



R/V Kairei Cruise Report KR20-10

High-resolution research of marine seismogenic faults in
wide area: Seismic survey and earthquake observation



Hyuga-nada, Nankai Trough
Sep. 14, 2020 – Sep. 22, 2020

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

Contents:

1. Cruise Information :
2. Research Proposal and Scientific Party
3. Research/Development Activities
4. Cruise Log
5. Notice on using:

1. Cruise Information

- Cruise ID: KR20-10
- Name of vessel: R/V Kairei
- Title of cruise: High-resolution research of marine seismogenic faults in wide area: Seismic survey and earthquake observation
- Chief Scientist [Affiliation]: Seiichi Miura [JAMSTEC]
- Cruise period: Sep. 14, 2020 – Sep. 22, 2020
- Ports of departure / call / arrival: Kochi-Kagoshima
- Research area: Hyuga-nada, Nankai Trough
- Research map

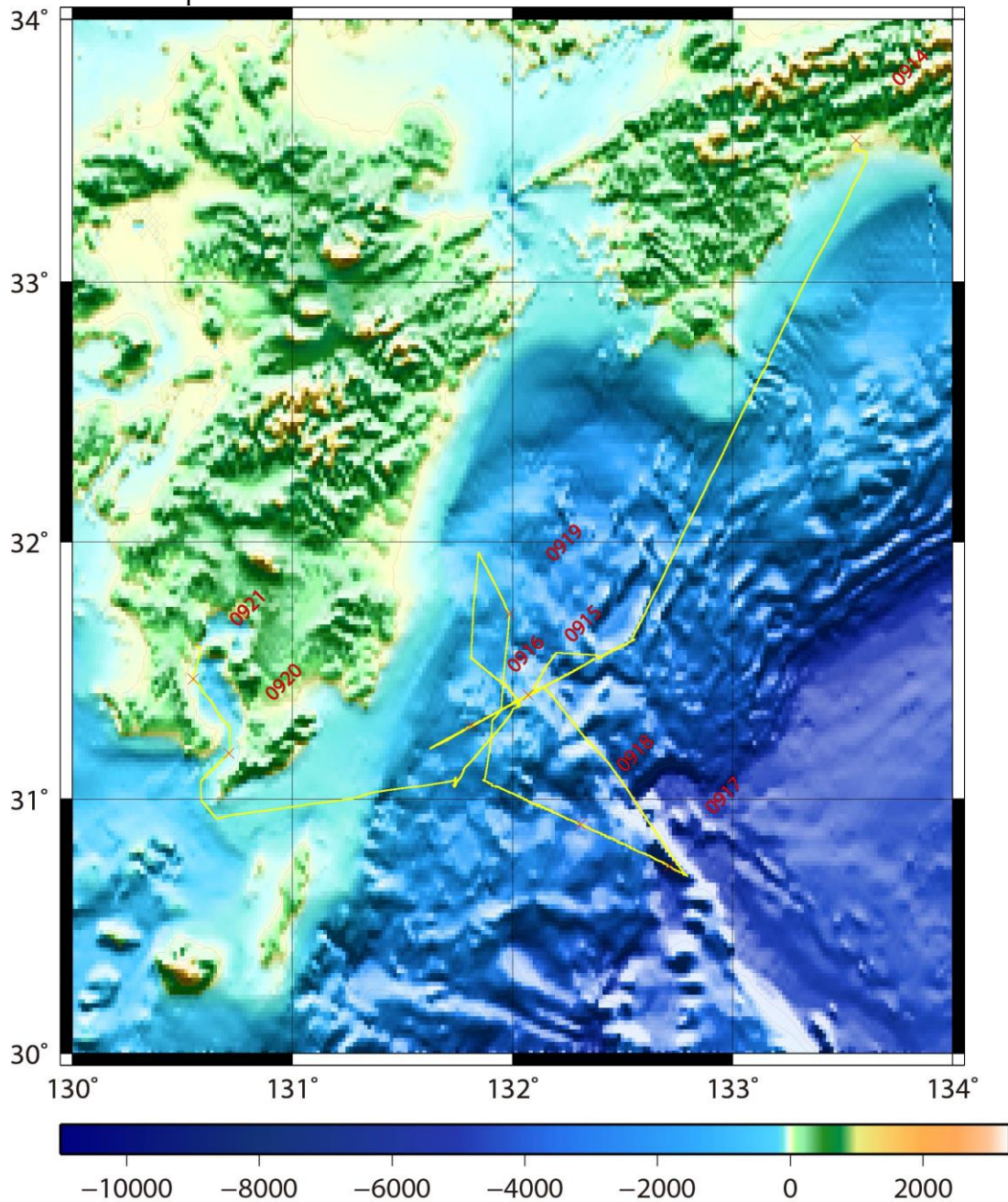


Figure 1: Bathymetry map and ship track of KR20-10 cruise. Yellow shows the ship track.

2. Research Proposal and Science Party

- Title of proposal:

Proposal 1: High-resolution research of marine seismogenic faults in wide area:
Seismic survey and earthquake observation

Proposal2: Electro-magnetic observation in the Hyuga-nada

- Representative of Science Party [Affiliation]:

Proposal1: Seiichi Miura

Proposal2: Hiroshi Ichihara

- Science Party (List) [Affiliation, assignment etc.]

Proposal1:

Shuichi Kodaira	[JAMSTEC]
Yasushi Ishihara	[JAMSTEC]
Koichiro Obana	[JAMSTEC]
Seiichi Miura	[JAMSTEC]
Gou Fujie	[JAMSTEC]
Yasuyuki Nakamura	[JAMSTEC]
Ryuta Arai	[JAMSTEC]
Yuka Kaiho	[JAMSTEC]
Ayako Nakanishi	[JAMSTEC]
Tetsuo No	[JAMSTEC]
Kazuya Shiraishi	[JAMSTEC]
Ryo Miura	[JAMSTEC]
Tsutomu Takahashi	[JAMSTEC]
Yojiro Yamamoto	[JAMSTEC]
Takashi Tonegawa	[JAMSTEC]
Eichiro Araki	[JAMSTEC]
Toshinori Kimura	[JAMSTEC]
Takane Hori	[JAMSTEC]
Fumiaki Tomita	[JAMSTEC]
Motoyuki Kido	[Tohoku University]
Yusaku Ota	[Tohoku University]
Masanao Shinohara	[University of Tokyo]
Kimihiro Mochizuki	[University of Tokyo]

Proposal2:

Hiroshi Ichihara	[Nagoya University]
Noriko Tada	[JAMSTEC]
Hayato Nakamura	[Nagoya University]

- Onboard Technician

Ikumasa Terada	[NME]
Toshinori Saijo	[NME]
Masayuki Toizumi	[NME]
Naoto Noguchi	[NME]
Norio Shimomura	[NME]
Yoshiki Horiuchi	[NME]
Takeshi Katayama	[NME]
Tatsuya Sugiyama	[NME]

Yuta Suzuki	[NME]
Taro Shirai	[NME]

● Crew

Master	Takafumi Aoki	[NME]
Chief Officer	TakeshiI Egashira	[NME]
2nd Officer	Tatsuya Nozawa	[NME]
Jr.2nd Officer	Tatsumi Deguchi	[NME]
3rd Officer	Eri Shiraishi	[NME]
Jr.3rd Officer	Taiga Yamamoto	[NME]
Chief Engineer	Minoru Tsukada	[NME]
1st Engineer	Kazunori Noguchi	[NME]
Jr.1st Engineer	Takahiro Mori	[NME]
2nd Engineer	Ryuzo Mikami	[NME]
3rd Engineer	Kazuki Ono	[NME]
Chief Electronics Operator	Takatomo Sshirozume	[NME]
2nd Electronics Operator	Kazumi Ugajin	[NME]
3rd Electronics Operator	Kohei Maeda	[NME]
Jr.3rd Electronics Operator	Keisuke Oi	[NME]
Boat Swain	Hideo Isobe	[NME]
Quarter Master	Shuichi Yamamoto	[NME]
Quarter Master	Tsuyoshi Chimoto	[NME]
Quarter Master	Tsubasa Kubota	[NME]
Quarter Master	Kenta Nasu	[NME]
Sailor	Hotaka Honjo	[NME]
Sailor	Yohei Hidaka	[NME]
No.1 Oiler	Katsuyuki Yoshida	[NME]
Oiler	Shinya Sugi	[NME]
Oiler	Sota Misago	[NME]
Assistant Oiler	Fubuki Homma	[NME]
Assistant Oiler	Aoi Dantsuka	[NME]
Assistant Oiler	Kouta Matsumura	[NME]
Chief Steward	Kiyotaka Kosuji	[NME]
Steward	Tuyoshi Nagatomo	[NME]
Steward	Norio Takaku	[NME]
Steward	Kina Abe	[NME]
Steward	Yuki Shirasaki	[NME]
Steward	Keito Sato	[NME]
Steward	Tsugumi Tanaka	[NME]

3. Research/Development Activities

- Purpose and background:

JAMSTEC has been conducted the project "Project "Observation and monitoring of large scale seafloor deformation for national land resilience" for national resilience and safety of Japan since 2019FY. This research cruise was planned to conduct the "Large-scale and high-resolution mapping of the submarine fault system around the rupture segment boundary in the Nankai Trough". We carried out retrievals of ocean bottom seismometers (OBS). This cruise is a part of the KAKENHI project "Science of Slow Earthquake".

Moreover, we retrieved ocean bottom electro-magnetometers (OBEM), which was proposed by "the first symposium for science cruise of Research Institute for Marine Geodynamics". The OBEM retrieval is also a part of a cooperative research "Science of Hyuga-nada seismogenic zone".

- List of observations

- (1) OBS retrieval

OBS retrieval was started by acoustic communications between the OBS and R/V Kairei, releasing the iron weight and ascending to the sea surface because of the buoyancy, and picking up by hook of rod.

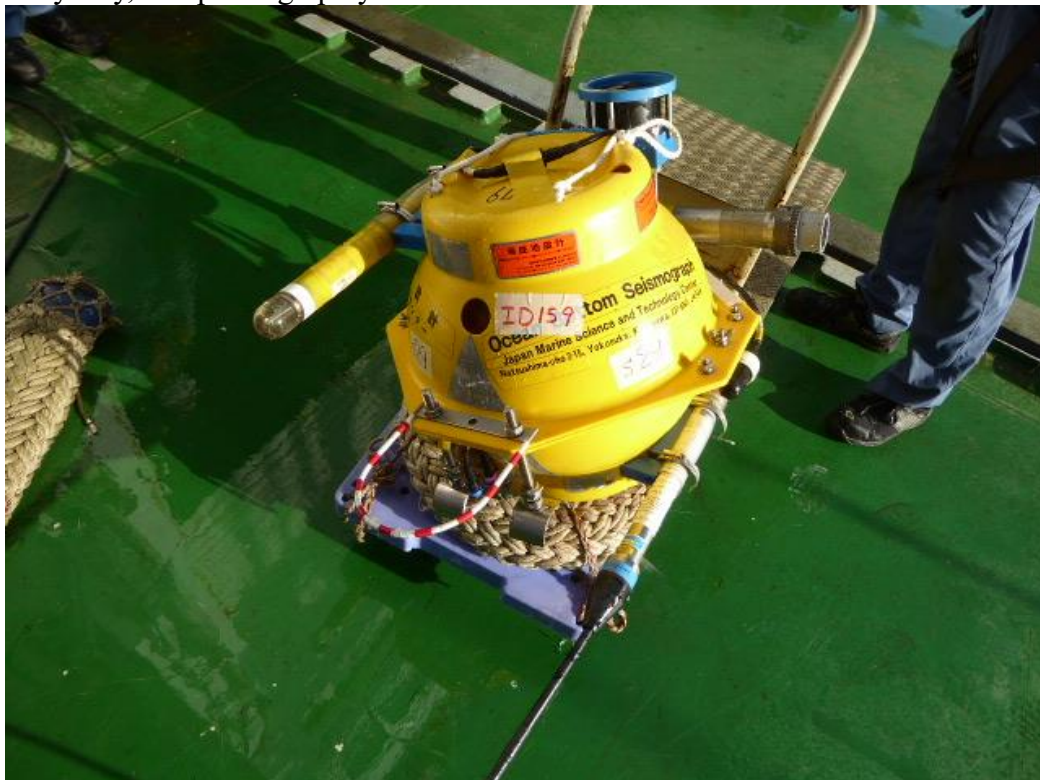


Figure 2: Ocean Bottom Seismometer (OBS).

(2) OBEM retrieval

OBEM retrieval was almost same as that of OBS.



Figure 3: Ocean Bottom Electro-Magnetometers (OBEM) of JAMSTEC just after the retrieval.



Figure 4: Ocean Bottom Electro-Magnetometers (OBEM) of Nagoya University.

(3) XBT (eXpendable-Bathy Thermograph)

One XBT cast was conducted during the cruise to obtain seawater temperature.

(4) Bathymetry, magnetic, gravity

Bathymetry, magnetometer, and gravity data were acquired during the cruise.

Bathymetry data was recorded by SeaBeam3012. Effective depth range is from 100m to 11000m. Magnetic data was acquired by SFG-1214 three component magnetometer of TERATECHNICA Inc. Gravity meter is Marine Gravity Meter MGS-6 of Micro-g LaCoste Inc.

4. Cruise Log

Date		Remarks
2020/9/14	Monday	Departure from Kochi port, transit to survey area, start OBS retrieval (OBS001-003)
2020/9/15	Tuesday	OBS retrieval (OBS004-OBS009, OBS025-OBS036, OBS010-OBS015)
2020/9/16	Wednesday	OBS retrieval (OBS016-OBS021, OBS037-OBS050, OBS022-OBS024)
2020/9/17	Thursday	OBS retrieval (OBS051-OBS067)
2020/9/18	Friday	OBS retrieval (OBS068-OBS093)
2020/9/19	Saturday	OBS retrieval (OBS094-OBS100, OBS029), OBEM retrieval (NU10, NU6, NU9)
2020/9/20	Sunday	Kagoshima Bay
2020/9/21	Monday	Kagoshima Bay
2020/9/22	Tuesday	Arrival to Kagoshima port

●Time table of OBS retrieval

	Release command	Ascending	Sea surface	Pickup
OBS001	2020/9/14 20:37	2020/9/14 20:53	2020/9/14 21:30	2020/9/14 21:47
OBS002	2020/9/14 21:48	2020/9/14 22:00	2020/9/14 22:35	2020/9/14 22:45
OBS003	2020/9/14 22:52	2020/9/14 23:06	2020/9/14 23:40	2020/9/14 23:46
OBS004	2020/9/14 23:47	2020/9/15 0:00	2020/9/15 0:35	2020/9/15 0:56
OBS005	2020/9/15 1:05	2020/9/15 1:18	2020/9/15 1:50	2020/9/15 1:59
OBS006	2020/9/15 2:02	2020/9/15 2:16	2020/9/15 2:50	2020/9/15 3:03
OBS007	2020/9/15 3:06	2020/9/15 3:24	2020/9/15 3:55	2020/9/15 4:02
OBS008	2020/9/15 4:05	2020/9/15 4:17	2020/9/15 4:50	2020/9/15 4:57
OBS009	2020/9/15 4:59	2020/9/15 5:11	2020/9/15 5:45	2020/9/15 5:52
OBS025	2020/9/15 7:35	2020/9/15 7:50	2020/9/15 8:10	2020/9/15 8:13
OBS026	2020/9/15 8:24	2020/9/15 8:45	2020/9/15 9:00	2020/9/15 9:03
OBS027	2020/9/15 9:16	2020/9/15 9:31	2020/9/15 9:50	2020/9/15 9:53
OBS028	2020/9/15 10:04	2020/9/15 10:20	2020/9/15 10:40	2020/9/15 10:43
OBS029				

OBS030	2020/9/15 11:18	2020/9/15 11:33	2020/9/15 11:50	2020/9/15 11:54
OBS031	2020/9/15 12:10	2020/9/15 12:21	2020/9/15 12:40	2020/9/15 12:44
OBS032	2020/9/15 12:54	2020/9/15 13:10	2020/9/15 13:29	2020/9/15 13:34
OBS033	2020/9/15 13:40	2020/9/15 13:58	2020/9/15 14:16	2020/9/15 14:21
OBS034	2020/9/15 14:33	2020/9/15 14:46	2020/9/15 15:03	2020/9/15 15:07
OBS035	2020/9/15 15:18	2020/9/15 15:33	2020/9/15 15:49	2020/9/15 15:54
OBS036	2020/9/15 16:10	2020/9/15 16:27	2020/9/15 16:40	2020/9/15 16:45
OBS010	2020/9/15 19:00	2020/9/15 19:15	2020/9/15 19:45	2020/9/15 19:49
OBS011	2020/9/15 19:50	2020/9/15 20:06	2020/9/15 20:35	2020/9/15 20:40
OBS012	2020/9/15 20:42	2020/9/15 20:56	2020/9/15 21:25	2020/9/15 21:30
OBS013	2020/9/15 21:32	2020/9/15 21:47	2020/9/15 22:14	2020/9/15 22:19
OBS014	2020/9/15 22:22	2020/9/15 22:34	2020/9/15 23:04	2020/9/15 23:09
OBS015	2020/9/15 23:11	2020/9/15 23:26	2020/9/15 23:55	2020/9/15 23:59
OBS016	2020/9/16 0:01	2020/9/16 0:15	2020/9/16 0:48	2020/9/16 0:53
OBS017	2020/9/16 0:54	2020/9/16 1:06	2020/9/16 1:40	2020/9/16 1:45
OBS018	2020/9/16 1:47	2020/9/16 1:59	2020/9/16 2:35	2020/9/16 2:40
OBS019	2020/9/16 2:41	2020/9/16 2:55	2020/9/16 3:27	2020/9/16 3:34
OBS020	2020/9/16 3:35	2020/9/16 3:49	2020/9/16 4:21	2020/9/16 4:26
OBS021	2020/9/16 4:27	2020/9/16 4:41	2020/9/16 5:09	2020/9/16 5:13
OBS037	2020/9/16 6:34	2020/9/16 6:49	2020/9/16 7:03	2020/9/16 7:07
OBS038	2020/9/16 7:24	2020/9/16 7:37	2020/9/16 7:50	2020/9/16 7:54
OBS039	2020/9/16 8:17	2020/9/16 8:31	2020/9/16 8:42	2020/9/16 8:46
OBS040	2020/9/16 9:00	2020/9/16 9:16	2020/9/16 9:27	2020/9/16 9:33
OBS041	2020/9/16 9:45	2020/9/16 10:05	2020/9/16 10:17	2020/9/16 10:22
OBS042	2020/9/16 10:35	2020/9/16 10:51	2020/9/16 11:03	2020/9/16 11:07
OBS043	2020/9/16 11:20	2020/9/16 11:34	2020/9/16 11:47	2020/9/16 11:50
OBS044	2020/9/16 12:20	2020/9/16 12:32	2020/9/16 12:47	2020/9/16 12:51
OBS045	2020/9/16 13:05	2020/9/16 13:20	2020/9/16 13:33	2020/9/16 13:37
OBS046	2020/9/16 13:50	2020/9/16 14:05	2020/9/16 14:18	2020/9/16 14:22
OBS047	2020/9/16 14:35	2020/9/16 14:53	2020/9/16 15:04	2020/9/16 15:08
OBS048	2020/9/16 15:20	2020/9/16 15:33	2020/9/16 15:46	2020/9/16 15:50
OBS049	2020/9/16 16:04	2020/9/16 16:06	2020/9/16 16:31	2020/9/16 16:36

OBS050	2020/9/16 17:00	2020/9/16 17:15	2020/9/16 17:29	2020/9/16 17:34
OBS024	2020/9/16 19:41	2020/9/16 19:55	2020/9/16 20:15	2020/9/16 20:22
OBS023	2020/9/16 20:26	2020/9/16 20:41	2020/9/16 21:03	2020/9/16 21:10
OBS022	2020/9/16 21:11	2020/9/16 21:25	2020/9/16 21:52	2020/9/16 21:59
OBS051	2020/9/17 2:16	2020/9/17 2:30	2020/9/17 3:32	2020/9/17 3:36
OBS052	2020/9/17 3:38	2020/9/17 3:52	2020/9/17 4:49	2020/9/17 4:56
OBS053	2020/9/17 4:56	2020/9/17 5:10	2020/9/17 6:08	2020/9/17 6:13
OBS054	2020/9/17 6:13	2020/9/17 6:27	2020/9/17 7:27	2020/9/17 7:32
OBS055	2020/9/17 7:32	2020/9/17 7:45	2020/9/17 8:43	2020/9/17 8:48
OBS056	2020/9/17 8:48	2020/9/17 9:03	2020/9/17 10:02	2020/9/17 10:07
OBS057	2020/9/17 10:08	2020/9/17 10:26	2020/9/17 11:22	2020/9/17 11:24
OBS058	2020/9/17 11:27	2020/9/17 11:44	2020/9/17 12:45	2020/9/17 12:49
OBS059	2020/9/17 12:50	2020/9/17 13:05	2020/9/17 14:03	2020/9/17 14:07
OBS060	2020/9/17 14:08	2020/9/17 14:27	2020/9/17 15:23	2020/9/17 15:28
OBS061	2020/9/17 15:29	2020/9/17 15:45	2020/9/17 16:35	2020/9/17 16:39
OBS062	2020/9/17 16:40	2020/9/17 17:02	2020/9/17 17:51	2020/9/17 17:55
OBS063	2020/9/17 17:55	2020/9/17 18:15	2020/9/17 18:51	2020/9/17 19:01
OBS064	2020/9/17 19:01	2020/9/17 19:14	2020/9/17 19:58	2020/9/17 20:02
OBS065	2020/9/17 20:03	2020/9/17 20:19	2020/9/17 20:58	2020/9/17 21:04
OBS066	2020/9/17 21:06	2020/9/17 21:25	2020/9/17 22:03	2020/9/17 22:09
OBS067	2020/9/17 22:10	2020/9/17 22:27	2020/9/17 23:06	2020/9/17 23:12
OBS068	2020/9/17 23:13	2020/9/17 23:27	2020/9/18 0:09	2020/9/18 0:14
OBS069	2020/9/18 0:15	2020/9/18 0:29	2020/9/18 1:11	2020/9/18 1:16
OBS070	2020/9/18 1:17	2020/9/18 1:30	2020/9/18 2:10	2020/9/18 2:15
OBS071	2020/9/18 2:16	2020/9/18 2:30	2020/9/18 3:08	2020/9/18 3:13
OBS072	2020/9/18 3:14	2020/9/18 3:28	2020/9/18 4:08	2020/9/18 4:14
OBS073	2020/9/18 4:14	2020/9/18 4:27	2020/9/18 5:09	2020/9/18 5:13
OBS074	2020/9/18 5:14	2020/9/18 5:29	2020/9/18 6:11	2020/9/18 6:17
OBS075	2020/9/18 6:23	2020/9/18 6:36	2020/9/18 7:19	2020/9/18 7:24
OBS076	2020/9/18 7:25	2020/9/18 7:38	2020/9/18 8:22	2020/9/18 8:27
OBS077	2020/9/18 8:27	2020/9/18 8:39	2020/9/18 9:26	2020/9/18 9:31
OBS078	2020/9/18 9:32	2020/9/18 9:45	2020/9/18 10:29	2020/9/18 10:34

OBS079	2020/9/18 10:35	2020/9/18 10:51	2020/9/18 11:32	2020/9/18 11:36
OBS080	2020/9/18 11:37	2020/9/18 11:52	2020/9/18 12:32	2020/9/18 12:37
OBS081	2020/9/18 12:37	2020/9/18 12:53	2020/9/18 13:29	2020/9/18 13:33
OBS082	2020/9/18 13:34	2020/9/18 13:49	2020/9/18 14:22	2020/9/18 14:27
OBS083	2020/9/18 14:28	2020/9/18 14:40	2020/9/18 15:14	2020/9/18 15:20
OBS084	2020/9/18 15:21	2020/9/18 15:34	2020/9/18 16:09	2020/9/18 16:15
OBS085	2020/9/18 16:16	2020/9/18 16:28	2020/9/18 17:04	2020/9/18 17:10
OBS086	2020/9/18 17:11	2020/9/18 17:25	2020/9/18 17:58	2020/9/18 18:04
OBS087	2020/9/18 18:04	2020/9/18 18:19	2020/9/18 18:49	2020/9/18 18:55
OBS088	2020/9/18 18:55	2020/9/18 19:09	2020/9/18 19:40	2020/9/18 19:45
OBS089	2020/9/18 19:46	2020/9/18 20:01	2020/9/18 20:31	2020/9/18 20:37
OBS090	2020/9/18 20:38	2020/9/18 20:52	2020/9/18 21:20	2020/9/18 21:27
OBS091	2020/9/18 21:28	2020/9/18 21:40	2020/9/18 22:06	2020/9/18 22:12
OBS092	2020/9/18 22:15	2020/9/18 22:30	2020/9/18 22:56	2020/9/18 23:02
OBS093	2020/9/18 23:03	2020/9/18 23:16	2020/9/18 23:42	2020/9/18 23:49
OBS094	2020/9/18 23:49	2020/9/19 0:06	2020/9/19 0:31	2020/9/19 0:37
OBS095	2020/9/19 0:39	2020/9/19 0:51	2020/9/19 1:14	2020/9/19 1:21
OBS096	2020/9/19 1:25	2020/9/19 1:38	2020/9/19 1:59	2020/9/19 2:06
OBS097	2020/9/19 2:11	2020/9/19 2:26	2020/9/19 2:48	2020/9/19 2:57
OBS098	2020/9/19 2:59	2020/9/19 3:12	2020/9/19 3:33	2020/9/19 3:40
OBS099	2020/9/19 3:44	2020/9/19 3:59	2020/9/19 4:19	2020/9/19 4:24
OBS100	2020/9/19 4:35	2020/9/19 4:48	2020/9/19 5:08	2020/9/19 5:13
OBS029	2020/9/19 15:50	2020/9/19 16:03	2020/9/21 16:21	2020/9/19 16:26

●Time table of OBEM retrieval

	Release command	Ascending	Sea surface	Pickup
NU10	2020/9/19 8:16	2020/9/19 8:31	2020/9/19 8:57	2020/9/19 9:06
NU6	2020/9/19 10:29	2020/9/19 10:45	2020/9/19 11:03	2020/9/19 11:10
NU9	2020/9/19 13:46	2020/9/19 14:02	2020/9/19 14:22	2020/9/19 14:34

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/e#report>

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