



R/V Kairei Cruise Report
KR19-08

Sea Trial of ROV “KAIKO”
And
Collection of the long-term exposed concrete specimens in
the deep sea

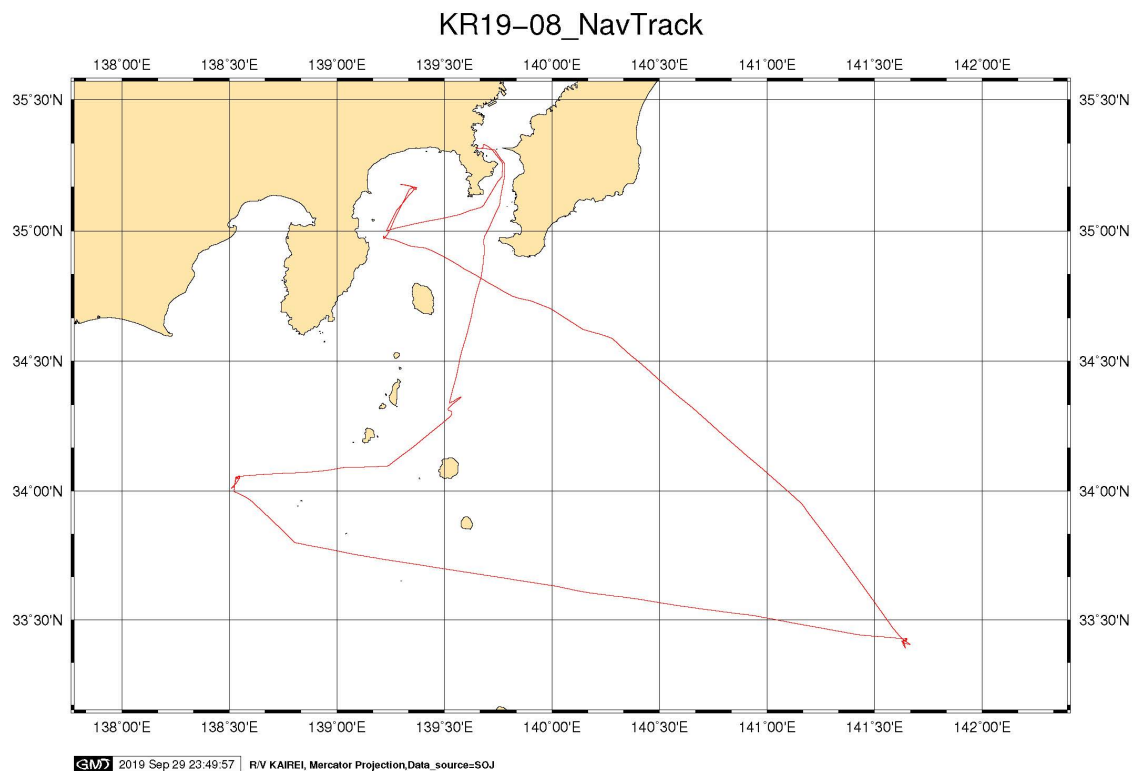
Research area:
Sagami-Bay, Izu-Ogasawara-Trench and Suruga-bay
Sep.26,2019-Sep.30,2019

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

1. Cruise Information

- Cruise ID: KR19-08
- Name of vessel: R/V Kairei
- Title of cruise: Sea trial of ROV “Kaiko” and Collection of the long-term exposed concrete specimens in the deep sea
- Chief Scientist: Yoshinobu Nambu
- Cruise period: September 26, 2019 to September 30, 2019
- Ports of departure/arrival: JAMSTEC Headquarter, Yokosuka
- Research area:
 - A: Sagami-Bay, Water depth 12,00m
[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” and Collection of the long-term exposed concrete specimens in the deep sea
- Representative of the science party [Affiliation]
Syun NOMURA [JAMSTEC]
Yoshinobu NAMBU [JAMSTEC]
- Science party(List) [Affiliation]

Yoshinobu NAMBU	[JAMSTEC]
Yasuyuki YAMAZAKI	[JAMSTEC]
Shun NOMURA	[JAMSTEC]
Takafumi KASAYA	[JAMSTEC]
Hisanori IWAMOTO	[NME]
Hiroko MAKITA	[JAMSTEC]
Keisuke TAKAHASHI	[Ube corporation]
Yuichiro KAWABATA	[PARI]
Kenji KANEKO	[Hachinohe Institute of Technology]
Yuki SAKOI	[Hachinohe Institute of Technology]
Hisashi FUKADA	[Fudo Tetra corporation]

3. Research/Development Activities

- Sea trial of ROV “KAIKO”

Annual sea trial of "KAIKO" was conducted to check the integrity of each equipment and also whole system after onshore maintenance work in water depth 7m,1,168m (Dive #831) and 5,820m (Dive #832). The trial also included the function test of modified components as listed bellows, auto-cruse-mode trial for KR19-09 and also operator training.

 - LED Flood light of Launcher
 - Fiber optical rotary joint for primary cable store winch.
 - Vehicle junction box E.
 - On board control system software
 - Oki-seatec transponder (Rated water depth 11,000m,7 kHz)

Dive #831, WD1,168m, Sea trial and training were completed without any trouble. Acoustic system test showed that position reference function worked well, only command signal to Oki-seatec transponder required unload, suspending hydraulic system, to reduce noise. Also, the trial of auto-cruse-mode was conducted. KAIKO moved 50m north-south round trip in auto-cruse mode with two kind of way point setting. One was set way point every 10m, the other was only start and end point. Footprint with the second setting looked like smooth since when KAIKO went through way point she always slow down even if it was just a passing point.

Dive #832, WD 5,804m, sea trial was also completed without any trouble. Acoustic system test showed responder mode worked well but transponder mode did not work even if “unload”.
- Collection of the long-term exposed concrete specimens in the deep sea

At present, for the installation of structures in the deep sea, the concrete material is often used as well in the land. However, data for the durability and the aging of concrete exists only in the land or the shallow sea, thereby there is no data in the deep sea. In this cruise, we proceed Dive #833 as follows to understand the degrade mechanisms of long-term exposed concrete specimens in the deep sea.

 - 1) Concrete specimens in plastic baskets exposed on the seabed platform of North edge of Nankai trough by YK19-08 cruise were collected from WD 3520 m and new materials are alternatively set by "KAIREI".
 - 2) Water and mud samples are collected to summarize the exposed environment.

4. Cruise Log

2019-9-26 09:00 Departed from JAMSTEC Headquarter, Yokosuka
2019-9-26 09:30 Arrived at #4 Yokohama port area. Conduct KAIKO function test.
2019-9-26 16:20 Completed function test and transited to research area A, Sagami-Bay.
Dive #831 Sea trial of ROV "KAIKO"
2019-9-27 08:46 Launched KAIKO
2019-9-27 10:17 Landed on sea bottom, water depth 1,168m.
Conducted function test and training.
2019-9-27 14:26 Left sea bottom.
2019-9-27 15:47 Recovered KAIKO
2019-9-27 15:47 Transited to research area B, Izu Ogasawara Trench.
2019-9-28 03:30 Arrived research area B
2019-9-28 05:15 Deployed XBT
Dive #832 Sea trial of ROV "KAIKO"
2019-9-28 08:06 Launched KAIKO
2019-9-28 11:09 Landed on sea bottom, water depth 5,804m.
Conducted function test and training.
2019-9-28 12:34 Left sea bottom.
2019-9-28 15:31 Recovered KAIKO
2019-9-28 15:31 Transited to research area C, Northern Nankai Trough
2019-9-29 03:50 Arrived research area C.
2019-9-29 06:10 Deployed XBT
Dive #833 Collection of the long-term exposed concrete specimens
2019-9-29 08:50 Launched KAIKO
2019-9-29 11:14 Landed on sea bottom, water depth 3,514m.
Working on the seafloor
2019-9-29 13:50 Left sea bottom.
2019-9-29 16:15 Recovered KAIKO
2019-9-29 17:10 Transited to JAMSTEC Headquarter, Yokosuka
2019-9-30 08:50 Arrived at JAMSTEC Headquarter, 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.

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