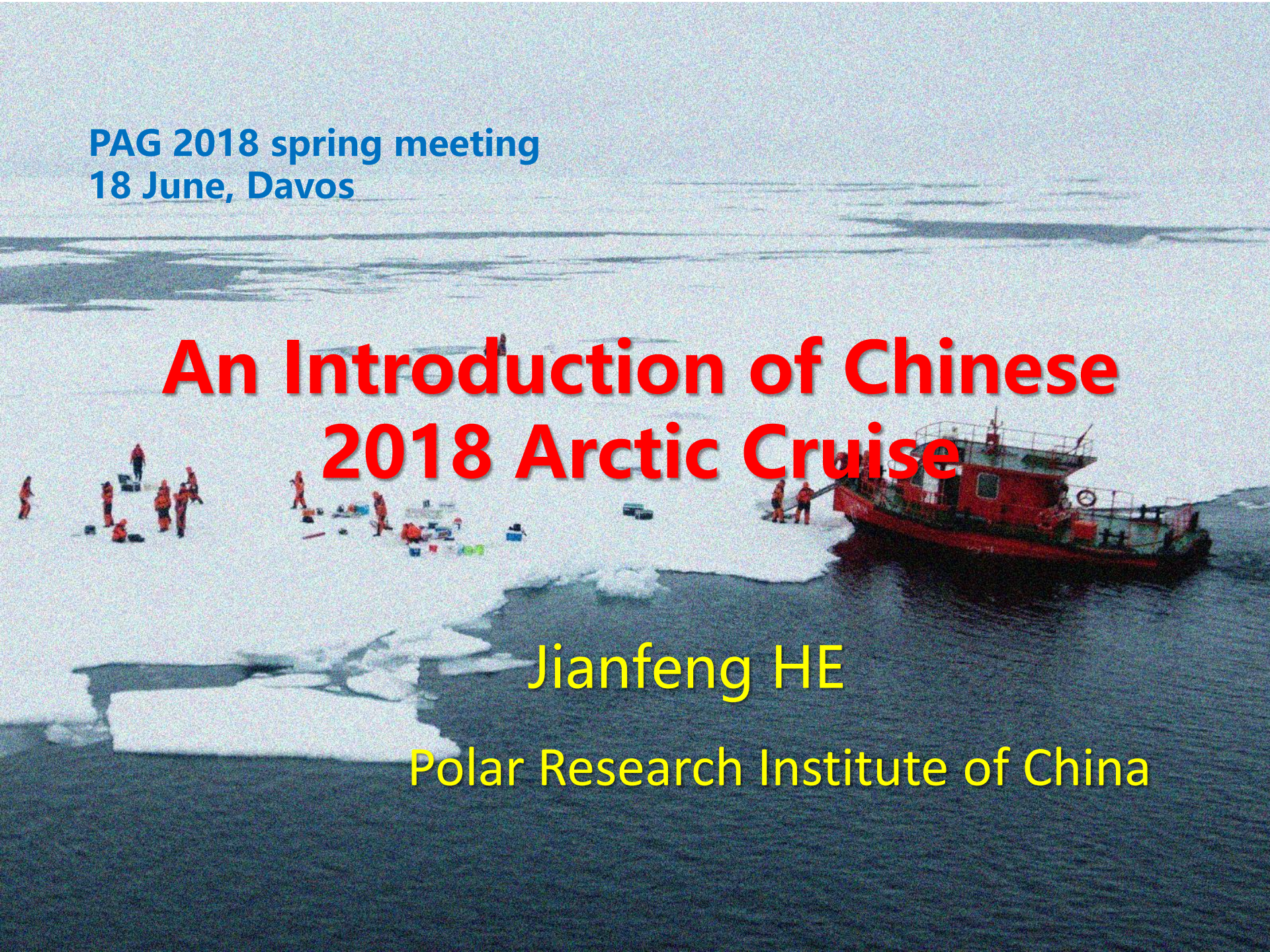


PAG 2018 spring meeting
18 June, Davos

An Introduction of Chinese 2018 Arctic Cruise

Jianfeng HE

Polar Research Institute of China



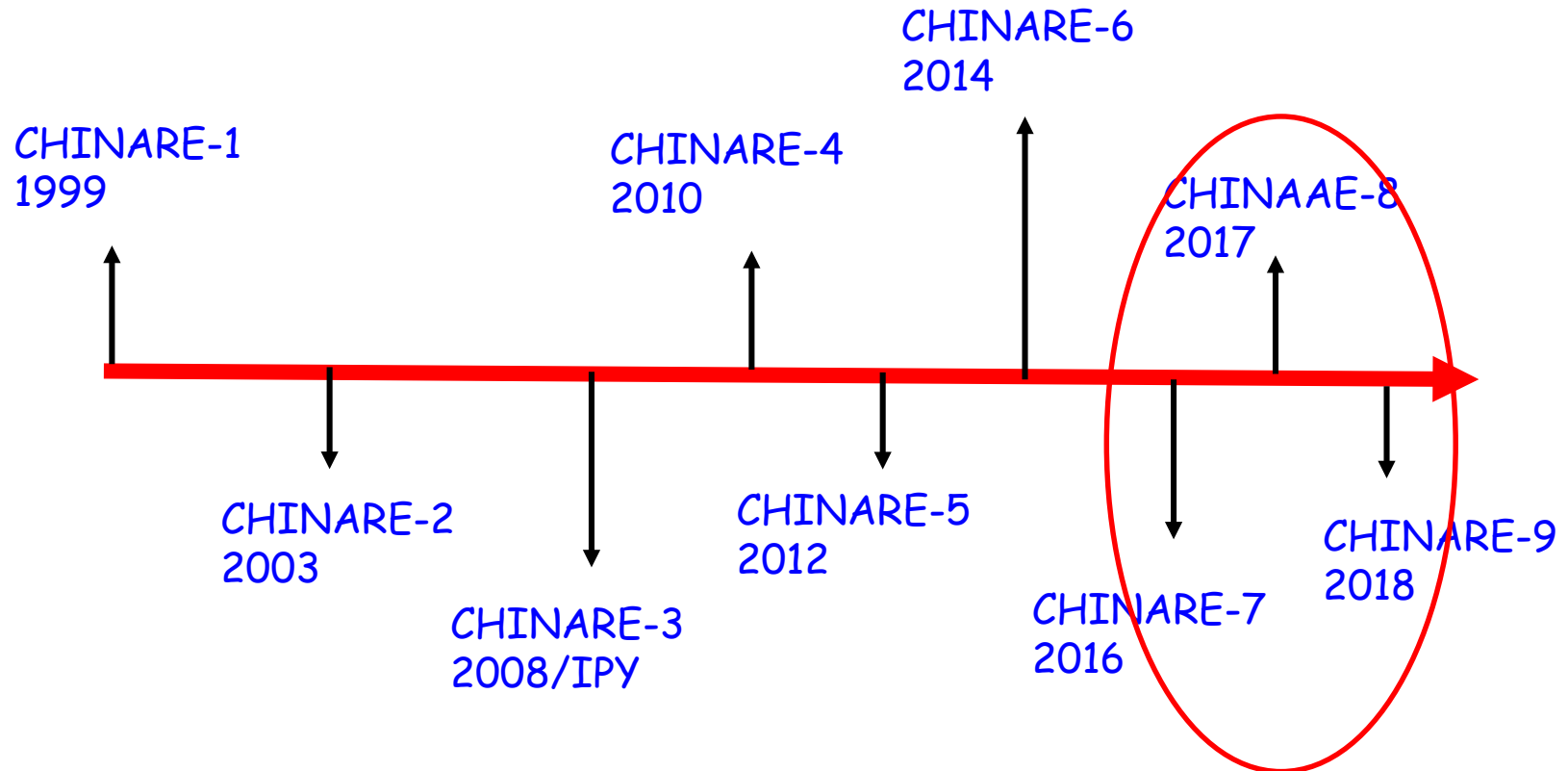
Outline

- CHINARE-7 (2017)
- CHINARE-8 (2018)
- CHINARE-9 (2019)?

Outline

- CHINARE-7 (2017)
- CHINARE-8 (2018)
- CHINARE-9 (2019)?

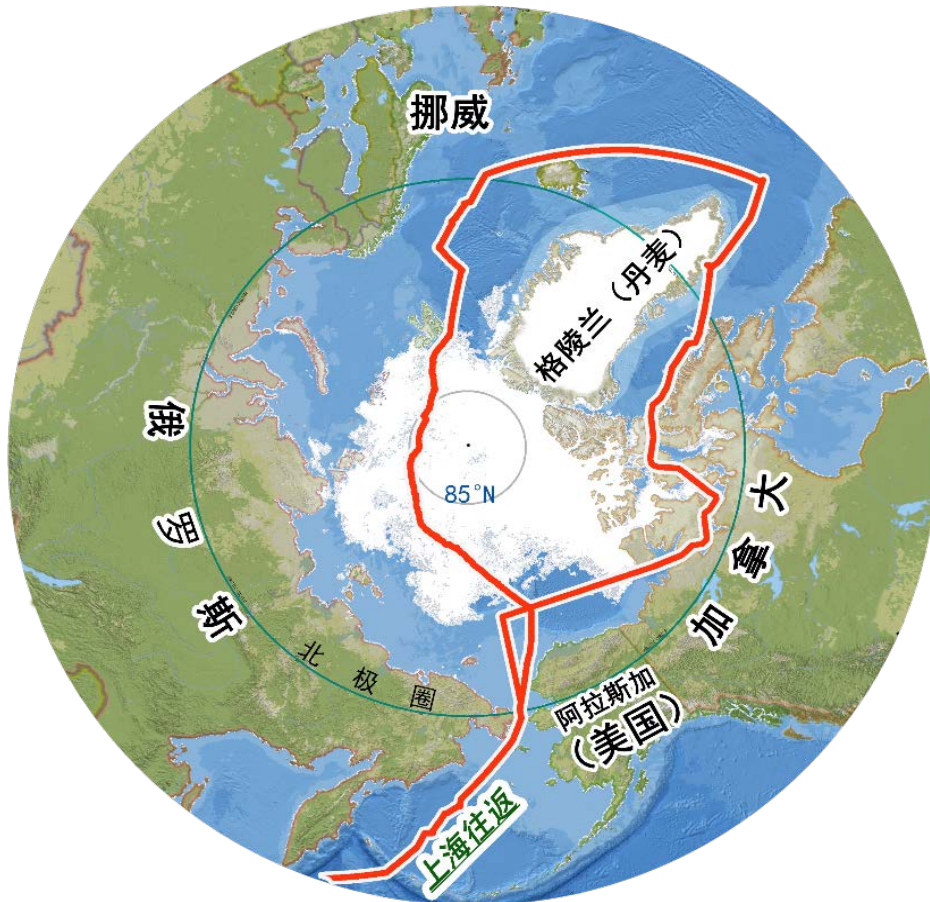
CHINARE Arctic Cruise History



Organized by The SOA of China

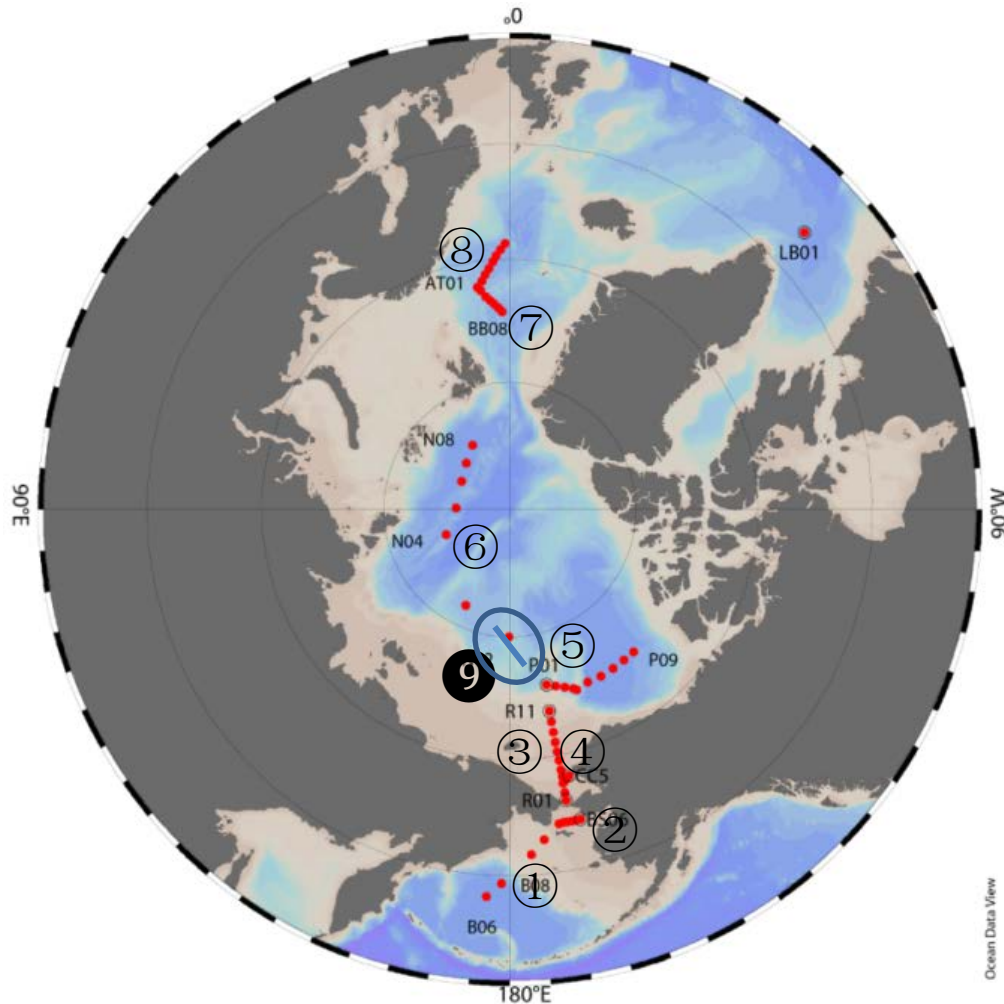
CHINARE-8 cruise

2017.7.20-10.10 83 days



- 7.28~7.29 Bering Sea
- 8.02~8.16 central Arctic Ocean
- 8.21~8.23 Nordic Sea
- 8.30~9.06 NP
- 9.11~9.19 Canada Basin
- 9.20~9.22 Chukchi Sea
- 9.23~9.25 Bering Sea

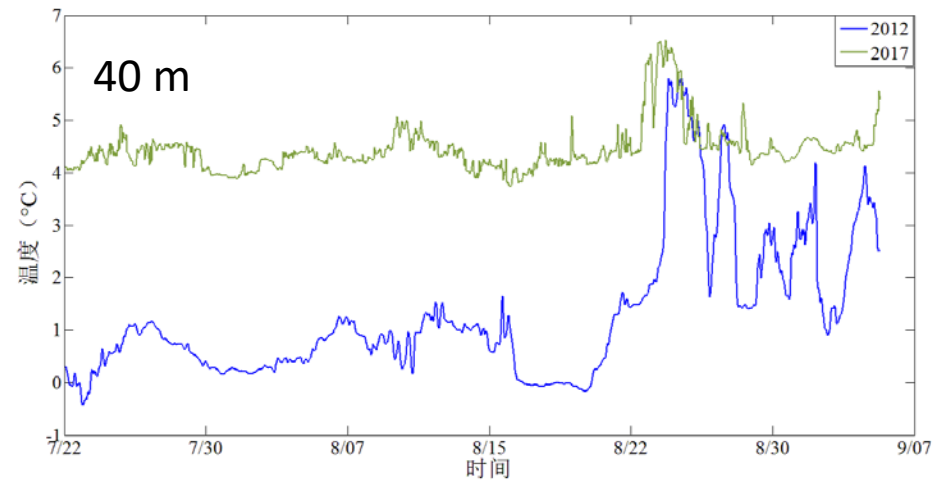
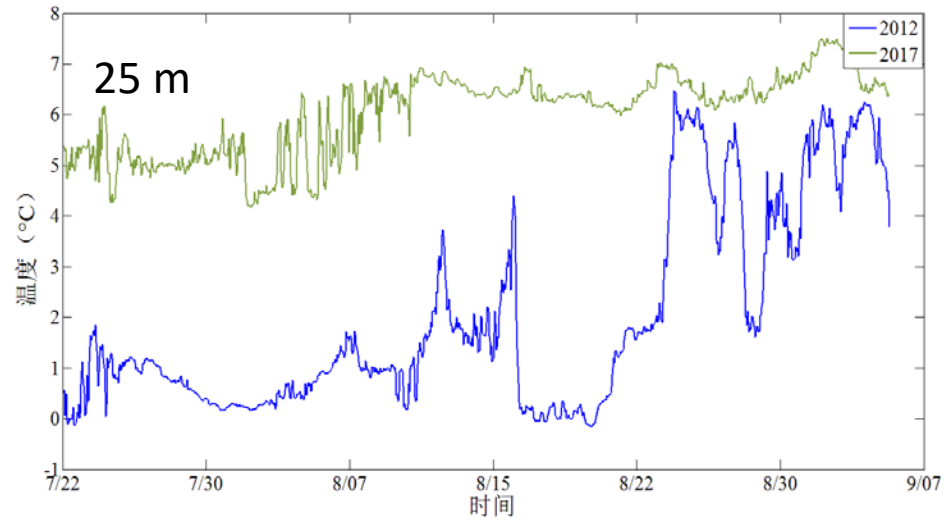
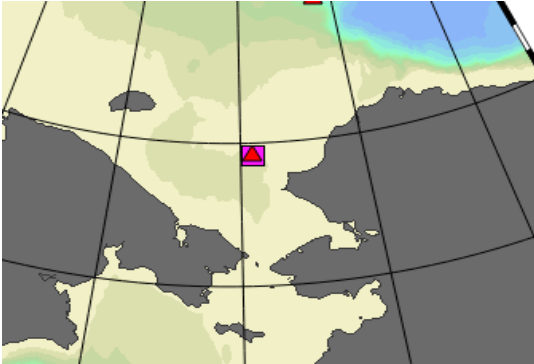
Transects and stations (in total)



- 8 transects, 58 stations;
- 7 ice camps in central Arctic Ocean.
- Deployment of 1 sediment trap and 2 hydrographic mooring systems

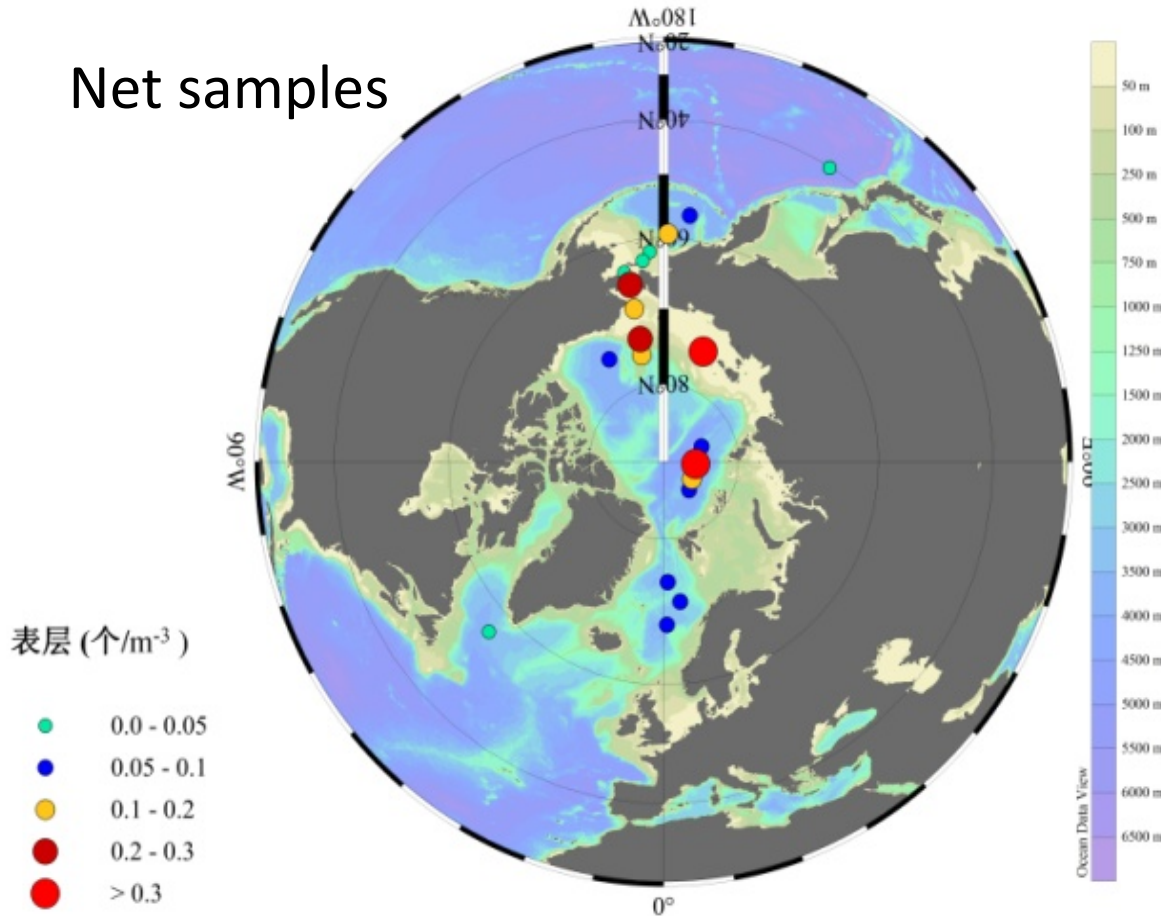
①B; ②BS; ③R; ④CC; ⑤P; ⑥N; ⑦BB; ⑧AT; ⑨ICE

Variation of water temperature



Microplastics in waters

Net samples



- Average 0.033/m³ with maximum 0.16/m³.
- Bering Sea: 0.013
- **Bering Strait: 0.16**
- Chukchi Sea: 0.028
- **Central Arctic Ocean: 0.044**
- Nordic Sea: 0.015
- Beaufort Sea: 0.021
- Northwest Atlantic: 0.018

Outline

- CHINARE-7 (2017)
- **CHINARE-8 (2018)**
- CHINARE-9 (2019)?

Two topics

- Ecosystem with its response to the changing environment
- Sea ice and air-ice-water interaction

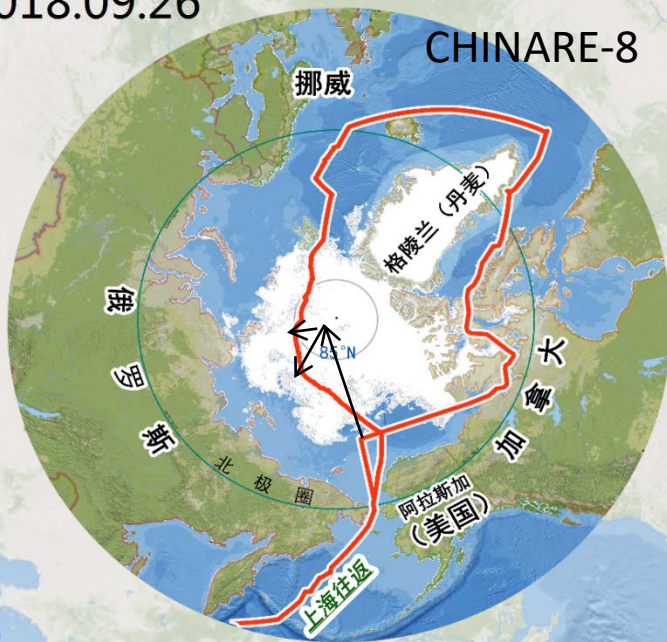
Cruise track

中国第九次北极考察计划航线示意图

2018.07.10 — 2018.09.26

CHINARE-8

- 去程
- 返程
- - - 返程 (备选)

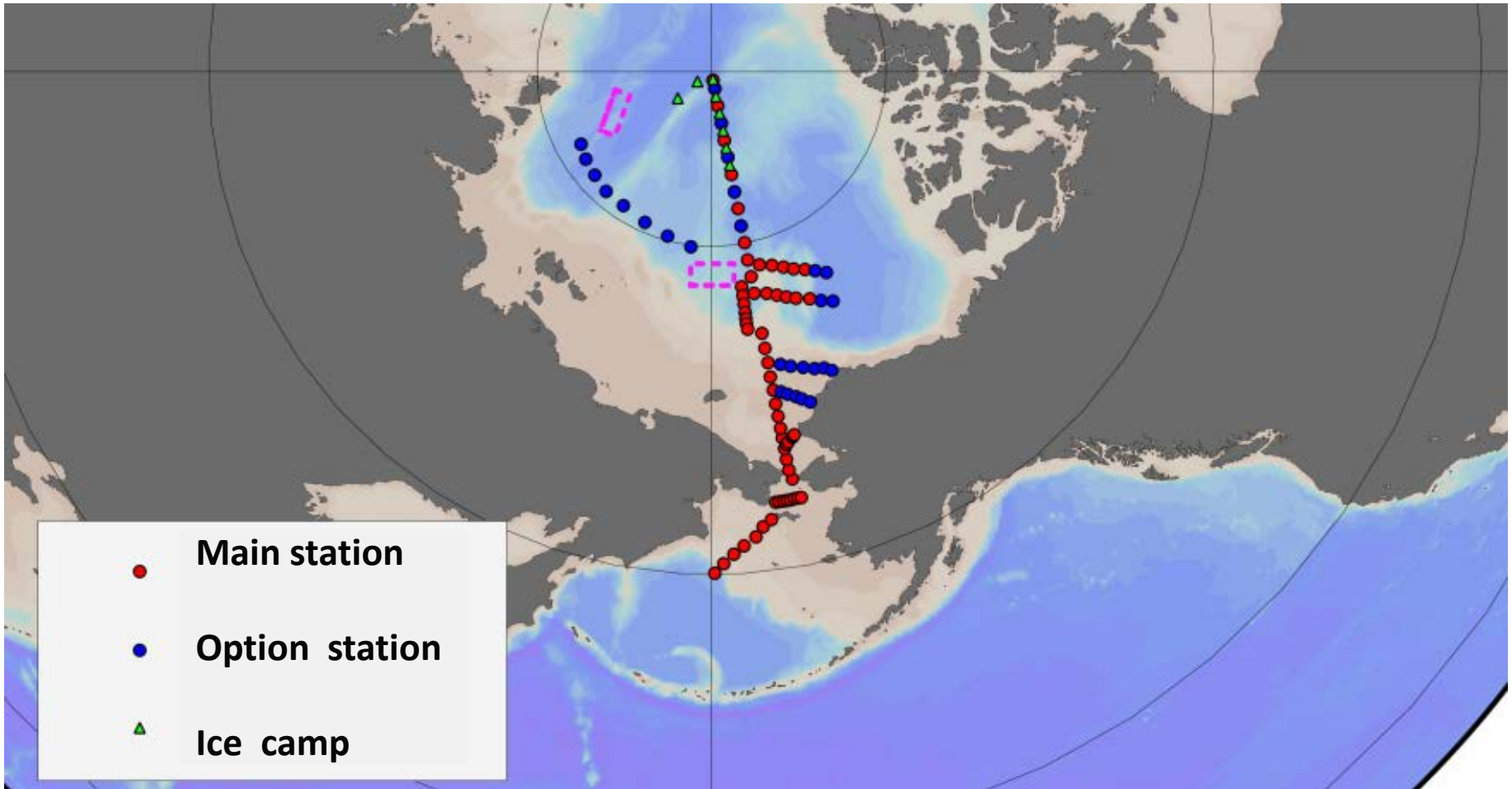


上海出发 : 2018.07.10

返回上海 : 2018.09.26

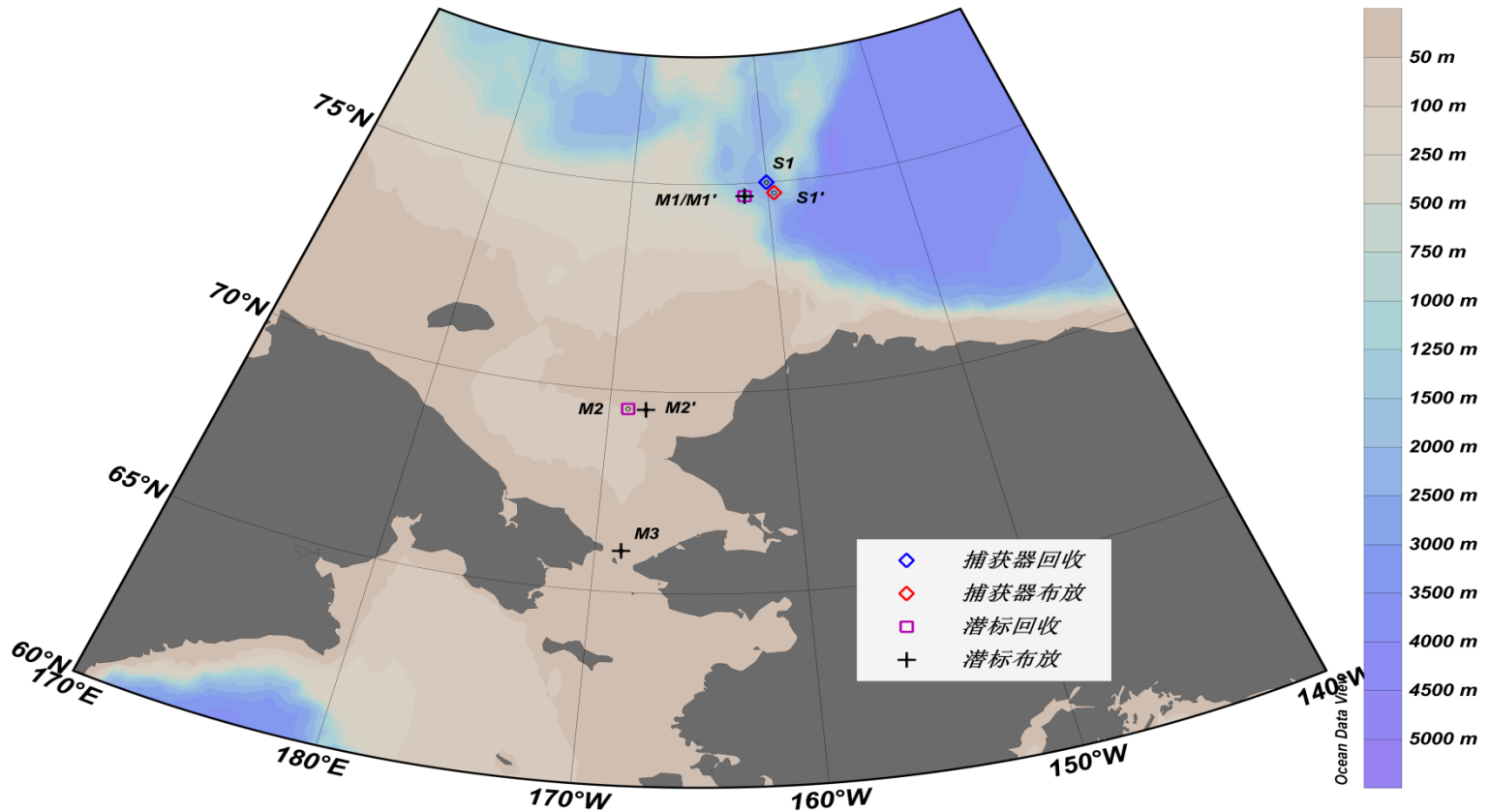


Investigation stations

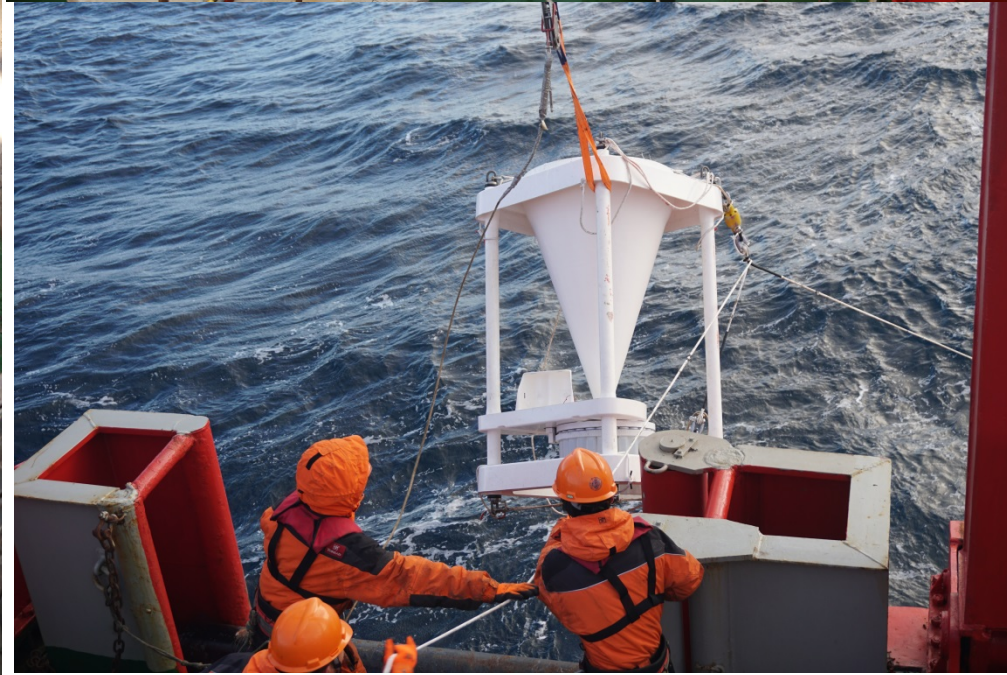


87 Oceanographic stations+6~8 ice camps

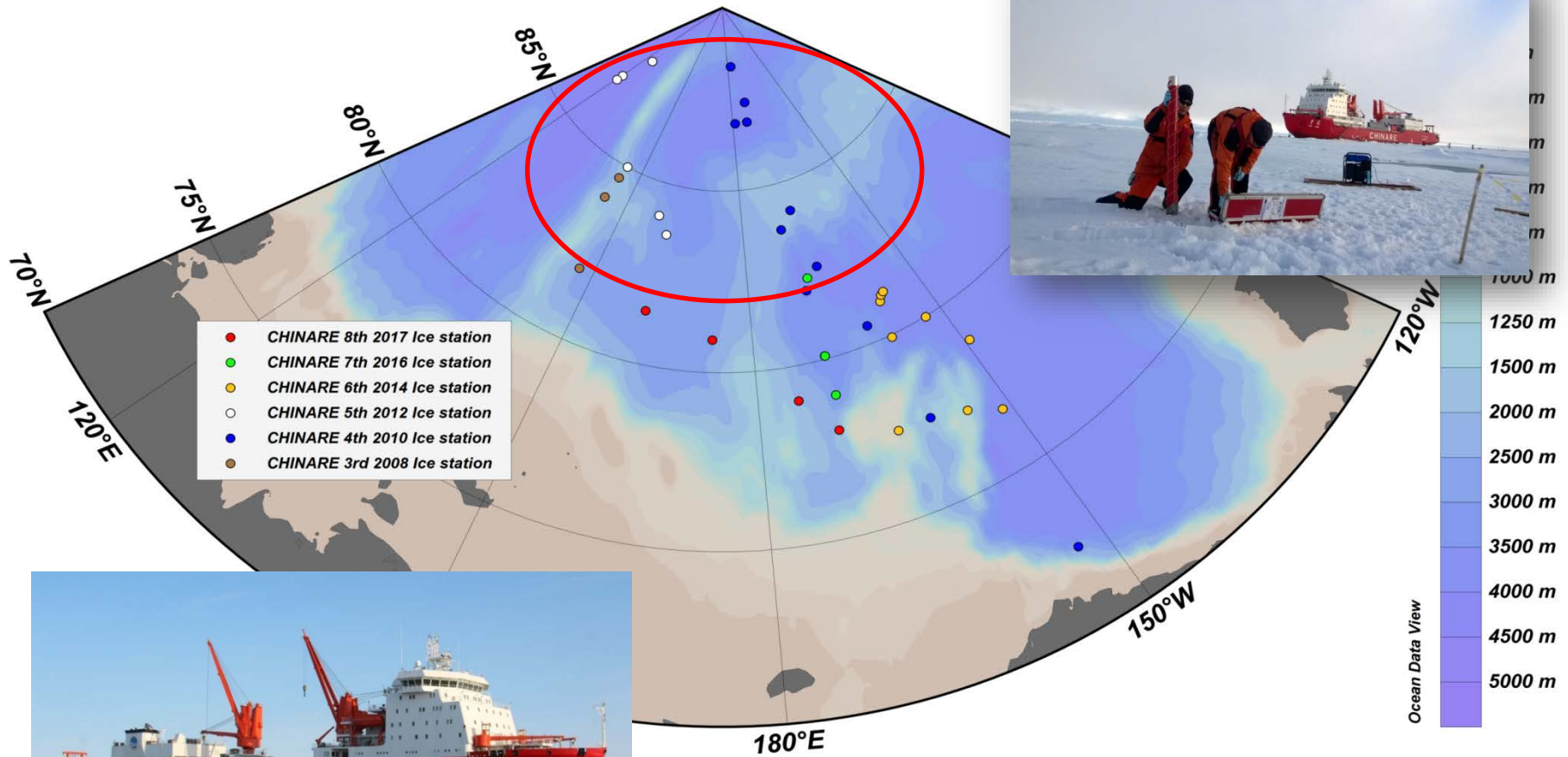
Mooring stations



Deployment of 3 hydrographic mooring system+1 sediment trap

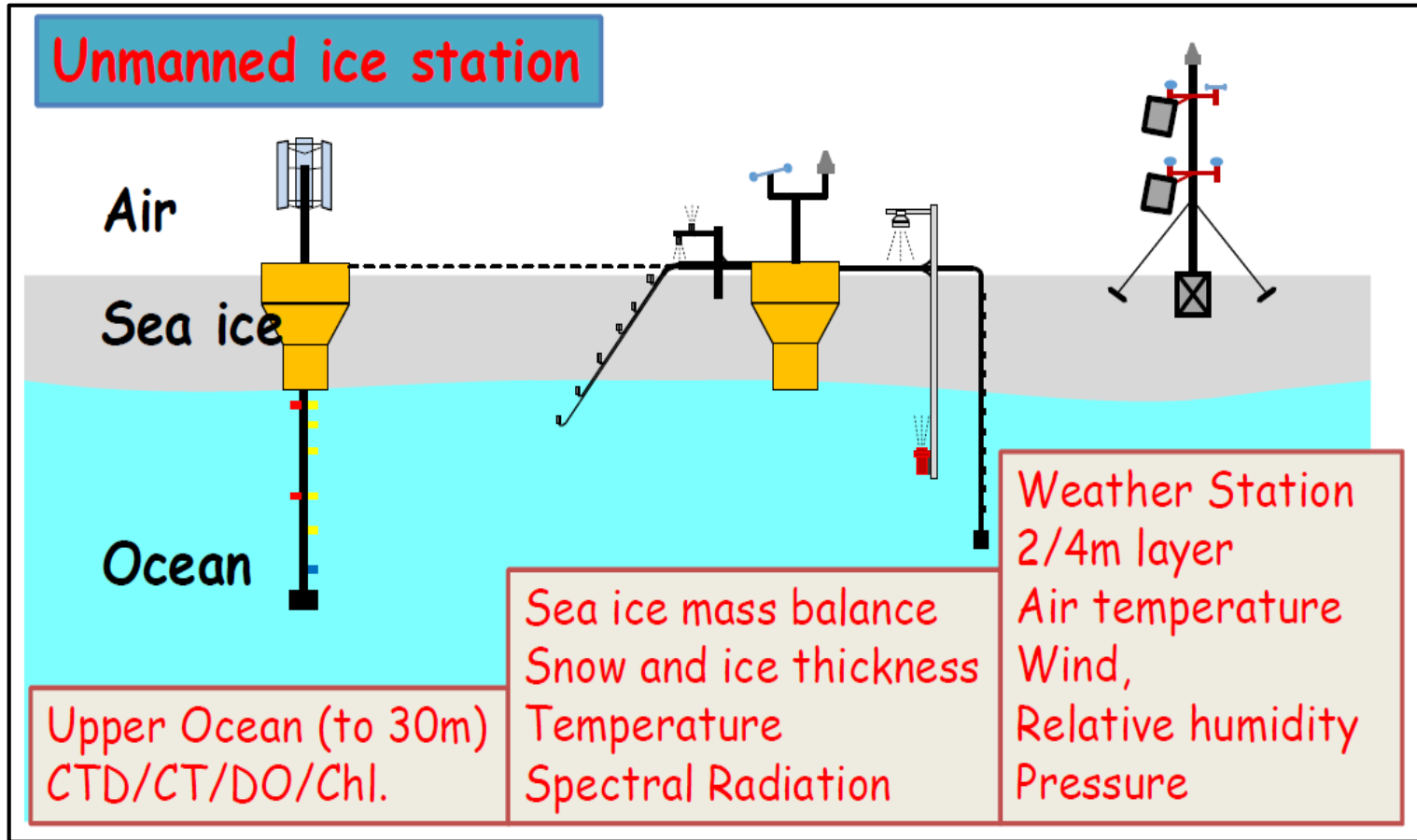


Ice camps



6~8 ice camps in
CAO

Unmanned ice station



Deployment of ~20 ice buoys (including 2 UISs)

Outline

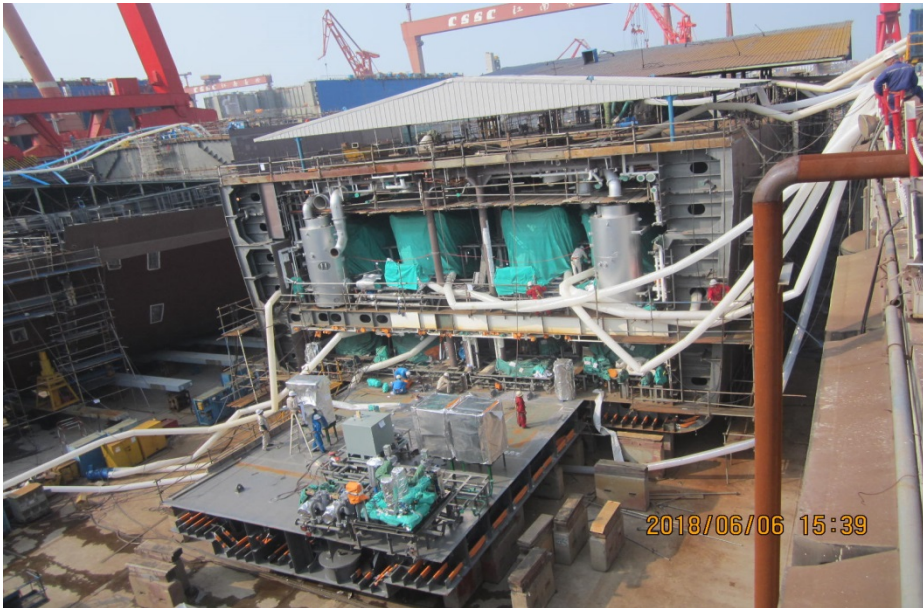
- CHINARE-7 (2017)
- CHINARE-8 (2018)
- CHINARE-9 (2019)?

- Xuelong cruise?
- Xuelong 2 test cruise
- MOSAiC

Xuelong2 under construction

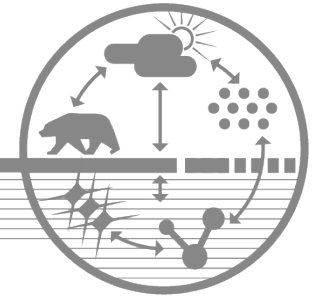


- ◆ Displacement of 14,000 tons, 20,000 nm endurance, self-sustaining for 60 days
- ◆ Ice breaking, double acting (forward and backward), 1.5m sea ice plus 0.2m snow, at 2 to 3 knots.
- ◆ now is under construction in Jiangnan Shipyard, Shanghai. Arctic test cruise in summer 2019

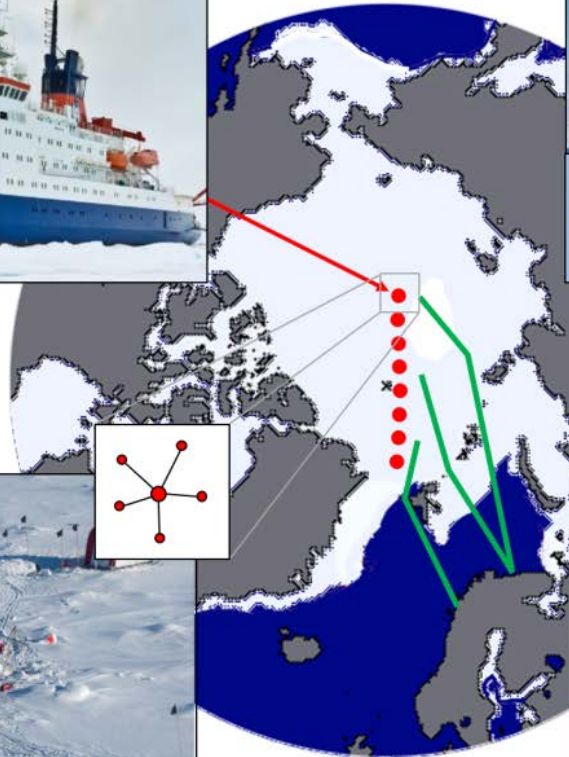


MOSAIC

International
Arctic Drift
Expedition



Central Observatory:
RV Polarstern

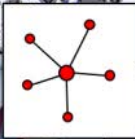


Operations of
research aircrafts
and helicopters



→
Extend vertical and
geographical coverage

Distributed network
of satellite stations

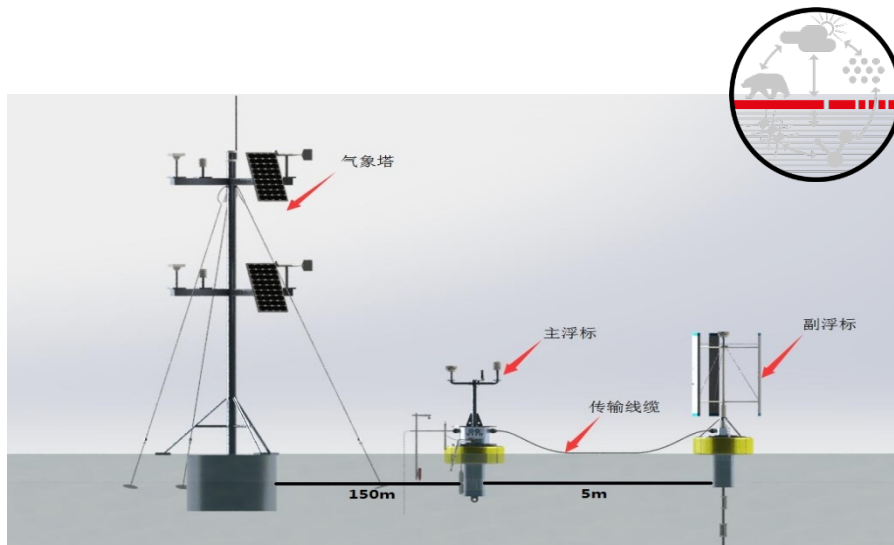


Rendezvous with
icebreakers from
MOSAIC partners

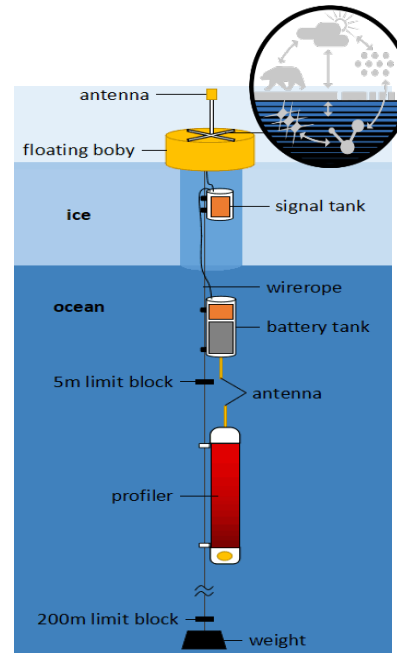


→
Broader geographic
coverage & supply

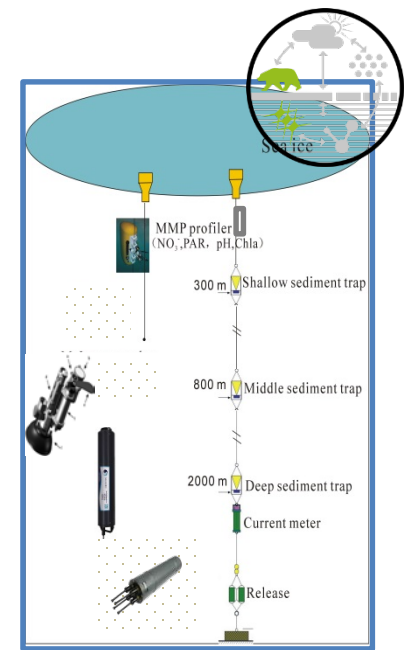




Sea ice dynamics and thermodynamics



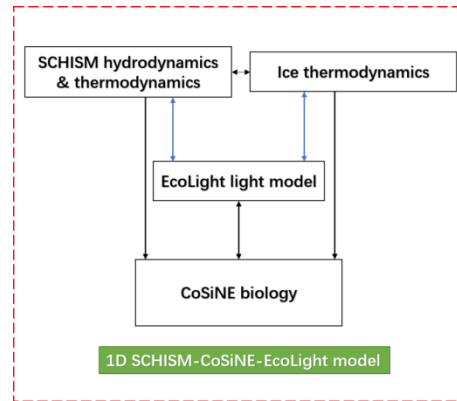
thermodynamics



Biogeochemical cycle



Greenhouse gases

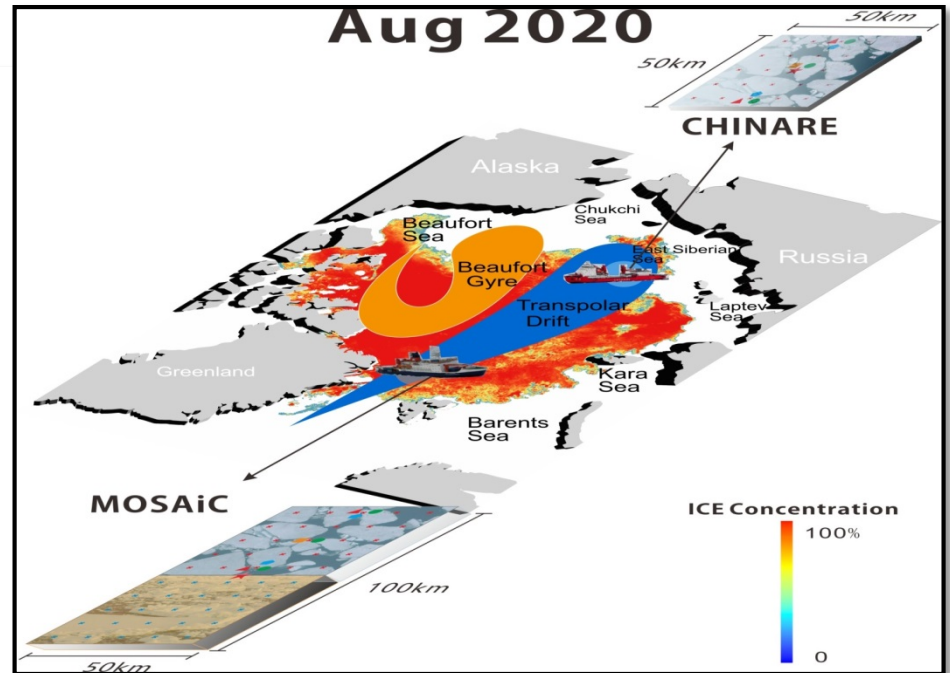
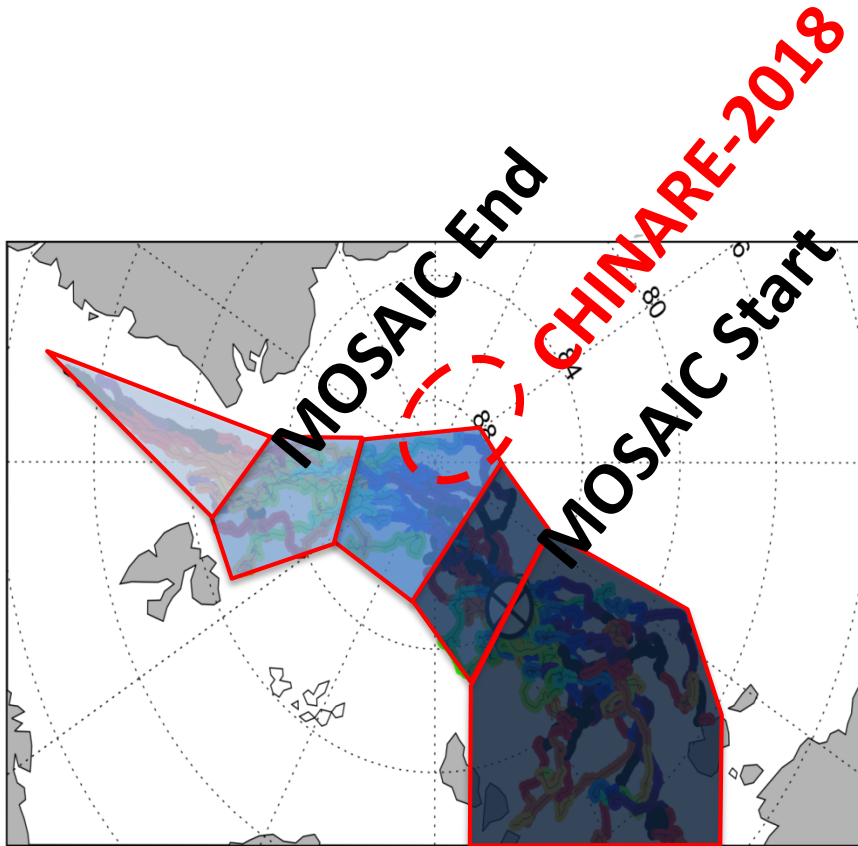


Modeling



~20 man-months onboard

Pre/Post-MOSAiC: Some ice stations will be set up in the region of Transpolar Drift Stream during CHINARE-2018/2020



Thank you for your attentions!

