



R/V Kairei Cruise Report
KR20-07

Sea Trial of ROV “KAIKO”

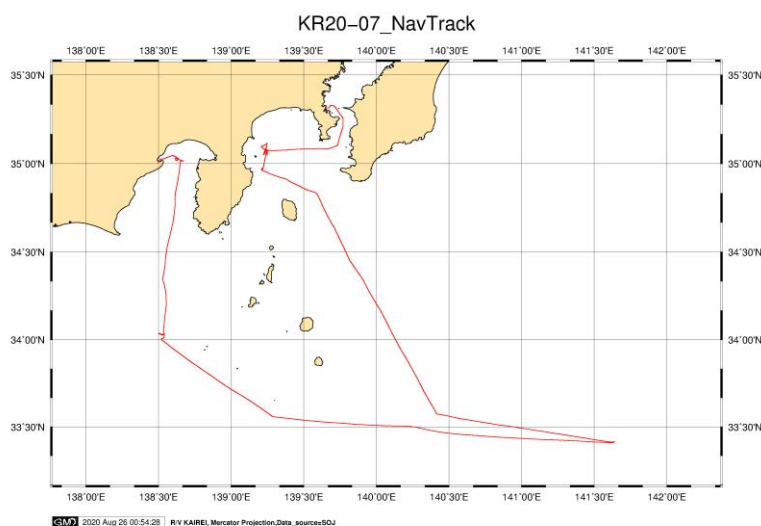
Research area:
Sagami-Bay, Izu-Ogasawara-Trench and Suruga-bay
Aug.22,2020-Aug.26,2020

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

1. Cruise Information

- Cruise ID: KR20-07
- Name of vessel: R/V Kairei
- Title of cruise: Sea trial of ROV “Kaiko”
- Chief Scientist: Yoshinobu Nambu
- Cruise period: August 22,2020 to August 26,2020
- Ports of departure/arrival: JAMSTEC Headquarter, Yokosuka/Shimizu
- Research area:
 - A: Sagami-Bay, Water depth 1,200m
[35° 00.00'N, 139° 13.00'E]
 - B: Izu-Ogasawara Trench, Water depth 2,000-5,800m
[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]
 - C: Suruga-Bay and Northern Nankai Trough, Water Depth 1,200-3,000m
[34° 00.00'N, 138° 00.00'E]、 [35° 05.00'N, 138° 36.00'E]、
[35° 05.00'N, 138° 43.00'E]、 [34° 00.00'N, 138° 43.00'E]

- Research map



2. Research Proposal and Science Party

- Title of proposal: Sea trial of ROV “Kaiko”
- Representative of the science party [Affiliation]
Yoshinobu NAMBU [JAMSTEC]
- Science party (List) [Affiliation]

Yoshinobu NAMBU	[JAMSTEC]
Yasuyuki YAMAZAKI	[JAMSTEC]
Shun NOMURA	[JAMSTEC]
Mari KOBAYASHI	[JAMSTEC]
Yuichiro KAWABATA	[JAMSTEC]
Keisuke TAKAHASHI	[JAMSTEC]
Tomomi SUMIDA	[JAMSTEC]
Masayuki MIYAZAKI	[JAMSTEC]
Ryo KIMURA	[NME]

● **KAIREI Crew**

Master	TAKAFUMI AOKI
Chief Officer	TAKESHI EGASHIRA
2nd Officer	TATSUYA NOZAWA
3rd Officer	ERI SHIRAIISHI
Jr.3rd Officer	TAIGA YAMAMOTO
Chief Engineer	MINORU TSUKADA
1st Engineer	KAZUNORI NOGUCHI
2nd Engineer	RYUZO MIKAMI
3rd Engineer	KAZUKI ONO
Chief Electronics Operator	TAKATOMO SHIROZUME
2nd Electronics Operator	KAZUMI UGAJIN
Jr.3rd Electronics Operator	KEISUKE OI
Boat Swain	HIDEO ISOBE
Quarter Master	TSUYOSHI CHIMOTO
Quarter Master	TAKAO OMURA
Quarter Master	TSUBASA KUBOTA
Quarter Master	TAKUYA MIYASHITA
Quarter Master	KENTA NASU
Sailor	KODAI KAKUBARI
Sailor	MIZUKI SUGAWARA
Sailor	YOHEI HIDAKA
No.1 Oiler	YUKIHIRO YAMAGUCHI
Oiler	SHINYA SUGI
Oiler	SOTA MISAGO
Assistant Oiler	FUBUKI HOMMA
Assistant Oiler	YUTARO ONO
Assistant Oiler	AOI DANTSUKA
Assistant Oiler	KOUTA MATSUMURA
Chief Steward	KIYOTAKA KOSUJI
Steward	TUYOSHI NAGATOMO
Steward	MASARU SUGIYAMA
Steward	HODAKA WAKIZAKA
Steward	YUKI SHIRASAKI

● **KAIKO Operator**

Submersible Op. Manager	TOMOE KONDO
1/Submersible Tec. Officer	SEIJI SHIGETAKE
2/Submersible Tec. Officer	SHIGERU KIKUYA
2/Submersible Tec. Officer	TAKUMA ONISHI
2/Submersible Tec. Officer	SHOTA IHARA
3/Submersible Tec. Officer	NAOKI SATO
3/Submersible Tec. Officer	KUNIHIRO IWATA
3/Submersible Tec. Officer	WATARU ASANO

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 belows.

- (1) System integrity test in accordance with sea trial procedure in max. operational water depth, 5,800m.
- (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 #846 (WD 1,172m), #847 (WD 5,802m) and #848(WD 3,517m) were conducted. Two abnormal functions were found during sea trial. Secondary-cable length data showed gradually increase without actual pay-out operation at the beginning of dive #846. After recovering KAIKO, the mold cable for the sensor was replaced new one and it was checked that the data was back to normal at dive #847. Also, the position data in Sub Bottom Profiler (SBP) showed "0". The investigation was conducted after this cruise. The disconnecting of data sending cable was found and fixed it.

- 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 YK18-09 and KR19-08 cruises were collected and new materials are alternatively installed.
- 2) Concrete block with strain measurement devices was installed to measure the its in-situ temporal developments.

- Additional Work 2

Sediment sampling for Open Innovation Platform (OIP)

OIP 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, OIP 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.

4. Cruise Log

- 2020-8-22 08:00 Scientists party onboard a vessel
08:45 Kick off Meeting
09:00 Departed from JAMSTEC Headquarter, Yokosuka
09:30 Arrived at #4 Yokohama port area (35-19.6N,139-41.0E)
10:30 Onboard lecture
13:00 Conducted KAIKO function test.
14:04 Launched KAIKO
16:02 Recovered KAIKO
17:30 Completed function test and transited to research area A, Sagami-Bay.
18:00 Scientist Meeting
- 2020-8-23 06:00 Arrived research area A, Sagami-Bay (34-58.5N,139-13.0E)
06:07 Deployed XBT
- Dive#846, KAIKO Sea Trial and Sediment Sampling
08:53 Launched KAIKO,
10:34 Landed on sea bottom, water depth 1,172m
14:32 Left sea bottom
15:51 Recovered KAIKO
16:50 Transited to research area B, Izu Ogasawara Trench
18:00 Scientist Meeting
- 2020-8-24 05:15 Arrived research area B, Izu-Ogasawara Trench (33-24.7N,141-37.9E)
05:36 Deployed XBT
- Dive#847, KAIKO Sea Trial and Sediment Sampling
08:00 Launched KAIKO,
11:13 Landed on sea bottom, water depth 5,803m
12:30 Left sea bottom
15:19 Recovered KAIKO
16:15 Transited to research area C, Northern Nankai Trough
18:00 Scientist Meeting
- 2020-8-25 04:00 Arrived research area C. Suruga-Bay and Northern Nankai Trough
06:11 Deployed XBT
- Dive #848, Collection and installation of concrete specimens sea
08:47 Launched KAIKO
11:03 Landed on sea bottom, water depth 3,516m
12:48 Left sea bottom.
15:09 Recovered KAIKO
16:00 Transited to Simizu Port
18:00 Scientist Meeting
- 2020-8-26 10:00 Arrived at Simizu Port

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>

E-mail: submit-rv-cruise@jamstec.go.jp