

CLIVAR/CliC/SCAR Southern Ocean Region Panel SORP-12: 29-30 June 2017

National activities report

Country: China

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Receipt of material prior to 15 June 2017 will ensure inclusion in meeting discussion. Receipt of material prior to 15 July 2017 will ensure inclusion in meeting report and contribute to future SORP discussions, as well as input to the SOOS and other CLIVAR/CliC/SCAR activities. All reports will be posted on the SORP website.

Purpose of material gathered for the SORP: To build an overview of
- observational, modeling, ocean reanalysis and state estimation initiatives relevant to the SORP

(This can include a list of activities, maps showing where work has been done, major international project involvement, etc.)

Please refer to SORP's terms of reference (also given at the end of this template) for guidance on scope: <http://www.clivar.org/clivar-panels/southern>

Note: Biological topics such as marine ecology and marine ecology research, for example, are not within the scope of SORP's terms of reference and are therefore not required in these reports. However, SOOS has an interest in such research, so National Representatives are welcome to include summaries of such research as separate sections.

Note: The Southern Ocean is not explicitly defined in SORP's terms of reference, so please note what the limit used for your national report is (e.g., research on regions only beyond an oceanographic boundary like "south of the Polar Front", or research contained within latitudinal limits like "south of 50°S").

A. Recent and ongoing activities

Does your country have a national committee tasked with oversight of Southern Ocean climate science (e.g., like US CLIVAR)? If yes, please give the name of the committee.
No.

What major activities have been carried out in the last several years or are in progress now? Contact information for the projects would be useful (e.g., Principal Investigators and Associate Investigators).

1. Observational

Main observational activities in CHINARE33 (2016/2017) are summarized as following:

- Hydrographic section observation

CTD/LADCP and water samplings were conducted in the region around South Shetland Islands (24 December, 2016 - 11 January, 2017; Fig. 1), Ross Sea (3-4 February, 2017) and Prydz Bay (2-9 March, 2017). Micro-structure profiler (VMP200) were deployed at some stations.

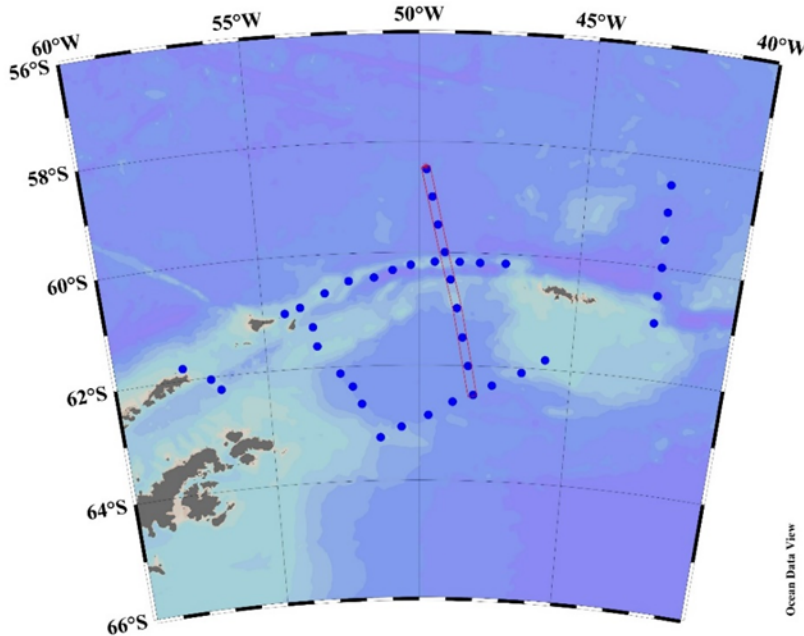


Fig. 1 CTD stations in the region of South Shetland Islands

- Mooring

Moorings with CTD, ADCP/current meters were deployed and recovered at several locations in Prydz Bay (Fig. 2). Year-long records have been collected at locations M11 (March 2015 - February 2017) , M11B (December 2015 - December 2016), M12/M13 (February 2016-February 2017) and M14 (December 2015 - February 2017, with sediment trap). New moorings were deployed at locations M10B (December 2016), M13 (February 2017), MDP1 and M15 (March 2017). The recovering of mooring at location M10A deployed in last cruise failed.

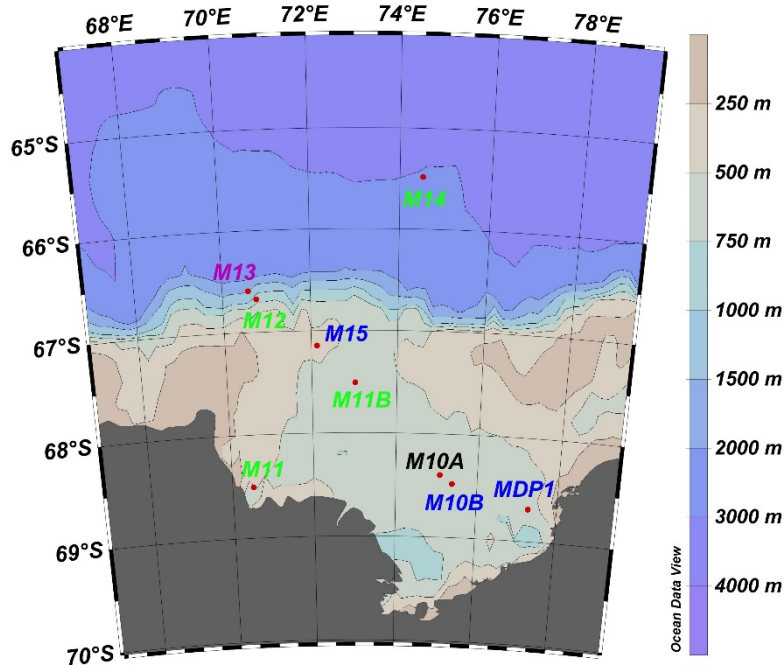


Fig. 2 Mooring locations in the region of Prydz Bay in CHINARE33
(Purple: recovered and deployed, Blue: deployed, Green: recovered, Black: not recovered.)

- Ice camp on fast ice near Zhongshan Station

An ice camp was set up on fast ice (about 76.336°E, 69.132°S) near Zhongshan Station on 4-10 December 2016. A CTD profiler driven by a programmed winch and an ADCP mounted in an ice hole were used to measure the upper ocean continuously. Radiation, snow and ice thickness were also measured on fast ice.

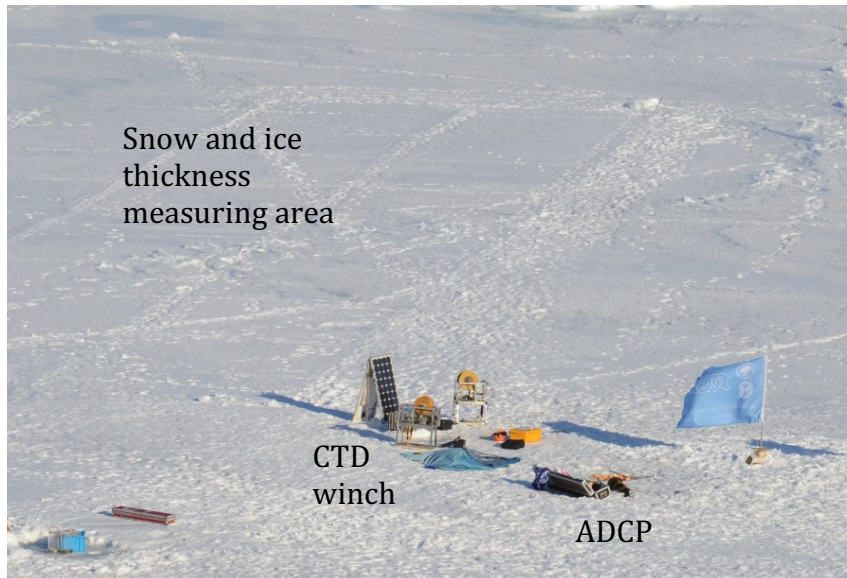


Fig. 3 Ice camp on fast ice near Zhongshan Station

- Expendable probes and floats observation

Expendable probes (XBT/XCTD, radiosonde) were launched at a transect between Fremantle and Prydz Bay, a transect in Weddell Sea and a transect cross Drake Passage.

- Underway observation

Temperature/salinity (measured by SBE 21) and chemistry (CO₂, etc) of sea surface water, meteorology, sea ice (following ASPeCt sea-ice protocol) were measured along cruise track (Fig. 4).

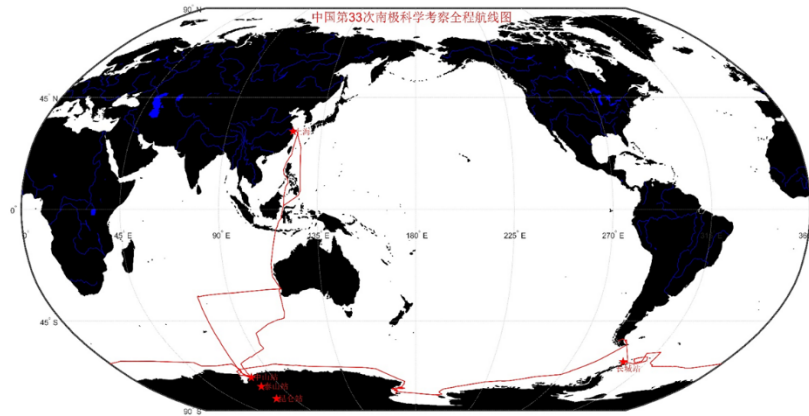


Fig. 4 Cruise track of CHINARE33

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2. Modeling

3. Ocean reanalysis and state estimation

Please give a full list of references at the end of section A.

B. Planned activities

What major activities are planned or likely to occur during the next several years?

Contact information for the projects would be useful (e.g., Principal Investigators and Associate Investigators).

1. Observational

The Chinese Polar Environment Comprehensive Investigation and Assessment Programme will be extended more 5 years (2017-2021) but the detailed field work plan is still pending. The likely observing activities include:

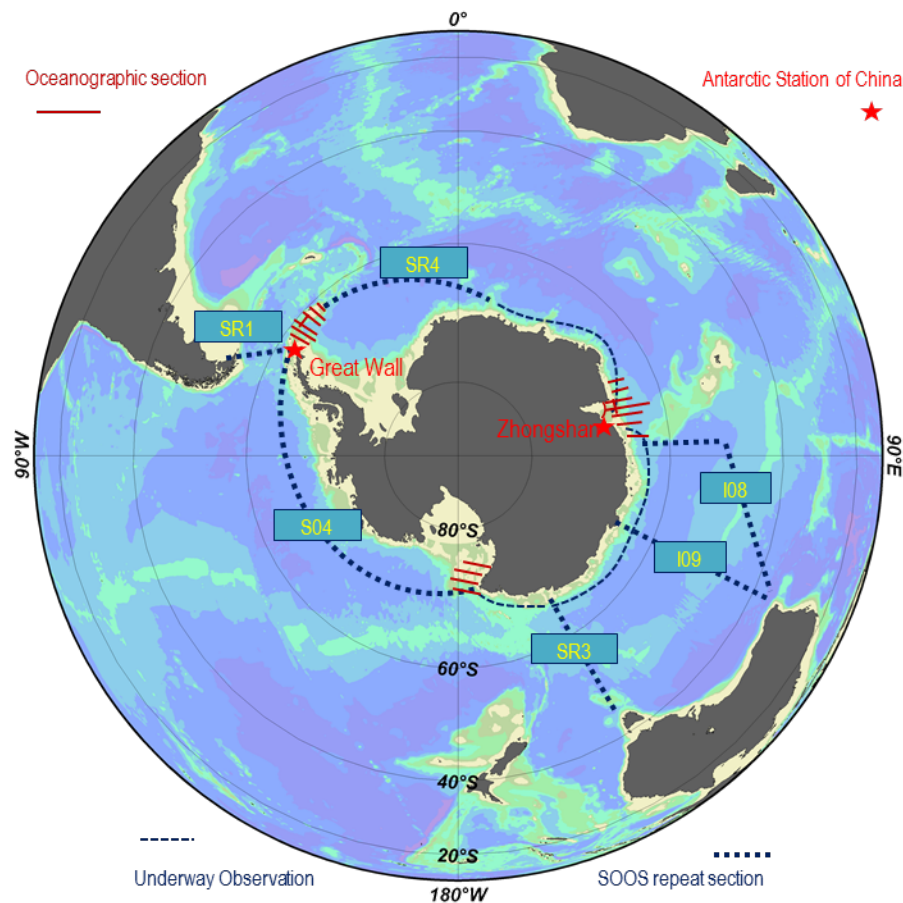
- Hydrographic observation at transects in regions around Prydz Bay (February, 2018, 2020), Weddell-Scotia Confluence (2019, 2021), and possibly Ross Sea.
- Mooring deployment/recovery in Prydz Bay.
- Underway observations along ship track (Indian sector cruise: Fremantle - Prydz Bay - Ross Sea - Hobart/Christchurch; or Circumpolar cruise: Fremantle - Prydz Bay –

Weddell Sea – Drake Passage – South America – Ross Sea - Prydz Bay – Fremantle): current in upper ocean (38kHz/300kHz ADCP), temperature, salinity and chemistry (CO₂, etc) of sea surface water, meteorology, sea ice (ASPeCt).

- Expendable probes (XBT/XCTD, radiosonde) observation at transects: Fremantle - Prydz Bay , Ross Sea - Hobart/Christchurch , Drake Passage.

- Ice Mass Balance Buoy (IMB) on fast ice in Prydz Bay near Zhongshan Station in winter.

- Argo floats and surface drifting floats might be released in the ACC region and Prydz Bay respectively.



Observing sections might be completed by China in future 5 years (2017-2021).
The SOOS repeat sections will be finished only by XBT/XCTD in underway observation.

2. Modeling
3. Ocean reanalysis and state estimation

"To serve as a forum for the discussion and communication of scientific advances in the understanding of climate variability and change in the Southern Ocean. To advise CLIVAR, [CliC](#), and [SCAR](#) on progress, achievements, new opportunities and impediments in internationally-coordinated Southern Ocean research."

Specific Activities:

1. Facilitate progress in the development of tools and methods required to assess climate variability, climate change and climate predictability of the ocean-atmosphere-ice system in the Southern Ocean.
2. Identify opportunities and coordinated strategies to implement these methods, spanning observations, models, experiments, and process studies.
3. Provide scientific and technical input into international research coordination, collaborating as required with other relevant programs, including the [Southern Ocean Observing System \(SOOS\)](#).
4. Monitor and evaluate progress in Southern Ocean research, and identify gaps.
5. Enhance interaction between the meteorology, oceanography, cryosphere, geology, biogeochemistry and paleoclimate communities with an interest in the climate of the Southern Ocean.
6. Work with relevant agencies on the standardization, distribution and archiving of Southern Ocean observations.