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R/V Shinsei-maru Cruise Report

KS-16-J06

Survey for SIP cabled observation system

Off Izu-Oshima

April.26,2016 - May.2,2016

Japan Agency for Marine-Earth Science and Technology

(JAMSTEC)

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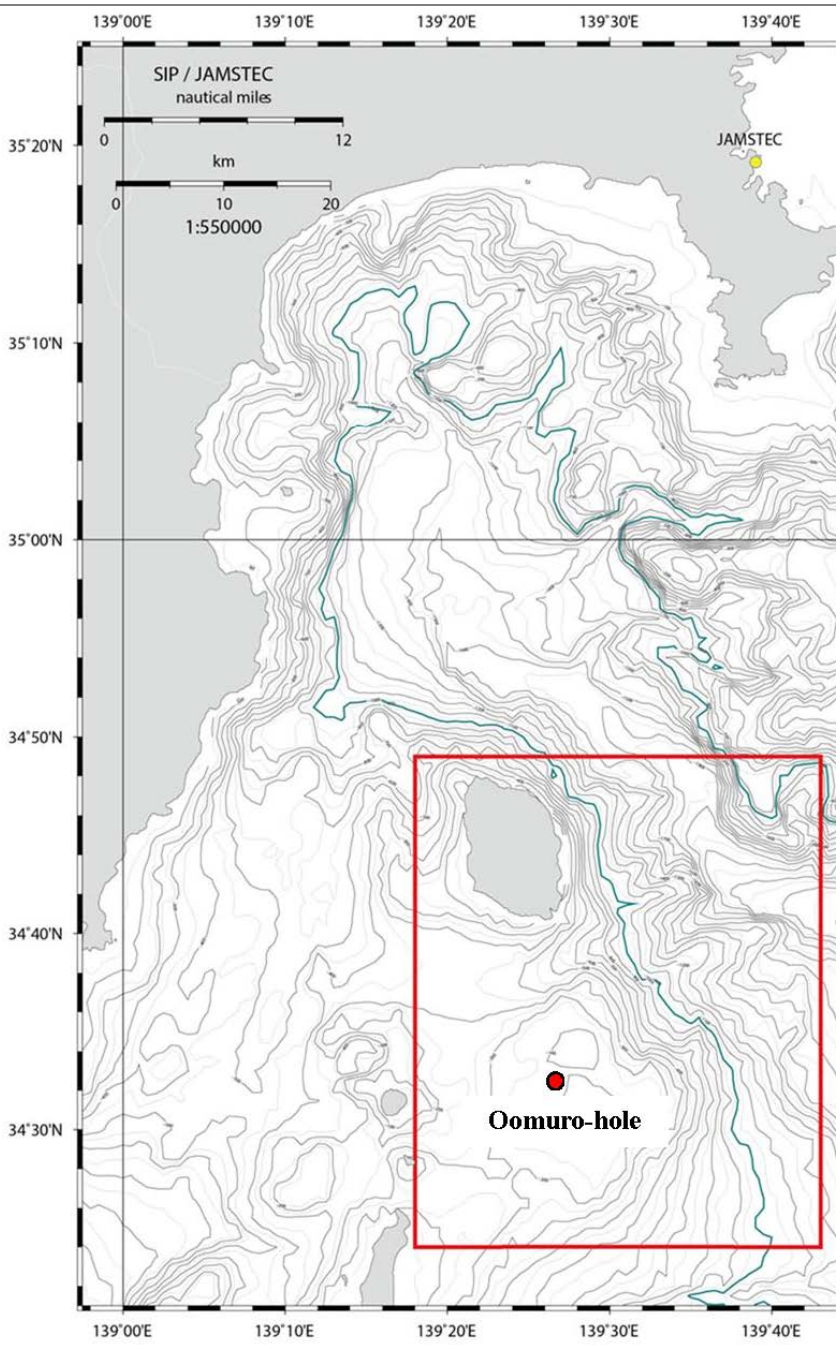
1. Cruise Information

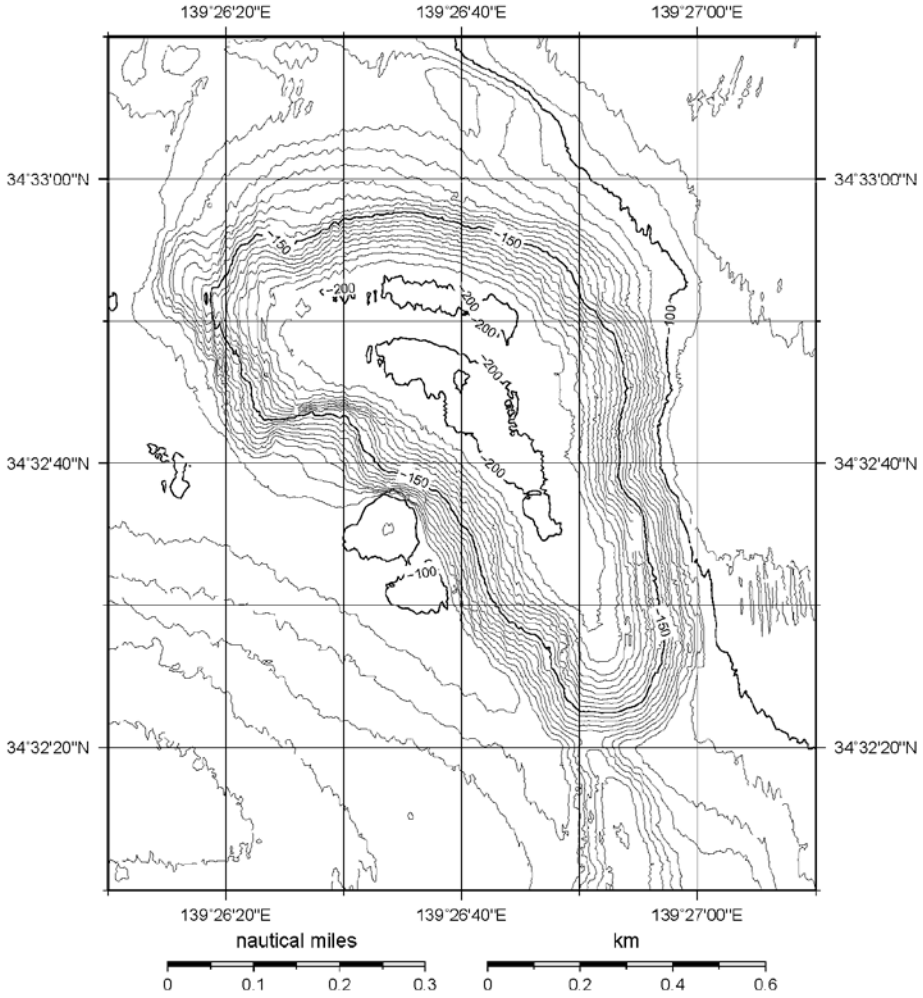
Cruise ID	**KS-16-J06**
Name of vessel	R/V Shinsei-maru
Title of the cruise	Survey for SIP cabled observation system
Title of proposal	Survey for cabled observation system
Cruise period	2016, April.26 ~ May.2
Ports of call	JAMSTEC Yokosuka ~ JAMSTEC Yokosuka
Research area	Off Izu-oshima, Inside of 34:24.0N, 34:49.0N, 139:18.0E, 139:43.0E

Research Map1



Research **Oomuro-hole**

Map2



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	Masayuki Toizumi	Nippon Marine Enterprises, Ltd.

3. Observation

3.1 Background

As a part of the Cross-ministerial Strategic Innovation Promotion (SIP) Program established by Ministry of Internal Affairs and Communications in 2014, 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 “Oomurodashi”, 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.

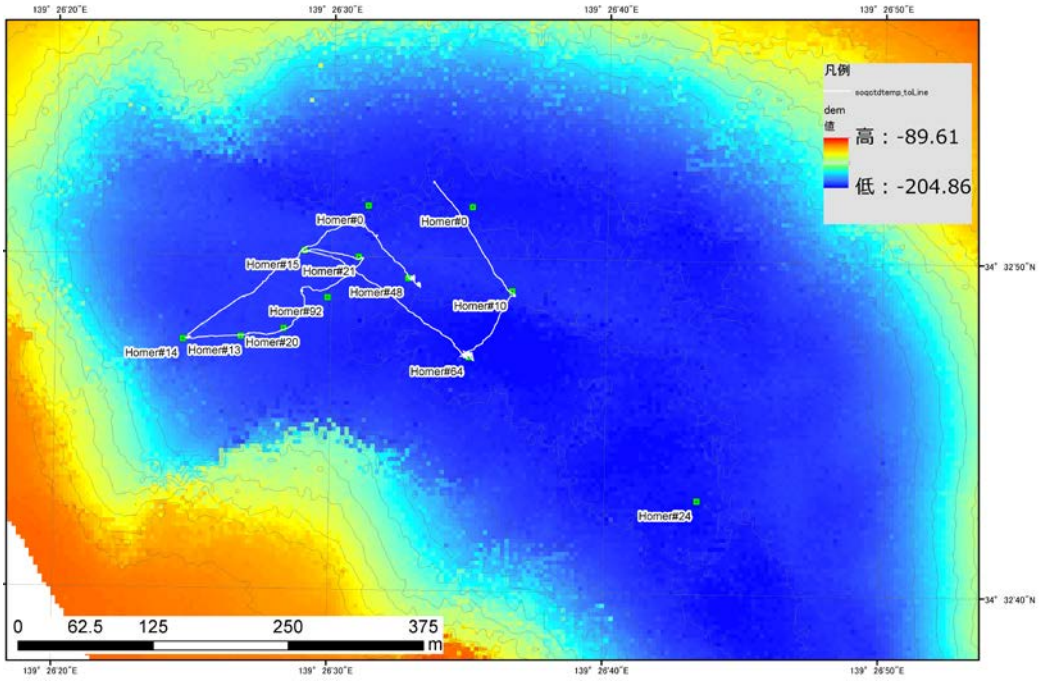
- Hydrothermal activities distribution survey
  to select where the observatory should be located and select where the cables should be laid,
  by hot water temperature sensor and ROV HD cameras
- Terrain observation of the bottom and outer slope
  to select suitable routes for the cable-laying
  by 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 SAHFs (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

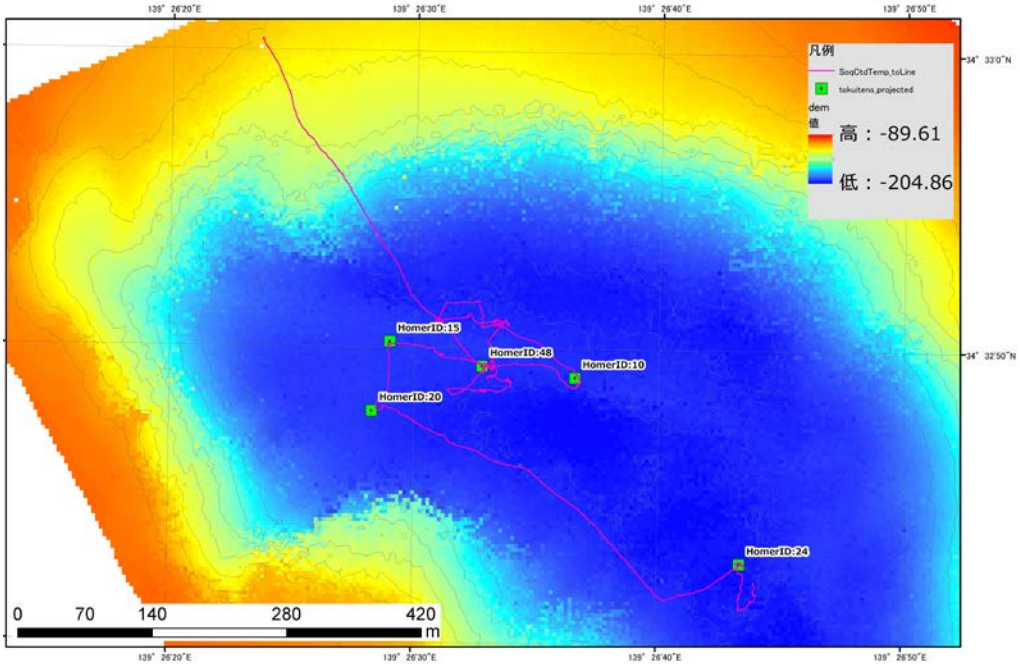
The result of the expedition is as follows.

Date	**Operation**
April.26	Departure at JAMSTEC Yokosuka, Dive#1959
April.27	Dive#1960
April.28	Harborage at Off Yokosuka
April.29	Dive was canceled due to bad weather
April.30	Dive#1961
May.1	Dive#1962
May.2	Arrival at JAMSTEC Yokosuka

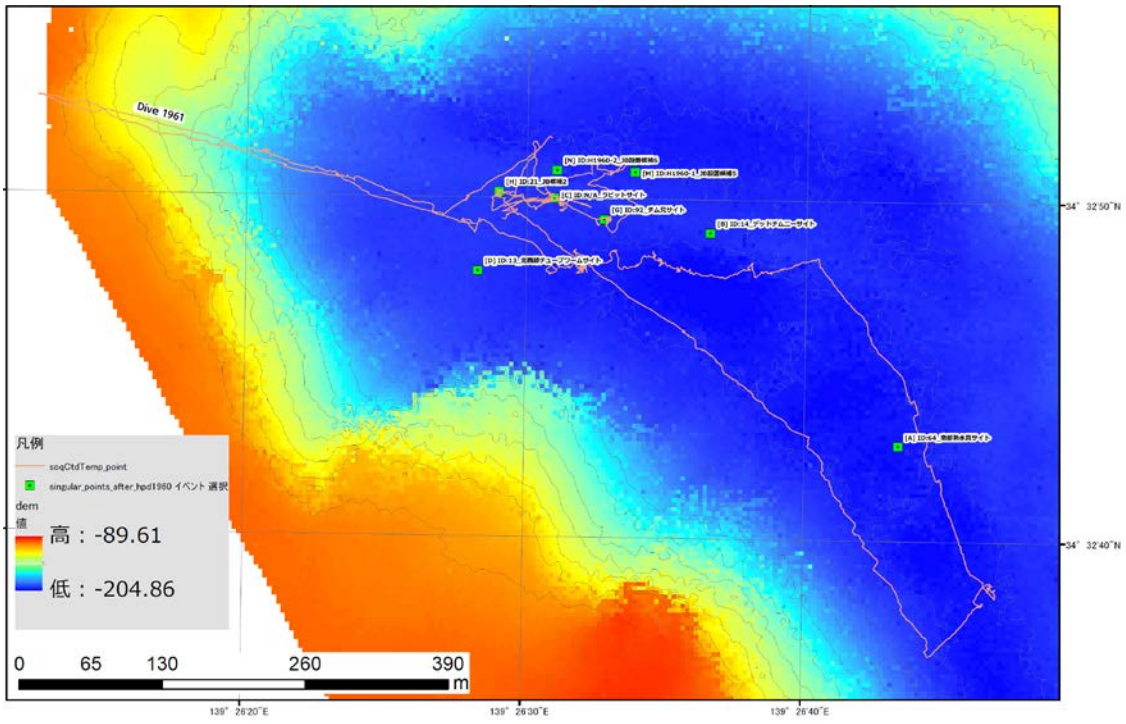
3.3.1 Dive #1959

Date	April. 26, 2016
Payload	Hot water thermometer ×1, Marker buoy × 2, Level meter × 1, cutter × 1
On seabed	14:14 JST
Leave the seabed	17:13 JST
Summary	The objective of this dive is to observe the terrain and mapping hydrothermal activities on the bottom of Oomuro-hole. In this dive, Five ROV-Homers and two SAHFs were recovered. One chimney site (Dive point #12) was observed using the hot water thermometer. The maximum temperature was 107 degrees.
Track of ROV	White line shows the track line of Dive#1959. 

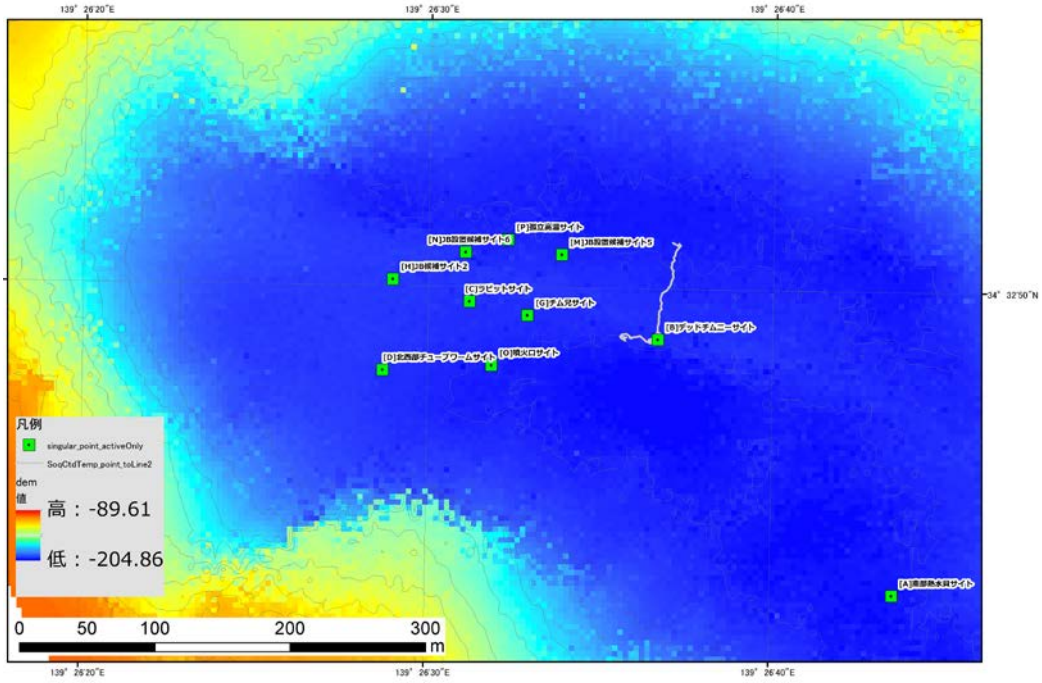
3.3.2 HPD Dive #1960

Date	April. 27, 2016
Payload	ROV-Homer × 5, cutter ×1, Hot water temperature sensor×1, Marker buoy×3, Peg × 5
On bottom	8:47 JST
Off bottom	16:11 JST
Summary	In this dive, the northwest sites were surveyed and detail temperature mapping was conducted. Five ROV-Homers with self-logging small underwater temperature sensor (ID:10, 15, 20, 24) were recovered, and Five ROV-Homer (ID:13, 14, 21, 64, 92) were deployed. At the Dive point #7, #8, #9, and #10, the temperature of hydrothermal vent was measured. The maximum temperature was 199 degrees.
Trajectory of ROV	Red line indicates the trajectory. 

3.3.3 HPD Dive 1961

Date	April. 30, 2016
Payload	ROV-Homer×2, Mobile seismometer and pressure sensor × 1 cutter ×1, hot water temperature sensor×1, Peg×3
On bottom	7:06 JST
Off bottom	15:52 JST
Summary	In this dive, the mapping of temperature was conducted, and the ground motion and the pressure were measured using mobile seismometer and pressure sensor at Dive point #1. At the Approximately 100m south of the Dive point #1, we found a depression that had small chimney. The diameter was approx.10m. The maximum temperature was 213 degrees. At last, we surveyed the slope region of the northwest sites where the backbone cable was planned to be laying.
Trajectory of ROV	Red line indicates the trajectory. 

3.3.4 HPD Dive 1962

Date	*May. 1, 2016*
Payload	ROV-Homer×1, cutter ×1, hot water temperature sensor×1, Marker buoy×3
On bottom	8:57 JST
Off bottom	9:51 JST
Summary	In this dive, chimneys were observed near the ROV-Homer ID:14. Due to bad weather, we finished observation in one hour.
Trajectory of ROV	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.