

## Argo Chinese National Report 2024

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### 1. The status of implementation of the new global, full-depth, multidisciplinary Argo array (major achievements and problems in 2024)

#### a. floats deployed and their performance

In 2024, China deployed 18 floats in the northwestern Pacific Ocean and Bering sea, including 4 HM2000, 10 deep XUANWU, 2 PROVOR\_CTS4 and 2 NAVIS floats. The details of these floats are shown in Table 1.

**Table 1. Details of the floats deployed in 2024**

Float model	Number	Sensor	Region	Owner
HM2000	4	SBE41	Bering sea	FIO, MNR
XUANWU	10	SBE61	NW Pacific	Laoshan Lab
PROVOR_CTS4	1	SBE41, Aanderaa 4330, ECO_FLBBCD, OCR504, SUNA	NW Pacific	Hainan Tropical Ocean University
PROVOR_CTS4	1	SBE41, Aanderaa 4330, ECO_FLBBCD, OCR504, SUNA, SeaFET	NW Pacific	Hainan Tropical Ocean University
NAVIS (with rechargeable battery)	2	SBE41, SBE63, MCOMS_FLBB2, SeaFET	NW Pacific	CSIO

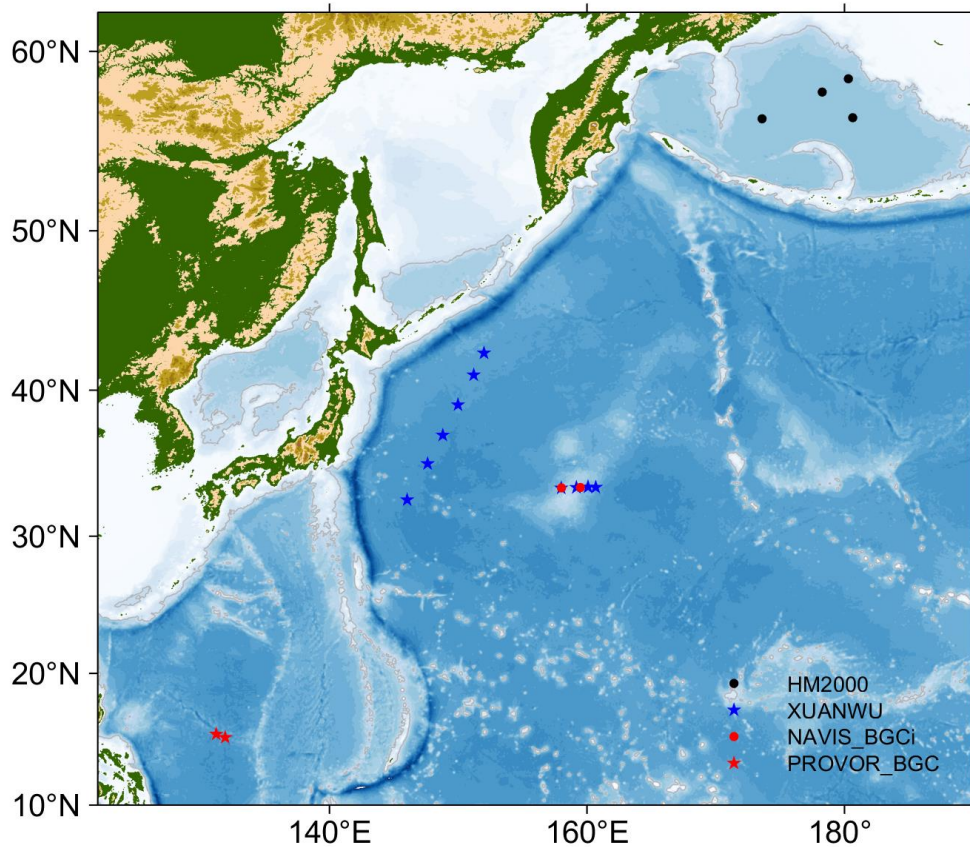


Fig.1 Launch locations of the Chinese floats in 2024

**b. technical problems encountered and solved**

Two NAVIS\_BGC floats with SeaTrac rechargeable battery have the same ballasting problem as the deployment of two NAVIS\_BGC floats in 2023, which resulted in too shallow profiling depth even if we adjusted their DeepProfileBuoyancyPosition through the Iridium system. Therefore both of the floats cannot harvest much energy from the less temperature difference and stopped transmission by January 2025.

**c. status of contributions to Argo data management including:**

- i. The status of your DAC, if applicable

CSIO acquired data from 80 active floats in 2024. The data processing chain including 5 float models runs every 1~3 hours. The profile, technical, trajectory and meta file of all floats are submitted to GDAC in NetCDF format. During 2024, 4,152 core profiles plus 1,340 DOXY, 1,025 CHLA, 1,812 BBP, 238 CDOM, 1,029 IRRADIANCE, 414 NITRATE and 702 pH profiles had been processed. All the Core and DOXY profiles were issued to the GTS in BUFR format via CMA.

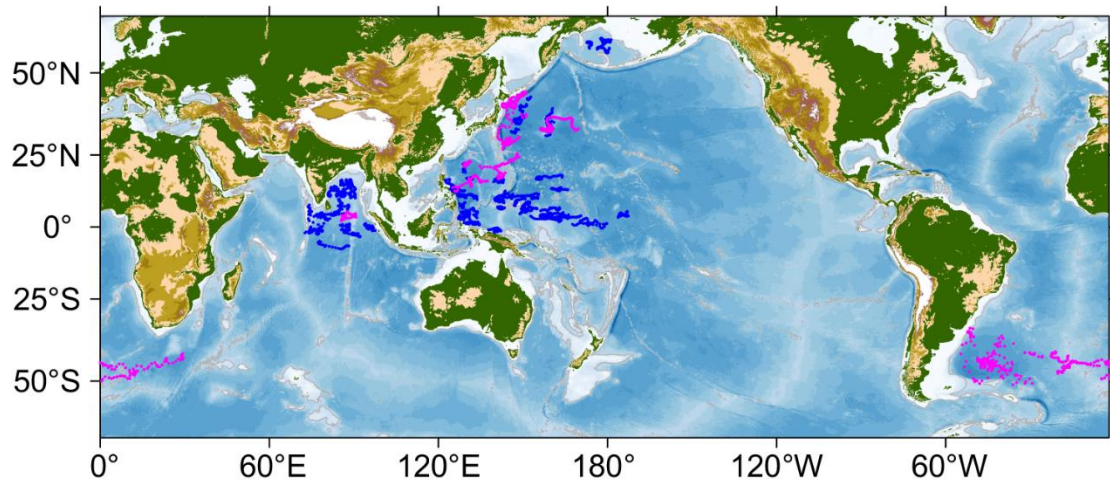


Fig.2 Locations of core (blue) and BGC (red) profiles.

## ii. Decoding difficulties

CSIO developed the decoders for all the operational floats. Table-driven method is being employed in reading binary messages for PROVOR floats and creation of NetCDF files. After the ADMT-25 meeting, we have updated our system for creation of new version of trajectory file.

## iii. Real-time Deep implementation

CSIO receives deep XUANWU data from Laoshan Laboratory and processes in real-time. Salinity profiles are adjusted in real-time using the new CPcor provided by the Argo quality control manual.

## d. status of delayed mode quality control process

Last year, CSIO had sent about 7132 D-files of Core Argo to GDACs. As of now, the DMQC processing for the RBR float data is ready at any time (only one RBR float has been deployed so far). In addition, with the help of Dr. Tanya Maurer, CSIO can handle the DMQC of dissolved oxygen profiles using SAGE toolbox, and the DMQC for other BGC parameters is still under learning.

For deep XUANWU floats, we conducted salinity adjustment using the new CPcor estimated by shipboard CTD data if applicable.

**2. Present level of and future prospects for national funding for Argo including a summary of the level of human resources devoted to Argo, and funding for sustaining the core mission and the enhancements: BGC, Deep, Spatial (Polar, equator, WBCs)**

The deployment of float for China Argo still relies on research and special programs undertaken by institutions and universities. 30 XUANWU floats operated by Laoshan Laboratory will be deployed this year, and 7 of them have been deployed until last month. The funding for 28 BGC floats purchases including 11 NKE products and 11 HSOE products have been secured by Xiamen University. 2 BGC floats will be purchased and deployed by Third Institution of Oceanography (TIO), MNR. For Core float deployments, we still have no operational funding from the government.

**3. Summary of deployment plans (level of commitment, areas of float deployment, Argo missions and extensions) and other commitments to Argo (data management) for the upcoming year and beyond where possible.**

In 2025, about 32 floats are expected to be deployed. Among them, 30 XUANWU floats are from Laoshan Laboratory and 2 BGC PROVOR floats are from TIO.

Float model	Number	Owner	Launch region	Launch time
XUANWU	20	Laoshan Lab	Northwestern Pacific	February-April
XUANWU	10	Laoshan Lab	Northwestern Pacific	Second half of 2025
PROVOR_CTS5	2	TIO, MNR	Northwestern Pacific	Second half of 2025

**4. Summary of national research and operational uses of Argo data as well as contributions to Argo Regional Centers. Please also include any links to national program Argo web pages to update links on the AST and AIC websites.**

Argo data are routinely assimilated into the MaCOM ocean forecasting system run by NMEFC (National Marine Environmental Forecasting Center, MNR); the near real-time post-QC'd global Argo T/S profiles provided by CSIO are being applied in the IAP (Institute of Atmospheric Physics, Chinese Academy of Sciences) reanalysis dataset and contributed to the release of the annual report of the global ocean temperature in Januray 2025.

CSIO maintains the website of the China Argo Real-time Data Center (<https://www.argo.org.cn>) where the implementation status of China Argo, real-time data display including profiles, float trajectory, profile data, the derived products and status of global Argo are accessible. A global deep Argo website is also maintained by CSIO (<http://deep.argo.org.cn/>).

**5. Issues that your country wishes to be considered and resolved by the Argo Steering Team regarding the international operation of Argo. These might include tasks performed by the AIC, the coordination of activities at an international level and the performance of the Argo data system. If you have specific comments, please include them in your national report. Also, during the AST-23 plenary, each national program will be asked to mention a single highlight or issue via a very brief oral report.**

None.

**6. To continue improving the quality and quantity of CTD cruise data being added to the reference database by Argo PIs, it is requested that you include any CTD station data that was taken at the time of float deployments this year. Additionally, please list CTD data (calibrated with bottle data) taken by your country in the past year that may be added to the reference database. These cruises could be ones designated for Argo calibration purposes only or could be cruises that are open to the public. To help CCHDO track down this data, please list the dates of the cruise and the PI to contact about the data.**

7 full-depth CTD casts obtained from the deployments of Argo float were submitted to Coriolis data center.

**7. Keeping the Argo bibliography ( [Bibliography | Argo \(ucsd.edu\)](#)) up to date and accurate is an important part of the Argo website. This document helps demonstrate the value of Argo and can possibly help countries when applying for continued Argo funding. To help me with this effort, please include a list of all papers published by scientists within your country in the past year using Argo data, including non-English publications.**

**There is also the thesis citation list ([Thesis Citations | Argo \(ucsd.edu\)](#)). If you know of any doctorate theses published in your country that are missing from the list, please let me know.**

**Finally, if you haven't already sent me a list of Argo PIs in your country, please do so to help improve the statistics on how many papers are published including an Argo PI vs no Argo PIs.**

**The list of publications not listed in the Argo bibliography**