Cruise Summary

1. Cruise Information

(1) **Cruise ID:** KH-22-9

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

(3) **Cruise Title**

Tohoku Japan arc transect for formation of island arc and understanding crustal activities, Study of heat transportation and fluid circulation in upper part of oceanic plate on seaward slope of Japan trench

(4) **Chief Scientist**

Masanao Shinohara (ERI)

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

SH22-10 Masanao Shinohara (ERI)

SH22-07 Makoto Yamano (ERI)

(6) **Research Titles**

SH22-10 Tohoku Japan arc transect for formation of island arc and understanding crustal activities

SH22-07 Study of heat transportation and fluid circulation in upper part of oceanic plate on seaward slope of Japan trench

(7) **Cruise Period**

2022/11/16 - 2022/11/30

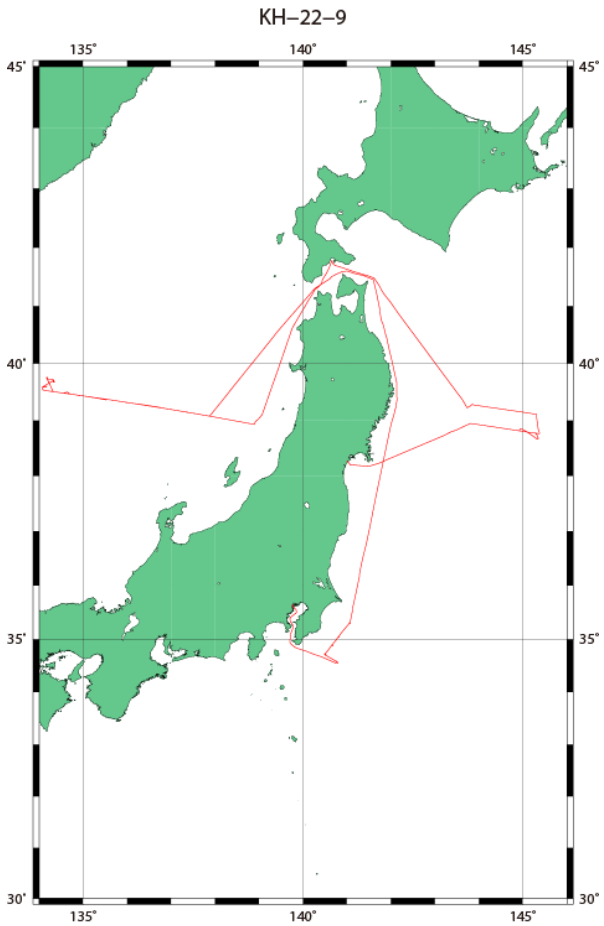
(8) **Ports of departure/call/arrival**

Harumi - Sendai

(9) **Research Area**

Off-Boso peninsula, northern Japan Sea, Far off-Iwate prefecture

(10) **Cruise Track**



2. Overview of the Observation

Japanese island arc is considered to be form by subduction of Pacific plate. It is useful for understanding of earth scientific phenomena such as occurrence of earthquakes below Japanese islands and volcanic eruption to reveal process of formation of Japanese islands. Detailed structure of island arc down to asthenosphere is important for the understanding. We deployed long-term compact broadband ocean bottom seismometers and started long-term seismic monitoring along a profile in the Japan Sea to obtain seismic structure of islands arc from Pacific plate to Japan sea. In addition, reflection survey using airgun and hydrophone streamer was carried out to obtain shallow structure of the profile where CBBOBSs were deployed for information about estimation of deep structure. For seafloor observation of deformation by oceanic plate subduction, it is necessary to know seafloor current, temperature, and precise pressure. To obtain these basic

data, Ocean Bottom ElectroMagneto Current meter was recovered and location of Ocean Bottom Pressure gauges were performed off Boso peninsula, Chiba prefecture, Japan.

It is very important to understand variation of state of ocean plate with deformation just before subduction to trench. this study includes seismic reflection surveys, heat flow measurement, collection and analysis of pore water and sediments and reveal the process of heat and fluid circulation in upper part of the subducting plate. Among these study, seismic reflection survey was carried out during this cruise.