

PACEO: KOPRI's PO Activity in 2017 and Plan for 2018



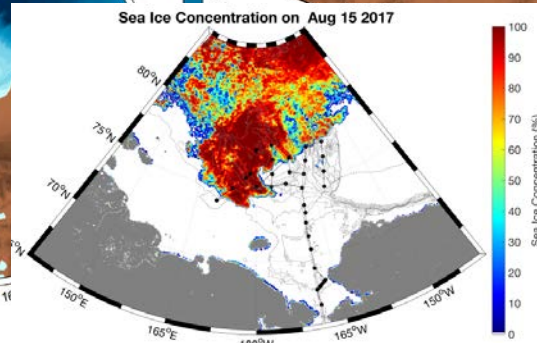
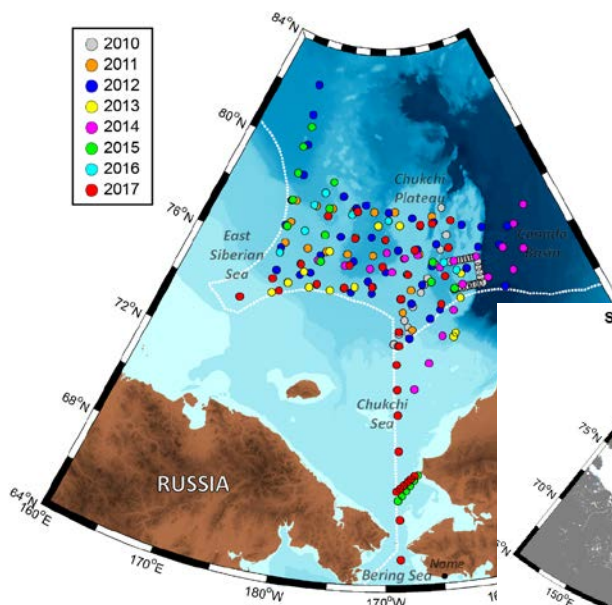
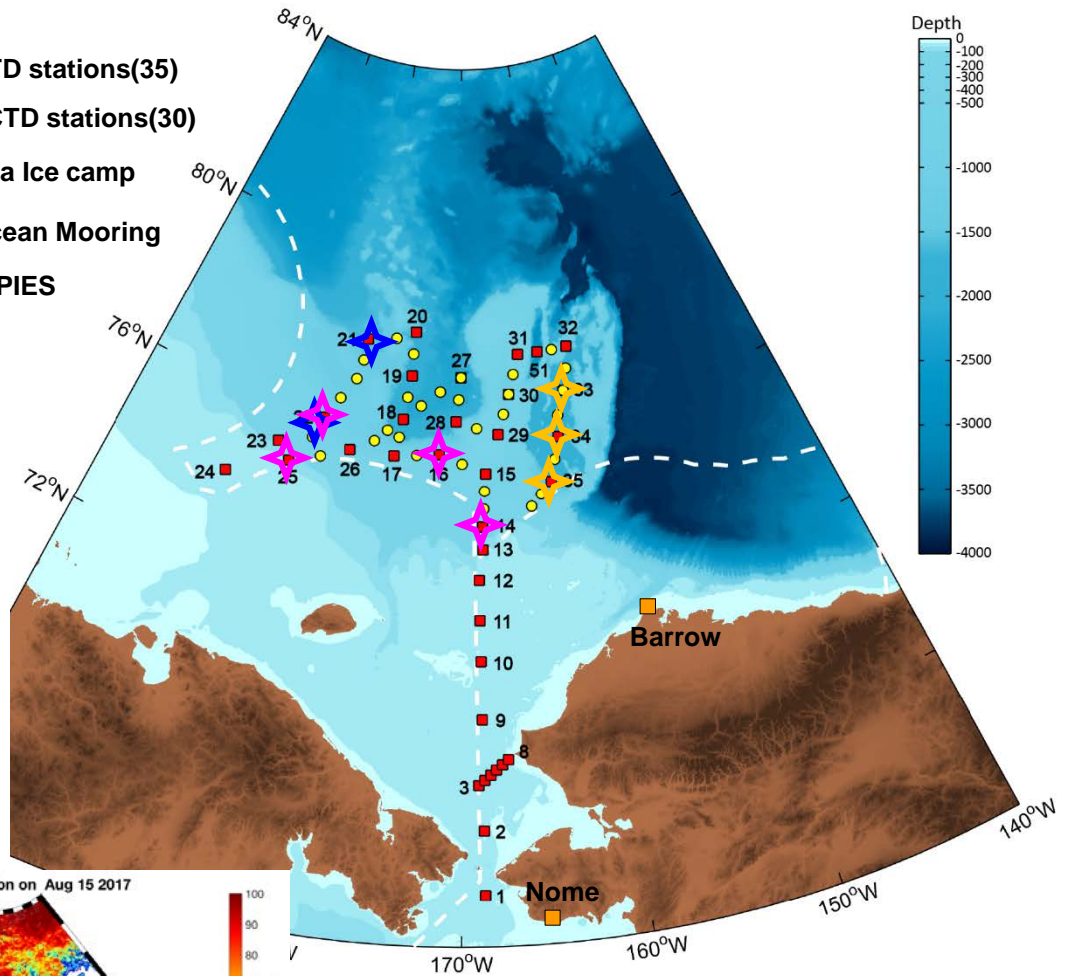
Presenter: Kyoung-Ho Cho

**Division of Polar Ocean Sciences
Korea Polar Research Institute, Korea**

IB R/V ARAON Arctic Cruise (2017)

- ◆ CTD: 35 stations
- ◆ XCTD: 30 stations
- ◆ Ocean Mooring: 5
- ◆ C-PIES: 3
- ◆ Sea ice camp: 2

- CTD stations(35)
- XCTD stations(30)
- ◆ Sea Ice camp
- ◆ Ocean Mooring
- ◆ C-PIES

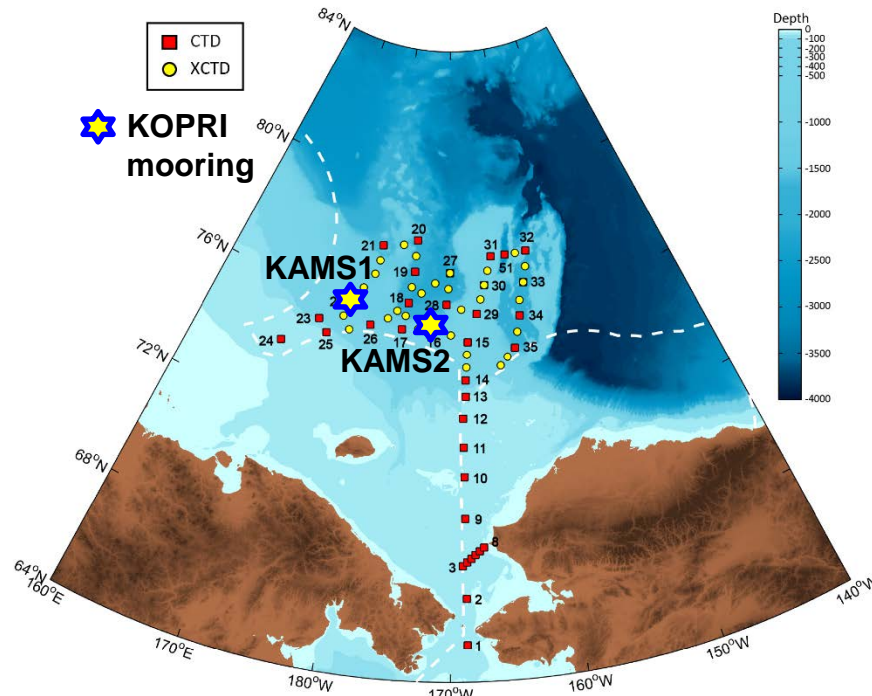
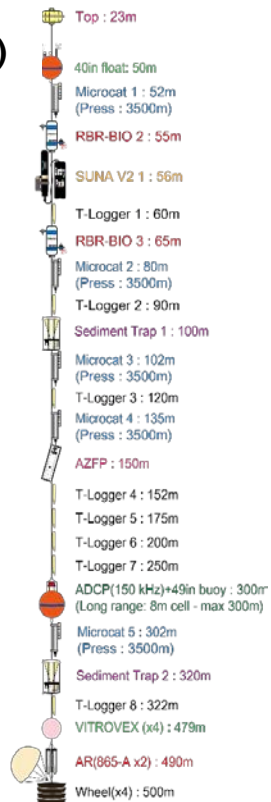


IB R/V ARAON Arctic Cruise (2017)

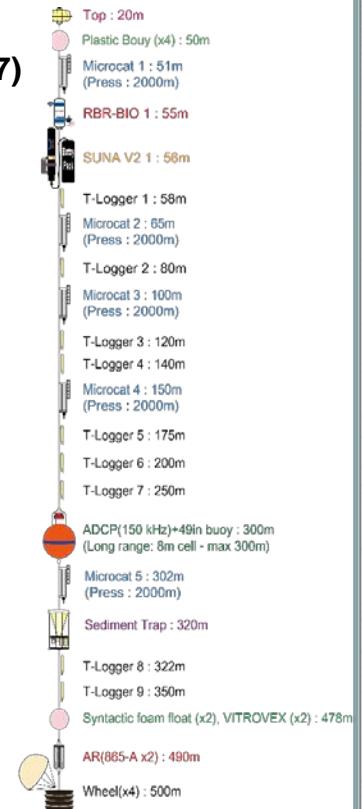
◆ KOPRI Ocean Mooring: KAMS1 (ESS), KAMS2 (CHS)

◆ Equipment: ADCP (150, 300 kHz), microCAT CTD, temperature logger, sediment trap, AZFP, UV nitrate sensor (SUNA V2), Fluorescence & PAR sensors

KAMS1 (ESS-17)

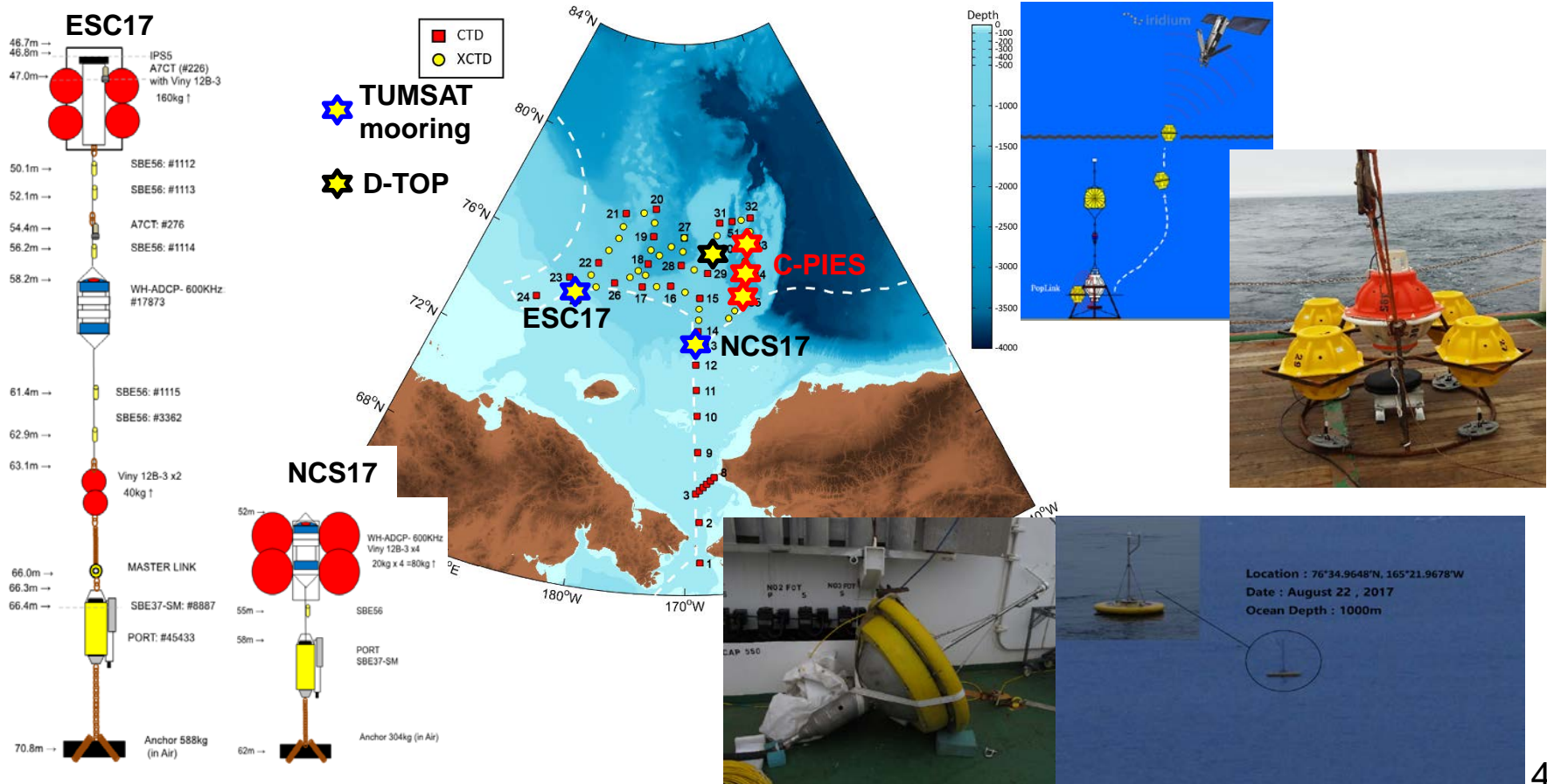


KAMS2 (CHS-17)

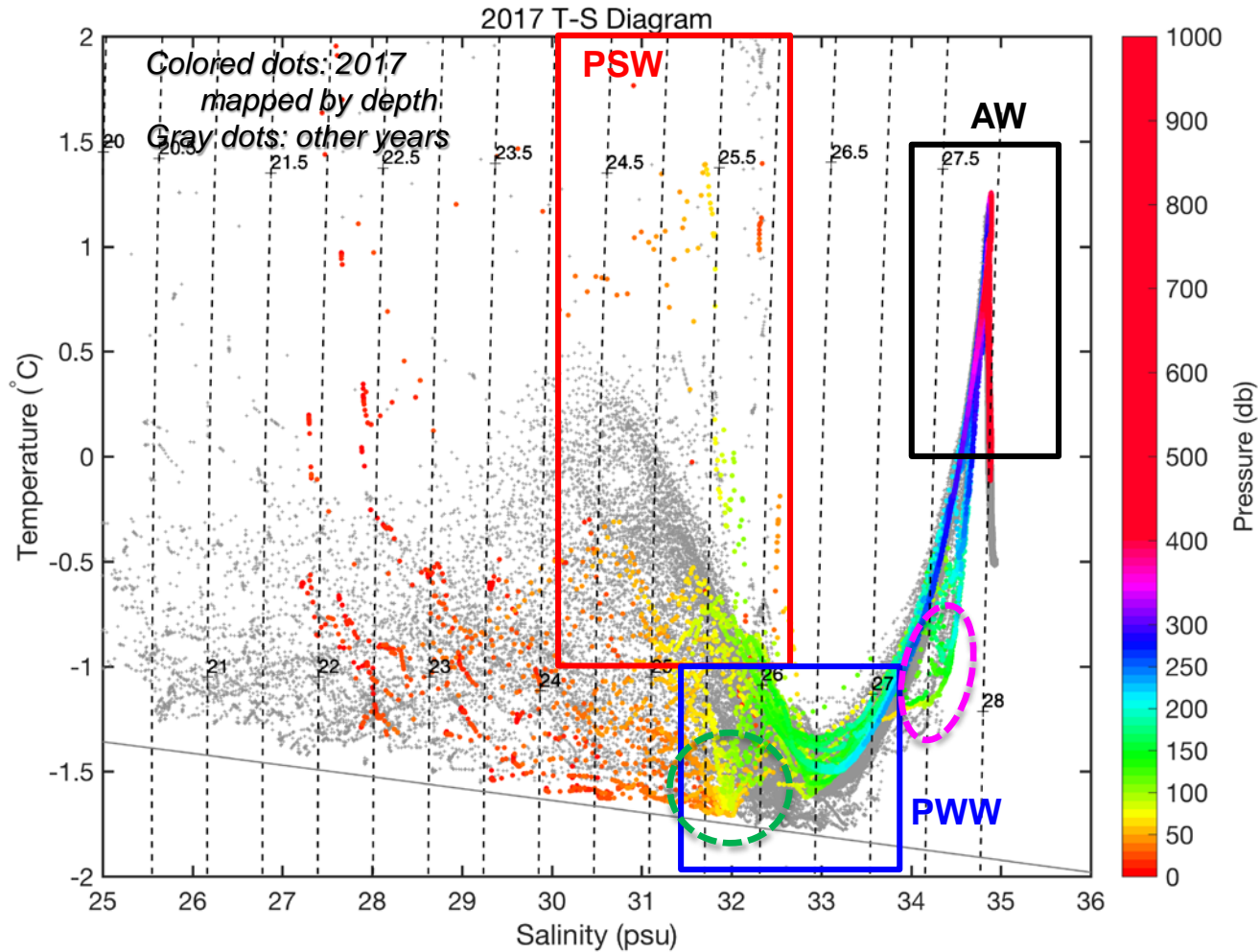


International Collaboration (2017)

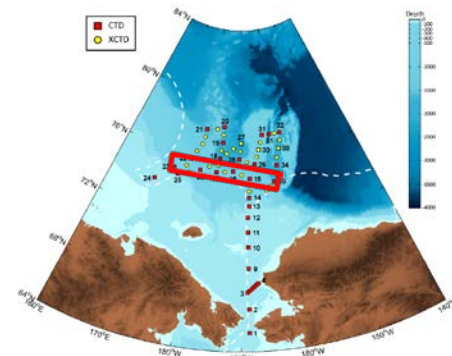
- ◆ Ocean Mooring: ESC17, NCS17 (TUMSAT, Japan)
- ◆ PDS-CPIESs: 3 deployed (MIT/Inha Univ. as a part of SODA program)
- ◆ D-TOP deployment (OUC, China)
- ◆ Equipment: ADCP (600 kHz), microCAT CTD, temperature logger ULS, hydrophone



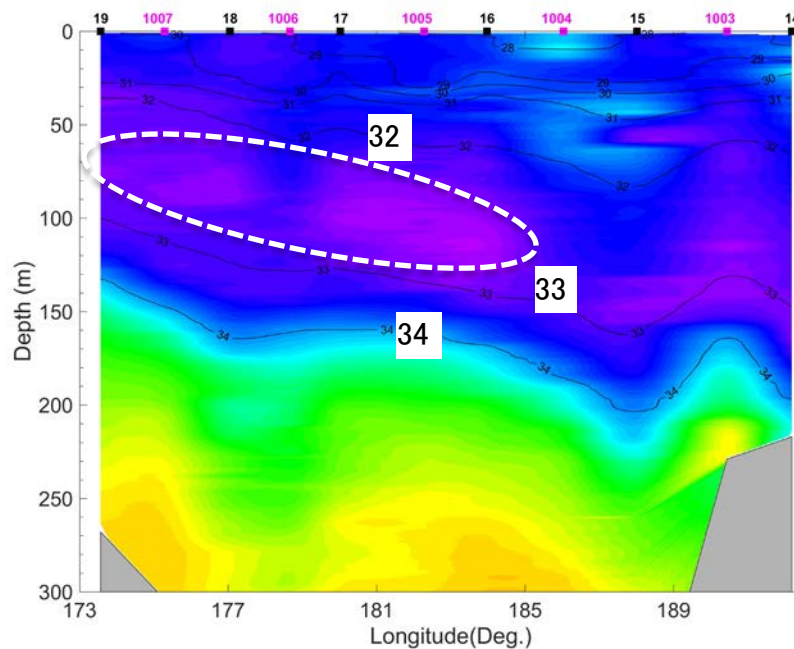
Results: T-S Diagram (CTD/XCTD)



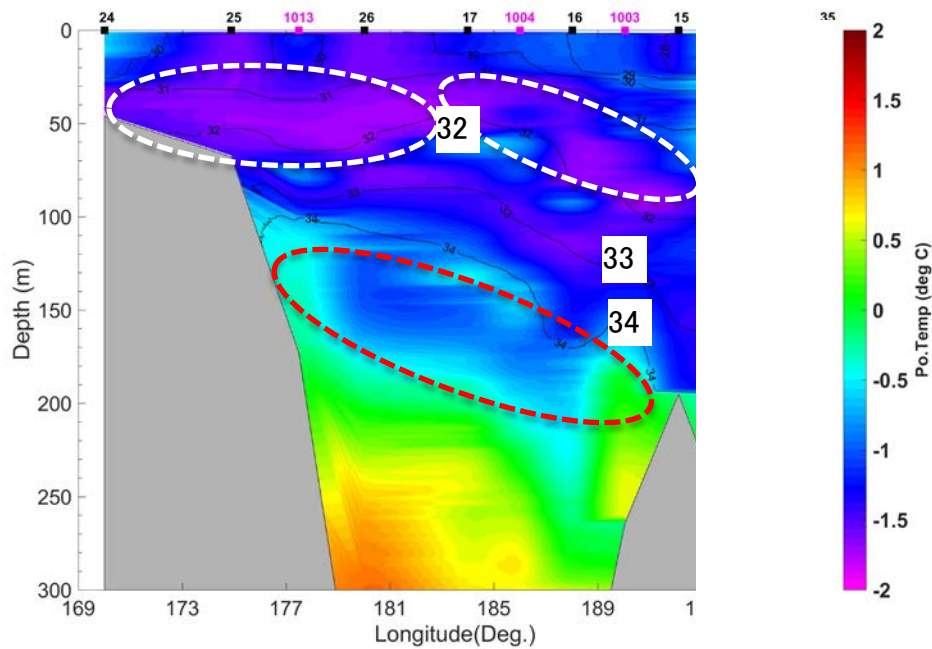
CBL Observation (CTD-T, S) : ~ 75 N



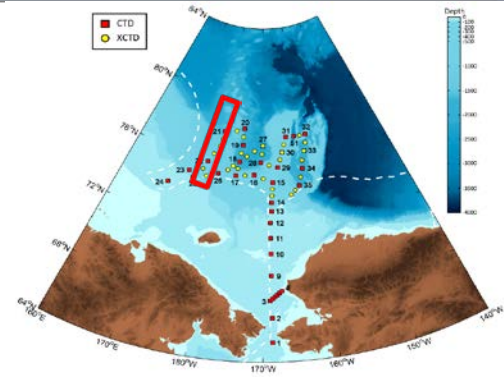
2016



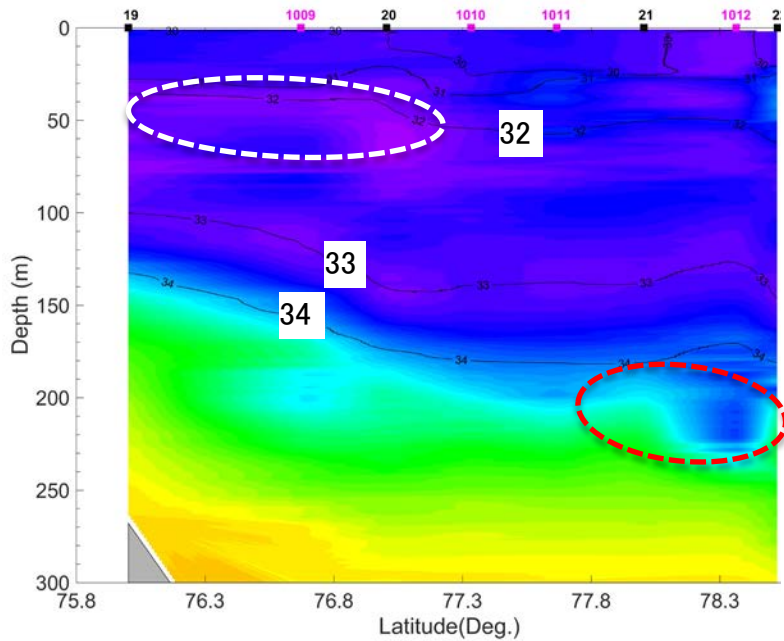
2017



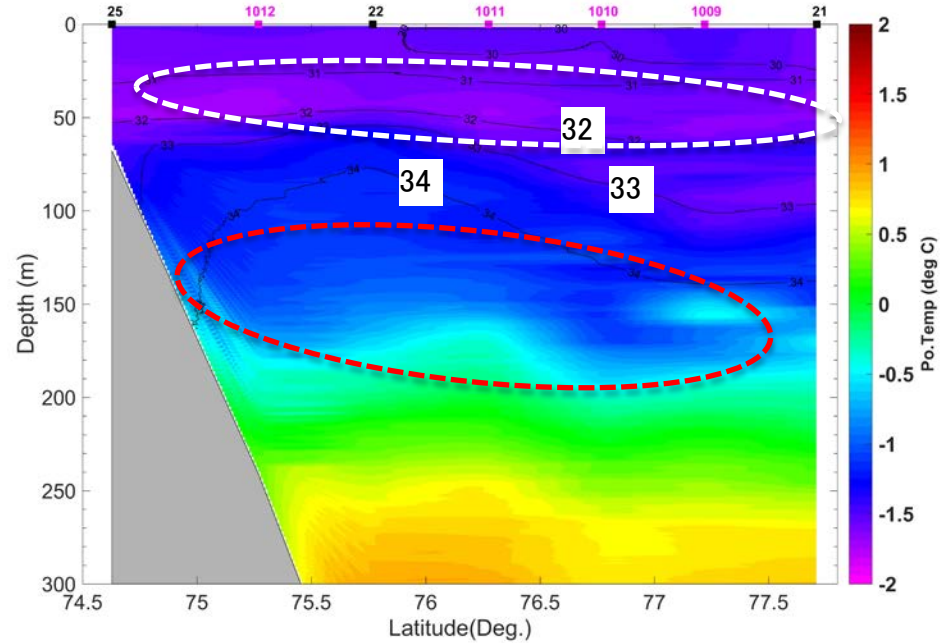
ESS Observation (CTD-T, S) : ~77 E



2016

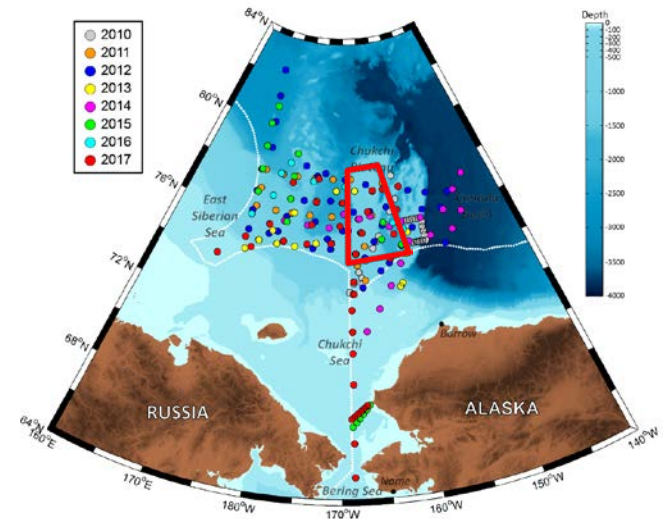
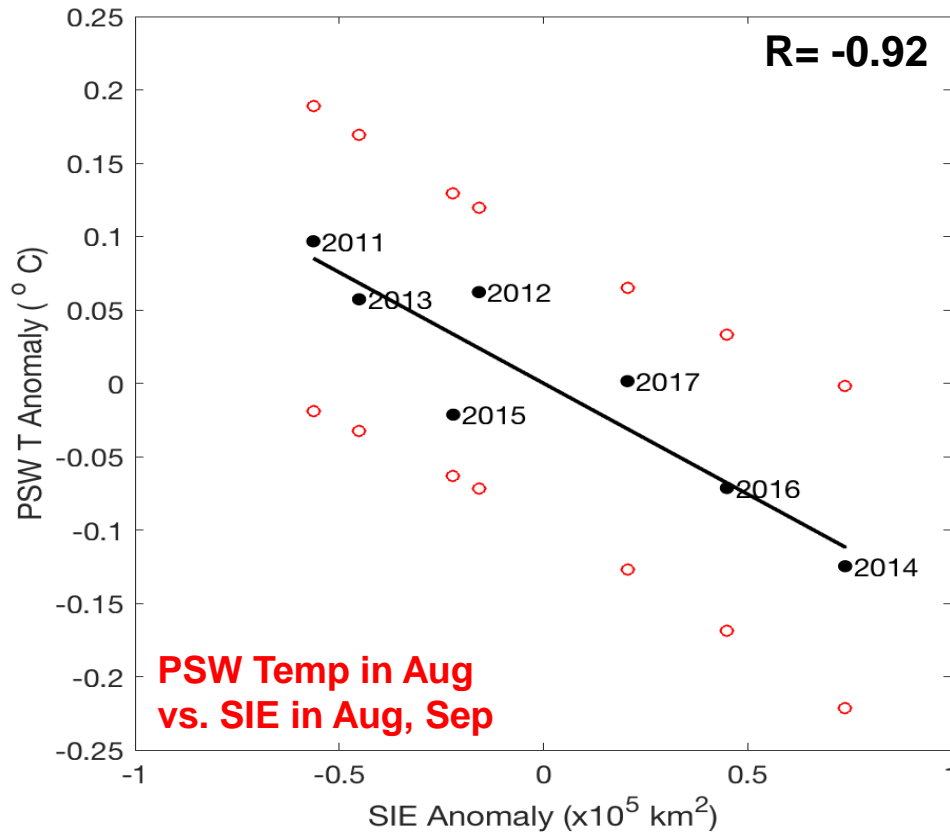
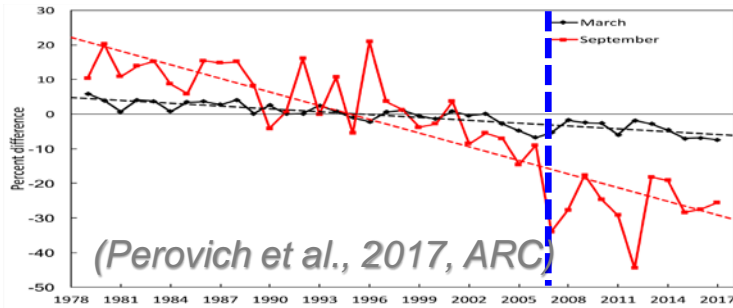


2017



Anomaly correlation

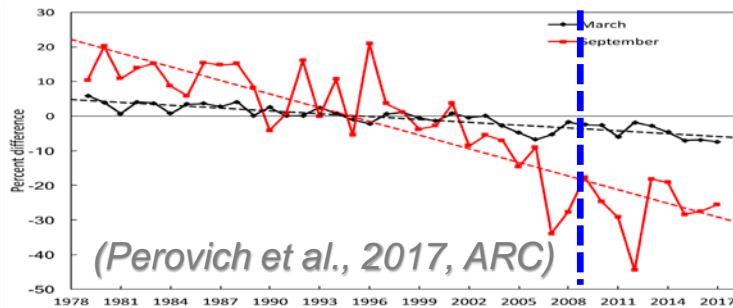
Sea Ice Extent (%)



- PSW selected from the area of [170°W~160°W, 74°N~78°N]
- SIE calculated from the areas of central Arctic and Chukchi Sea

Further Analysis (ongoing)

Sea Ice Extent (%)



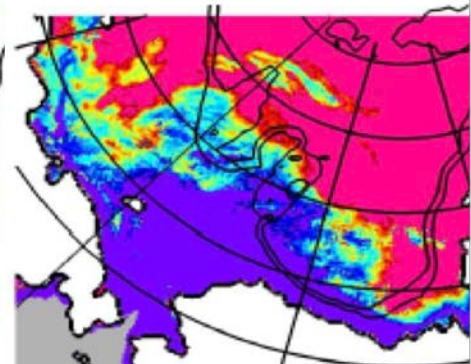
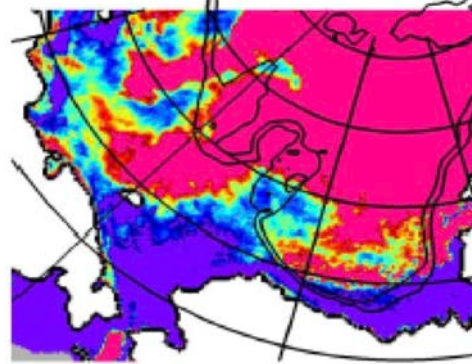
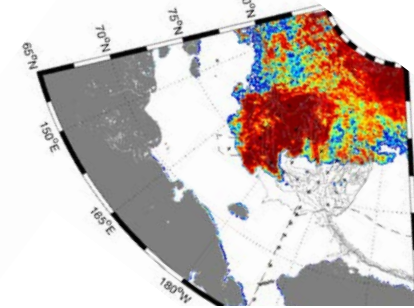
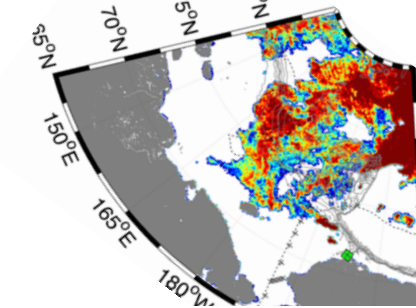
- Distribution of SIC on summer appears to be influenced by two ice factors:

- 1) Pattern of sea ice formation during previous winter
- 2) Wind pattern in summer

- This will be further analyzed for the future study.

2016

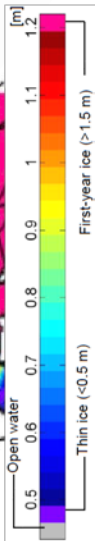
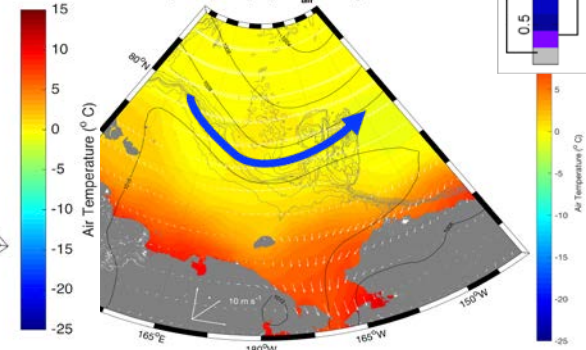
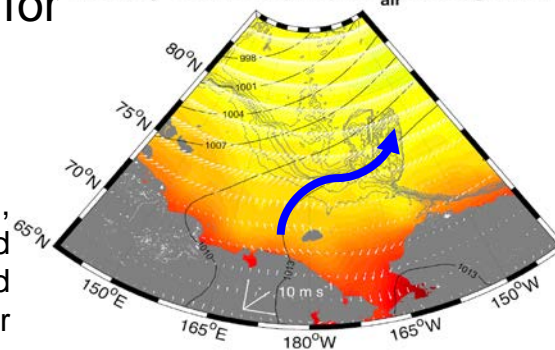
2017



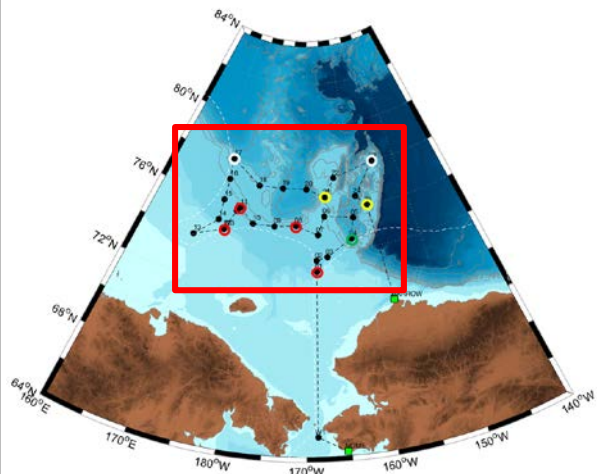
Monthly Wind, SLP(hPa) & T_{air} on Aug 2016

Monthly Wind, SLP(hPa) & T_{air} on Aug 2017

Sea ice concentration in August (upper), sea ice draft in January (middle), and wind pattern (lower) of 2016 (left), and 2017 (right). Blue color stands for convergence.



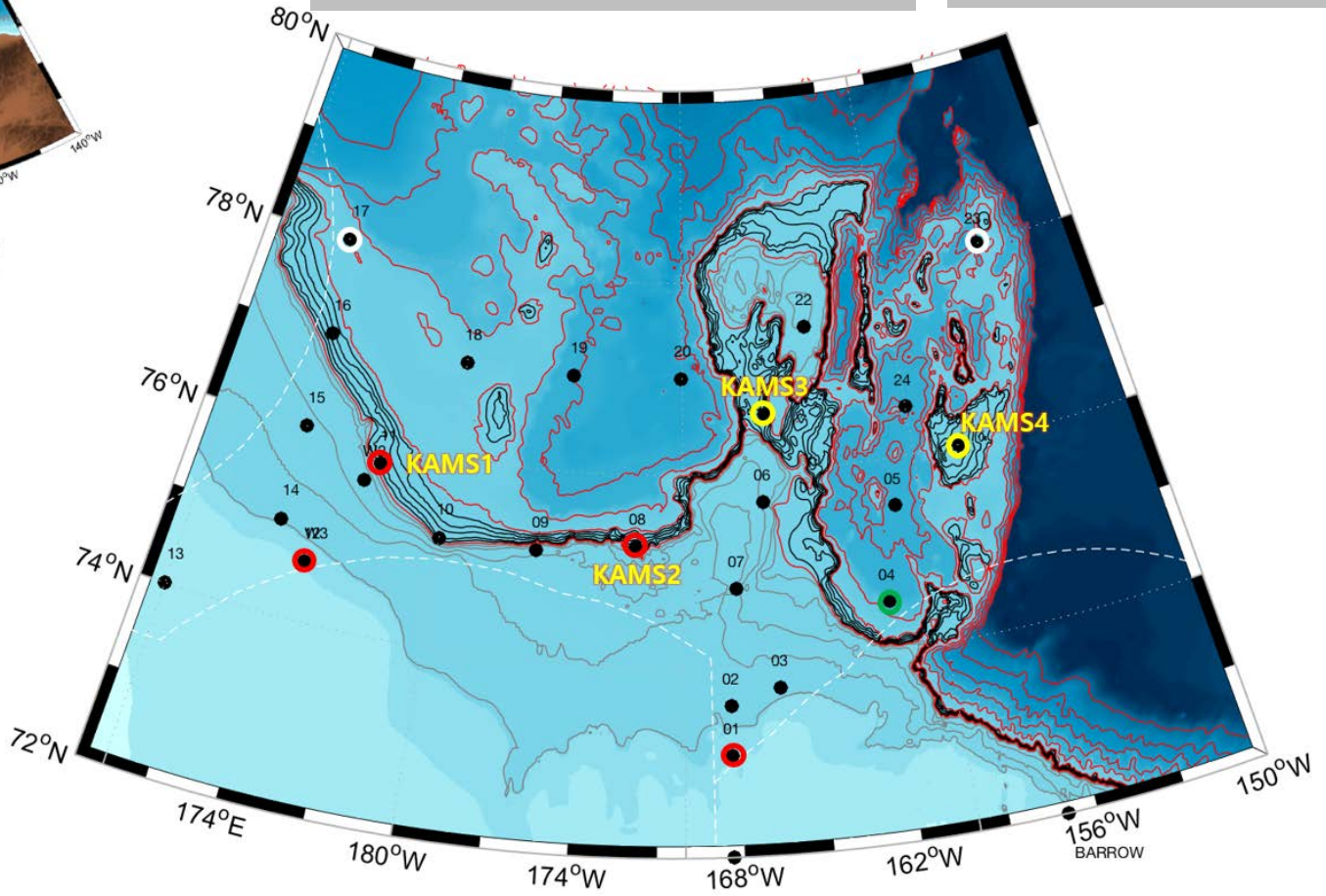
2018 ARAON Cruise Plan: Station Map



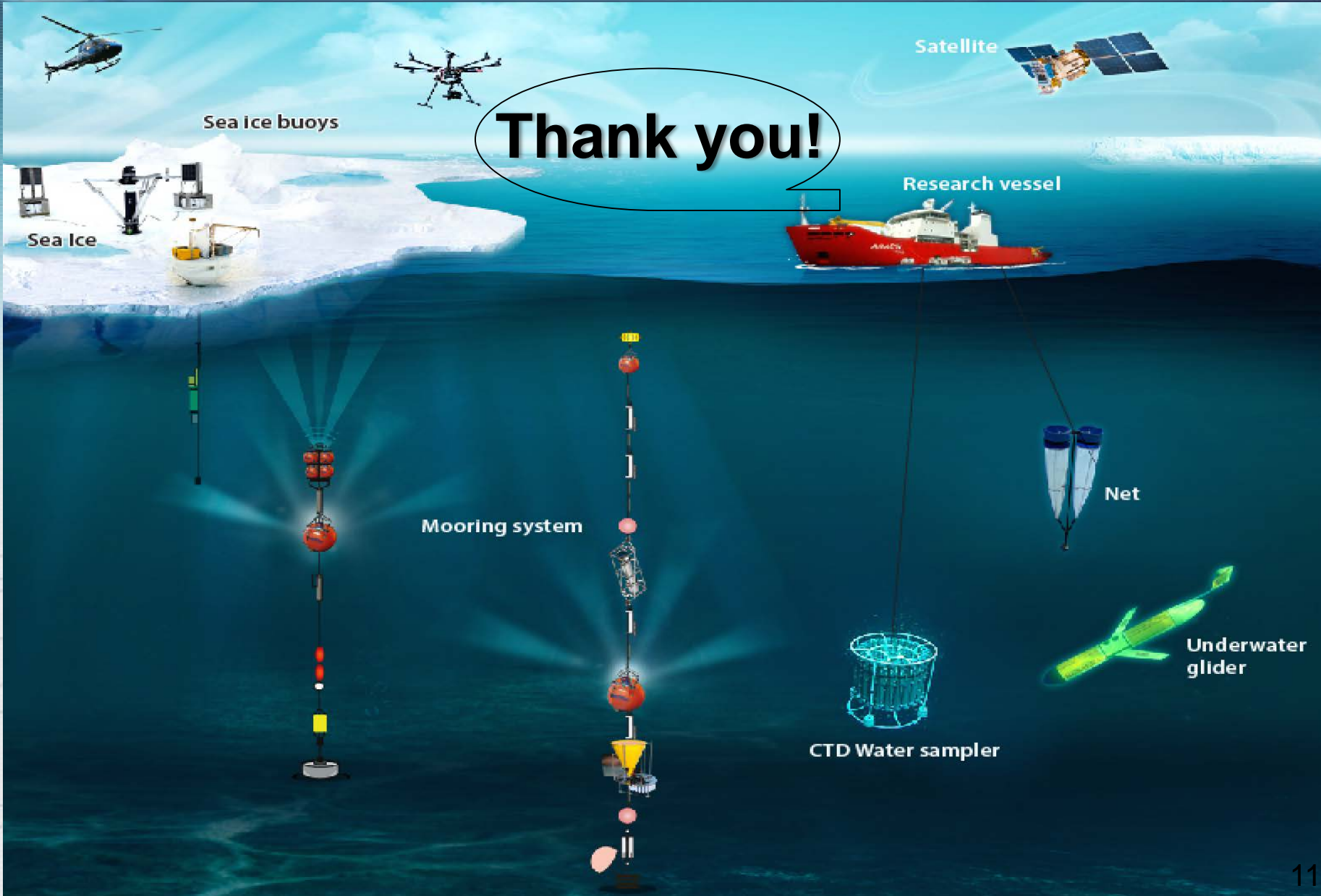
- ◆ Research Cruise: 18 days
- ◆ Aug. 4 12:00 Depart from Nome
- ◆ Aug. 26 12:00 Arrive at Barrow
- ◆ Sea ice camps: 1~2 sites
- ◆ CTD 25 stations (bio-chem 25)

- Maintain moorings
- New moorings
- JAMSTEC mooring
- Sea ice camps (TBD)

- KAMS3 (CP-18)**
- Dummy float : 23m
 - RBR-BIO 1 : 25m
 - Float for hooking : 40m
 - Top Bouys (x4) : 50m
 - Microcat 1 : 51m SN: 37-, PN: 5420-
 - RBR-BIO 2 : 55m
 - SUNA V2 1 : 56m
 - T-Logger 1 : 60m SN: 56-, PN: 5420-
 - T-Logger 2 : 70m
 - Microcat 2 : 80m
 - T-Logger 3 : 90m
 - Sediment Trap 1 : 100m
 - Microcat 3 : 102m
 - T-Logger 4 : 125m
 - T-Logger 5 : 150m
 - Microcat 4 : 200m
 - T-Logger 6 : 250m
 - 49in Mid Buoy : 300m (Up: ADCP-150; down: ADCP-300)
 - T-Logger 7 : 302m
 - T-Logger 8 : 375m
 - T-Logger 9 : 450m
 - Sediment Trap 2 : 500m
 - Floats for AR (x7) : ???m
 - AR (865A x2) : ???m
 - Wheel(x4) : 700m



Thank you!



Sea Ice buoys

Satellite

Sea Ice

Research vessel

Mooring system

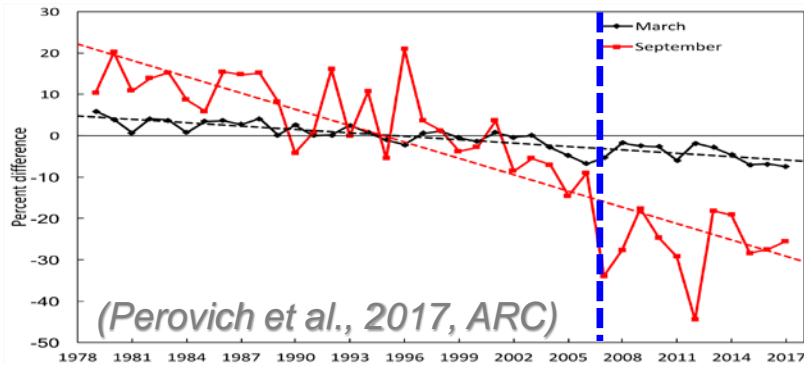
Net

CTD Water sampler

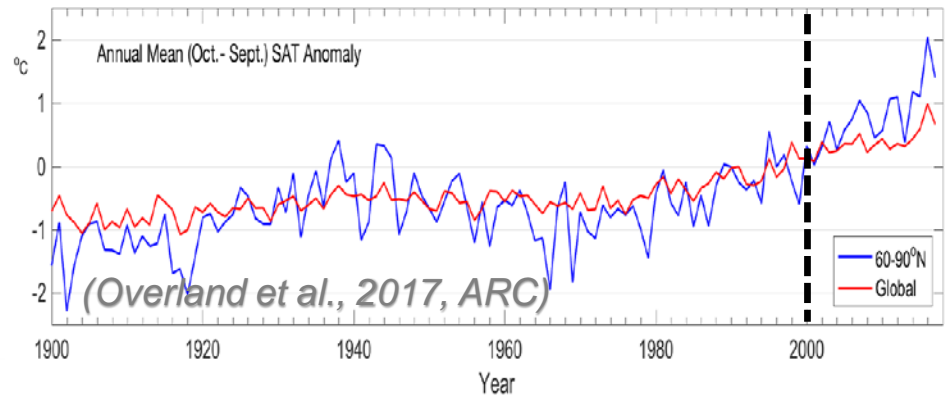
Underwater glider

Background & Objective

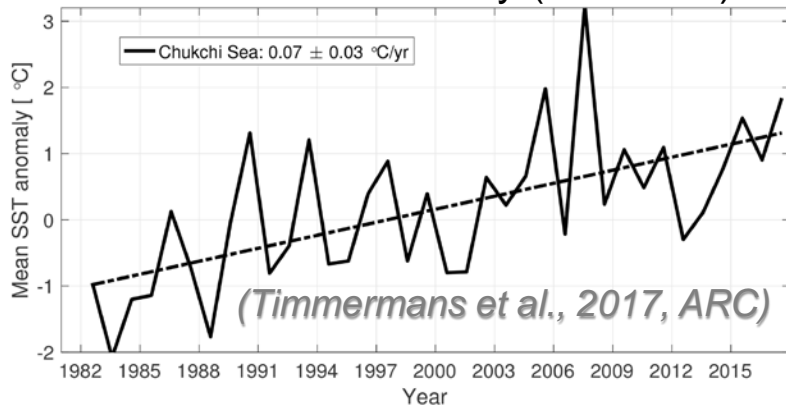
Sea Ice Extent (%)



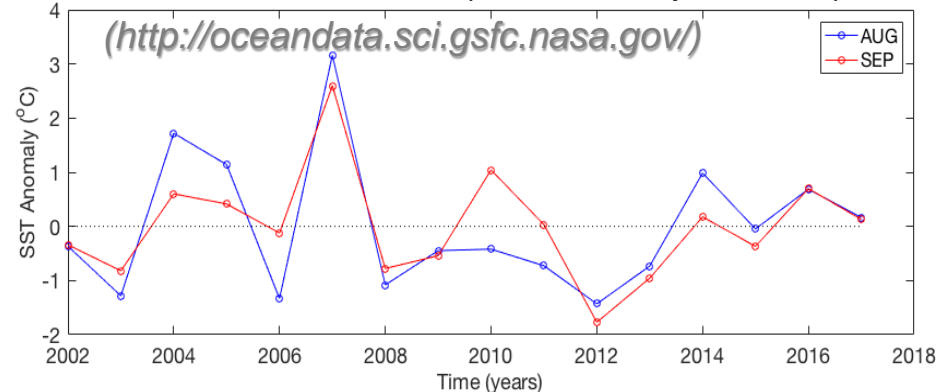
Land Surface Air Temperature



Mean SST anomaly (NOAA OI)

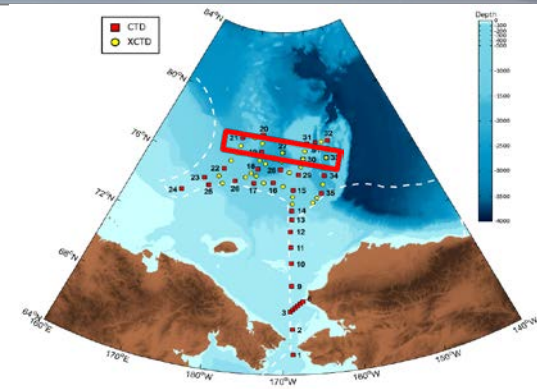


Chukchi Sea SST (MODIS-Aqua: 4km)

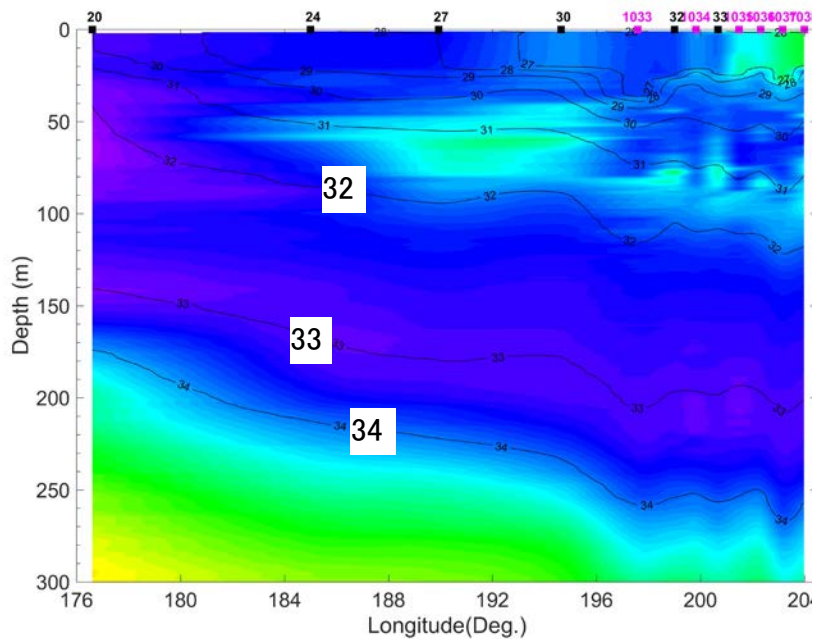


Under such an environmental change in western Arctic Ocean, we would like to understand water mass distribution and its variability in northern Chukchi regions (i.e., Chukchi Borderland, etc.)

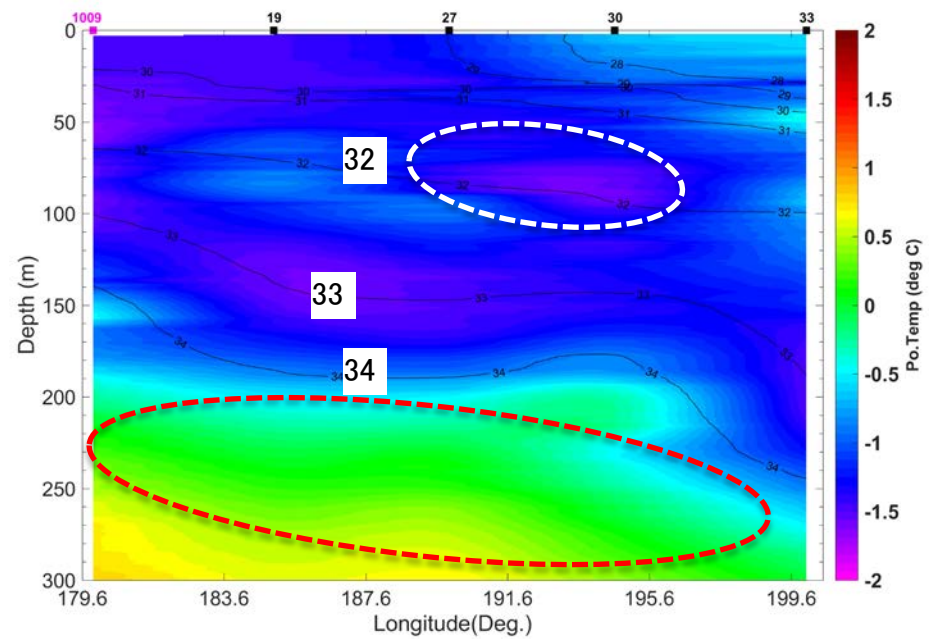
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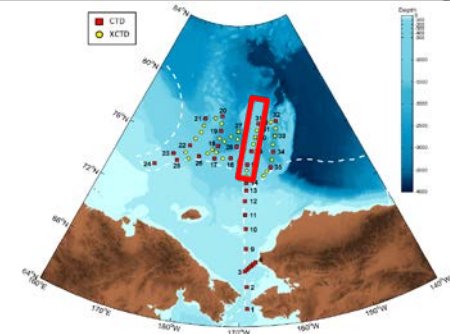
2016



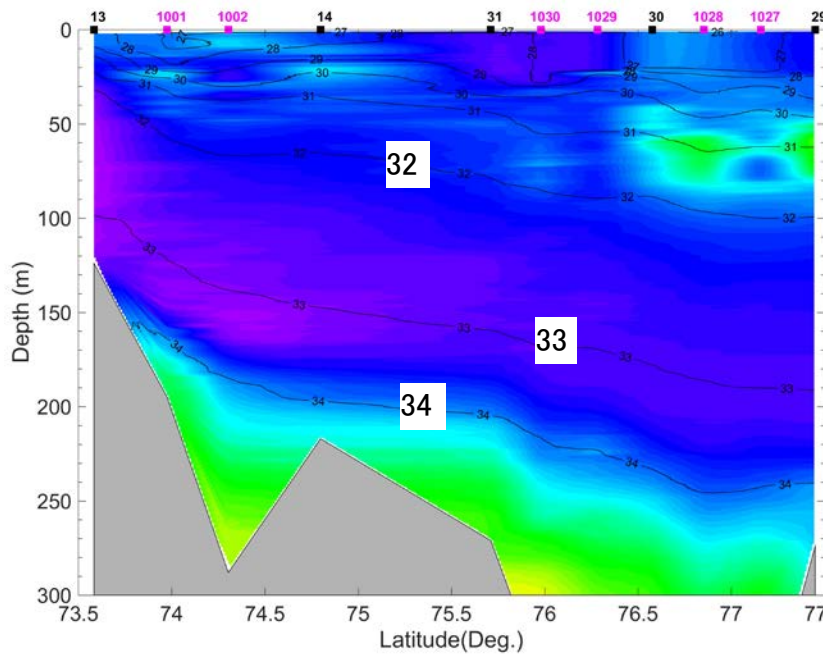
2017



CP Observation (CTD-T, S): $\sim 168W$



2016



2017

