



R/V Natsushima Cruise Report

NT15-21



Survery for SIP cable observation system

Off Izu-Oshima

Dec.8,2015-Dec.16,2015

Japan Agency for Marine-Earth Science and Technology

(JAMSTEC)

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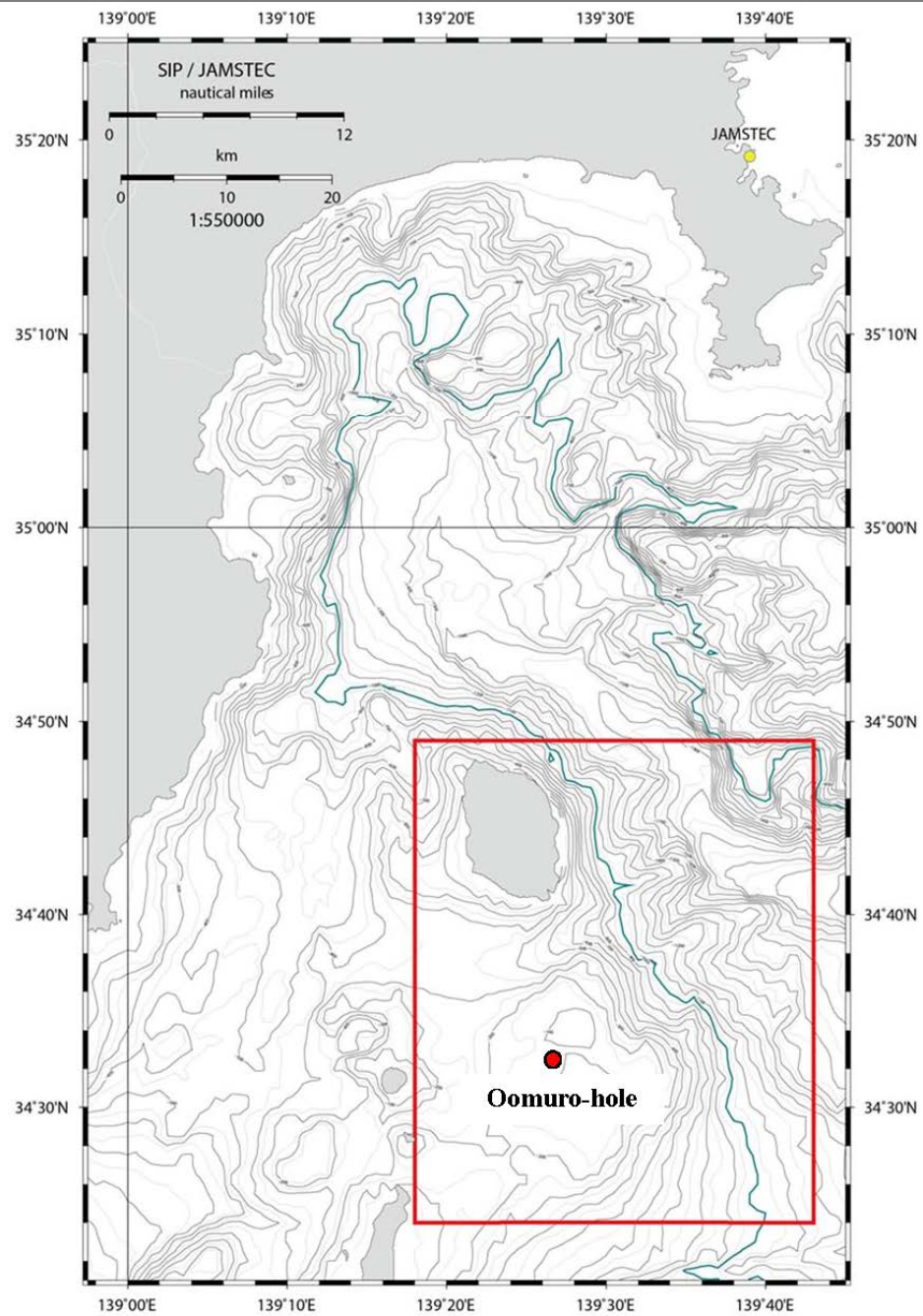
4. Notice on Using

1. Cruise Information

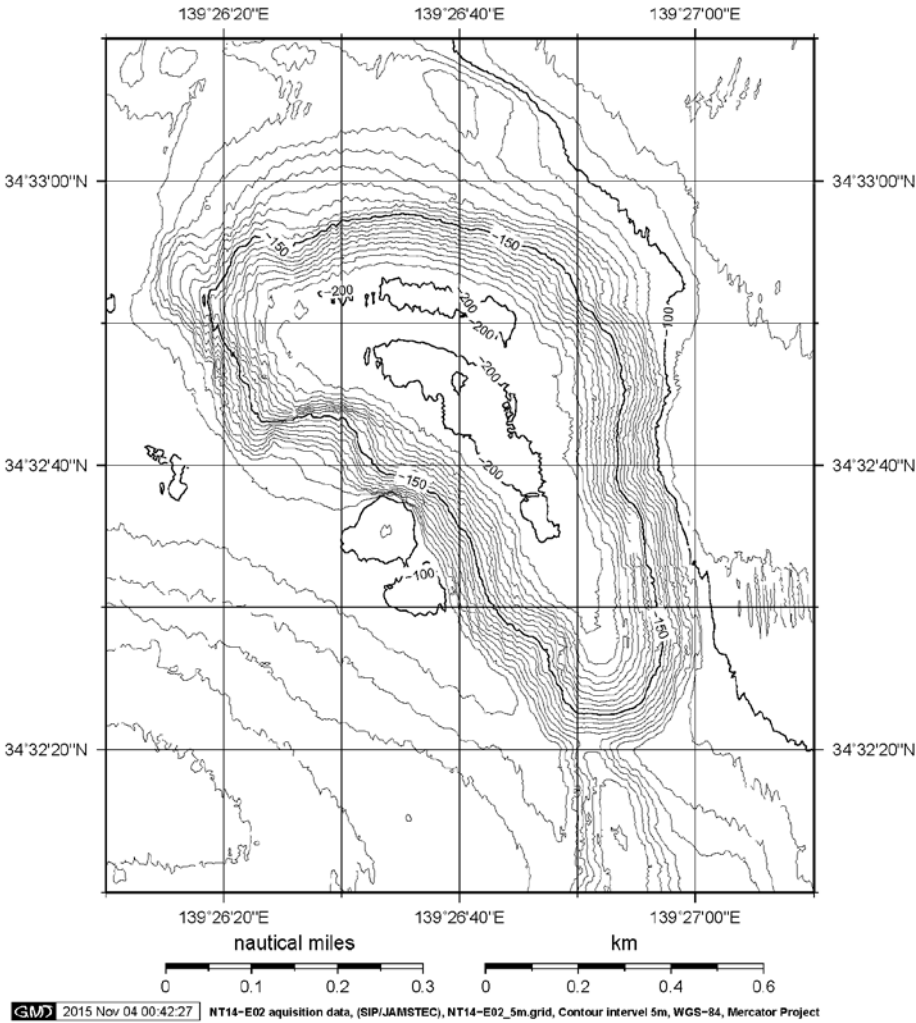
Cruise ID	NT15-21
Name of vessel	R/V Natsushima
Title of the cruise	Survey for SIP cable observation system
Title of proposal	Survey for cable observation system
Cruise period	2015, Dec.8 ~ Dec.16
Ports of call	JAMSTEC Yokosuka ~ Shimizu port
Research area	Off Izu-oshima, inside of 34° 24.0'N, 34° 49.0'N, 139° 18.0'E, 139° 43.0'E

Research

Map1



Bathymetric map at Oomuro hole[NT14-E02]



2. Researchers

Representative of the science party (not boarding)

Name	Affiliation
Dr. Katsuyoshi Kawaguchi	JAMSTEC

Scientific Members

Role	Name	Affiliation
Chief scientist	Dr. Takashi Yokobiki	JAMSTEC
Assistant Chief Scientist	Dr. Takeshi Ohki	JAMSTEC
Scientist	Dr. Shuhei Nishida	JAMSTEC

Engineer

Role	Name	Affiliation
Marine technician	Tohru Kodera	Nippon Marine Enterprises, Ltd.

3. Observation

3.1 Background

Since 2014, as a part of the Cross-ministerial Strategic Innovation Promotion (SIP) Program started by the government, JAMSTEC started to develop Real-time Geo-scientific and Environment seafloor Monitoring System (RealGEMS), whose objective is monitoring the hydrothermal activities found at the bottom of off Izu-Oshima island.

3.2 Objective and methods

The goal of this expedition is to survey seafloor of Oomuro-hole located in the center of an active volcano “Oomuro-dashi”, where RealGEMS observatory will be constructed. To reduce the potential risk of damage to the underwater facilities of RealGEMS by the high temperature caused by the hydrothermal activities, it is important to understand where such hydrothermal activities are located. Therefore, during this expedition, the following surveys were conducted.

- Hydrothermal activities distribution survey
 - to select where the observatory should be located and select where the cables should be laid,
 - by hot water temperature sensor and ROV HD cameras
- Terrain observation of the bottom and outer slope
 - to select suitable routes for the cable-laying
 - by ROV HD cameras
- Environmental background earthquake and pressure data collection
 - to design the observatory which will be connected to RealGEMS
 - by mobile seismometer and pressure sensor package
- Environmental background heat flows data collection
 - to design the observatory which will be connected to RealGEMS
 - by two SAHF's (Stand-alone heat flow meter) and 10 self-logging small underwater temperature sensors
- Bathymetric map construction near Izu-Oshima and on Oomuro-hole
 - to select the cable route.
 - by multibeam echo sounder (MBES) of R/V Natsushima

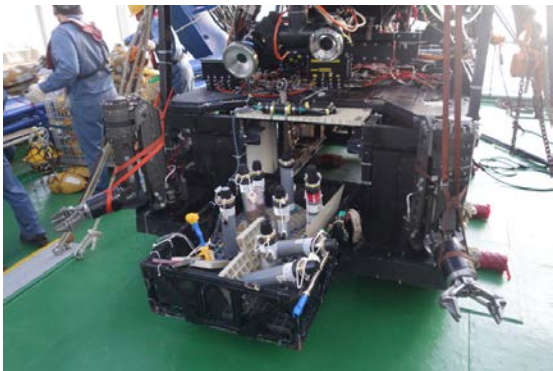
3.3 Results

3.3.1 Overview

The result of the expedition is as follows.

<i>Date</i>	<i>Operation</i>
<i>Dec.8</i>	Departure at JAMSTEC Yokosuka, MBES (south of off Izu oshima)
<i>Dec.9</i>	MBES (over Oomuro-hole)
<i>Dec.10</i>	HPD dive 1919
<i>Dec.11</i>	Harborage at Off-Tateyama
<i>Dec.12</i>	Harborage at Off-Tateyama
<i>Dec.13</i>	Dive was cancelled due to bad weather
<i>Dec.14</i>	HPD dive 1920
<i>Dec.15</i>	HPD dive 1921
<i>Dec.16</i>	Arrival at Shimizu-port

3.3.2 HPD dive 1919



Date Dec. 10, 2015

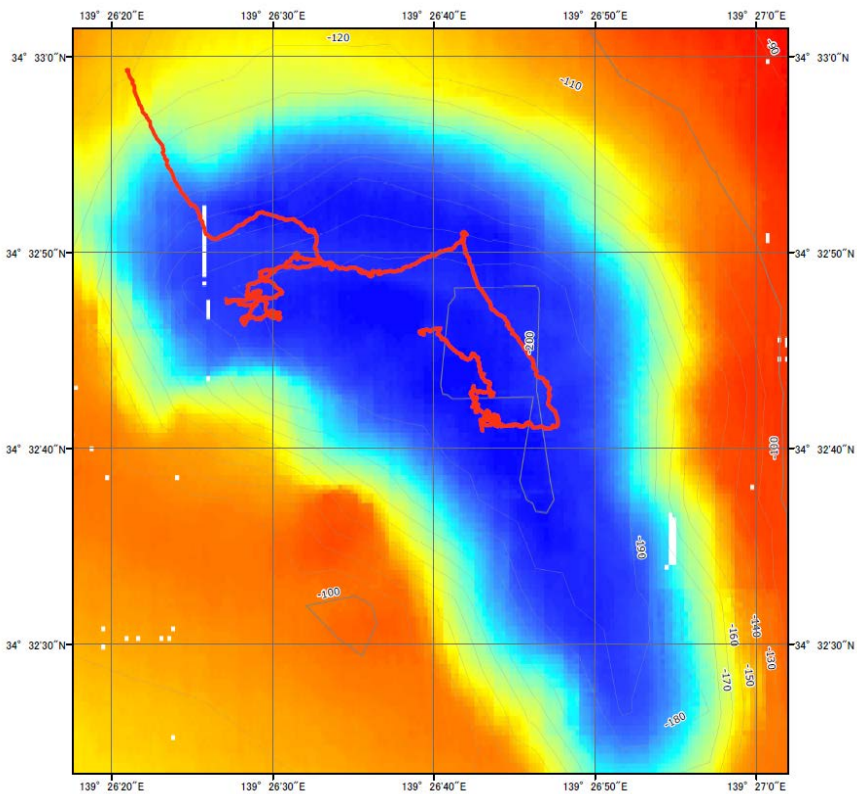
Payload ROV-Homer with self-logging small underwater temperature sensor(Homer package) ×10, cutter ×1, hot water temperature sensor×1

On bottom 9:00 JST

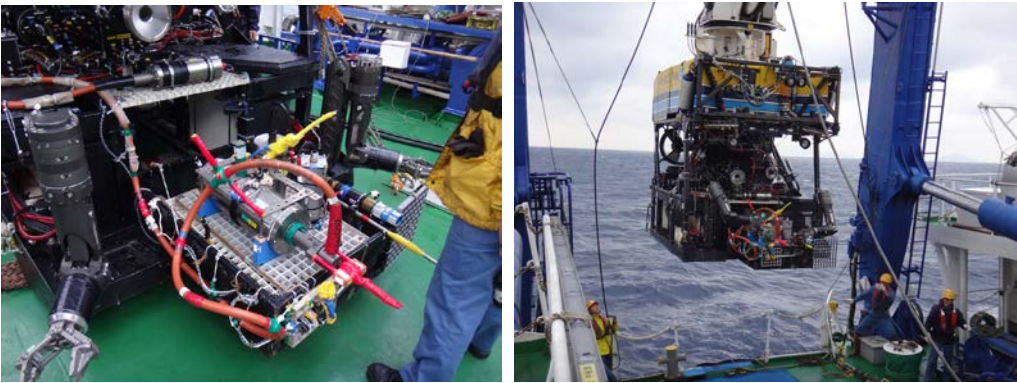
Off bottom 16:15 JST

Summary The objective of this dive is to observe the terrain and mapping hydrothermal activities on the bottom of Oomuro-hole. Several strong hydrothermal activity were found in the northwest part of the Oomuro hole. Eight Homer and temperature sensors were deployed.

Trajectory of ROV Red line indicates the trajectory.

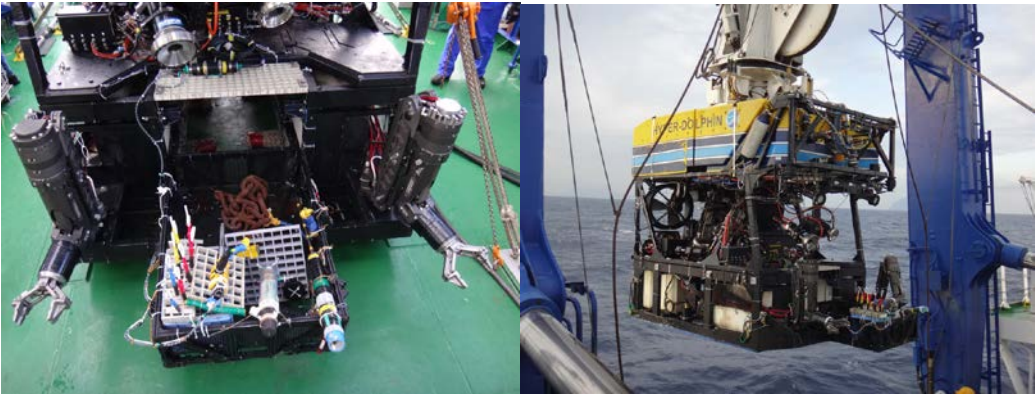


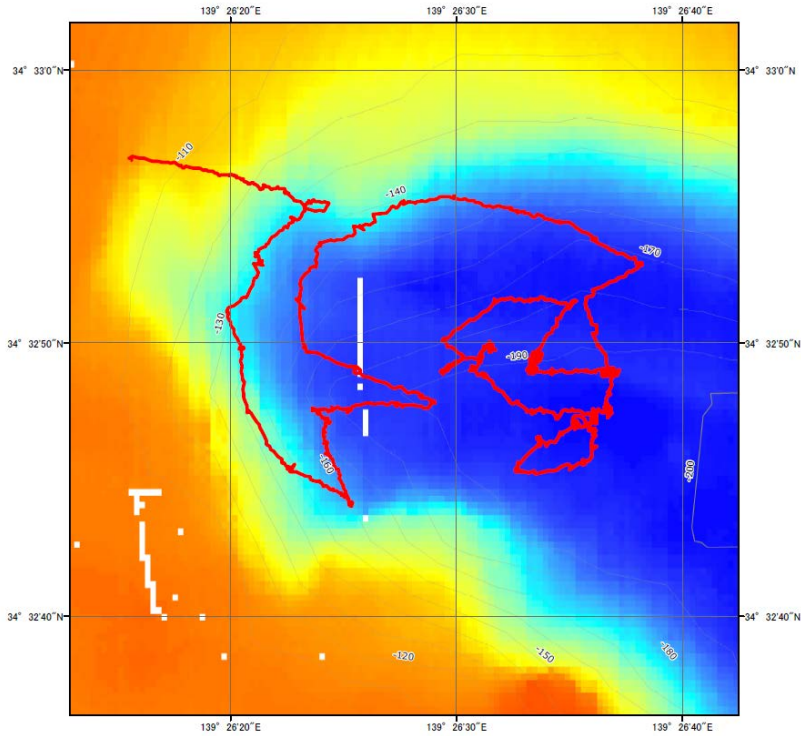
3.3.3 HPD Dive 1920



Date	Dec. 14, 2015
Payload	ROV-Homer with self-logging self-logging small underwater temperature sensor (Homer package)×2, cutter ×1, hot water temperature sensor×1, mobile seismometer and pressure sensor ×1, SAHF ×1, marker ×2
On bottom	9:00 JST
Off bottom	16:00 JST
Summary	In this dive, the northeast sites were surveyed and detail temperature mapping was conducted. Besides, the mobile seismometer and pressure sensor package were deployed and the data collection was conducted. One SAHF was also deployed.
Trajectory of ROV	Red line indicates the trajectory.

3.3.4 HPD Dive 1921



<i>Date</i>	<i>Dec. 15, 2015</i>
<i>Payload</i>	ROV-Homer with self-logging self-logging small underwater temperature sensor (Homer package)×1, cutter ×1, hot water temperature sensor×1, homer stopper×10
<i>On bottom</i>	9:00 JST
<i>Off bottom</i>	16:00 JST
<i>Summary</i>	In this dive, the slope region of the northeast sites was surveyed, and the temperature mapping was conducted. One SAHF and one homer package was deployed. Because several homer package were fallen, the stoppers were stuck to prevent the falling.
<i>Trajectory of ROV</i>	Red line indicates the trajectory. 

- **4. Notice on Using**

This cruise report is a preliminary documentation as of the end of the cruise.

This report may not be corrected even if changes on contents (i.e. taxonomic classifications) may be found after its publication. This report may also be changed without notice. Data on this cruise report may be raw or unprocessed. If you are going to use or refer to the data written on this report, please ask the Chief Scientist for latest information.

Users of data or results on this cruise report are requested to submit their results to the Data Management Group of JAMSTEC.