



# OUC field activities in the Pacific Arctic region in 2016

PAG fall meeting, 2016, Qingdao

# Outlines

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- Involved Arctic expeditions in 2016:
  - Chinese Arctic Expedition 2016 (CHINARE 7);
  - Korean Arctic Survey 2016;
  - China-Russia joint Expedition 2016;

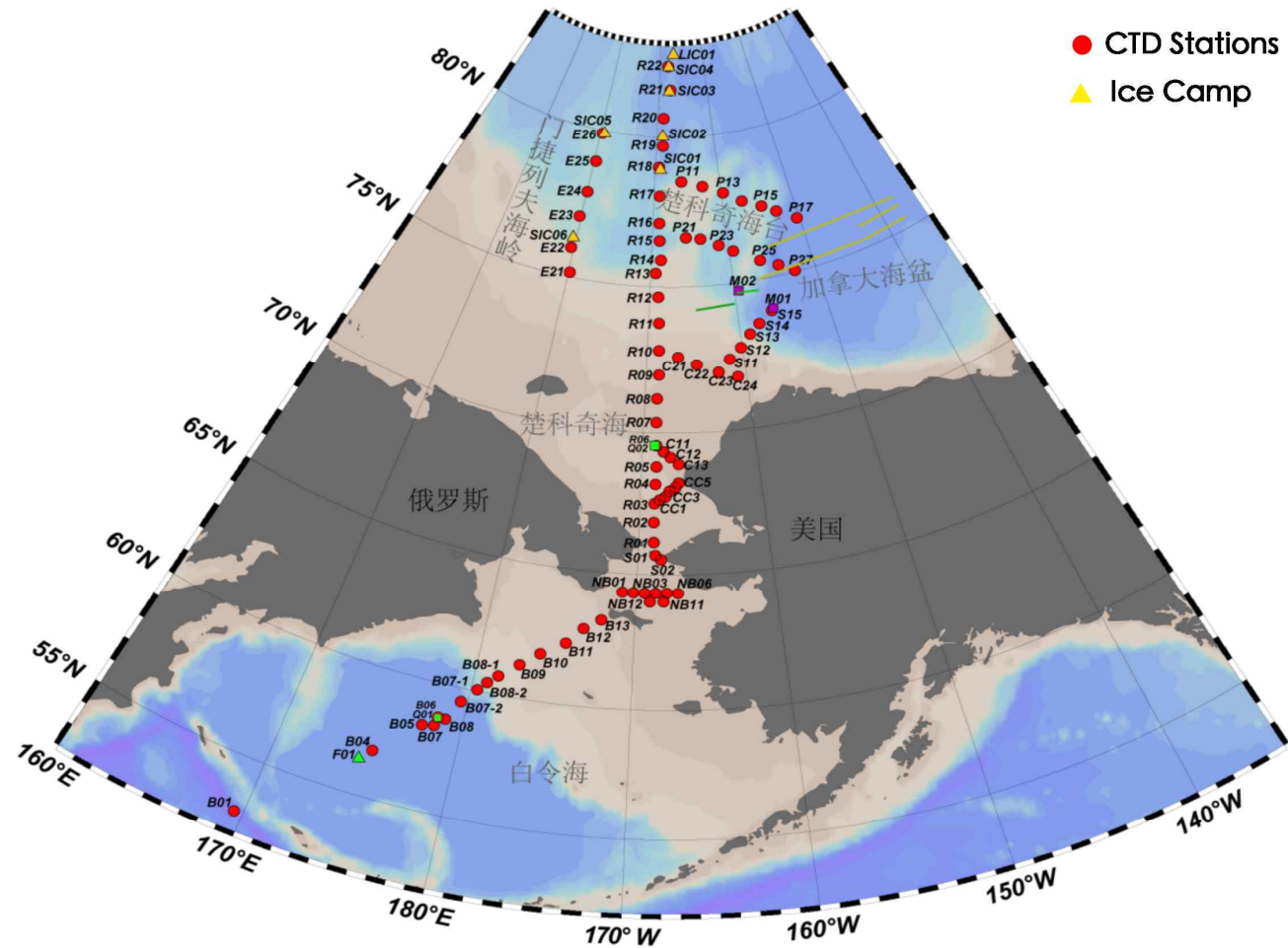
# Objectives

- 1, to study the physical interaction processes **in shelf and slope of Bering sea: variations** of water mass, circulation and heat flux;
- 2, to monitor the fate of the **Pacific Water** in the west Chukchi Sea and Canada Basin;
- 3, to evaluate the partitioning **of solar radiation** in regional air-ice-ocean system;
- 4, to study the variations of **Atlantic Water Core** in the west Arctic Ocean;
- 5, to monitor the **long term change** in upper ocean in the Central Arctic;

# Chinese Arctic Expedition 2016

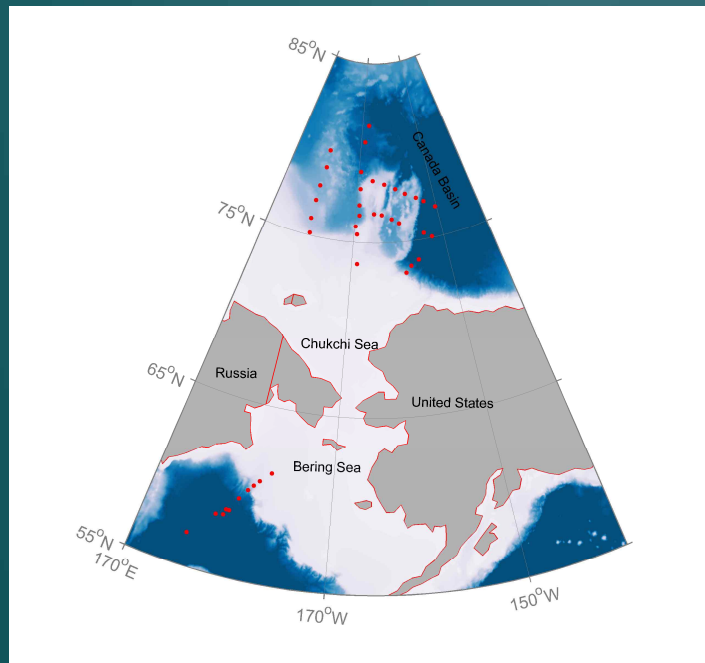
● Period:  
07.11-09.26,  
2016

● Area:  
Bering Sea  
Chukchi Sea  
Canada Basin  
East Siberian Sea

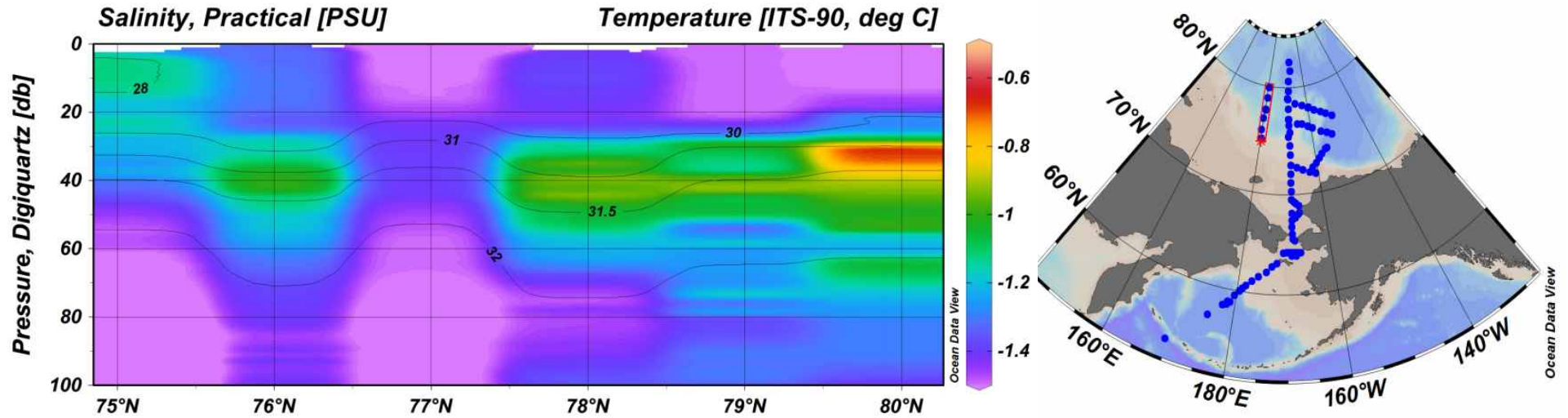


# Ship-based sampling

- CTD/LADCP: 83/81 Stations
- Vertical Microstructure Profiler (VMP): 41 Stations

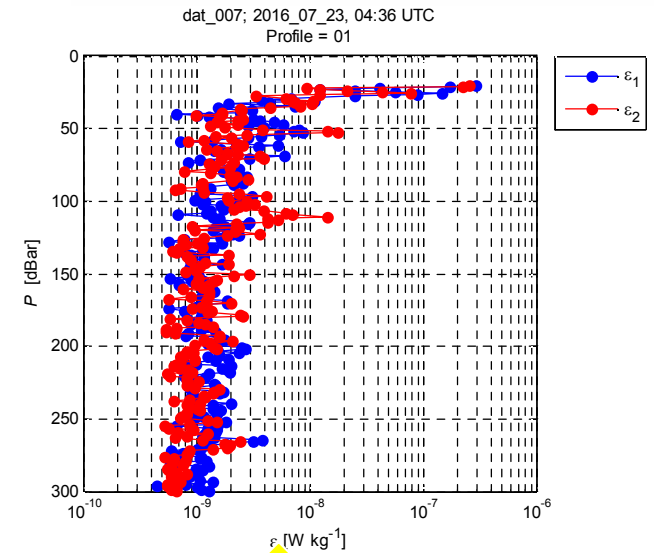
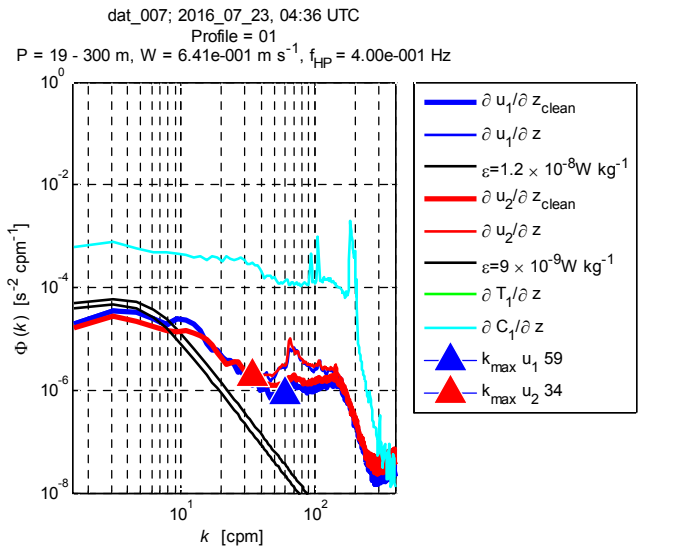


# Preliminaries



CTD Section

Shear wavenumber spectrum

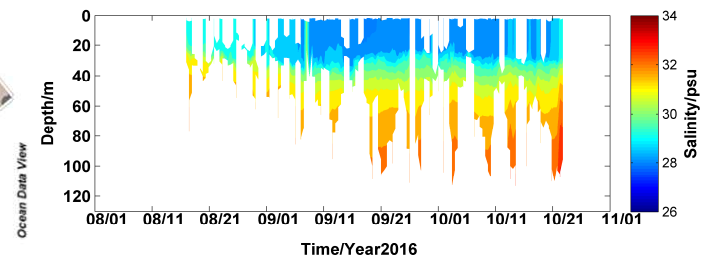
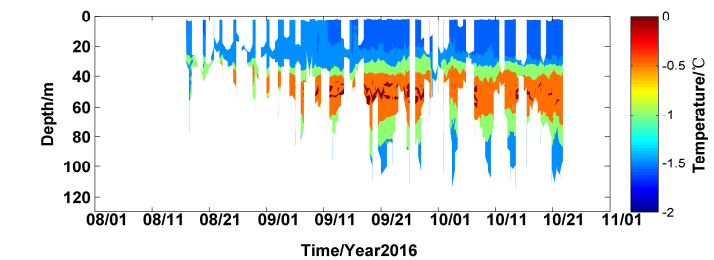
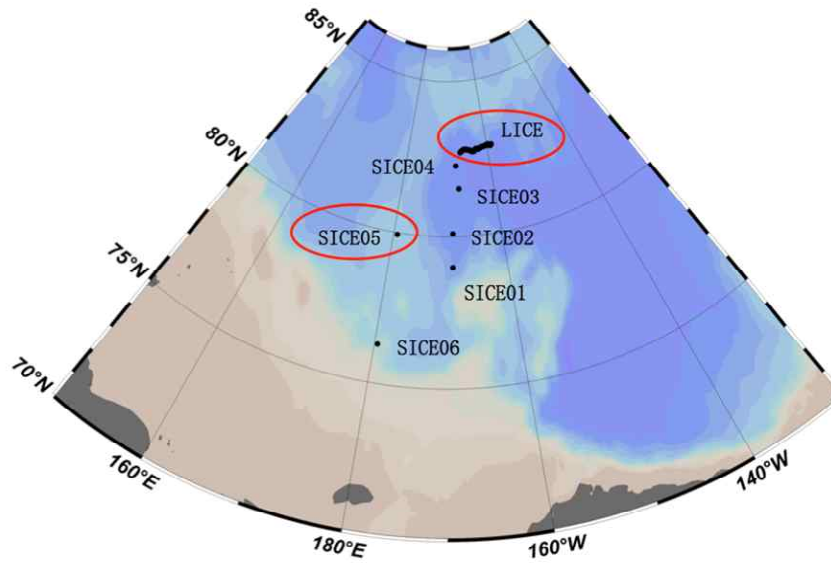


Rate of dissipation of Turbulence Kinetic Energy



# Ice-based sampling

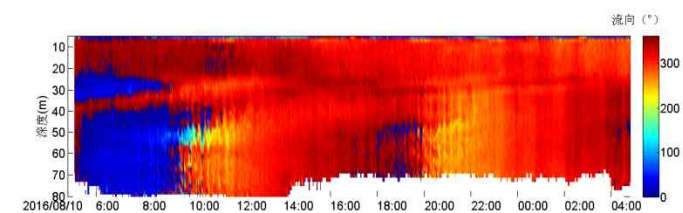
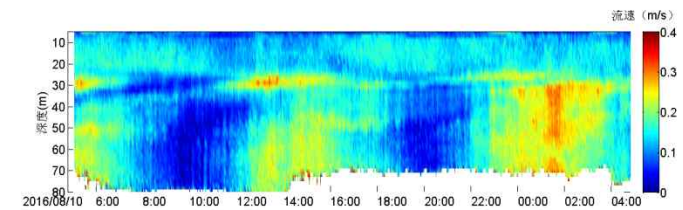
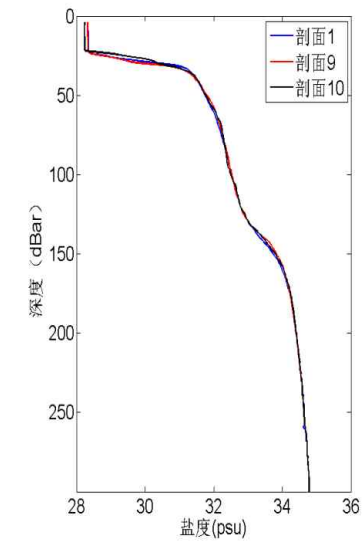
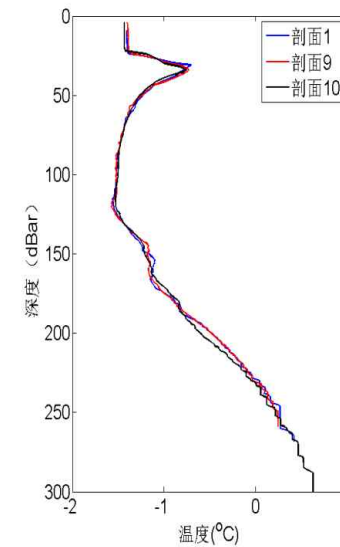
- Drift-Towing Ocean Profiler (D-TOP) deployments  
D-TOP003:  $82^{\circ} 47'$ ,  $165^{\circ} 48'$ .  
D-TOP004:  $79^{\circ} 56'$ ,  $179^{\circ} 23'$ .



# Ice-based sampling

- Hydrographic sampling:

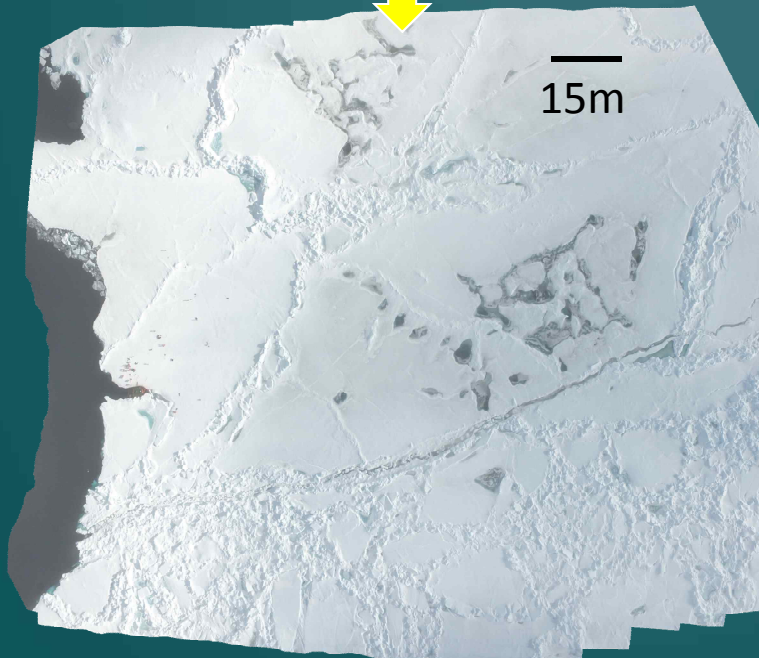
Measurements of temperature, salinity and current velocity in the upper ocean beneath the sea ice





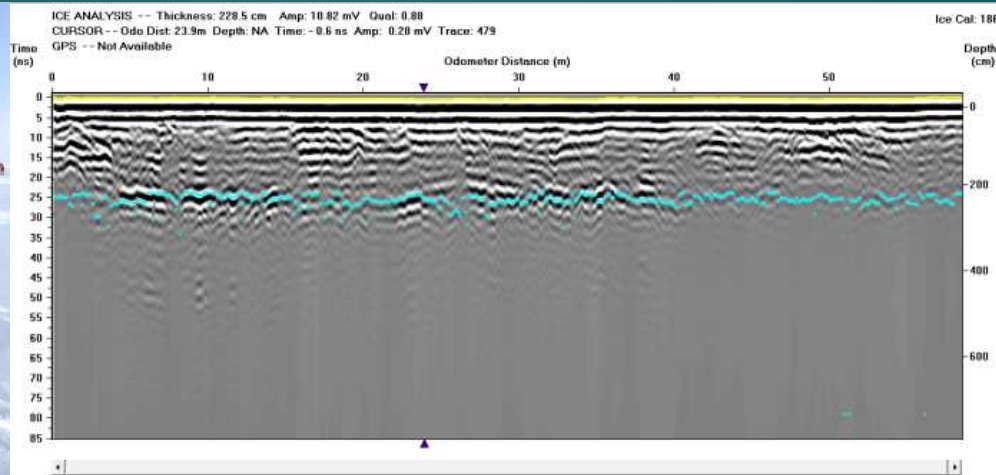
# Ice-based sampling

- Optical measurements for solar energy absorbed by sea ice →
- Concentration of melt pond observed by Unmanned Aerial Vehicle (UAV)



# Ice-based sampling

- Sea ice thickness measurements by Ground Penetrating Radar (GPR)



A-scan

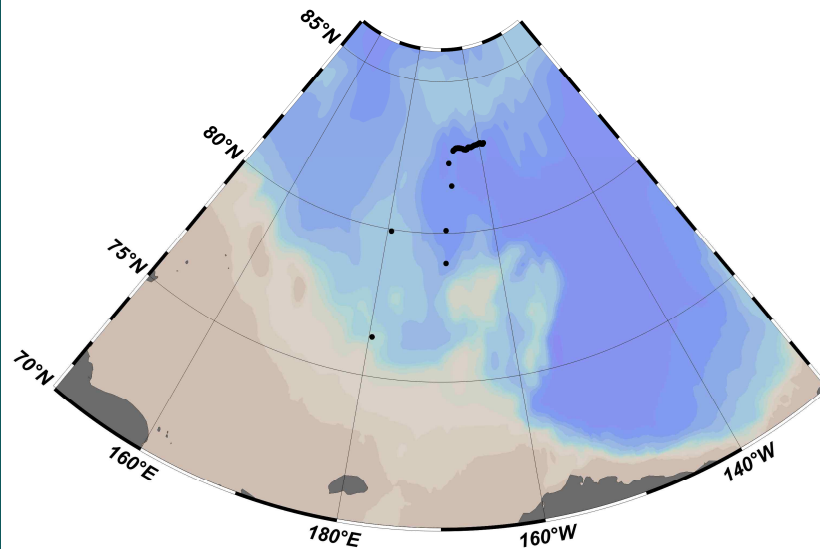
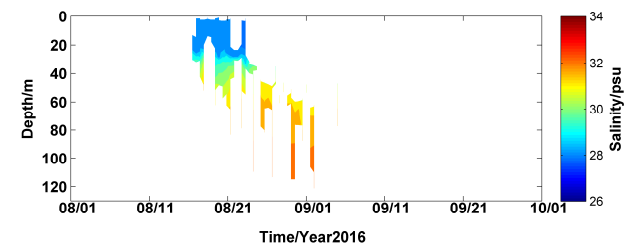
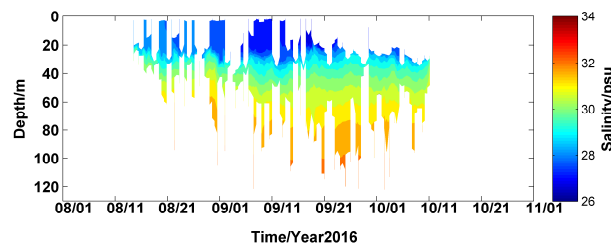
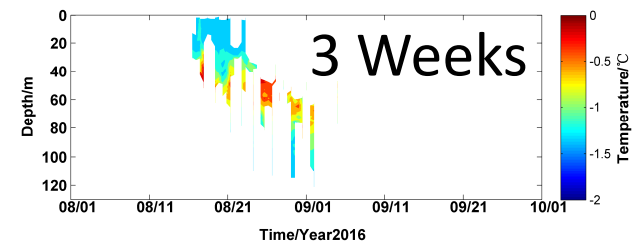
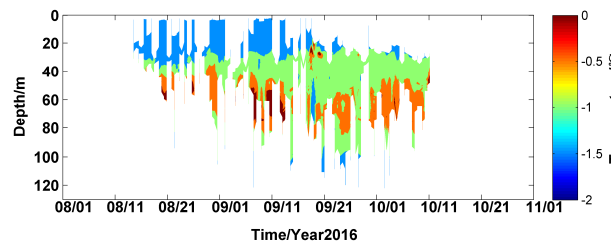


Photo by UAV

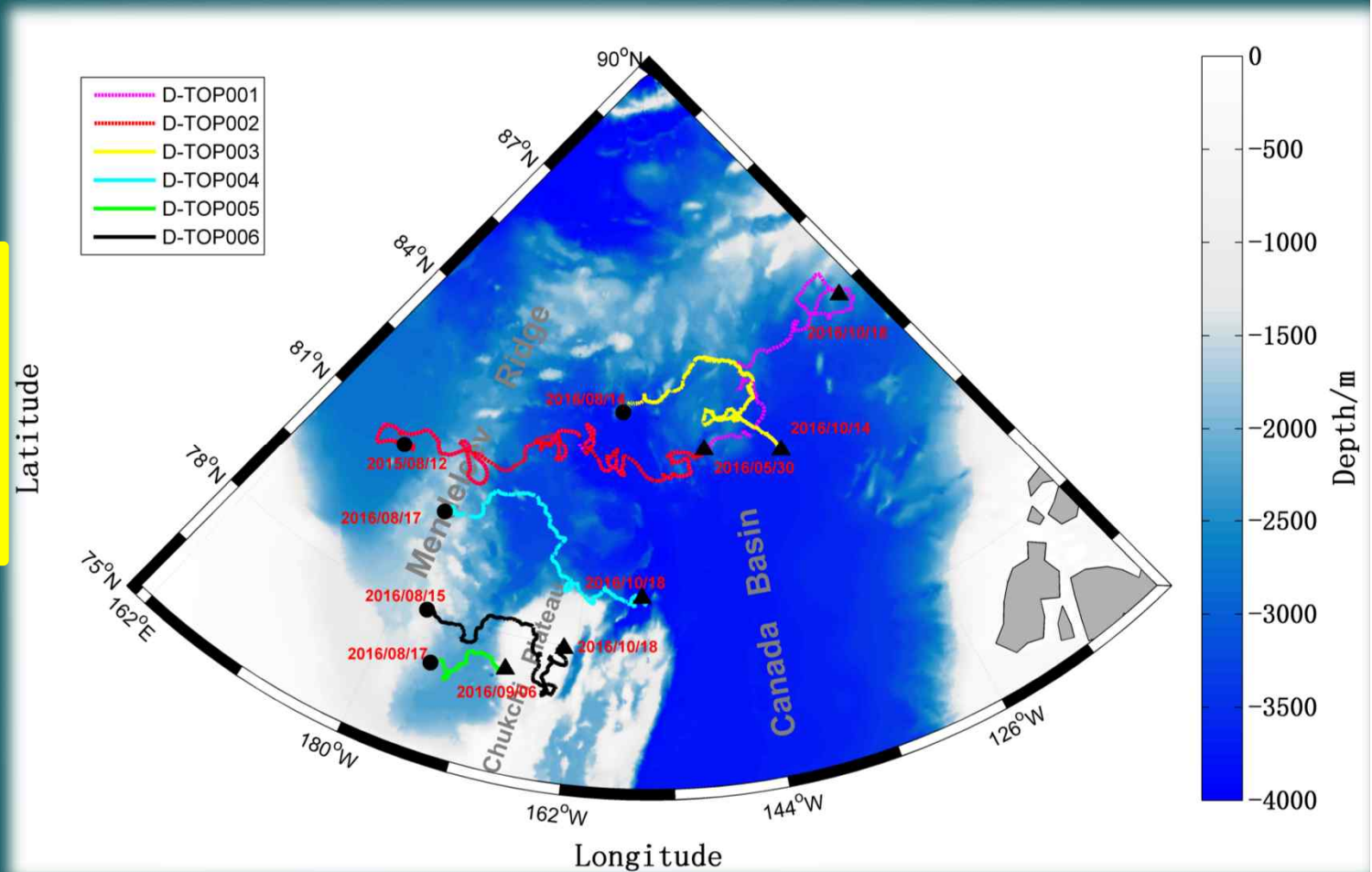
# Korean Arctic Survey 2016

- Period:  
8.3-8.22, 2016
- Area:  
E. Siberian Sea  
Chukchi Sea
- Mission:  
D-TOP  
Deployments:  
D-TOP005  
D-TOP006



# D-TOPs' status

4 D-TOPs  
are working now.  
Longest period:  
14 months and  
still on.





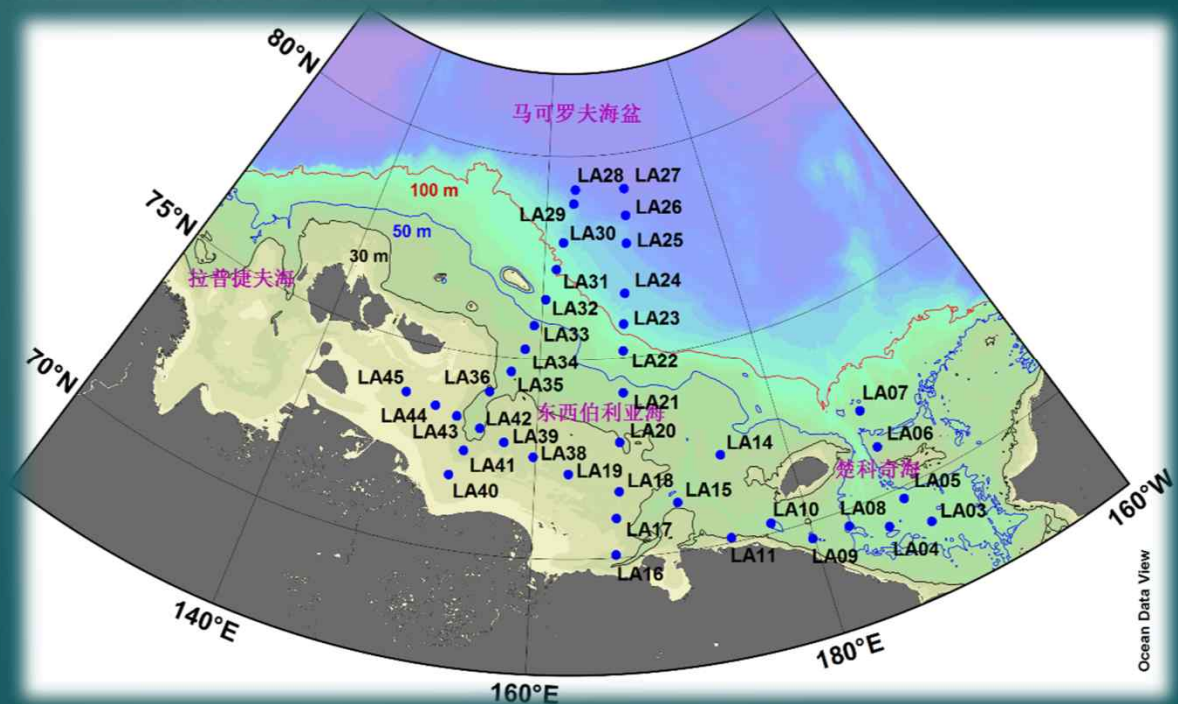
# China-Russia Joint Expedition 2016

- Period:  
8.15-9.22, 2016
- Area:  
E. Siberian Sea  
Chukchi Sea
- Vessel:  
AKADEMIK  
M.A.LAVRENTYEV



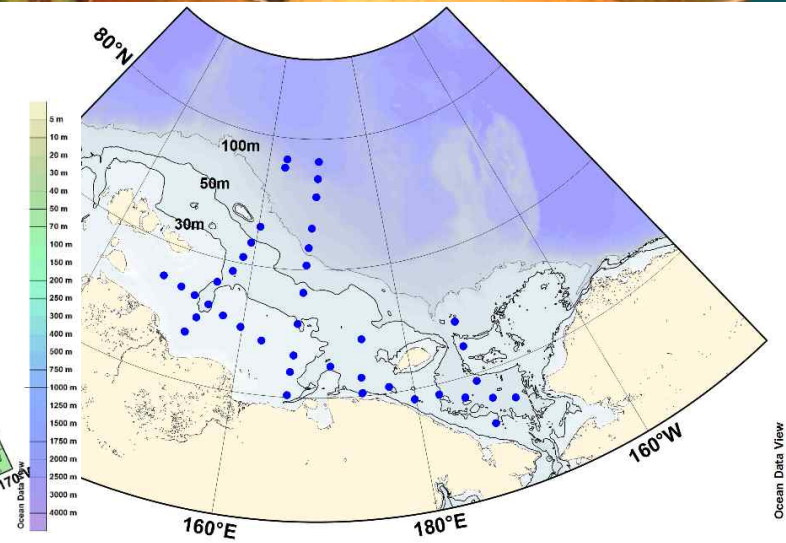
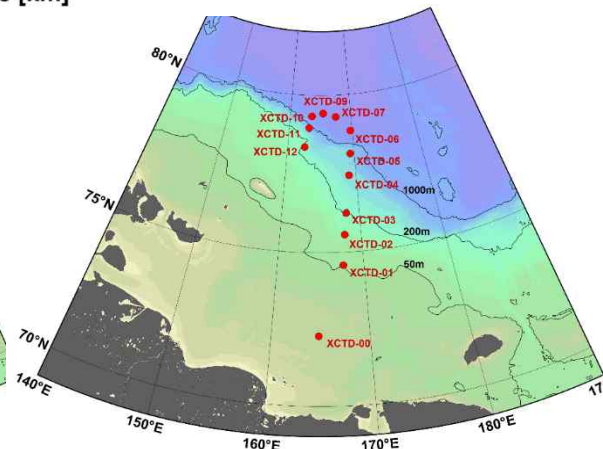
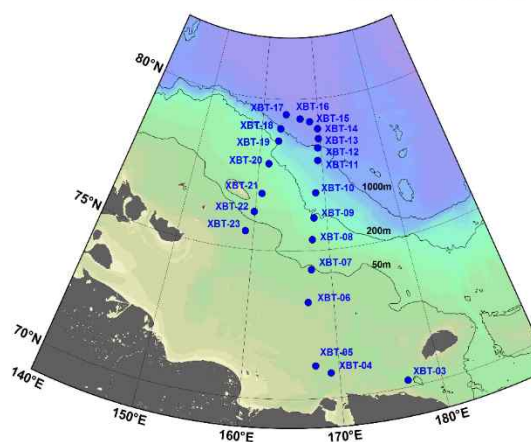
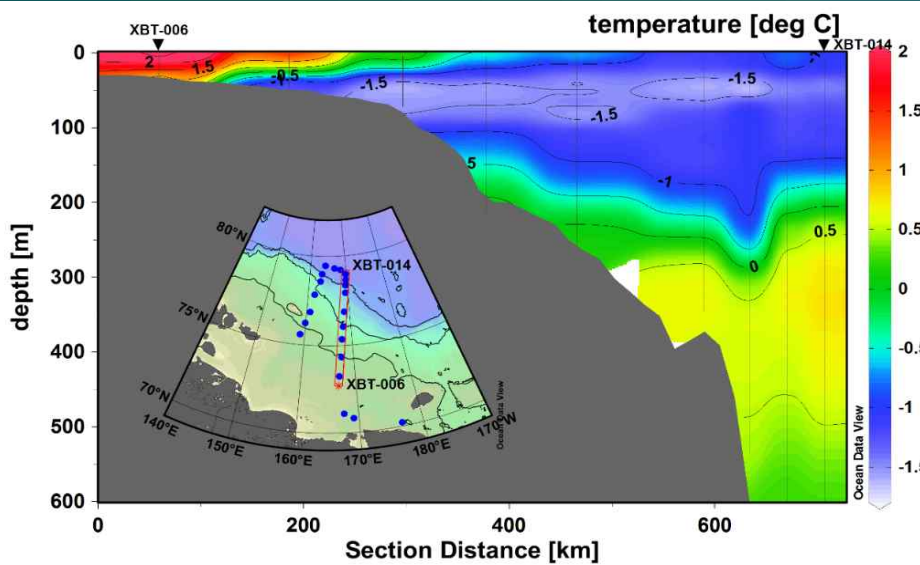
I am not an  
icebreaker

Stations are located in  
the shelf and slope  
where is no ice around.



# Hydrographic Survey

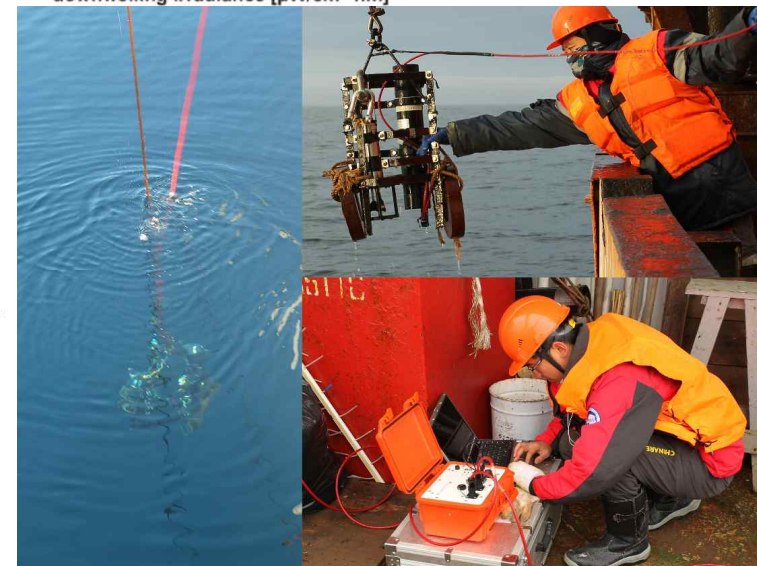
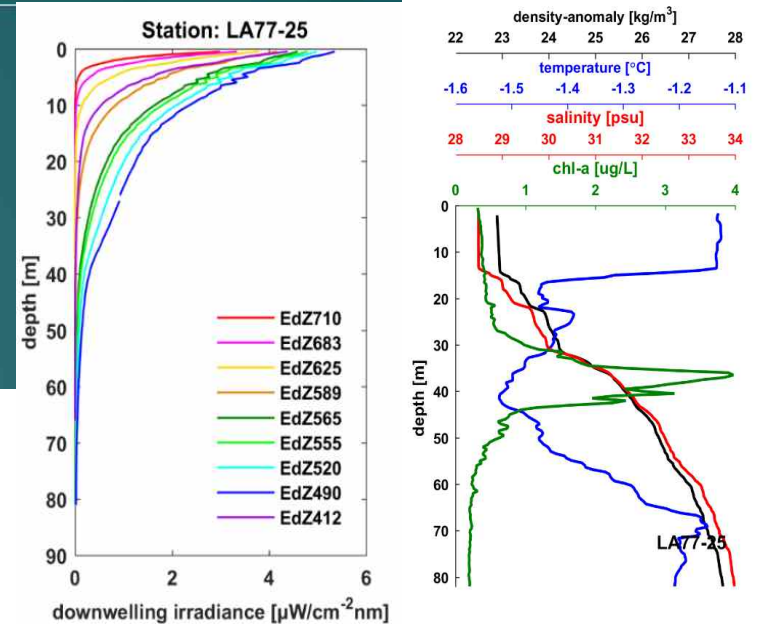
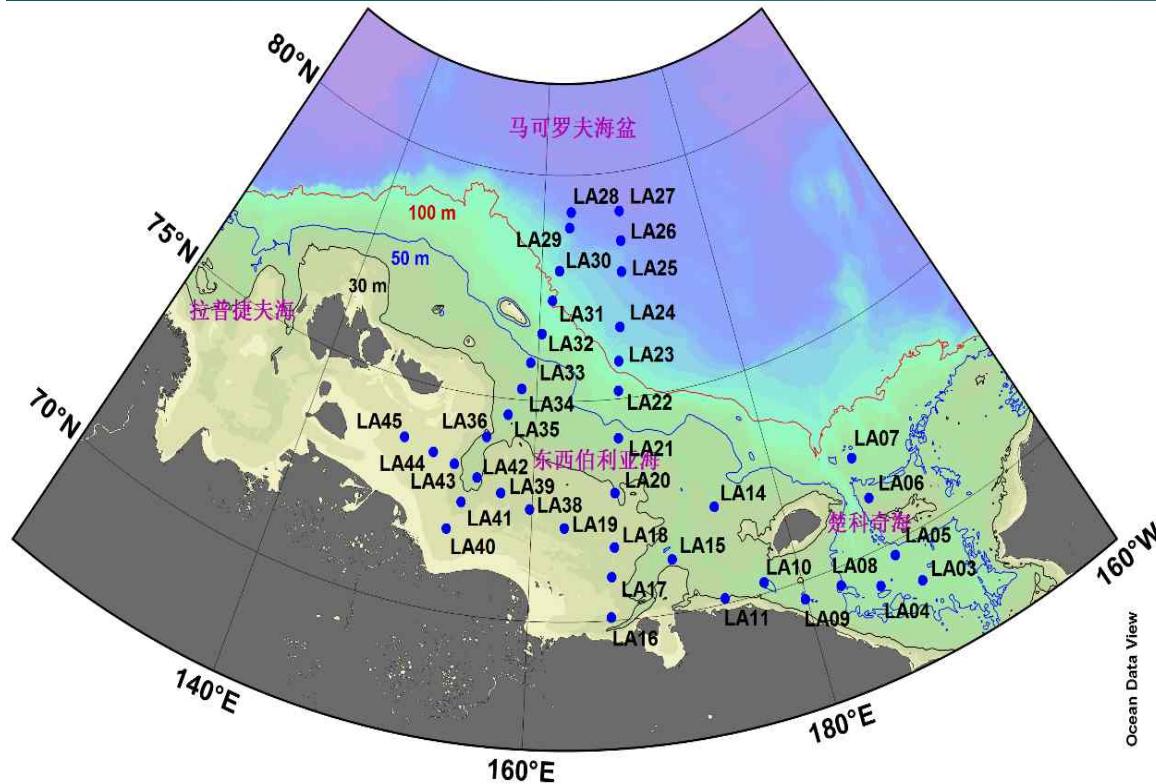
CTD/LADCP: 40 Stations  
XBT/XCTD: 21/13





# Hydrographic-optical-biological survey

Parameters: CTD, solar radiation and chlorophyll concentration  
In total: 40 stations



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Thank you for your attention