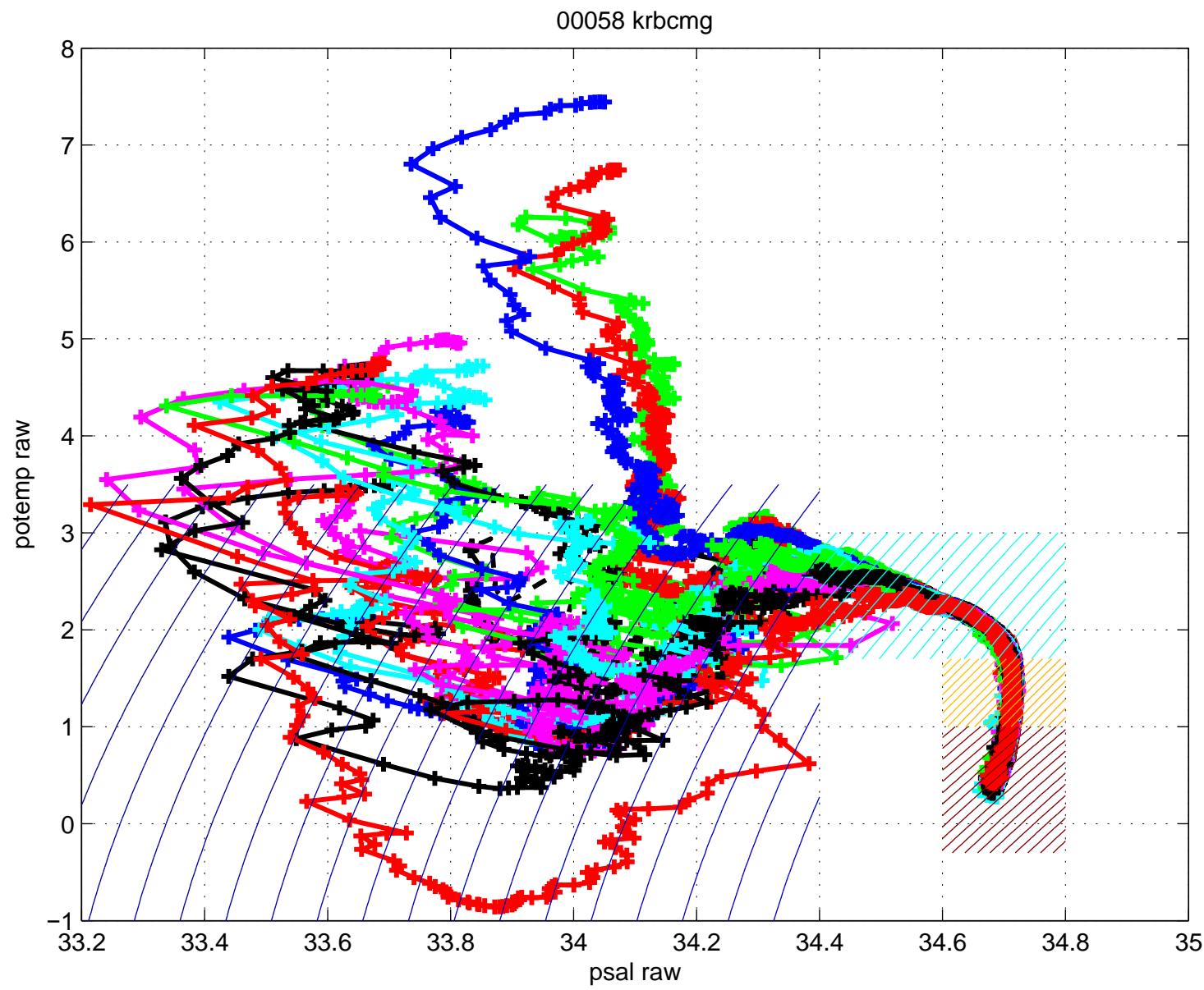
Deep 019/00057; cycle 3 and 11 have bad salinity
00057 krbcmg



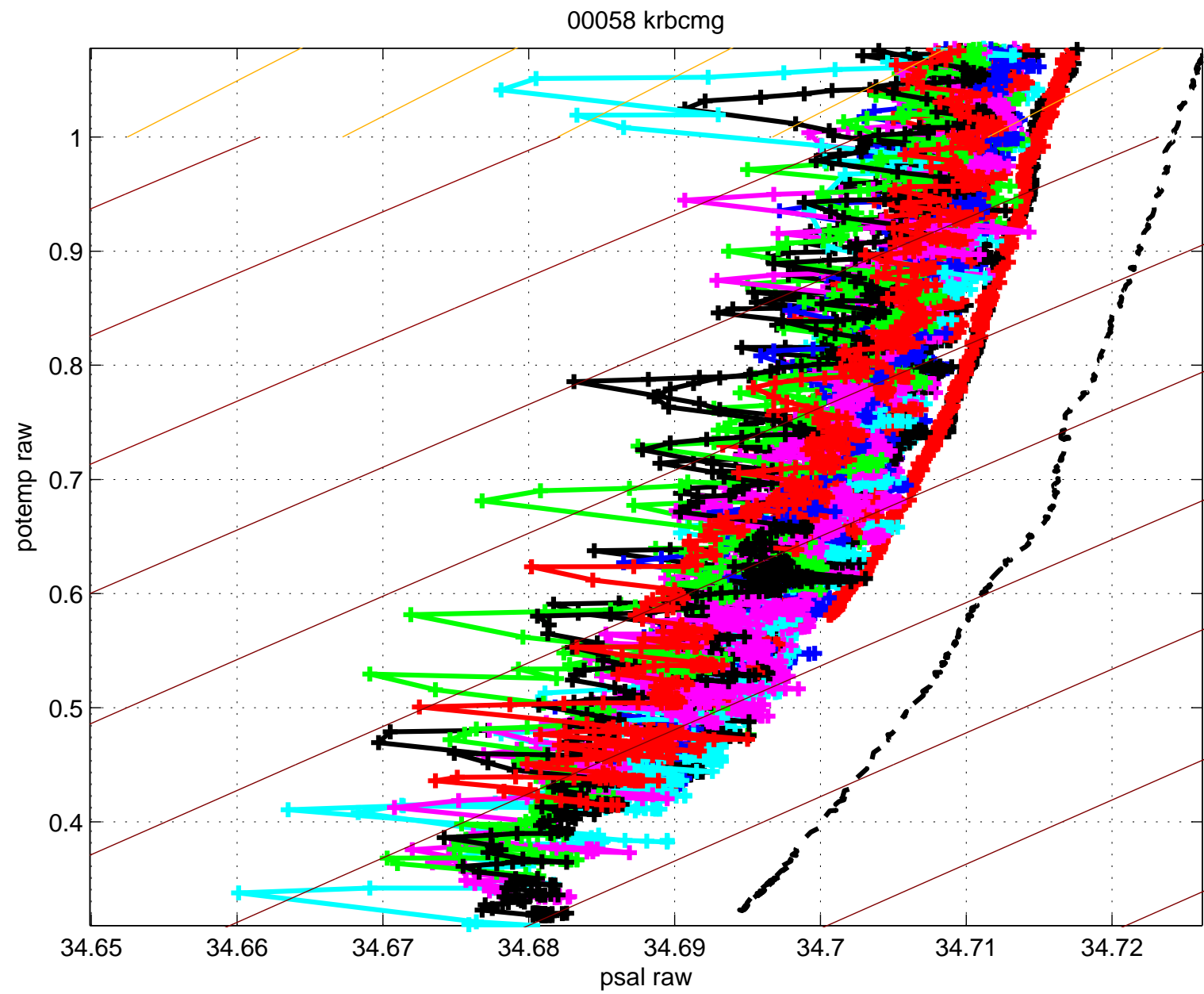
Deep 019/00057; cycle 11 has bad salinity; dotted line is cruise CTD



Deep 021/00058; bad salinity cycle 3 onwards; note spikes across sigma-0, sigma-1, sigma-2, sigma-3



Deep 021/00058; bad salinity cycle 3 onwards ; dotted line is cruise CTD



Deep 18,19,20,21 Summary (20 Feb 2018)

2 floats failed

1 float has permanently bad salinity (noisy)

1 float has intermittently bad salinity

The two floats that are working mechanically have S reported around 0.005 fresh

No explanation yet (20 Feb 2018) from TWR or SBE about bad salinity data or on hypothesis that pump rate is responsible for bad salinity

JAMSTEC Deep APEX experience 2017/2018

S/N 17 with Optode Oxygen was launched in Southern Ocean (45S, 109E) in January, 2017.

→ Water leakage was occurred and changed in Emergency mode. After a few cycle, TWR started to control and monitored all data for several ten cycles.

S/N 26 with RINKO Oxygen (5905062) was launched in the Southern Ocean (45S, 109E) in January, 2018.

→ SBE61CTD has some noise (cp mode), although operating well. RINKO Oxygen cannot be measured deeper profile, still discussing reason with TWR.

S/N 28 with Optode Oxygen (5905218) was launched in the western North Pacific (23N, 164E) in January 2018.

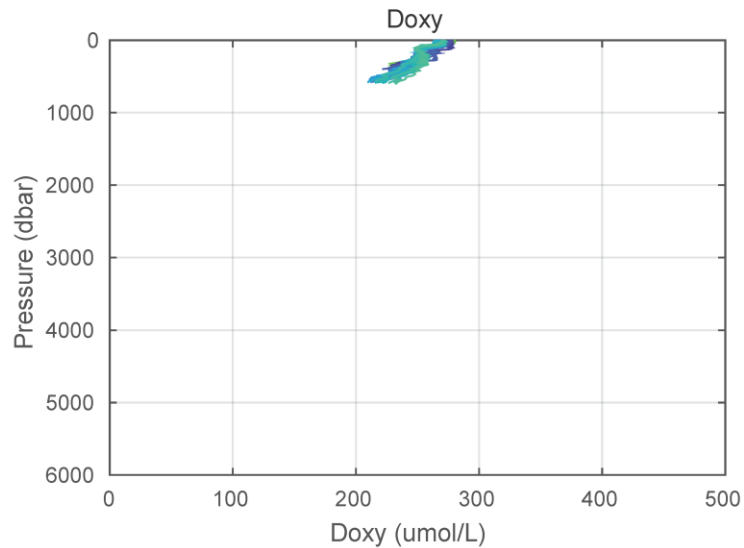
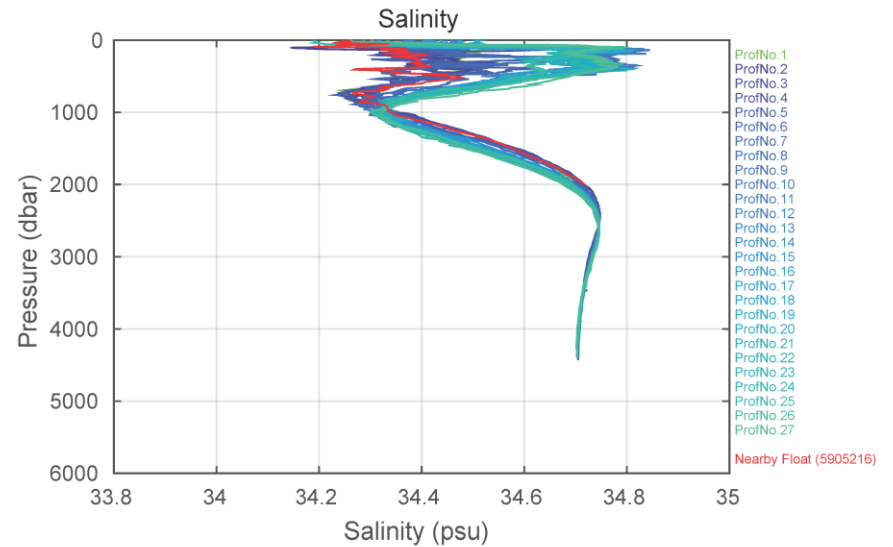
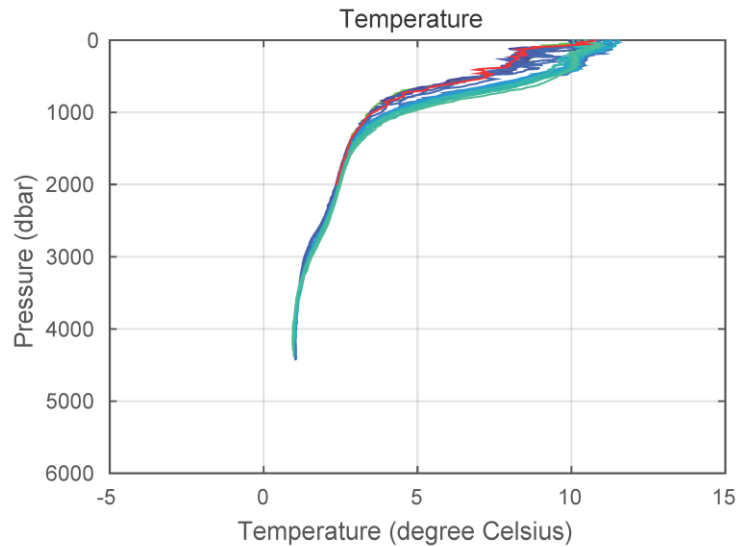
→ SBE61CTD has some noise (cp mode), but is operating well.

S/N 29 with Optode Oxygen (2903212) was launched in the Southern Ocean (54S, 118E) in November, 2017.

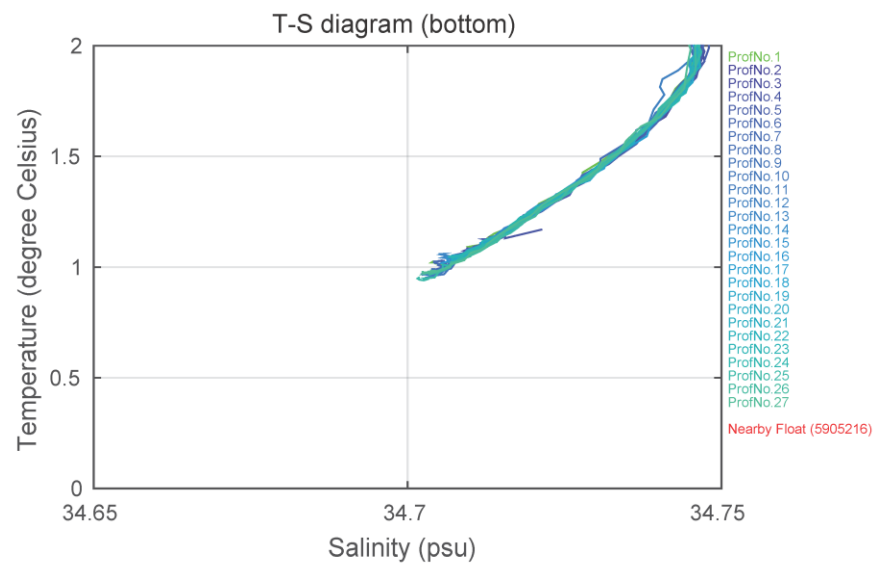
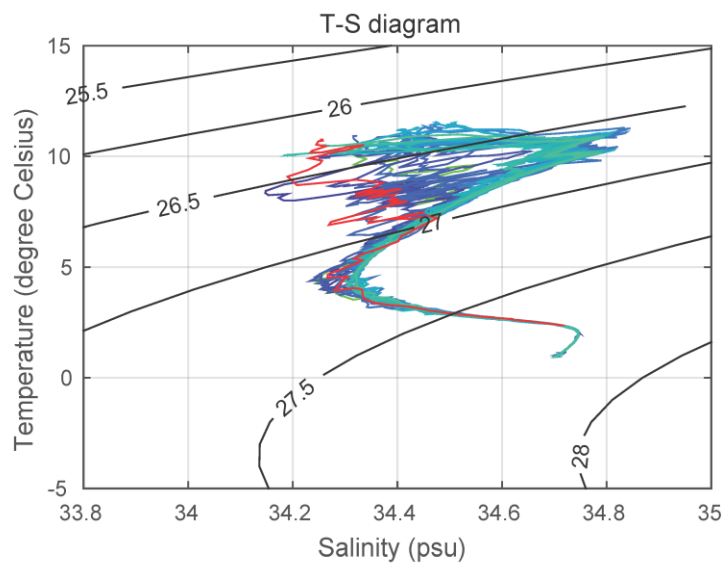
→ CTD and Optode Oxygen have large negative biases, but SBE and TWR do not have any comments.

All Deep APEX were deployed in p-activate mode.

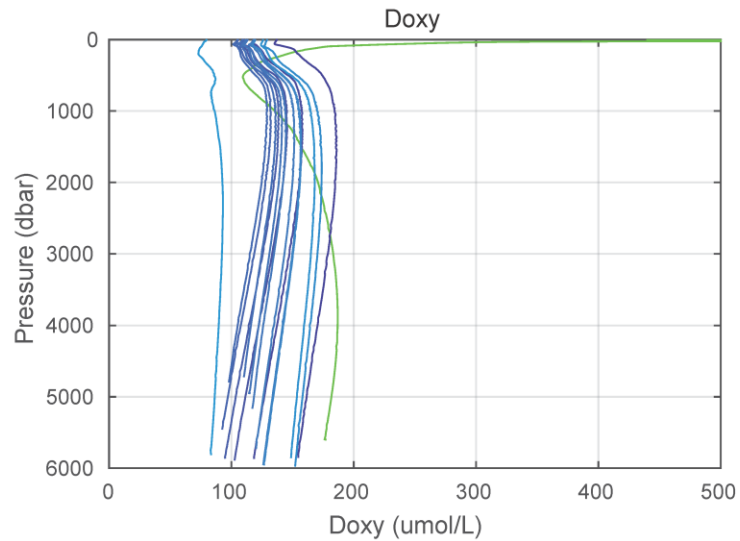
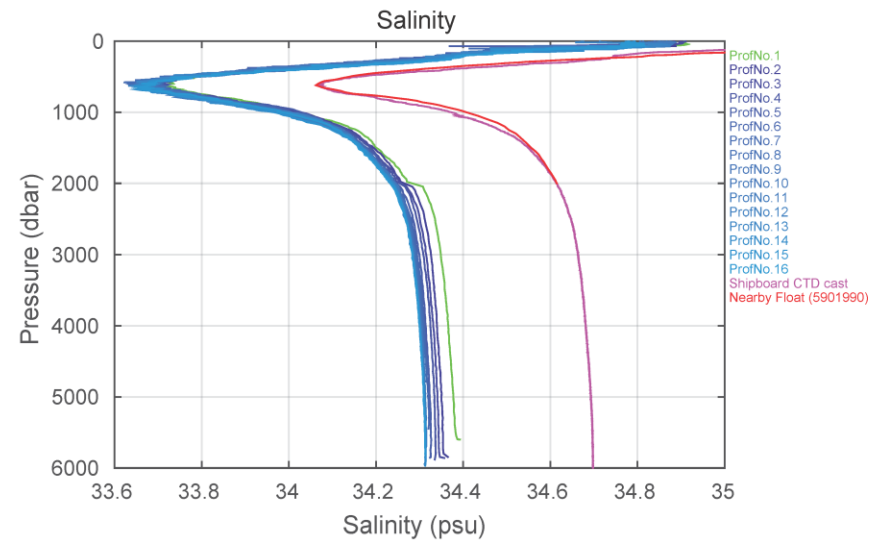
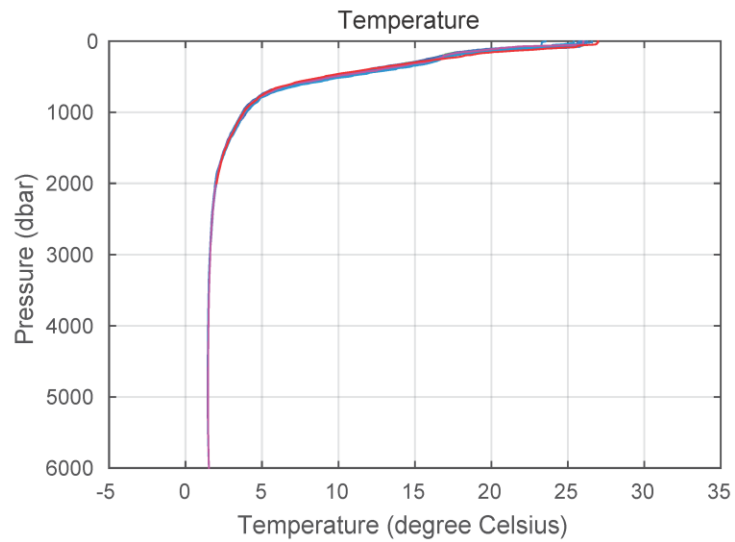
S/N 26 (5905062) all profiles with RINKO



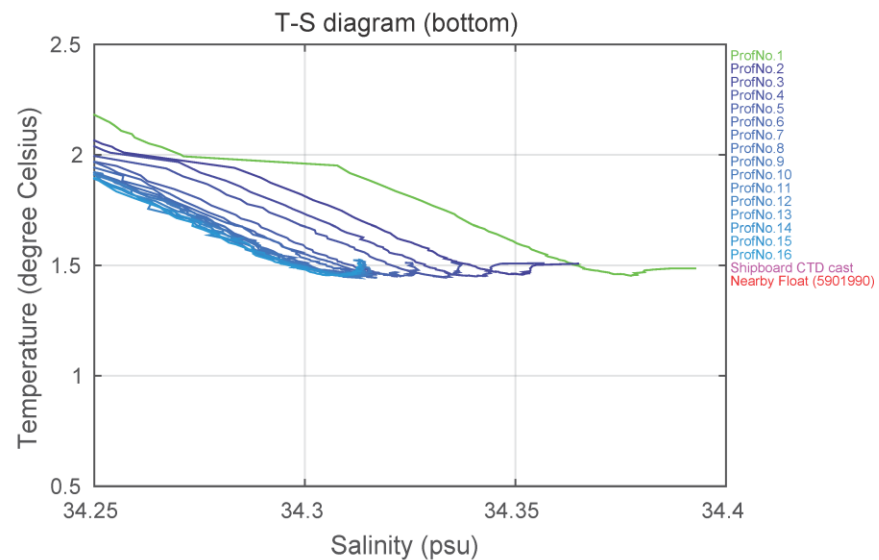
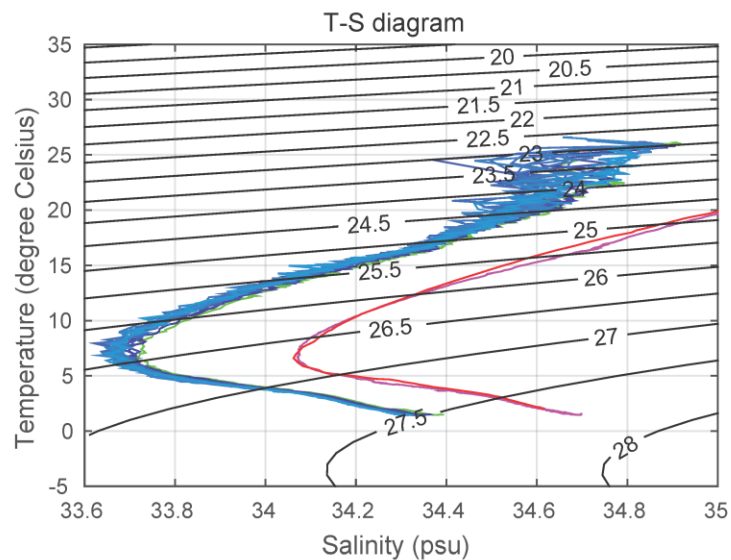
S/N 26 (5905062) SBE61 T-S diagram



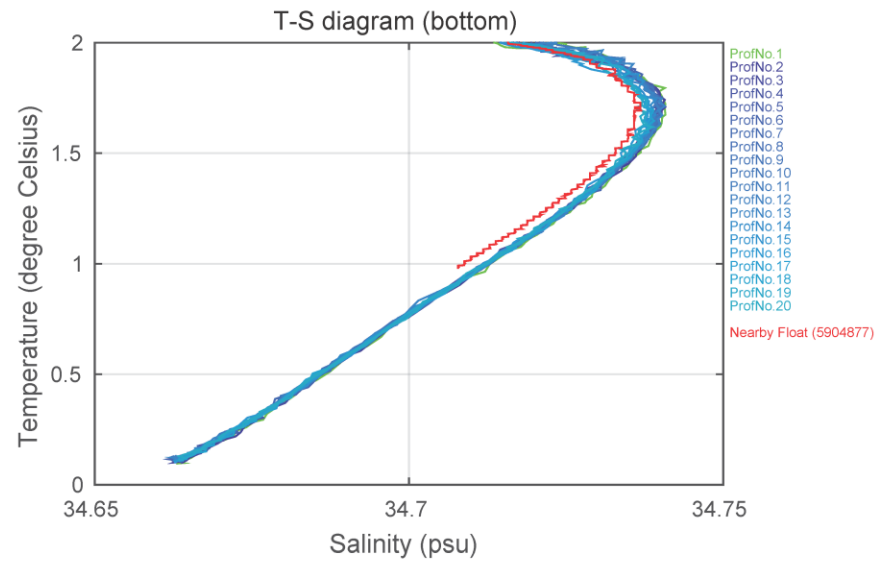
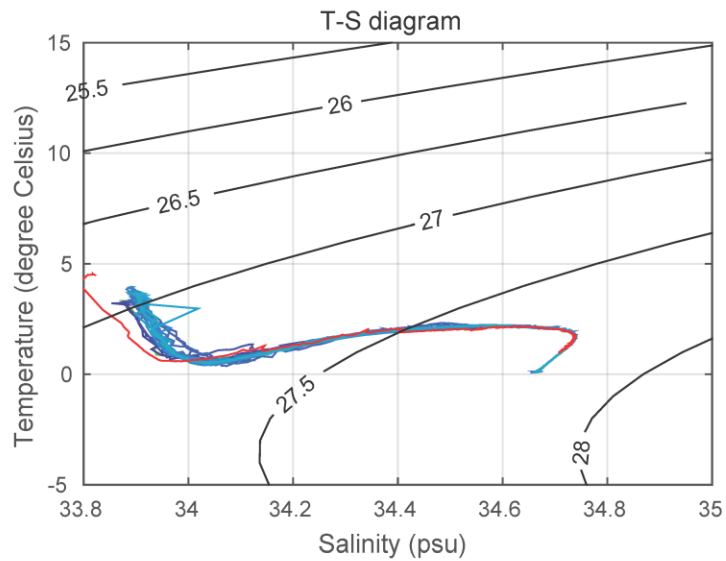
S/N 29 (2903212) all profiles



S/N 29 (2903212) SBE61 T-S diagram



S/N 28 (5905218) SBE61 T-S diagram



Summary (UK + Japan)

Regarding to recent Deep APEXs status in UK (4) and Japan (4),

- 3 floats were dead or operated without profiles,

Others were working mechanically but,

- 3 float has permanently bad noisy salinity,
- 2 float has intermittently bad salinity or biases,

Regarding to Oxygen sensor (3 for Japan),

- 1 Optode has permanently large negative bias,
- 1 RINKO has too short profiles

➤ CTD and Oxygen have some problems in almost floats, but SBE and TWR do not have any comments.

Do SBE61 on Deep SOLO work well?

FY2018 (Apr.~) Deployment plan for Core, BGC, Deep Argo

Num. of planned floats: Core Argo **39**, **Deep Apex(6000m) 14**, BGC Argo **5**
(Chla,O2, bb + NO3 or pH), **Deep NINJA(4000m) 1**, RINKO-Deep NINJA (4000m) **3**

