

Cruise Summary

1. Cruise Information

(1) **Cruise ID:** KH-22-7 Leg2

(2) **Vessel:** R/V HAKUHO MARU

(3) **Cruise Title**

Comprehensive biogeochemical studies on distributions and cycles of trace elements and their isotopes in the western North Pacific and the equatorial Pacific (GEOTRACES)

(4) **Chief Scientist**

Hajime OBATA (The University of Tokyo)

(5) **Representative of the Science Party**

SH22-02 Hajime OBATA (The University of Tokyo)

H22-01 Ichiro YASUDA (The University of Tokyo)

(6) **Research Titles**

SH22-02 Comprehensive biogeochemical studies on distributions and cycles of trace elements and their isotopes in the western North Pacific and the equatorial Pacific (GEOTRACES)

H22-01 Study on the turbulence and double-diffusive mixing and impacts with fast-response thermistors

(7) **Cruise Period**

2022/08/10 - 2022/09/01

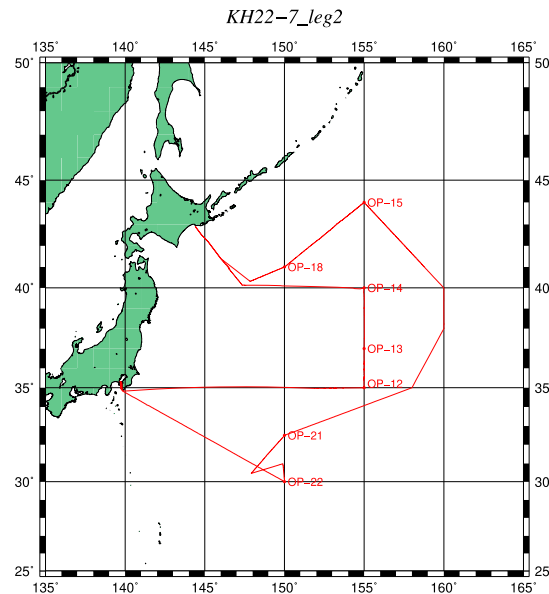
(8) **Ports of departure/call/arrival**

Daiba - Harumi

(9) **Research Area**

Western Pacific

(10) Cruise Track



2. Overview of the Observation

This cruise has been internationally authorized as the GEOTRACES section study in the western Pacific Ocean (GP22). Recently, we have realized that the information on trace elements and their isotopes (TEIs) in the ocean is useful to deepen our understandings on physical, chemical and biological processes in marine environments. However, accumulated high-quality data are not large enough to draw a global picture of marine biogeochemical cycles of TEIs.

This cruise aimed at establishing the 2-dimensional profiles of GEOTRACES TEIs in the western Pacific, in order to advance ocean sciences on TEIs as mentioned above. It is well known that both Oyashio and Kuroshio are strong surface currents and transport trace elements from marginal seas like the Sea of Okhotsk and the East China Sea to the western North Pacific. Therefore, we decided to set 2-dimensional section observations along 155°E to investigate TEIs in seawaters and sediments of the western Pacific.

In order to pursue these purposes, we have taken air, seawater, and sediment samples for chemical analyses. Water samples were collected from surface to near the bottom by using a clean CTD Carousel Multi Sampling system attached at the end of an Aramid yarn cable. The system was also equipped with various chemical sensors for in situ measurements. For the precise measurements of trace

radioactive nuclides in seawater, large-volume water samplers with a volume of 250 L were also used for seawater sampling. Bottom sediment was taken with a multiple corer and a piston corer. Suspended particles were taken using an in situ filtering system.