Cruise Summary

1. Cruise Information

(1) **Cruise ID:** KM23-08,09C

(2) **Vessel:** R/V KAIMEI

(3) **Cruise Title**

Unraveling the abnormal gold enrichment mechanism at the Higashi-Aogashima Knoll Caldera hydrothermal filed: ROV dive survey part 3

(4) **Chief Scientist**

Tatsuo Nozaki (JAMSTEC)

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

P23-01 Takafumi Kasaya (JAMSTEC)

JC23-01 Tatsuo Nozaki (JAMSTEC)

(6) **Research Titles**

P23-01 Geophysical survey for the future BMS drilling at the Higashi-Aogashima Knoll Caldera hydrothermal field: Part 2

JC23-01 Unraveling the abnormal gold enrichment mechanism at the Higashi-Aogashima Knoll Caldera hydrothermal filed: ROV dive survey part 3

(7) **Cruise Period**

2023/06/26 - 2023/07/07

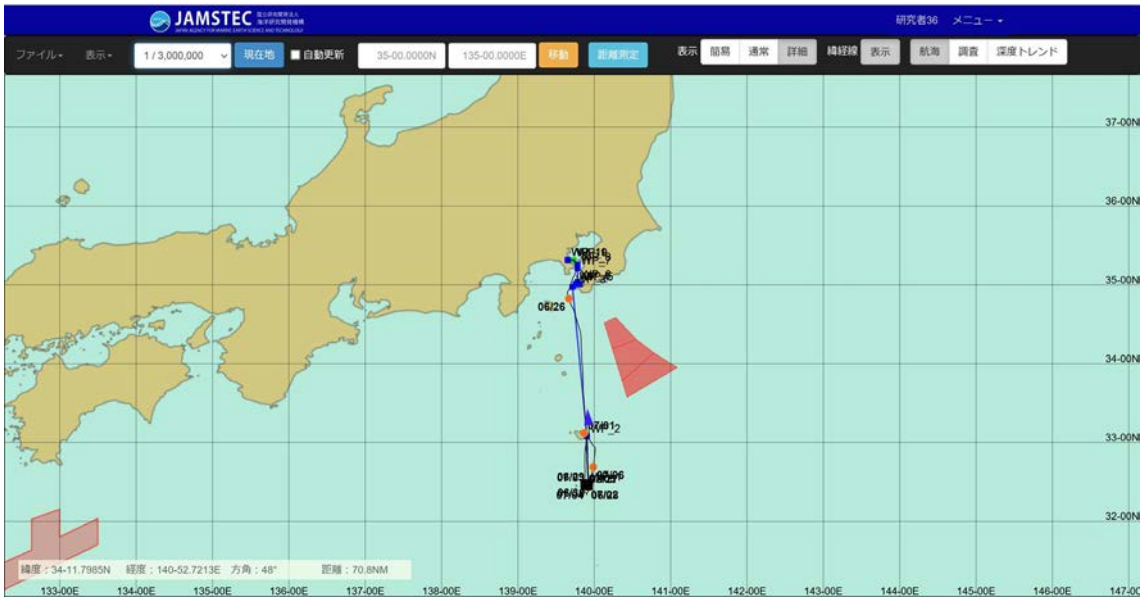
(8) **Ports of departure/call/arrival**

Yokosuka - Yokosuka

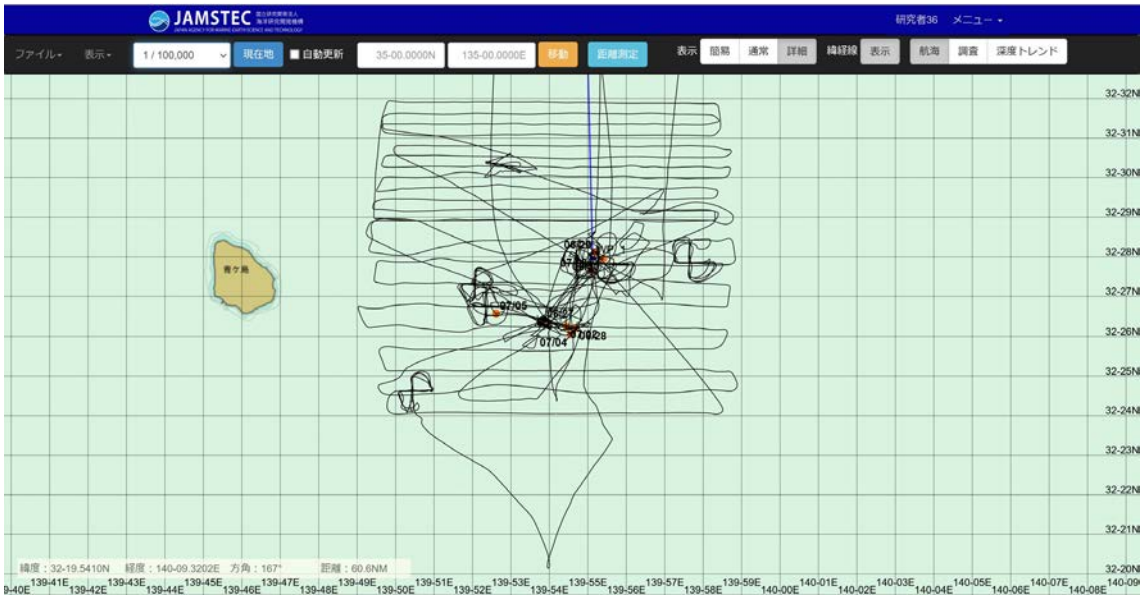
(9) **Research Area**

Higashi-Aogashima Knoll Caldera

(10) **Cruise Track**



Marine area covered by latitude and logitude lines of 30o00'N, 37o00'N, 133o00'E and 147o00'E.



Marine area covered by latitude and logitude lines of 32o20'N, 32o32'N, 139o41'E and 140o09'E.

2. Overview of the Observation

During last year's cruise KM22-11C, we had planned to conduct remotely operated vehicle (ROV) dives at the Higashi-Aogashima Knoll Caldera hydrothermal field.

Unfortunately, we could not conduct any dives due to the impact of typhoons and strong tidal currents. This year, during the cruise KM23-08, 09C, we sought to redeem ourselves. Despite frequently encountering strong currents that limited our dive durations and maneuverability, we successfully completed all seven planned dive days.

As a result, we obtained a total of 42 rock, 12 seawater, 6 hydrothermal fluid, 1 push core and numerous biological and microbial samples from Central Cone, Southeast and East Sites of the Higashi-Aogashima Knoll Caldera hydrothermal field. Additionally, we discovered new sulfide mounds and hydrothermal vents to the south of Eastern Site, which we named the South of East (SOE) Site.

During the nights without dive surveys and the daytime periods when diving was not feasible, we conducted systematic mapping using a multibeam echosounder (MBES), investigated water column (hydrothermal plume), performed tricomponent magnetometer surveys and utilized a gravimeter for geophysical survey. We adjusted various settings of the MBES and conducted thorough plume surveys, resulting in the collection of a substantial amount of data.

Moving forward, our plan is to analyze and interpret these samples and data in order to elucidate the mechanisms of gold enrichment at the Higashi-Aogashima Knoll Caldera hydrothermal field.