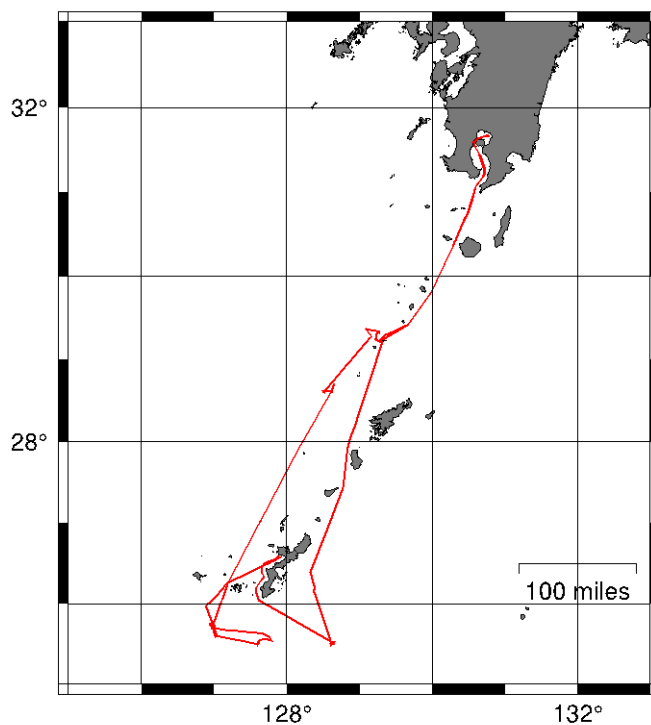


## Cruise Summary

### 1. Cruise Information

- Cruise ID: KH-22-4
- Name of vessel: Hakuho-maru
- Title of cruise: Chemical oceanographic research cruise for testing observation tools
- Chief Scientist: Hajime OBATA [Atmosphere and Ocean Research Institute, The University of Tokyo]
- Cruise period: 20 February – 3 March
- Ports of departure / arrival: Kagoshima / Kagoshima
- Research area: Ryukyu Trench, Daiichi-Amami Knoll, eastern East China Sea, Okinawa Trough and Kagoshima Bay
- Research map

### KH-22-4 Nav Track



2022 Feb 28 21:48:57

- Representative of Science Party [Affiliation]:

Hajime OBATA [Atmosphere and Ocean Research Institute, The University of Tokyo]

Hirofumi TAZOE [Hiroshima University]

Shigeyoshi OTOSAKA [Atmosphere and Ocean Research Institute, The University of Tokyo]

Hideki FUKUDA [Atmosphere and Ocean Research Institute, The University of Tokyo]  
Ichiro YASUDA [Atmosphere and Ocean Research Institute, The University of Tokyo]  
Yuichiro NISHIBE [Atmosphere and Ocean Research Institute, The University of Tokyo]  
Koji HAMASAKI [Atmosphere and Ocean Research Institute, The University of Tokyo]  
Hiroshi OGAWA [Atmosphere and Ocean Research Institute, The University of Tokyo]  
Hiroaki SAITO [Atmosphere and Ocean Research Institute, The University of Tokyo]  
Shin-ichi ITO [Atmosphere and Ocean Research Institute, The University of Tokyo]

## **2. Overview of Research Activities**

- Purpose, background: By the renovation of R. V. Hakuho-maru, we have opportunity to develop new observation methods for chemical oceanographic studies. During this research cruise, we examined the observation methods by using replaced facilities of Hakuho-maru and checked the quality of the data obtained.

- Clean water sampling by using No. 3 cable winch

We examined clean water sampling by Niskin-X samplers deployed onto CTD-CMS connected to the cable from the No. 3 winch of R. V. Hakuho-maru. The water samples were collected at Kagoshima Bay, the East China Sea, Ryukyu Trench and Kerama Gap. The water samples were filtered with Acropak filter (pore size 0.2  $\mu\text{m}$ ) in a clean space.

- LISST observation by using No. 2 cable winch

Because titanium wire installed in No. 3 winch was removed, we needed to use the cable from No. 2 winch for LISST observation. We successfully observed suspended particles in seawater with LISST by using the cable from No. 2 winch.

- Marine snow collection, suspended particle collection, large volume water sampling and turbulence measurement by using A-frame

By using the new A-frame, we successfully collected marine snow with marine snow catchers, suspended particles with in-situ pumps and large volume of seawater with a large volume water sampler. We also obtained turbulence data with turbulence profilers by using A-frame.

- CTD-towyo observation

We examined CTD-towyo observation by using the cable from No. 2 winch, which was successfully carried out at Kerama Gap in the Okinawa Trough.

- Sea glider and microlayer observations

We succeeded in deploying and recovering sea gliders for the first time after the renovation of R. V. Hakuho-maru. We also examined a microlayer sampler by using Zodiac boat during this cruise.

- Microplastic collection by Neuston net

During CTD-CMS observation, we tested the Neuston net for microplastic collection, which was smoothly performed.

- Surface water and aerosol samplings

After the renovation, Selective Catalytic Reduction System (SCR) was newly introduced to R. V. Hakuho-maru. For this system, large amount of urea water will be used. To evaluate the contamination by reactive nitrogen released from this system to the samples, we collected surface seawater and aerosol samples during this cruise.