Cruise Summary

1. Cruise Information

(1) **Cruise ID:** KS-19-12

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

(3) **Cruise Title**

Investigation of preparation process for the huge interplate rathquake along the southwestern Kuril Trench based on the multiple sea-floor geodetic observation

(4) **Chief Scientist**

Yusaku Ohta (RCPEVE, Graduate School of Science, Tohoku University)

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

SH19-21 Yusaku Ohta (RCPEVE, Graduate School of Science, Tohoku University)

(6) **Research Titles**

SH19-21 Investigation of preparation process for the huge interplate rathquake along the southwestern Kuril Trench based on the multiple sea-floor geodetic observation

(7) **Cruise Period**

2019/07/03 - 2019/07/13

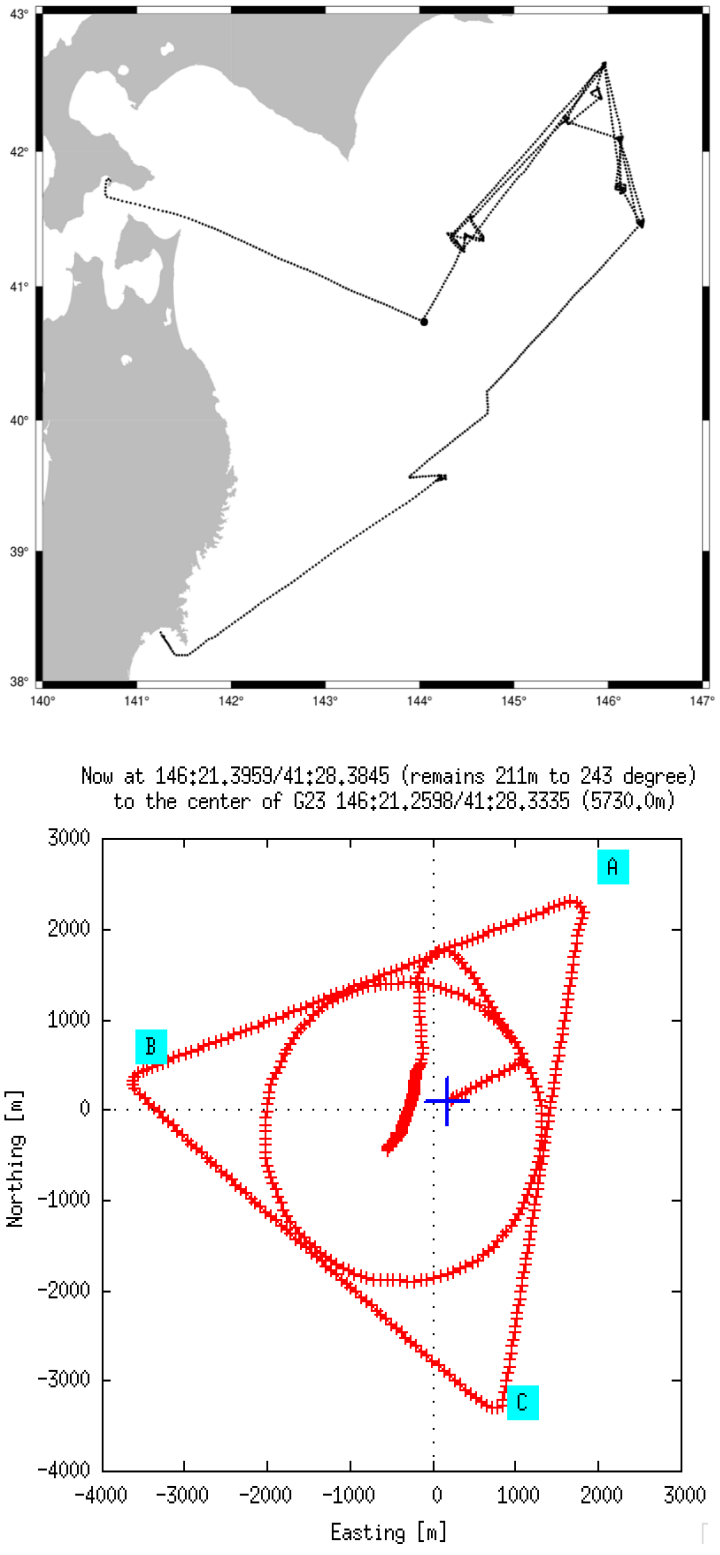
(8) **Ports of departure/call/arrival**

Hakodate - Ishinomaki

(9) **Research Area**

Northern part of Sanriku-Oki, Tokachi-Oki, and Nemuro-Oki

(10) **Cruise Track**



*Track chart 1: Track chart of the KS-19-12 cruise.

2. Overview of the Observation

In this study, we try to investigate the postseismic and strain accumulation process along the plate interface in the off northern Sanriku and off Nemuro region using multiple offshore geodetic and seismic observation. Furthermore, we also try to investigate the earthquake history based on the piston core sample.

In this cruise, we newly installed 11 transponders for the GNSS-Acoustic (GNSS-A) observation in off Nemuro to investigate the sea-floor crustal deformation monitoring. After installation, we also conducted the GNSS-A observation. We also installed one prototype system for the long-term ocean bottom pressure gauge (OBP) to assess the ability of the developed system in off Nemuro. Furthermore, we installed four long-term ocean bottom seismometer (LTOBS) in and around the Erimo sea-mount for the investigation of the activity of the very low frequency earthquakes and ordinary earthquakes in the region. We also installed acoustic distance measurement sysmte (ADM) in the off Nemuro and Sanriku region to understand the crustal deformation between the incoming subducting plate the continental plate. We also conducted the GNSS-A measurement using WaveGlider system to realize the automatic GNSS-A measurement by unmanned surface vehicle. Furthermore, we carried out two piston coring in off Nemuro to investigate the spatial and temporal distribution of the turbidite caused by the past large earthquakes.