

Pacific Arctic Climate Ecosystem Observatory (PACEO)

KOPRI's activities in 2017

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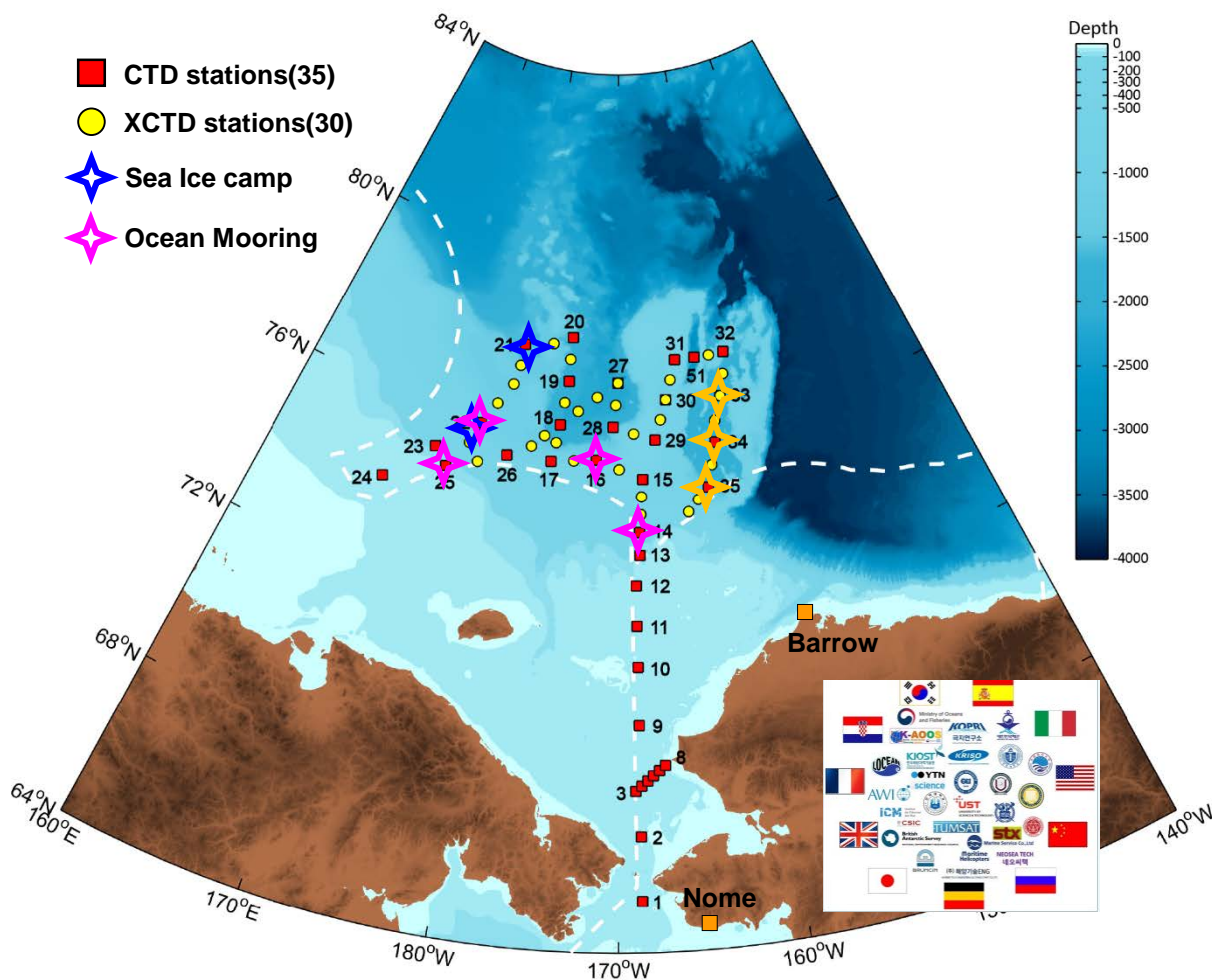
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KOPRI
Korea Polar Research Institute

PAG 2018 Spring meeting, Davos, Switzerland

Research stations surveyed in 2017



Korean Icebreaker R/V ARAON

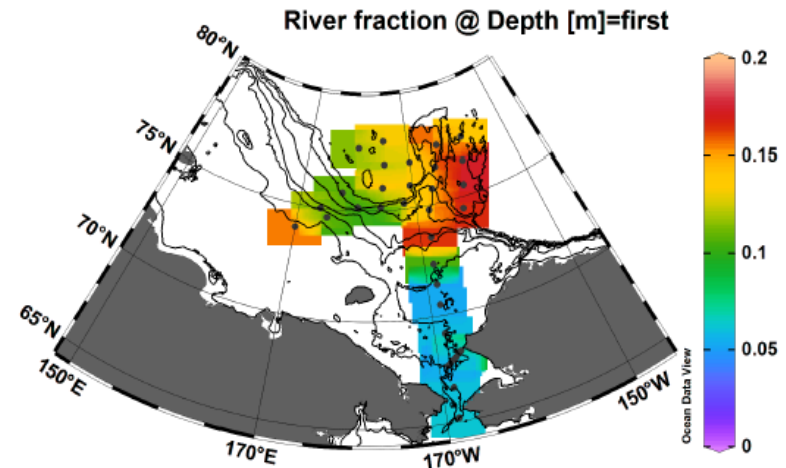
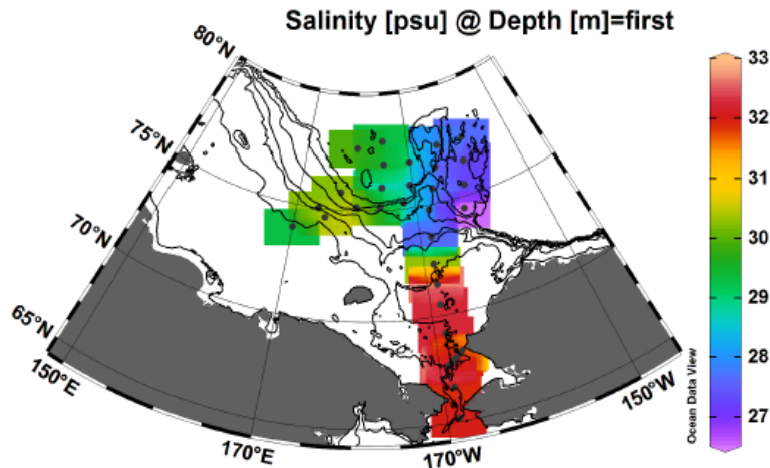
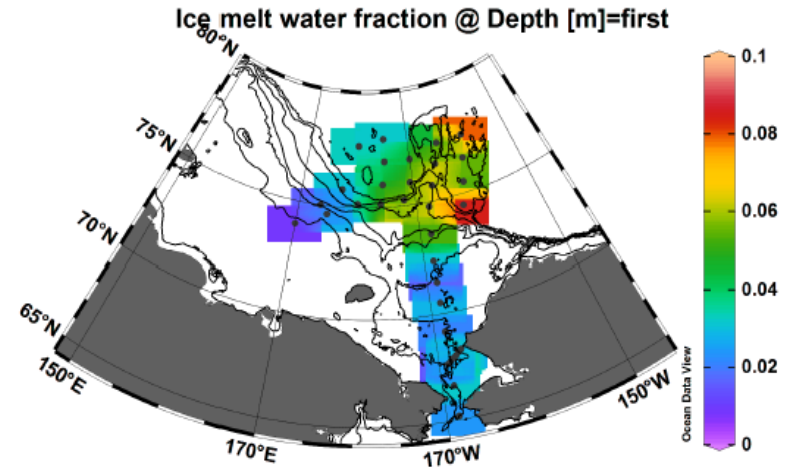
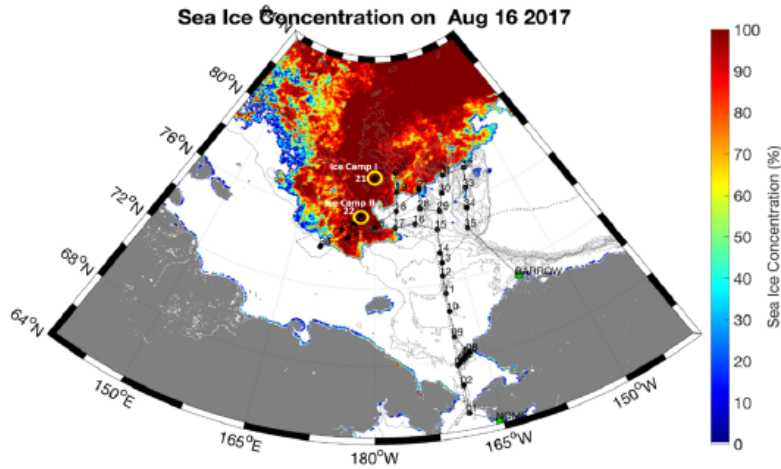
- ◆ CTD: 35 stations
- ◆ XCTD: 30 stations
- ◆ Ocean Mooring: 5
- ◆ C-PIES: 3
- ◆ Sea ice camp: 2

ARA08B cruise: August 6–25, 2017



Group photo

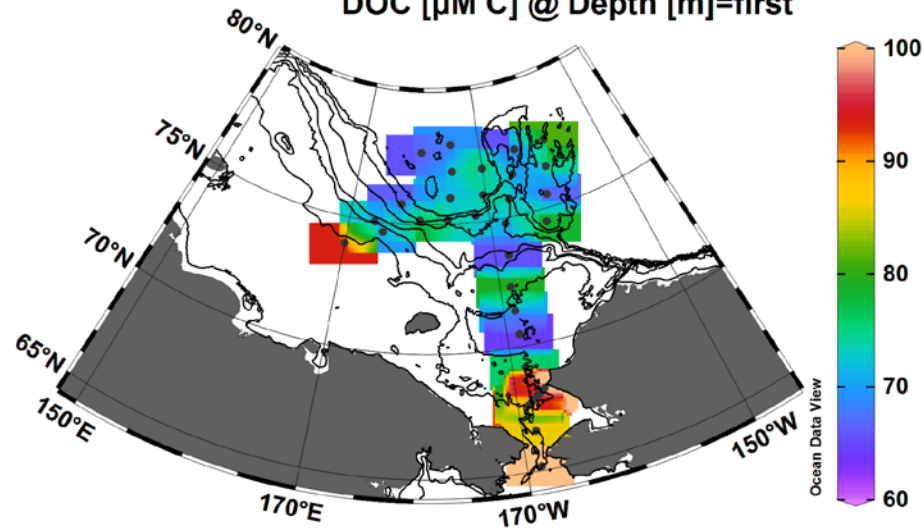
Distributions of ice melt water and river fractions



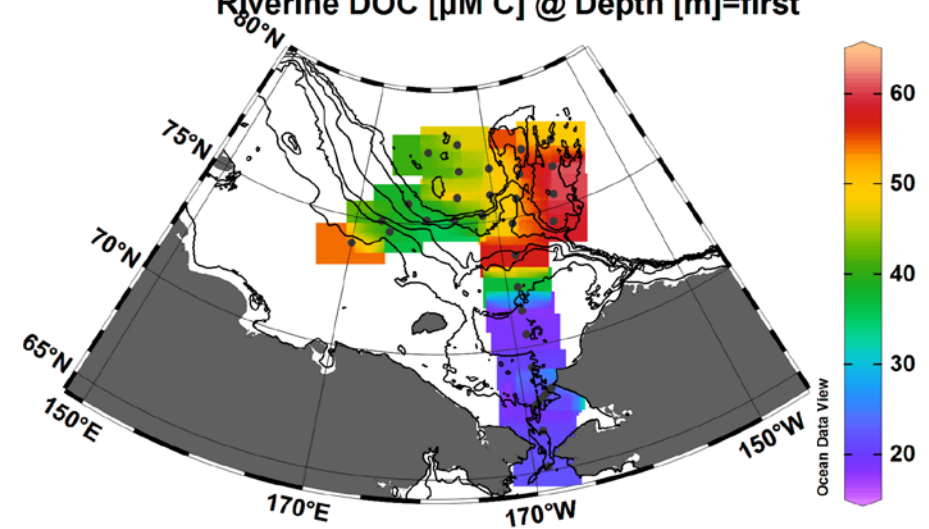
- A clear difference was observed in between western and eastern Chukchi Sea.
- Lower salinity in the eastern Chukchi Sea was attributed to the influence of ice melt water and river water.

Fraction of riverine DOC in PACEO region

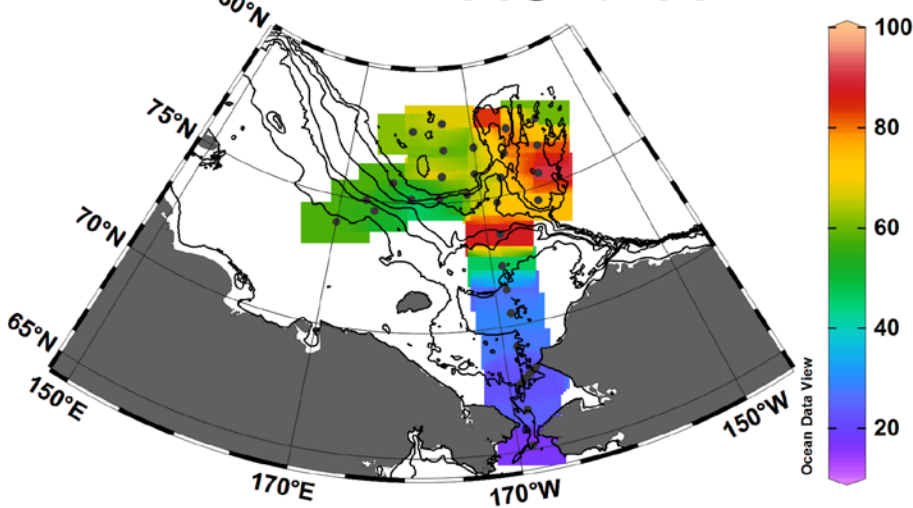
DOC [$\mu\text{M C}$] @ Depth [m]=first



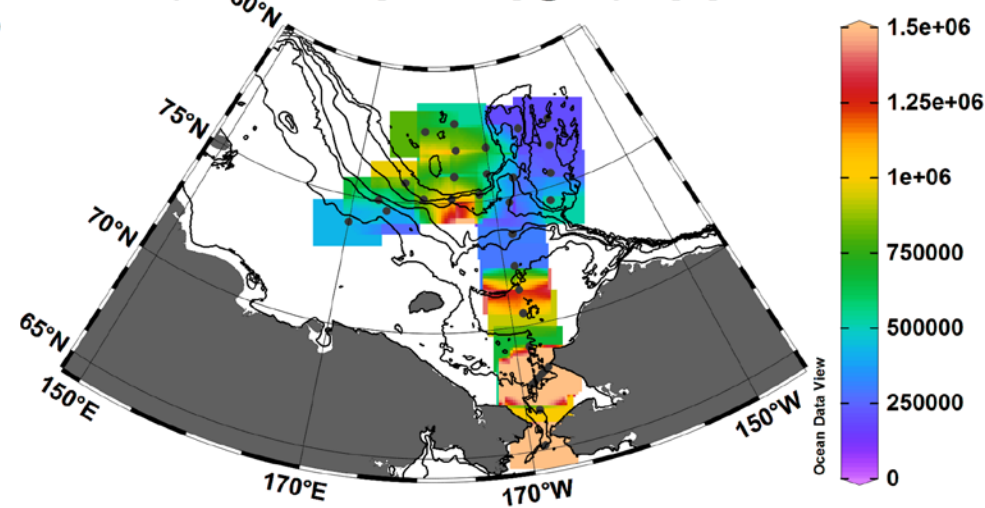
Riverine DOC [$\mu\text{M C}$] @ Depth [m]=first



Riverine DOC [%] @ Depth [m]=first

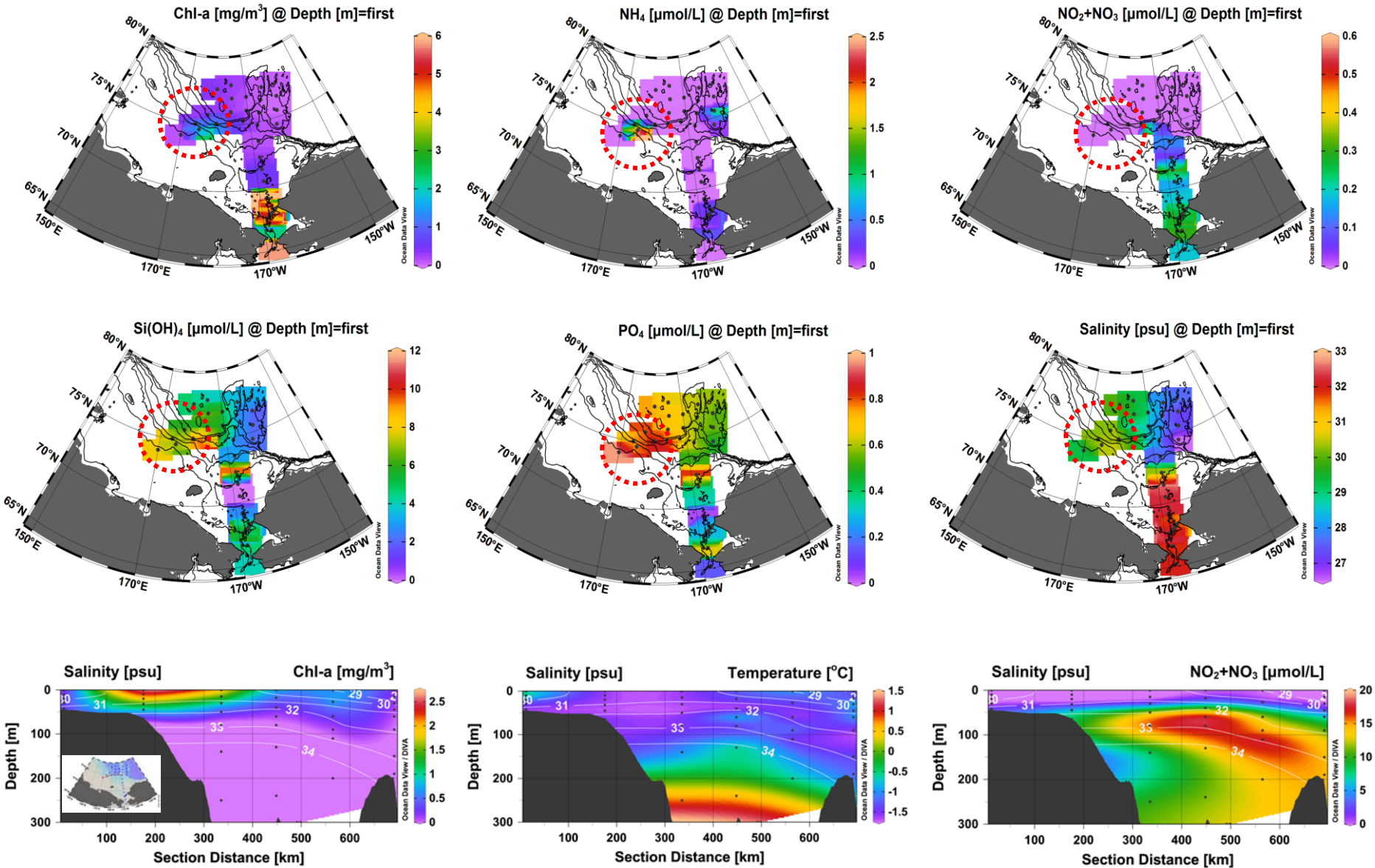


Heterotrophic bacteria [cells/mL] @ Depth [m]=first

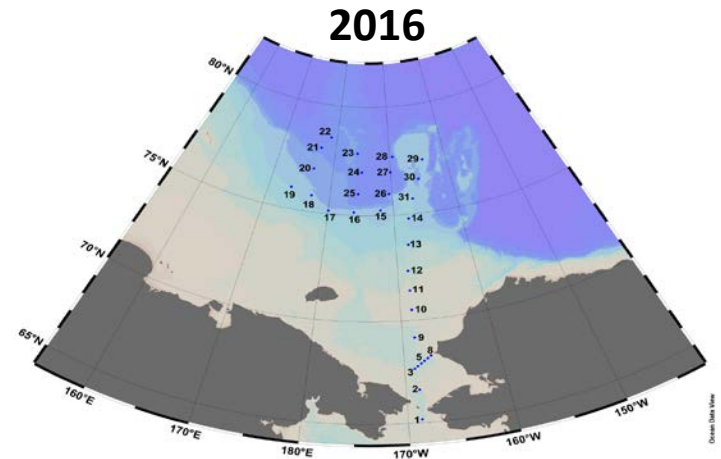
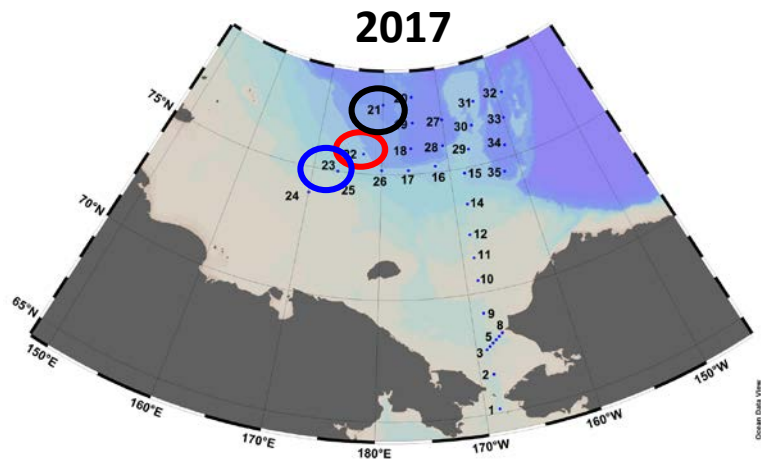
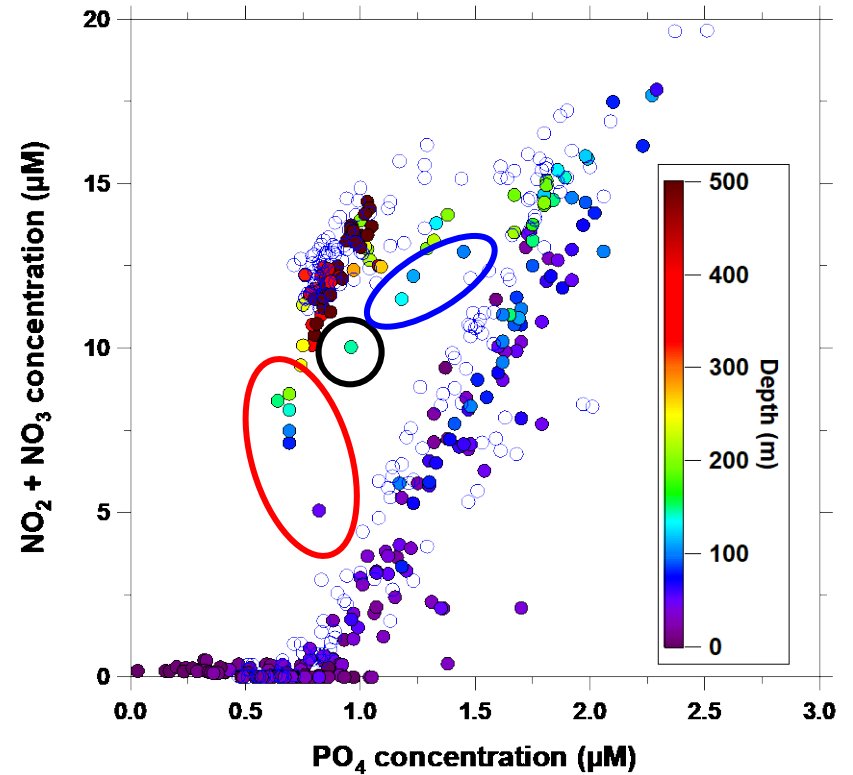
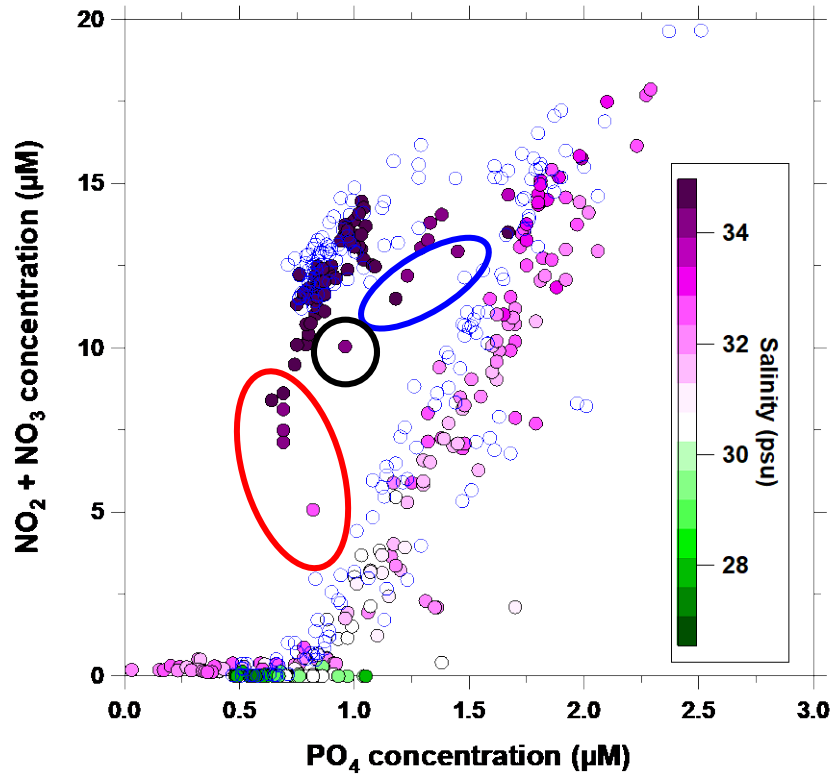


- High riverine DOC concentration was observed in the eastern Chukchi Sea.
- Heterotrophic bacteria concentration was inversely correlated with riverine DOC concentration.

Distributions of nutrients in surface water



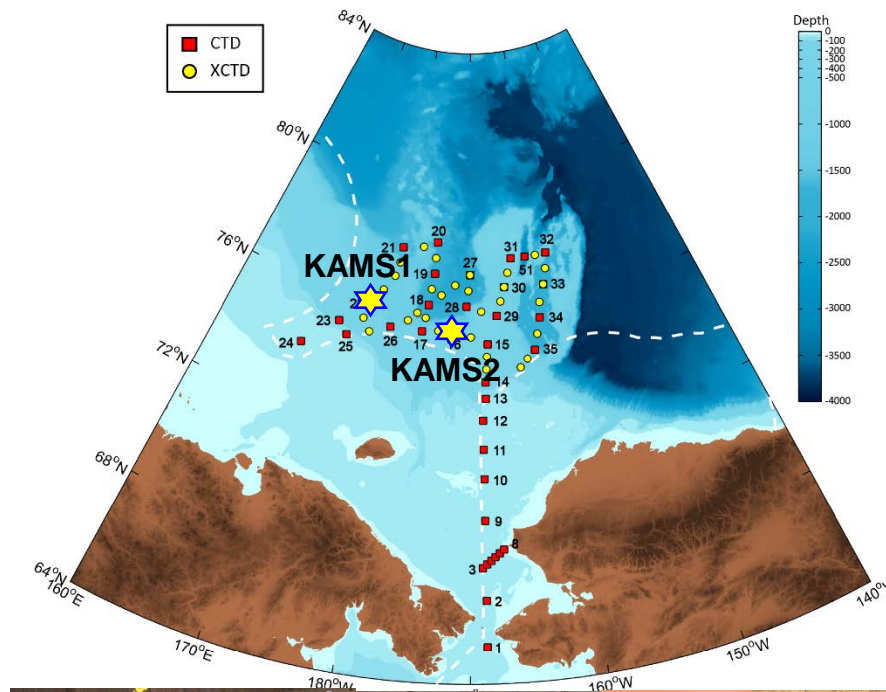
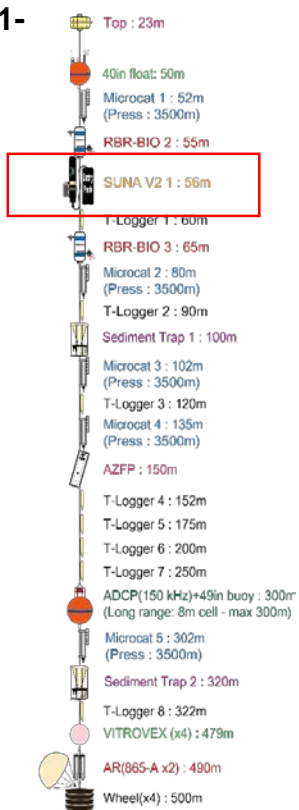
N:P ratio in PACEO region



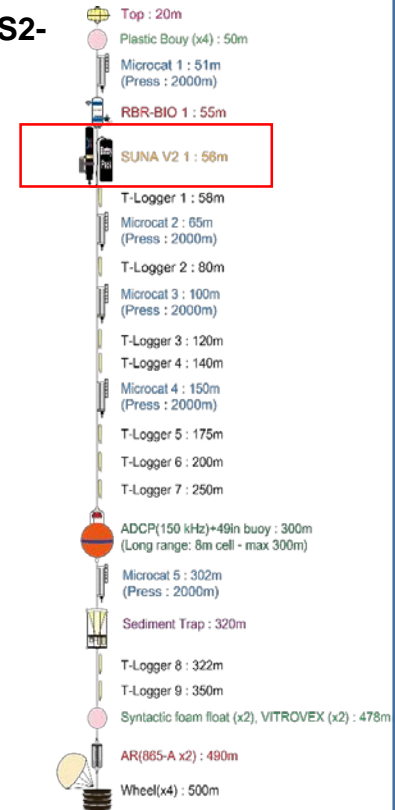
IB R/V ARAON Arctic Cruises (2017)

- ◆ KOPRI Ocean Mooring: KAMS1 (ESS), KAMS2 (CHS)
- ◆ TUMSAT Ocean Mooring: ESS, CHS
- Equipment: ADCP (150, 300 kHz), microCAT CTD, temperature logger, sediment trap, AZFP, **UV nitrate sensor (SUNA V2)**, Fluorescence & PAR sensors, ULS, hydrophone

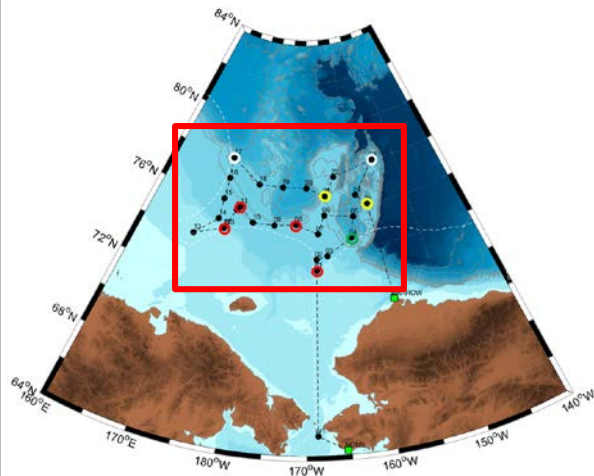
KAMS1-17



KAMS2-17



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

