

ASSW2024 Edinburgh, UK

21/03/-29/03/2024

National Report to FARO

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Polar Research Institute of China

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- 1. Platform for Arctic Researches**
- 2. International cooperation programs**
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(1) R/V Xuelong 2 Icebreaker



Main dimensions

Length: 122.5m

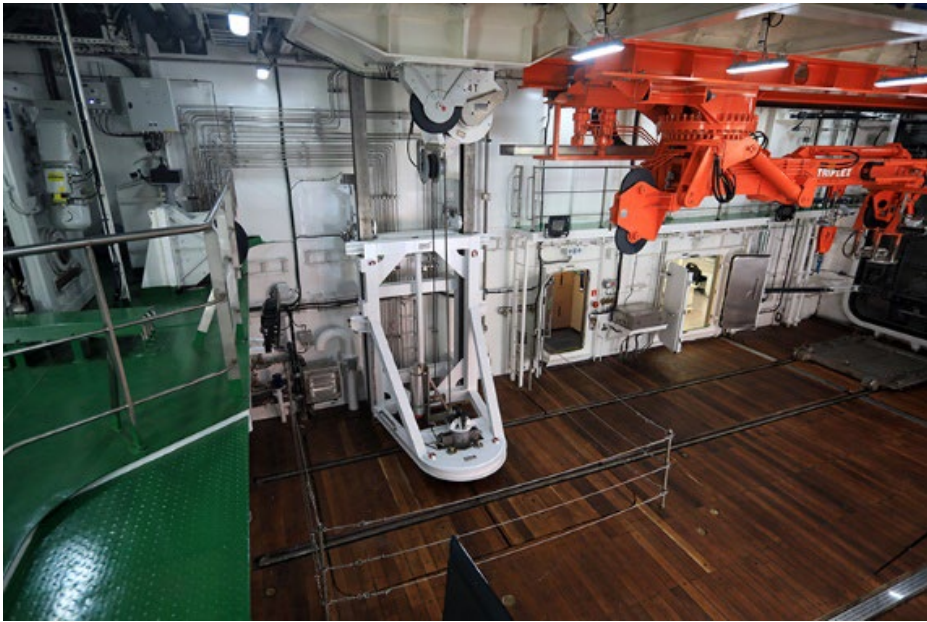
Breadth: 22.3m

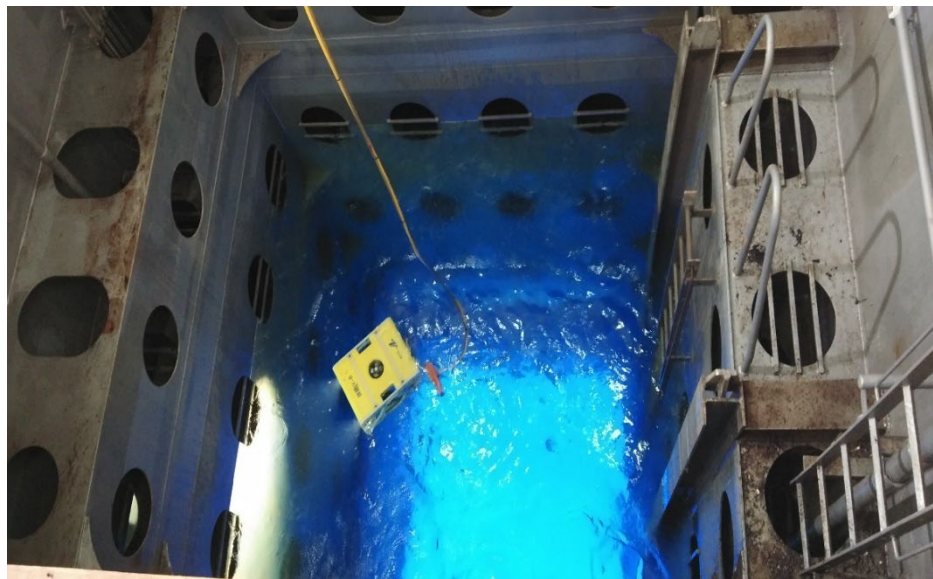
Draught: 8.3m

Ice Class: PC3

Crews/Scientists:101







CHINARE 11: 7.15~9.28 2020

Chukchi Plateau, central Arctic Ocean

CHINARE 12: 7.12~9.28 2021

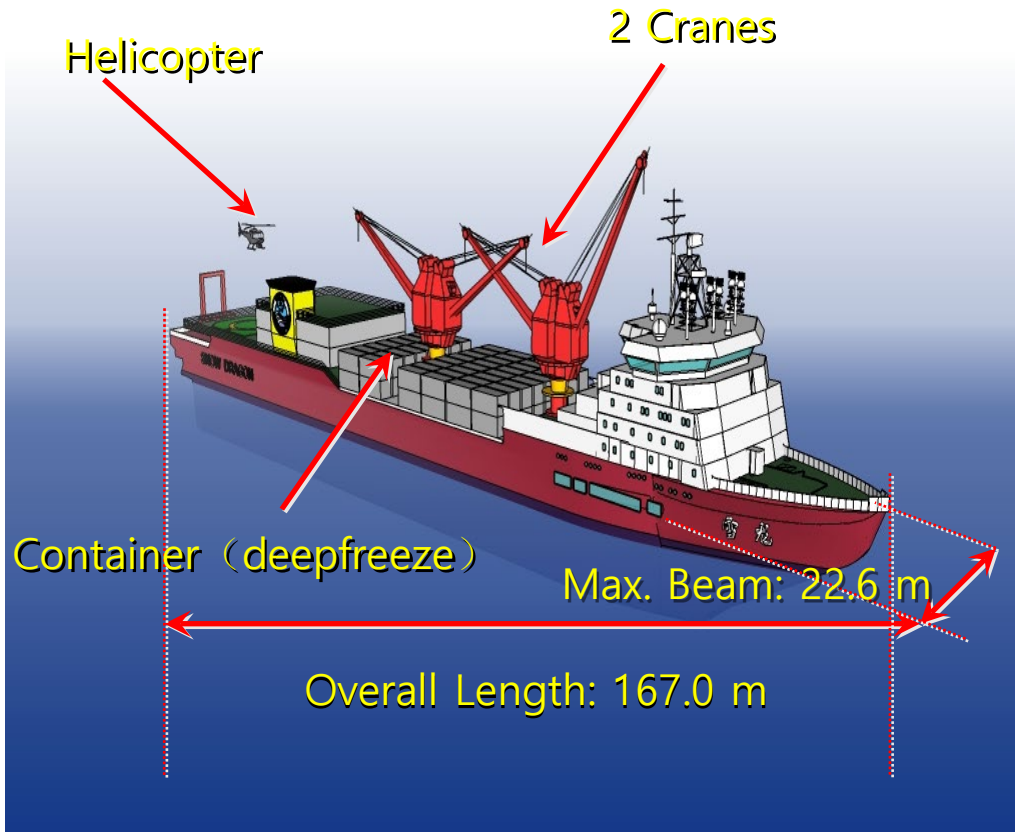
Chukchi Plateau, Gakkel Ridge region

CHINARE 13: 7.12~9.27 2023

Chukchi Plateau, Gakkel Ridge region, North Pole region

(2) R/V Xuelong Icebreaker





- Maximum displacement: 21025 Ton
- Ice Breaking :B1 Class, 1.2 M of first year ice with the 0.2m snow cover
- Wind Resisting: 12 L Scale:
- Berth: 156 persons
(40 sailors + 116 Scientist)
- Maximum Cruising Radius:
21,000 Nautical Mile
- Endurance: 45 days
- Cargo Capability: 10225 Ton
- Desalting Capability: 50 T/D
- 2 helicopterS
- B&W MAN Host: 13200 KW
- Engine Output(3 engines): (2540 KW)

Logistic support from CHIARE 1-CHINAR 8 (1999-2017) and CHINARE 10 in 2019 .

(3) R/V Jidi (new construction)

IMO: 9970351

Gross weight: 4647 T

Length: 89.95 m

Depth: 8.2 m

Maximum speed: 16 knots

Cruising speed: 11.5 knots

Ice class: PC6

25 crews + 35 scientists



Scientific instruments:

Multibeam sounder
Seabed profiler
Fishery sounder
ADCP: 38 and 300kHz
A Fram
CTD winch
Geological winch
SEB 911 plus CTD
Plankton net
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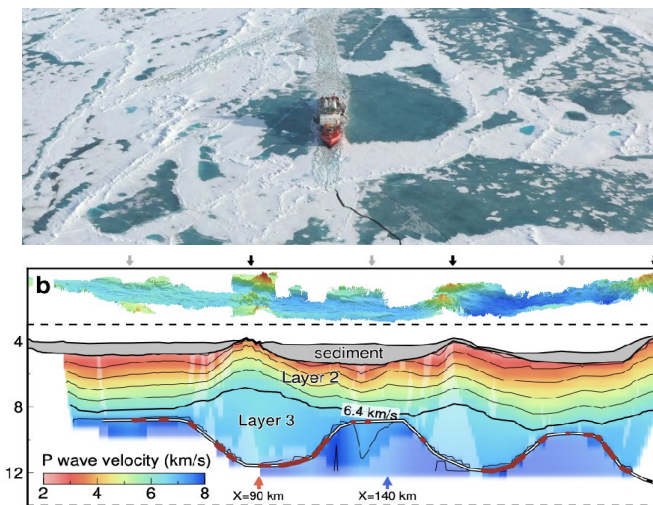
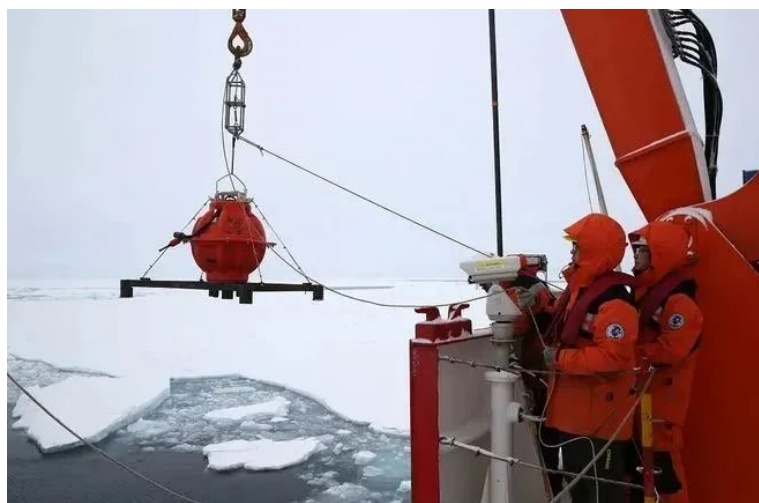
4. Activity Plan in 2024



Program 1

JASMIInE

- ✓ Joint Arctic Scientific Middle-ocean ridge Insight Expedition, JASMIInE
——China, Germany, France, Russia, et al. (8 countries)
- ✓ ADOMIC, Arctic Deep Observation for Multi-sphere Cycling
——United Nations' Decade of the Oceans project



Program 2

RecCAO

- ✓ Recording the Environment and Ecosystem Changes in the Central Arctic Ocean, RecCAO
- ✓ Period : 2023-2027
- ✓ Ship-based investigations
- ✓ Ice buoys
- ✓ Drifting buoys
- ✓ Mooring systems
- ✓ , , , , , , ,



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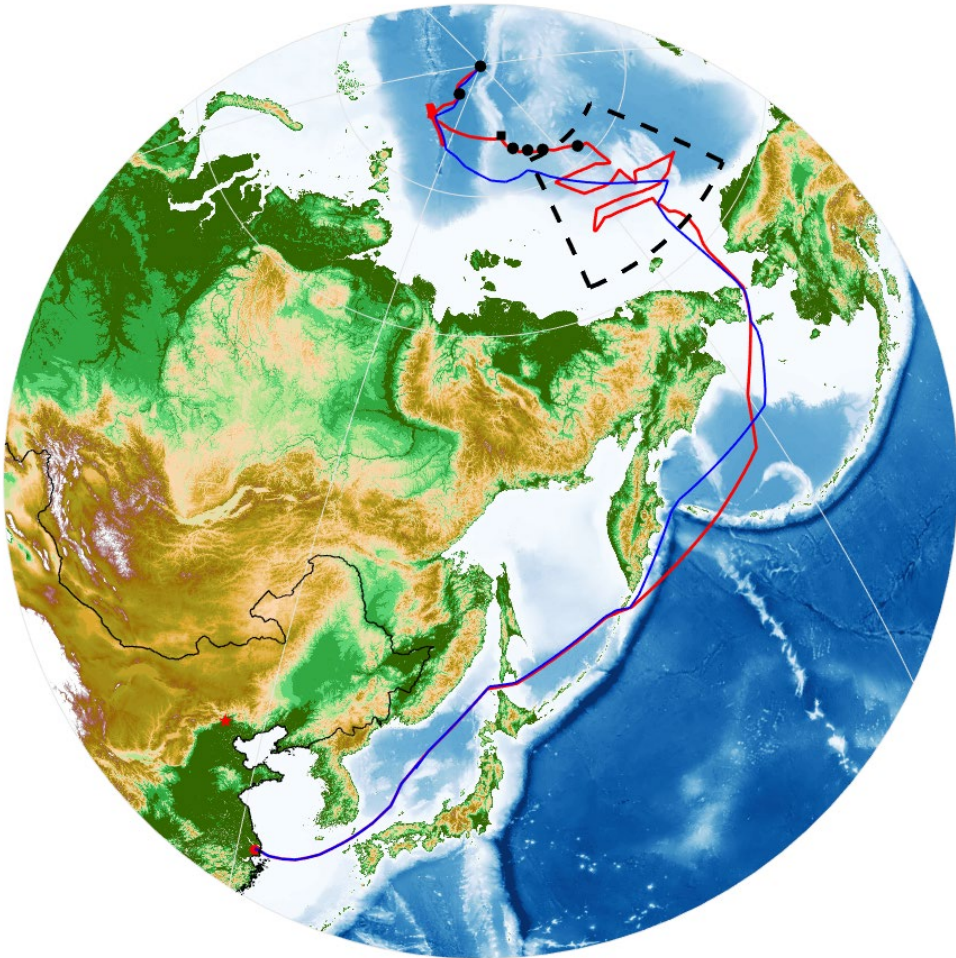
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CHINARE 13



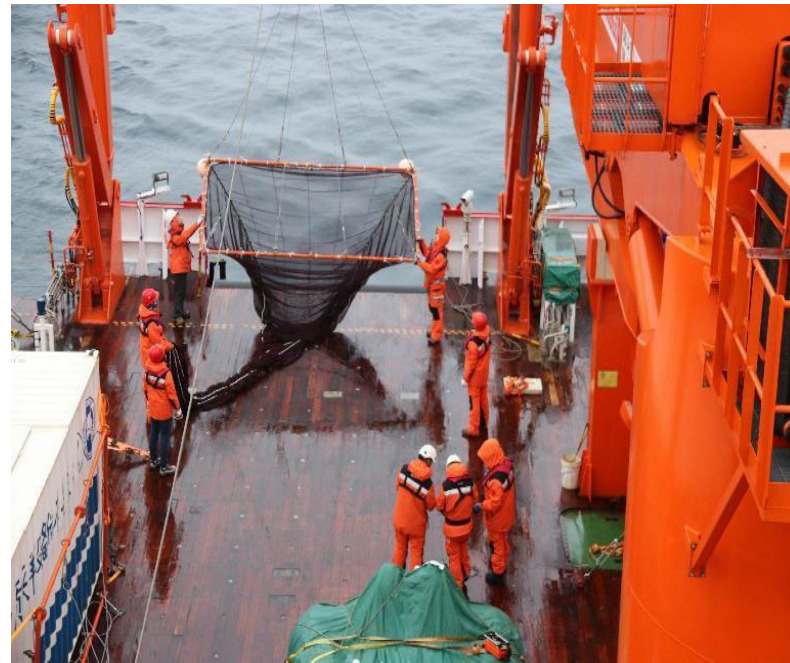
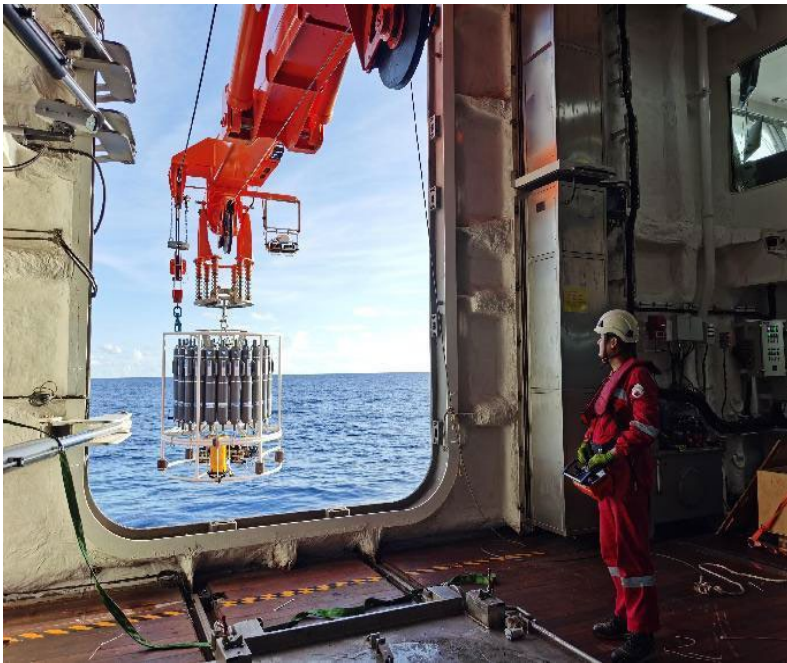
- ✓ From July 12th to September 27th
- ✓ Shanghai_Chukchi Plateau_Gakkel
middle-ocean ridge_North
Pole_Shanghai
- ✓ 49 marine station investigation
- ✓ 7 ice camps observation
- ✓ 26 ice buoys were deployed



A group photo at the North Pole on Sep. 5th, 2023

Mission 1: Marine Ecosystem Investigation

- ✓ 49 marine station investigation
- ✓ Temperature, salinity, nutrients, DO, pH, microplastic, chlorophyll, phytoplankton, zooplankton, pelagic fish



CTD sampling and trawling in open waters and light ice area onboard

Investigations based on Ice Camps



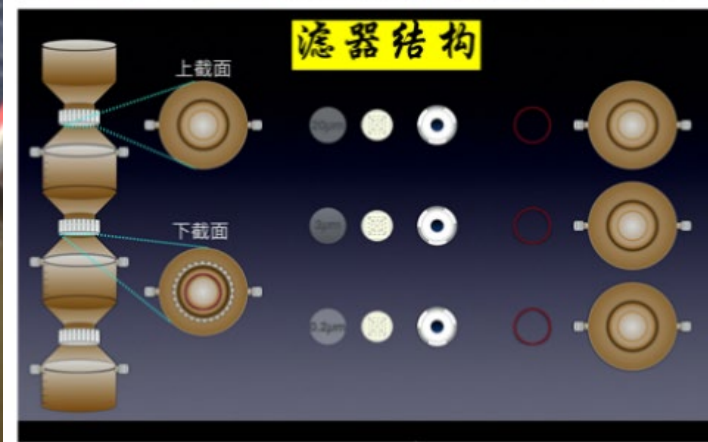
Meteorological observation



Microplastic trawl



Biological trawl

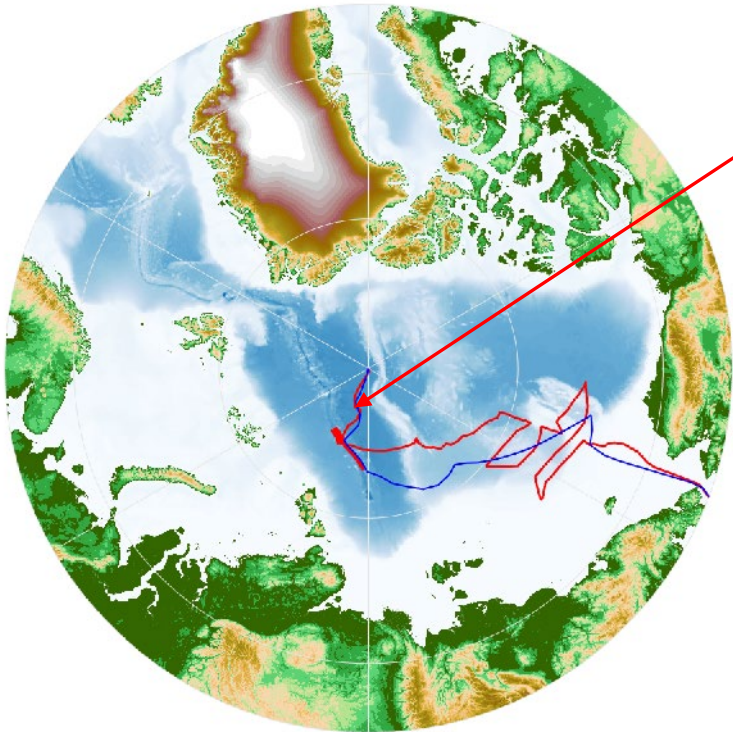


Filtration at Lab.

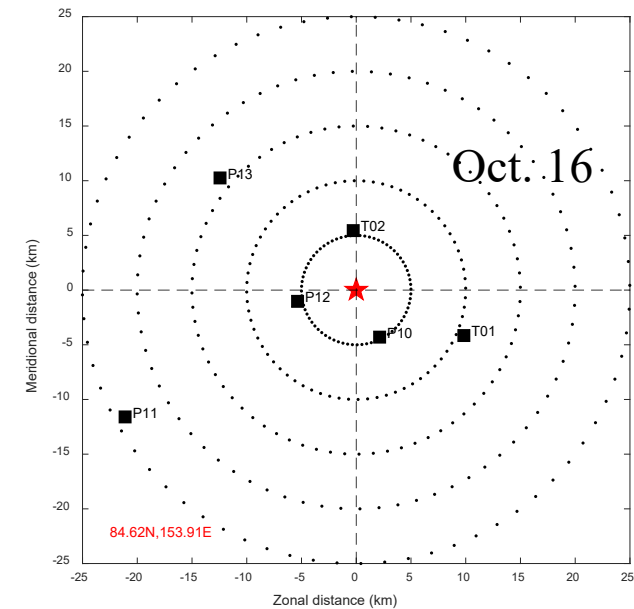
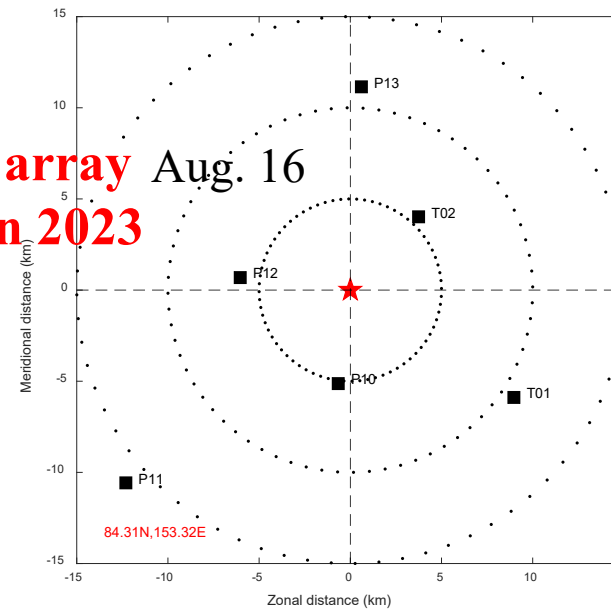
Mission 2: Sea Ice Observation

Sea ice dynamics observations

- ✓ 7 ice camps observation
- ✓ Deploying 26 ice buoys



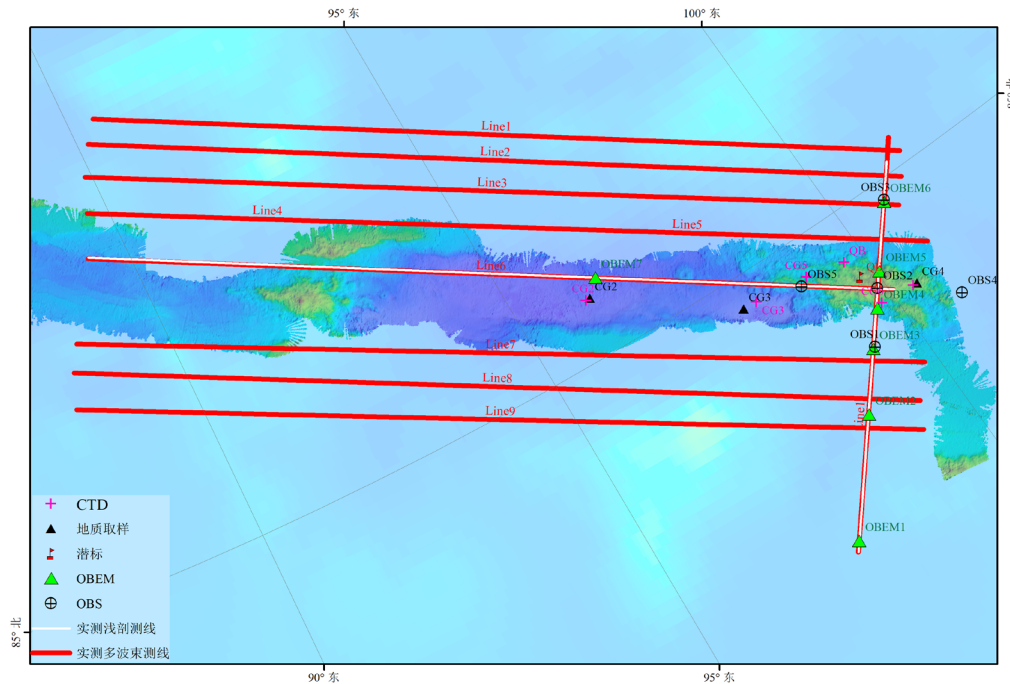
drift buoy array Aug. 16
deployed in 2023



Monitoring dynamic processes such as sea ice drift, shear and rotation

Mission 3: Middle-Ocean Ridge Survey

Joint Arctic Scientific Mid-ocean Ridge Insight Expedition (JASMIInE)



- ✓ 14 day's **Gakkel Ridge** survey;
- ✓ Profiles (Multibeam, SBP, gravity, magnetic)
- ✓ Seabed-based detection
 - 7 Ocean-Bottom Electromagnetometers
 - 5 Ocean-Bottom Seismometers
- ✓ Geological sampling: 3 sites

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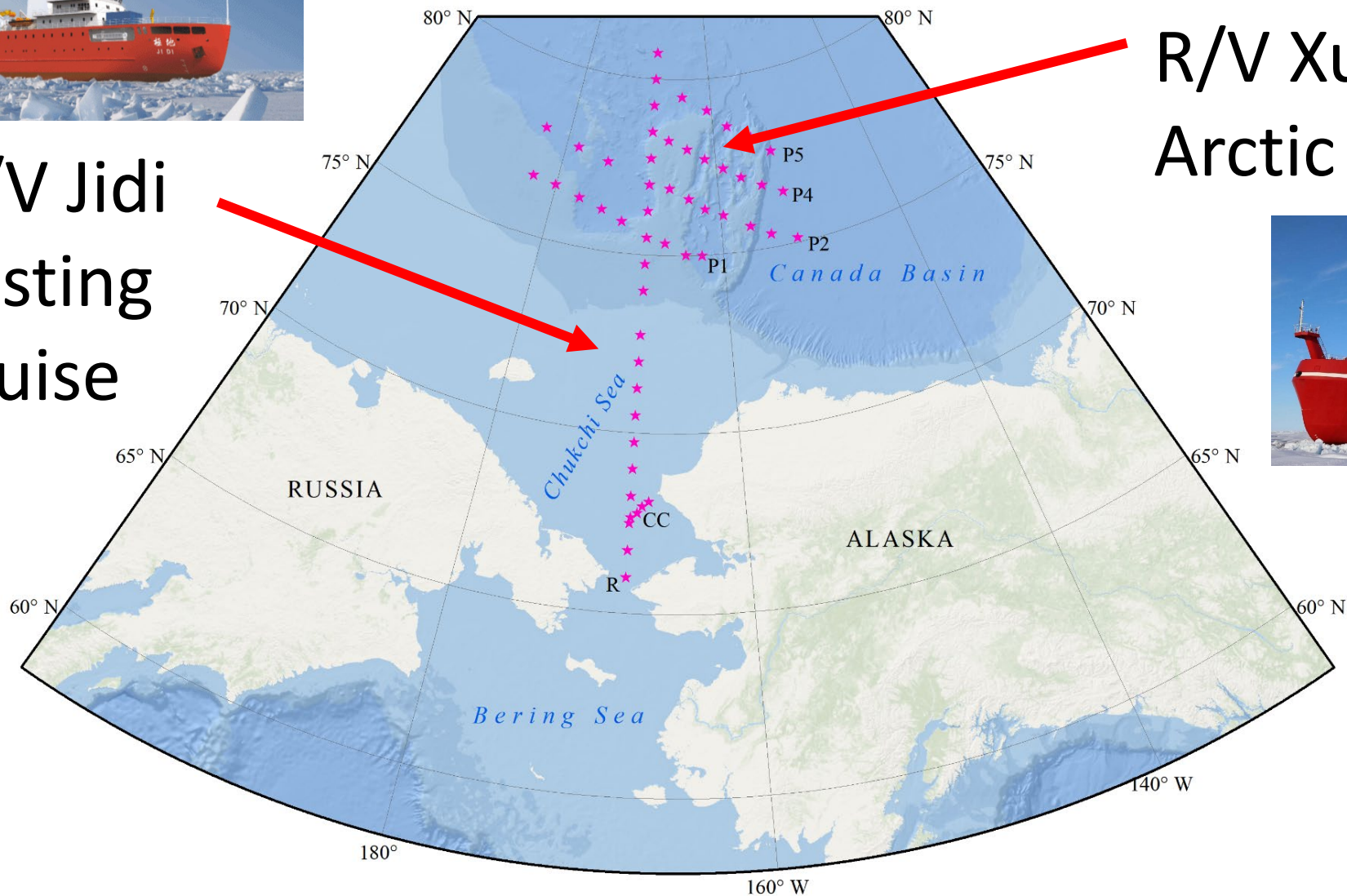
CHINARE 14



- To carry out by Xuelong 2 and Jidi
- Two main missions:
 - ✓ Marine ecosystem investigation in Pacific Arctic region
 - ✓ Geophysical survey in Gakkel middle-ocean ridge



R/V Jidi
Testing
cruise



R/V Xuelong 2
Arctic cruise



Thanks for your attention!

