



R/V Kairei Cruise Report
KR21-07

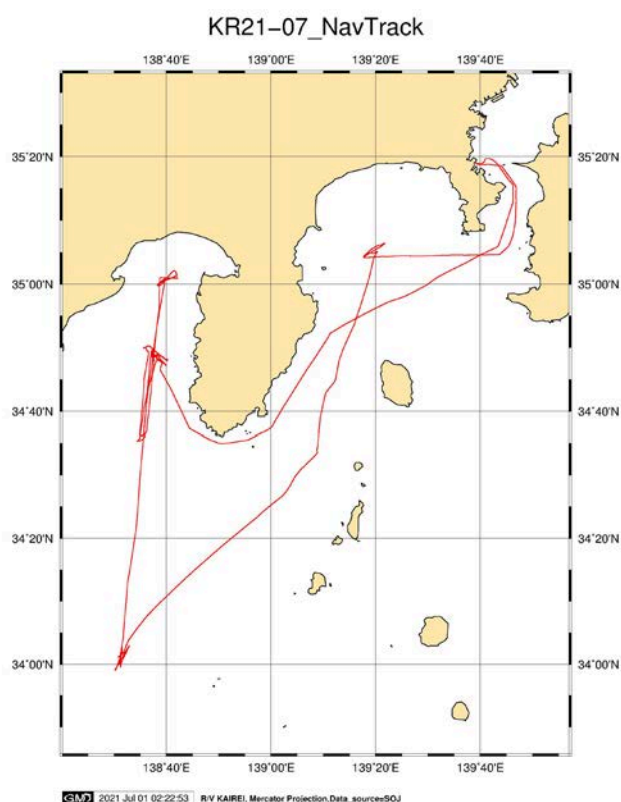
Sea Trial of ROV “KAIKO”

Research area:
Sagami-Bay, Izu-Ogasawara-Trench and Suruga-bay
Jun.26,2021-Jul.1,2021

Japan Agency for Marine-Earth Science and Technology
(JAMSTEC)

1. Cruise Information

- Cruise ID: KR21-07
- Name of vessel: R/V Kairei
- Title of cruise: Sea trial of ROV “Kaiko”
- Chief Scientist: Yoshinobu Nambu
- Cruise period: June 26, 2021 to July 1, 2021
- Ports of departure/arrival: NISSAN No.6 Quay, Yokosuka / NISSAN No.6 Quay, Yokosuka
- Research area:
 - A: Sagami-Bay, Off the coast of Hatsushima, Water depth 1,200m
Within the circle with a radius of 2 miles centered on [35°00.00'N, 139°14.50'E]
 - B: Izu-Ogasawara Trench, Water depth 2,000~5,800m
Within the area surrounded by below 4 points.
[33°00.00'N, 141°05.00'E], [34°35.00'N, 141°05.00'E],
[34°35.00'N, 142°30.00'E], [33°00.00'N, 142°30.00'E]
Planned Dive point [33°24.70'N, 141°37.90'E] (Water Depth 5,800m)
 - C: Suruga-Bay and Northern Nankai Trough, Water Depth 300~3,600m
Within the area surrounded by below 4 points.
[34°35.00'N, 138°31.00'E], [34°50.00'N, 138°35.00'E],
[34°50.00'N, 138°41.00'E], [34°35.00'N, 138°41.00'E]
or within the area surrounded by below 4 points.
[34°00.00'N, 138°10.00'E], [34°15.0'N, 138°25.00'E],
[34°15.00'N, 138°45.00'E], [34°00.0'N, 138°35.00'E]
- Research map



2. Research Proposal and Science Party

- Title of proposal: Sea trial of ROV “Kaiko”
- Representative of the science party [Affiliation]
NAMBU YOSHINOBU
Japan Agency for Marine-Earth Science and Technology
Institute for Marine-Earth Exploration and Engineering (MarE3)
- Science party (List) [Affiliation]
Chief Scientists NAMBU YOSHINOBU
Japan Agency for Marine-Earth Science and Technology
Institute for Marine-Earth Exploration and Engineering (MarE3)
- Scientist AKIYAMA KEITA
Japan Agency for Marine-Earth Science and Technology
Institute for Marine-Earth Exploration and Engineering (MarE3)
- Scientist ASO TATSUYA
Japan Agency for Marine-Earth Science and Technology
Institute for Marine-Earth Exploration and Engineering (MarE3)
- Scientist SANADA YOSHINORI
Japan Agency for Marine-Earth Science and Technology
Institute for Marine-Earth Exploration and Engineering (MarE3)
- Scientist URABE GOU
Japan Agency for Marine-Earth Science and Technology
Institute for Marine-Earth Exploration and Engineering (MarE3)
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Japan Agency for Marine-Earth Science and Technology
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Center for Mathematical Science and Advanced Technology
- Scientist KASAYA TAKAFUMI
Japan Agency for Marine-Earth Science and Technology
Submarine Resources Research Center
- Scientist NOMURA SHUN
Japan Agency for Marine-Earth Science and Technology
Center for Mathematical Science and Advanced Technology
- Scientist TAKAHASHI KEISUKE
Japan Agency for Marine-Earth Science and Technology
Research and Development Center for Earthquake and Tsunami Forecasting
- Scientist KAWABATA YUICHIROU
Japan Agency for Marine-Earth Science and Technology
Submarine Resources Research Center
- Scientist MAKITA HIROKO
Japan Agency for Marine-Earth Science and Technology
Super-cutting-edge Grand and Advanced Research Program
- Scientist YAMANAKA TOSHIROU
Japan Agency for Marine-Earth Science and Technology
Submarine Resources Research Center

Marine Tec. MORIOKA MIKI
Nippon Marine Enterprises, Ltd.

● KAIREI Crew

Captain	AOKI TAKAFUMI
Chief Officer	EGASHIRA TAKESHI
2nd Officer	NOZAWA TATSUYA
3rd Officer	OBATA YUTO
Jr. 3rd Officer	NAKAMURA RYOTA
Chief Engineer	SAKAGUCHI EIJI
1st Engineer	NOGUCHI KAZUNORI
2nd Engineer	IKEGUCHI KENTA
3rd Engineer	SHIMADA KEITO
Chief Electronics Op.	ISHIWATA HIROKI
2nd Electronics Op.	UGAJIN KAZUMI
Jr. 2nd Electronics Op.	FUKAGAWA SHUNSUKE
3rd Electronics Op.	OI KEISUKE
Boat Swain	KUWAHARA YOSUKE
Quarter Master	YAMAMOTO SHUICHI
Quarter Master	OGASAWARA KAZUMI
Quarter Master	MIYASHITA TAKUYA
Quarter Master	KURIHARA AKIRA
Sailor	KAKUHARI KOUDAI
Sailor	HIRAI KOSEI
Sailor	NAKANO MIZUKI
No.1 Oiler	SUGI SHINYA
Oiler	YAMAGUCHI YUKIHIRO
Oiler	HIDAKA TORU
Assistant Oiler	HAYASHIDA SOUMA
Assistant Oiler	DANTSUKA AOI
Assistant Oiler	MATSUMURA KOTA
Assistant Oiler	NAKASHIMA FUMIYA
Chief Steward	ONOE TATSUNARI
Steward	NAGATOMO TSUYOSHI
Steward	YAMAMOTO MASAACKI
Steward	OHYU SHINOBU
Steward	TANAKA TSUGUMI
Steward	SATO KEITO
Steward	OKADA HAYATO

● KAIKO Operator

1st Submersible Tec. Officer	SHIGETAKE SEIJI
1st Submersible Tec. Officer	KONDO TOMOE
2nd Submersible Tec. Officer	IHARA SHOUTA
2nd Submersible Tec. Officer	YAMAGUCHI TAIKEN
3rd Submersible Tec. Officer	IWATA KUNIHIRO
3rd Submersible Tec. Officer	KOGUMA ATSUSHI
3rd Submersible Tec. Officer	SATO NAOKI
3rd Submersible Tec. Officer	TAKEDA KAI

3. Research/Development Activities

- Sea trial of ROV “KAIKO”

Annual sea trial of "KAIKO" was conducted to check the integrity of each equipment and operator training. The function test items are listed bellows.

- (1) System integrity test in accordance with sea trial procedure in max. operational water depth, 3,500m.
- (2) Operational test of responder/transponder with measuring acoustic noise
- (3) General training for operator, such as steering vehicle and manipulator etc.

The sea trial and training, Dive #858 (WD 1,680m), #859 (WD 2,480m), #860(WD 1,680m), and #861(WD 3,520m) were conducted. Due to the outer sheath damage of the primary cable in previous cruise (KR21-06 Leg1), cable condition observation was conducted from 1,900m to 2,100m cable length with dead slow (10m/min) mode while lowering/recovering sequence at #859 and #861. In recovering of #861, sheath repairing was conducted because three damage points of sheath were observed near the repaired points.

In the sequence of recovering “KAIKO”, inching of winch was occurred at #858, #859, and #861. The cause of this problem has not been completely identified, so trouble shooting will be conducted after this cruise.



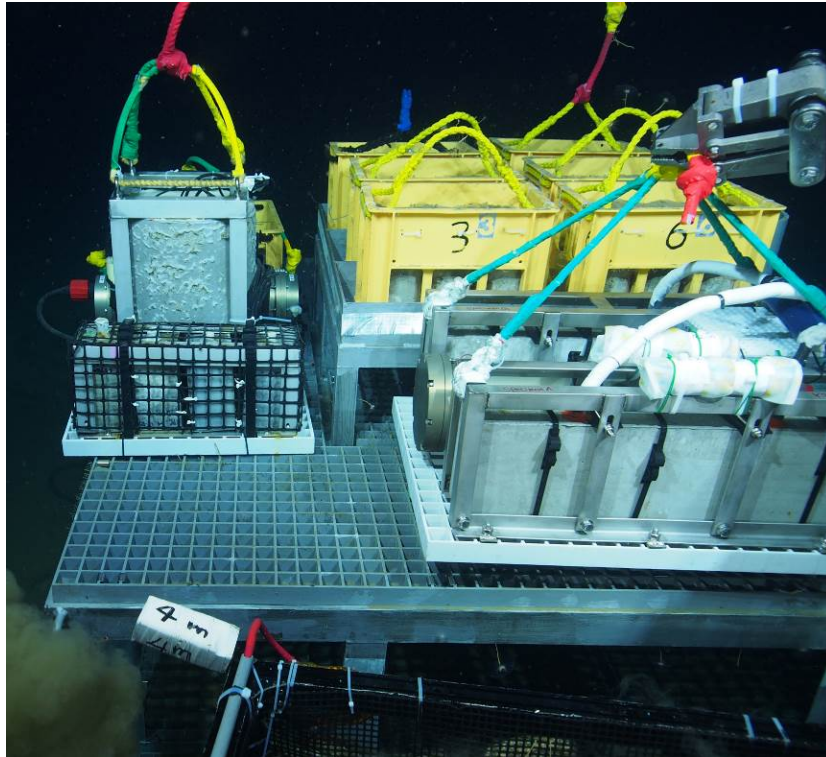
Launching “KAIKO”

- Additional Work 1

Collection and installation of concrete specimens for the long-term exposed test in the deep sea

We proceed the trial as follows with a help of "KAIKO" to understand the degrade mechanisms of long-term exposed concrete specimens on which is in the seabed platform of North edge of Nankai trough.

- 1)Concrete specimens exposed on the platform by KR20-07 cruises were collected.
- 2)Concrete block with strain measurement devices was installed to measure the its in-situ temporal developments.

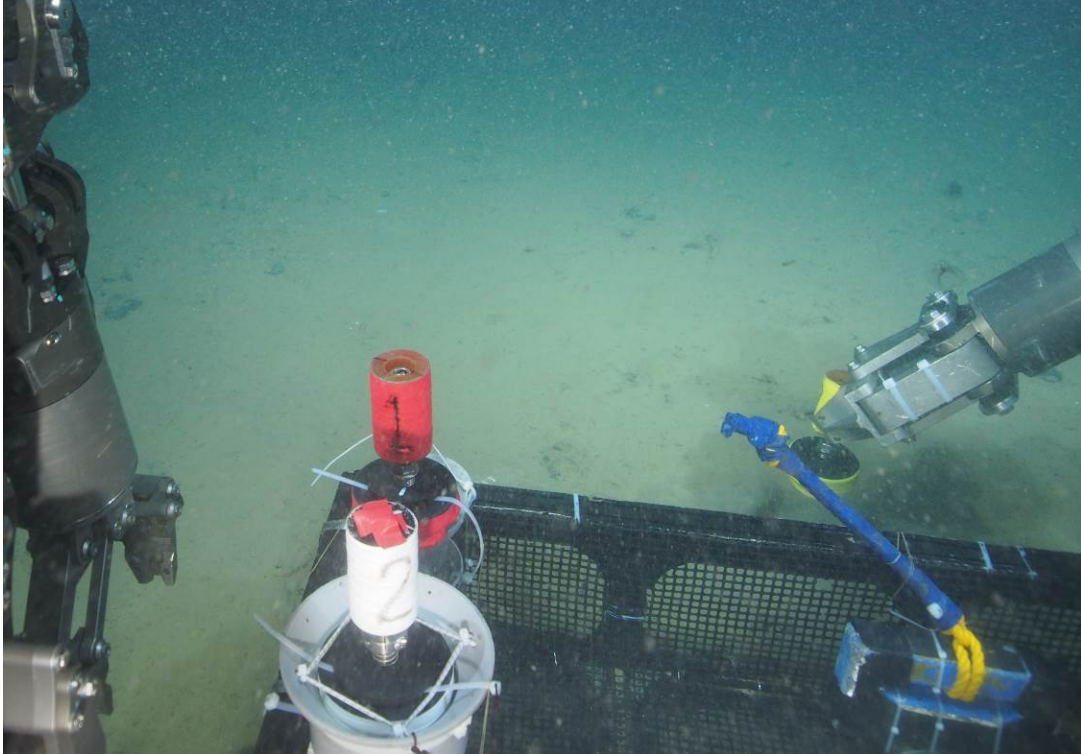


Concrete logger Installation

- Additional Work 2

Sediment sampling for Deep-Sea Bioresources Repository Project

Deep-Sea Bioresources Repository Project provides microbiological and environmental genetic resources such as microbial strains, deep-sea sediments for isolation of microbes and for environmental DNA, and environmental DNA sequences, to industry and academy for industrial purposes. During this cruise, Deep-Sea Bioresources Repository Project takes deep-sea sediment samples for the resources and samples for environmental parameters associated with them such as pore-water geochemistry, sediment organic geochemistry and microbial diversity.



Sediment sampling

4. Cruise Log

- 2021-6-26 08:00 Scientists party onboard a vessel
09:00 Departed from NISSAN No.6 Quay, Yokosuka
09:10 Kick off Meeting
09:25 Arrived at #4 Yokohama port area (35°19.70'N,139°41.00'E)
09:30 Conducted KAIKO pre-dive check
11:49 Launched KAIKO
11:52 Conducted KAIKO underwater function test
13:00 Recovered KAIKO
13:54 KHI engineers disembarked (4 persons) by traffic boat
14:00 Transited to research area C, Suruga-Bay
15:00 Onboard lecture
18:00 Scientist Meeting
20:45 Arrived at research area (Suruga-Bay)
- 2021-6-27 Dive #858, KAIKO Sea Trial and Sediment Sampling at area C
Suruga-Bay, Water depth 1,680m, [34°48.50'N, 138°37.50'E]
05:50 Conducted KAIKO pre-dive check
06:00 Released XBT (34°49.2452'N, 138°37.3068'E)
08:42 Launched KAIKO
10:37 Landed on sea bottom, water depth 1,672m
13:53 Left sea bottom, water depth 1,678m
15:35 Recovered KAIKO
18:00 Scientist Meeting
- 2021-6-28 Dive #859, KAIKO Sea Trial and Sediment Sampling at area C
Suruga-Bay, Water depth 2,480m, [34°35.50' N, 138°34.70'E]
05:50 Conducted KAIKO pre-dive check
08:41 Launched KAIKO
10:10 Cable condition observation (Cable length 1,900~2,100m)
11:26 Landed on sea bottom, water depth 2,469m
13:36 Left sea bottom, water depth 2,471m
14:10 Cable condition observation (Cable length 1,900~2,100m)
16:05 Recovered KAIKO
18:00 Scientist Meeting
- 2021-6-29 Dive #860, KAIKO Sea Trial and Sediment Sampling at area C
Suruga-Bay, Water Depth 1,680m, [34°48.50'N, 138°37.50'E]
05:50 Conducted KAIKO pre-dive check
08:54 Launched KAIKO
09:15 Trouble shooting of Launcher CTD
11:04 Landed on sea bottom, water depth 1,670m
12:48 Left sea bottom, water depth 1,671m
14:24 Recovered KAIKO
18:00 Scientist Meeting
- 2021-6-30 Dive #861, KAIKO Sea Trial and Collection and installation of concrete specimens at area C
Northern Nankai Trough, Water Depth 3,520m
05:50 Conducted KAIKO pre-dive check
06:00 Released XBT (34°01.6522N, 138°31.4729E)
08:37 Launched KAIKO
10:00 Cable condition observation (Cable length 1,900~2,100m)
12:07 Landed on sea bottom, water depth 3,512m
13:57 Left sea bottom, water depth 3,511m

14:50 Cable condition observation and repairment (Cable length 1,900~2,100m)
17:17 Recovered KAIKO
18:00 Scientist Meeting

2021-7-1 09:00 Arrived at NISSAN No.6 Quay, Yokosuka

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.

<http://www.godac.jamstec.go.jp/darwin/explain/1/c#report>

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