



Kairei+ “Cruise Report”

KR21-08



Real time ocean bottom crustal movement observation

East off Izu-Oshima

Jul. 5th , 2021-Jul.12th, 2021

Ocean Floor Observatory Technology Development Group
R&D Center for Earthquake and Tsunami
Research Institute for Marine Geodynamics
Japan Agency for Marine-Earth Science and Technology
(JAMSTEC)

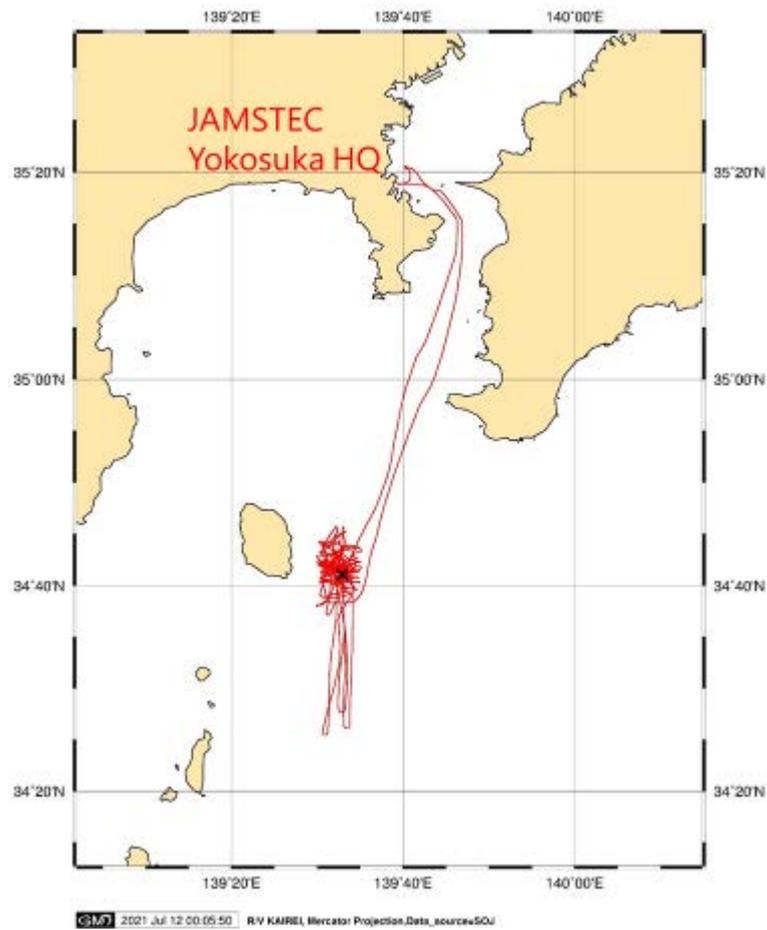
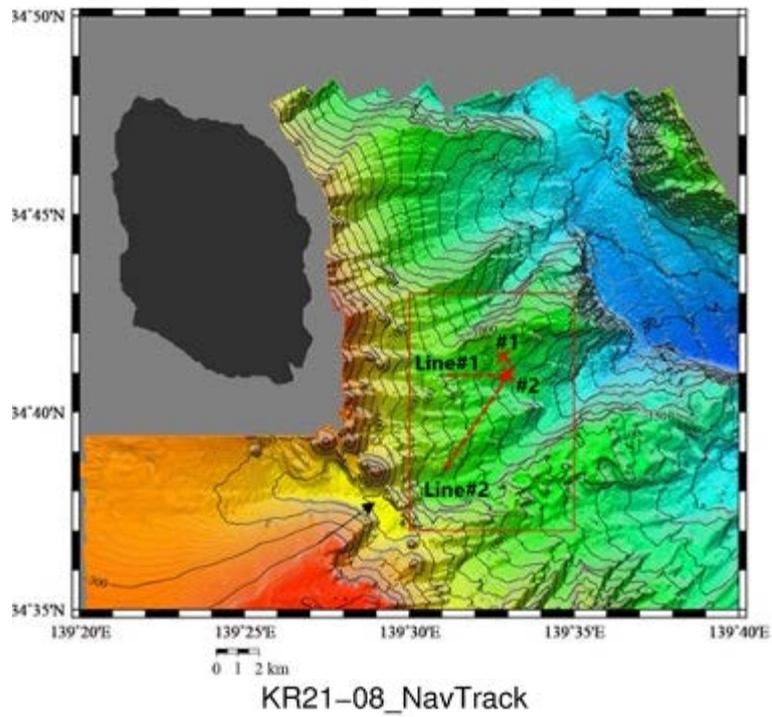
Contents

1. Cruise Information	3
2. Research Proposal	5
3. Activities and Results.....	5
4. Operation Summary	6
5. Notice on Using	9

1. Cruise Information

Cruise ID:	KR21-08
Name of vessel:	Kairei
Title of cruise:	Real time ocean bottom crustal movement observation
Representative of the Science Party [Affiliation]	Eiichiro Araki[JAMSTEC]
Chief Scientist [Affiliation]:	Shuhei Nishida [JAMSTEC]
Boarding Scientist [Affiliation]:	Yuya Machida [JAMSTEC] Morifumi Takaesu [Nihon Marine Enterprise] Hisanori Iwamoto [Nihon Marine Enterprise]
Cruise period:	July. 5th, 2021 - July12th, 2021
Ports of departure / arrival:	JAMSTEC Yokosuka HQ / JAMSTEC Yokosuka HQ
Research area:	East off Izu-Oshima

Research Area Map



2. Research Proposal

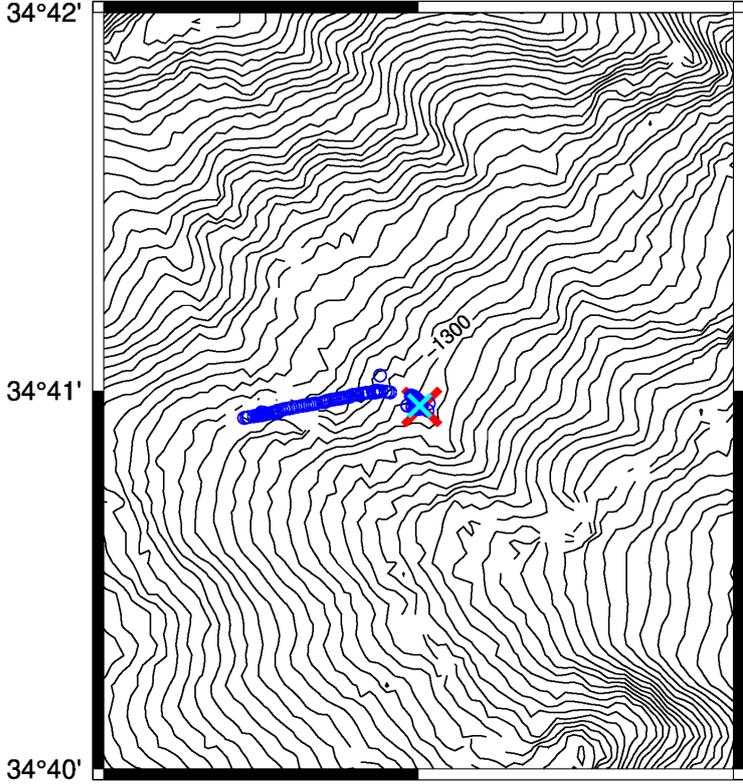
We are developing an observation system for volcanic activity in the sea area, which combines an unmanned automatic observation system and submarine instruments, in order to understand the current status of the activity history and past eruption patterns by observing and surveying submarine volcanic activity and collecting and analyzing geological data. We will combine the long-term seafloor pressure observation developed with the in-situ calibration technology of seafloor pressure gauges, and apply it to the observation of vertical crustal movement associated with volcanic activities in the sea area around Izu-Oshima. In this expedition, we will install and check the function of the long-term bottom pressure recorder equipped with a battery that enables independent observation for more than five years, mount a precision pressure measuring device and a laser scanner on the ROV, and measure the exact water depth of the ROV with the precision pressure measuring device while moving directly above the long-term bottom pressure recorder.

3. Activities and Results

We installed a self-recording seafloor pressure gauge and a reference point marker for crustal movement observation in order to observe vertical crustal movement caused by volcanic activity in the sea area around Izu-Oshima Island.

The long-term bottom pressure recorder can be connected to the ROV via the underwater matable connector, and the observation data can be downloaded to the PC on board. After the installation, the data will be collected and the calibration will be performed once a year. The long-term pressure recorder will be recovered by the ROV after five years (2025).

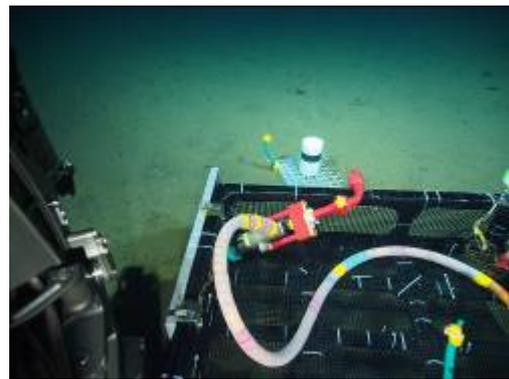
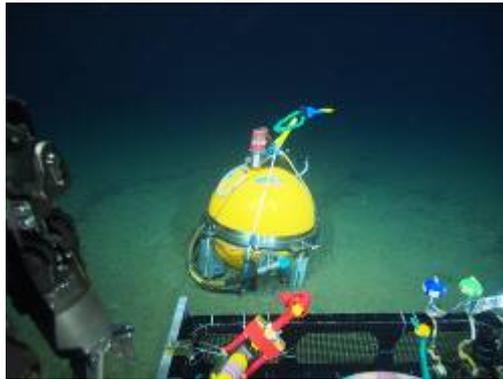
4. Operation Summary

No.	Date Dive Num.	Start Time	Site	Latitude	Longitude	Depth
		End Time		Latitude	Longitude	Depth
	2021/07/06	13:13	East Off Izu-Oshima	34:40.957N	139:33.010E	1304m
		14:18		34:40.9638N	139:33.0070E	1299m
Work Summary			The Long-term Ocean Bottom Pressure Recorder was deployed on bottom.			
<div style="display: flex; justify-content: space-around;">   </div>						
1	 <p style="text-align: center;"> 34°42' 34°41' 34°40' </p> <p style="text-align: center;"> 139°32' 139°33' 139°34' </p> <p style="text-align: center;">Red Cross : Planned Point, Blue Circle: Acoustic Tracking Point, Cyan Cross: Deploy Point</p>					

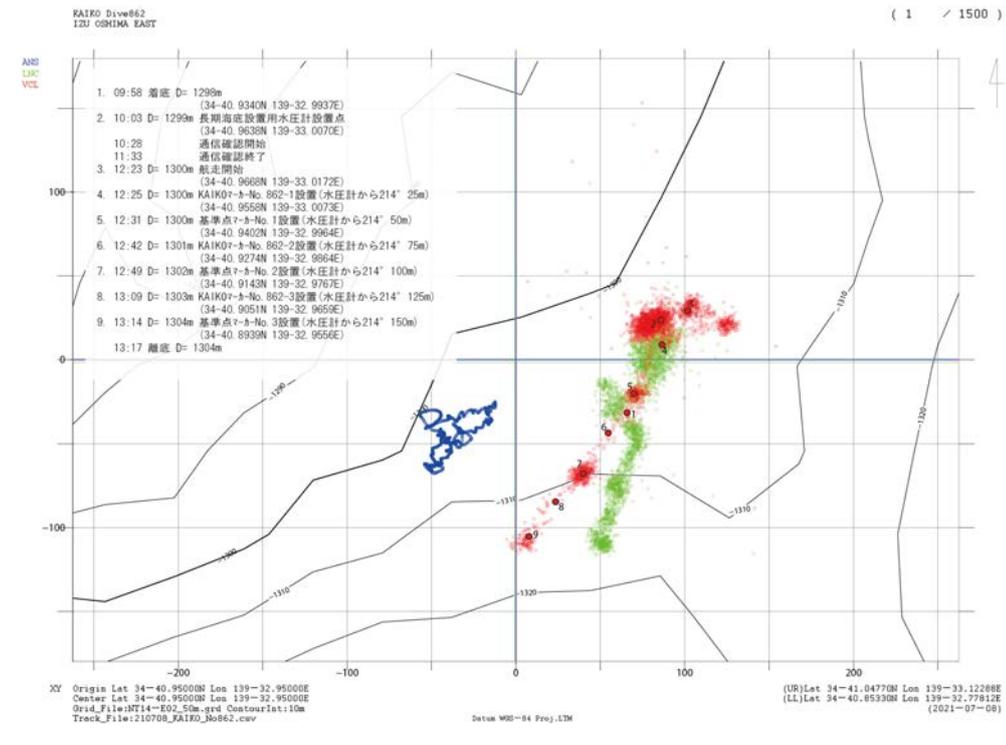
No.	Date	Start Time	Site	Latitude	Longitude	Depth
	Dive Num.	End Time		Latitude	Longitude	Depth
	2021/07/08	09:58	East Off Izu-Oshima	34:40.9638N	139:33.0070E	1299m
	Dive# 862	13:17		34:40.8939N	139:32.9556E	1304m

Work Summary

After confirming the communication with the Long-Term Ocean Bottom Pressure Recorder, the recorded data were downloaded. The landing condition of the LT-OBPR was adjusted. And then, we sailed in the direction of 214°, put the reference point markers at 50 meter intervals, and surfaced.



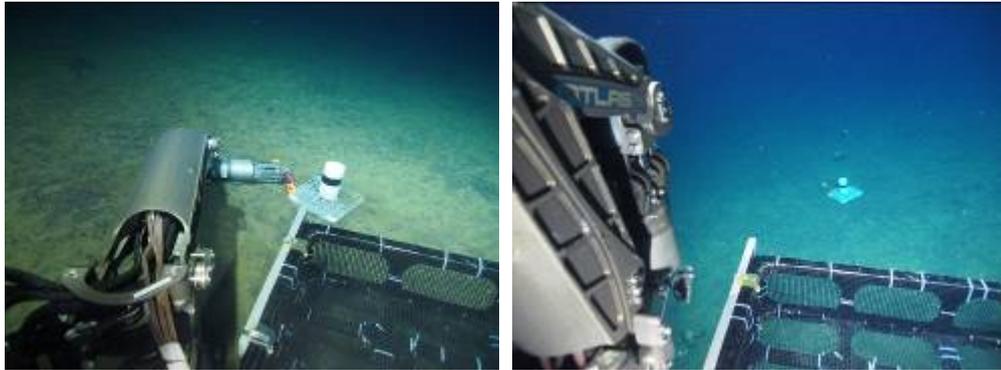
2



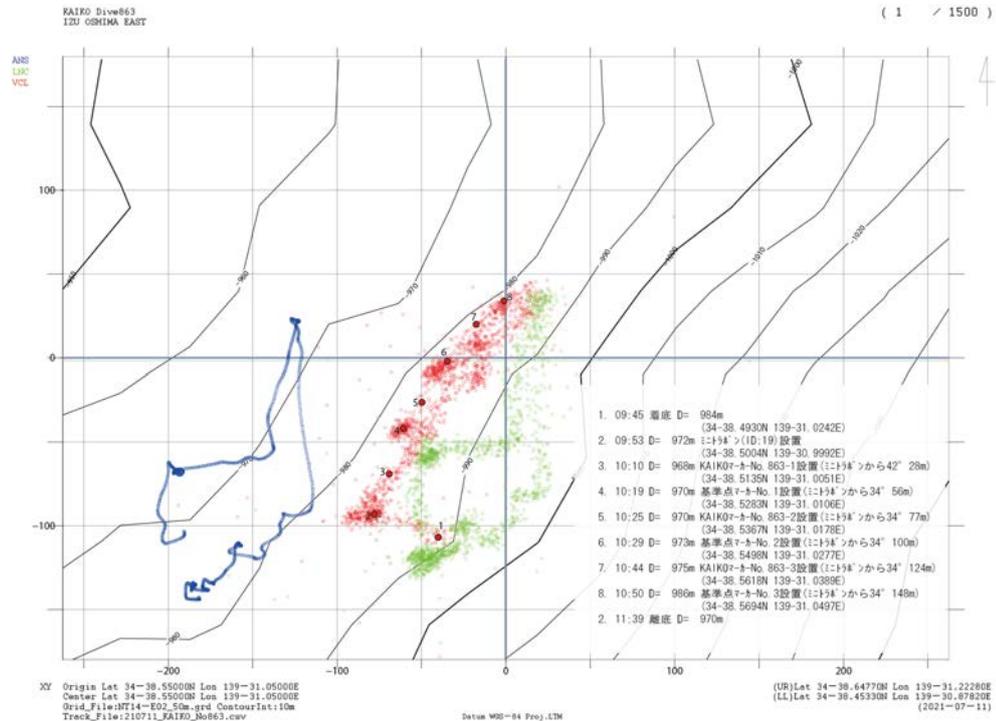
No.	Date Dive Num.	Start Time	Site	Latitude	Longitude	Depth
		End Time		Latitude	Longitude	Depth
	2021/07/11	09:45	East Off Izu-Oshima	34:38.4930N	139:31.0242E	984m
		11:39		34:38.4930N	139:31.0242E	970m

Work Summary

Three reference point markers were placed at 50 m intervals as the ship cruised in a 34° direction from the end of LINE#2. After that, the installation condition of the markers was checked by auto-cruise.



3



5. Notice on Using

This cruise report is a preliminary documentation as of the end of cruise.
This report is not necessarily corrected even if there is any inaccurate description (i.e. taxonomic classifications). This report is subject to be revised without notice. Some data on this report may be raw or unprocessed. If you are going to use or refer the data on this report, it is recommended to ask the Chief Scientist for latest status.
Users of information on this report are requested to submit Publication Report to JAMSTEC.

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