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R/V Yokosuka Cruise Report

YK22-07

Wide-area 2-D seismic survey of earthquake source faults and seismicity observation in and around the Kuril Trench area

Kuril Trench

April 4, 2022- April 13, 2022

Japan Agency for Marine-Earth Science and Technology

(JAMSTEC)

●**Contents**

1. Cruise Information

● Cruise ID: YK22-07

● Name of vessel: R/V Yokosuka

● Title of the cruise:

Wide-area 2-D seismic survey of earthquake source faults and seismicity observation in and around the Kuril Trench area

● Title of proposal:

High precision wide-area survey of earthquake source faults: seismic survey and crustal activity observation

● Cruise period:

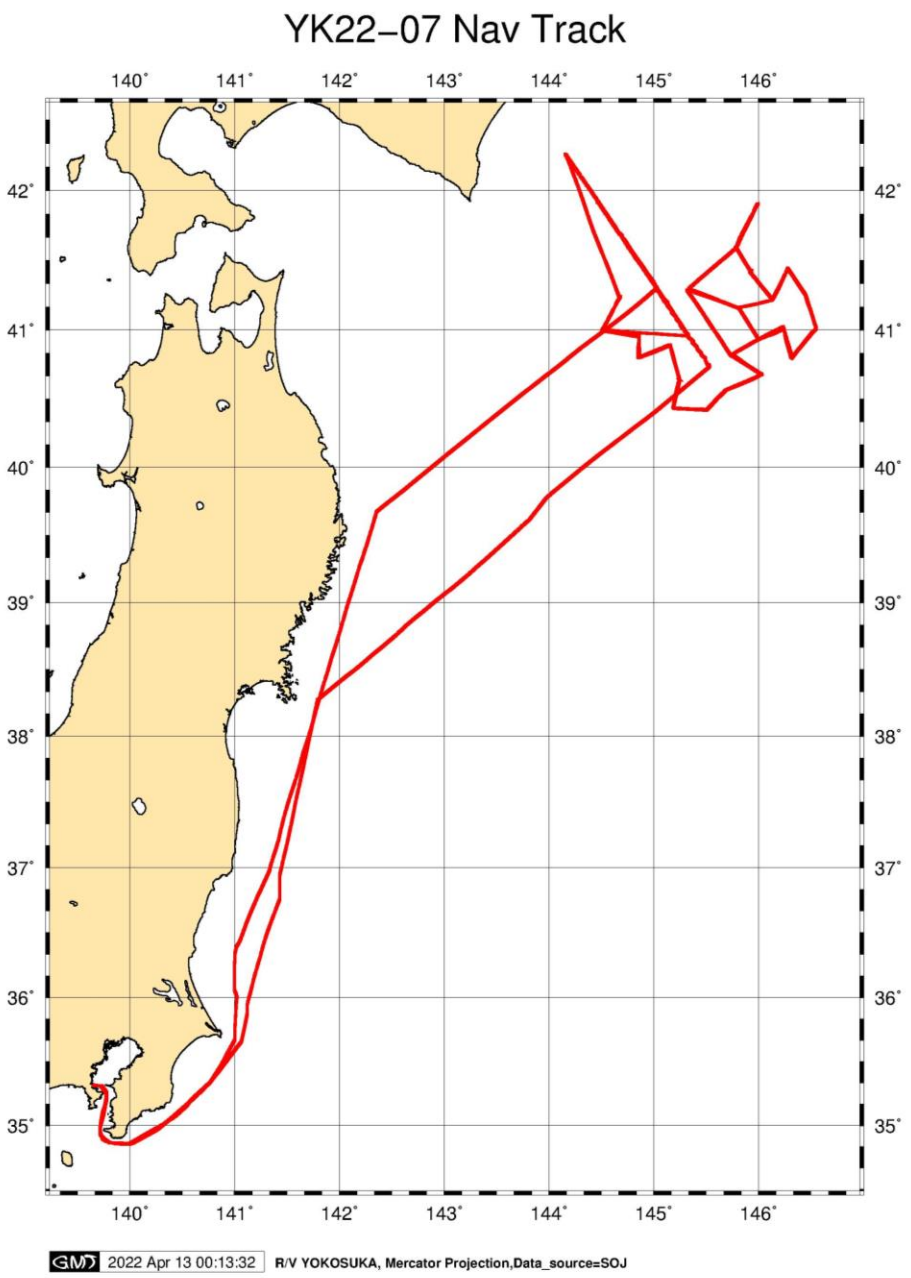
April 3, 2022 – April 13, 2022

● Ports of departure / call / arrival:

Yokosuka (Nissan Pier) – Yokosuka (JAMSTEC)

● Research area: Kuril Trench

● Research Map



2. Researchers

● Chief scientist [Affiliation]:

Koichiro Obana [JAMSTEC]

● Representative of the science party: Seiichi Miura [JAMSTEC]

● Science party:

Yasushi Ishihara [JAMSTEC]

Gou Fujie [JAMSTEC]

Yausyuki Nakamura [JAMSTEC]

Yuka Kaiho [JAMSTEC]

Ayako Nakanishi [JAMSTEC]

Ryuta Arai [JAMSTEC]

Kazuya Shiraishi [JAMSTEC]

Tetsuo No [JAMSTEC]

Xin Liu [JAMSTEC]

Ryo Miura [JAMSTEC]

Yanfang Qin [JAMSTEC]

Koichiro Obana [JAMSTEC, onboard]

Tsutomu Takahashi [JAMSTEC]

Takashi Tonegawa [JAMSTEC]

Takane Hori [JAMSTEC]

Takeshi Iinuma [JAMSTEC]

Yojiro Yamamoto [JAMSTEC]

Fumiaki Tomita [Tohoku University]

Ryota Hino [Tohoku University]

Motoyuki Kido [Tohoku University]

Yusaku Ohta [Tohoku University]

Masanao Shinohara [University of Tokyo]

Masanao Shinohara [University of Tokyo]

Shuichi Kodaira [JAMSTEC]

3. Observation

(1) Objectives:

This research cruise was planned to conduct the “Wide-area 2-D seismic survey of earthquake source faults in and around the Kuril Trench area”, as a part of the Project “High precision wide-area survey of earthquake source faults: seismic survey and crustal activity observation”. In this, cruise, we deployed the ocean bottom seismographs for structure survey and earthquake observation in Kuril Trench.

(2) List of observations:

1) OBS deployment

We deployed 78 ocean bottom seismographs (OBSs) (site1 to 78) along a seismic survey line KT093 across the Kuril Trench and 24 OBSs (JKT01A to 24A) for earthquake observation in the trench-outer trench area of the Kuril Trench and northern Japan Trench. The OBS locations on the seafloor were determined by SSBL. These OBSs will be recovered during the KM22-07 cruise from May to June, 2022.

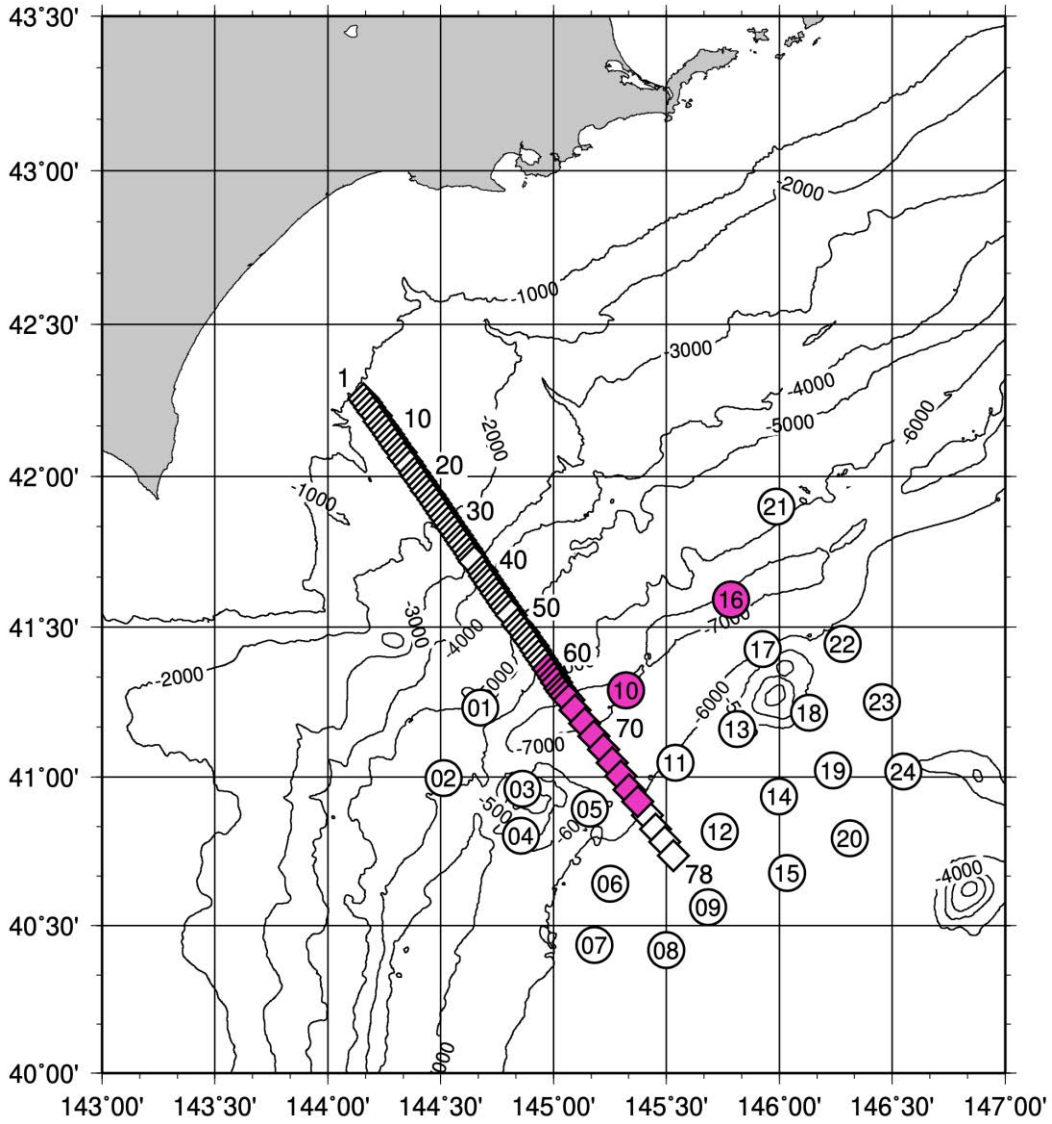


Figure 1. OBS locations. Diamonds are the OBSs deployed along the seismic survey line KT093 (site1 to 78). Circles are the OBSs for the earthquake observations (JKT01A to 24A). Purple symbols indicate the sites with an ultra-deep type OBS (UD/UD-2G). Open symbols are the sites with a Katsujima-type OBS.

Table 1: OBS positions (calibrated position on the seafloor)

Site	Lat. (N)	Lon. (E)	Depth(m)	Type
1	42° 15.315'	144° 9.457'	1119.0	Katsujima
2	42° 14.438'	144° 10.312'	1150.1	Katsujima
3	42° 13.550'	144° 11.161'	1184.0	Katsujima
4	42° 12.646'	144° 12.011'	1188.5	Katsujima
5	42° 11.919'	144° 12.825'	1234.1	Katsujima
6	42° 10.862'	144° 13.579'	1279.7	Katsujima
7	42° 9.938'	144° 14.468'	1224.6	Katsujima
8	42° 9.118'	144° 15.312'	1257.5	Katsujima
9	42° 8.222'	144° 16.116'	1285.7	Katsujima
10	42° 7.323'	144° 16.934'	1319.7	Katsujima
11	42° 6.401'	144° 17.728'	1345.4	Katsujima
12	42° 5.516'	144° 18.536'	1368.7	Katsujima
13	42° 4.662'	144° 19.492'	1411.6	Katsujima
14	42° 3.739'	144° 20.080'	1447.5	Katsujima
15	42° 2.853'	144° 21.023'	1496.7	Katsujima
16	42° 1.948'	144° 21.811'	1531.6	Katsujima
17	42° 0.710'	144° 22.966'	1575.4	Katsujima
18	41° 59.837'	144° 23.789'	1611.1	Katsujima
19	41° 58.936'	144° 24.608'	1654.4	Katsujima
20	41° 58.058'	144° 25.412'	1676.4	Katsujima
21	41° 57.149'	144° 26.216'	1729.1	Katsujima
22	41° 56.279'	144° 27.046'	1782.5	Katsujima
23	41° 55.384'	144° 27.871'	1827.7	Katsujima
24	41° 54.461'	144° 28.692'	1858.0	Katsujima
25	41° 53.589'	144° 29.518'	1880.8	Katsujima
26	41° 52.704'	144° 30.320'	1928.3	Katsujima
27	41° 51.776'	144° 31.121'	1976.2	Katsujima
28	41° 50.886'	144° 31.949'	1994.4	Katsujima
29	41° 49.993'	144° 32.761'	2065.3	Katsujima
30	41° 49.101'	144° 33.608'	2181.3	Katsujima
31	41° 48.184'	144° 34.381'	2361.8	Katsujima
32	41° 47.308'	144° 35.194'	2417.1	Katsujima
33	41° 46.467'	144° 35.965'	2515.6	Katsujima

34	41°	45.572'	144°	36.814'	2751.6	Katsujima
35	41°	44.702'	144°	37.642'	3100.3	Katsujima
36	41°	43.808'	144°	38.426'	3214.5	Katsujima
37	41°	43.009'	144°	38.963'	3303.2	Katsujima
38	41°	41.120'	144°	41.034'	3736.7	Katsujima
39	41°	40.246'	144°	41.652'	4038.0	Katsujima
40	41°	39.361'	144°	42.403'	4428.2	Katsujima
41	41°	38.555'	144°	43.137'	4632.8	Katsujima
42	41°	37.639'	144°	43.955'	4705.5	Katsujima
43	41°	36.765'	144°	44.714'	4746.4	Katsujima
44	41°	35.927'	144°	45.526'	4749.3	Katsujima
45	41°	35.071'	144°	46.327'	4696.9	Katsujima
46	41°	34.155'	144°	47.137'	4754.8	Katsujima
47	41°	33.321'	144°	47.939'	4870.1	Katsujima
48	41°	32.427'	144°	48.700'	4928.1	Katsujima
49	41°	30.557'	144°	50.485'	4980.2	Katsujima
50	41°	29.730'	144°	51.243'	4982.9	Katsujima
51	41°	28.943'	144°	52.196'	5204.2	Katsujima
52	41°	28.045'	144°	52.874'	5213.8	Katsujima
53	41°	27.134'	144°	53.711'	5291.8	Katsujima
54	41°	26.214'	144°	54.522'	5447.0	Katsujima
55	41°	25.313'	144°	55.329'	5499.1	Katsujima
56	41°	24.365'	144°	56.065'	5540.1	Katsujima
57	41°	23.459'	144°	56.909'	5644.7	Katsujima
58	41°	22.551'	144°	57.711'	5936.6	2G-UD
59	41°	21.639'	144°	58.529'	6060.2	2G-UD
60	41°	20.755'	144°	59.350'	6276.2	2G-UD
61	41°	19.865'	145°	0.131'	6178.4	2G-UD
62	41°	18.949'	145°	0.870'	6489.4	2G-UD
63	41°	17.819'	145°	1.658'	6974.7	2G-UD
64	41°	17.063'	145°	2.302'	6885.5	2G-UD
65	41°	16.306'	145°	3.190'	7011.0	2G-UD
66	41°	15.411'	145°	4.054'	7185.5	2G-UD
67	41°	13.440'	145°	5.734'	7180.2	UD
68	41°	10.790'	145°	8.263'	7094.1	UD

69	41°	8.130’	145°	10.694’	6874.2	UD
70	41°	5.552’	145°	13.324’	6719.8	UD
71	41°	2.817’	145°	15.574’	6533.0	UD
72	41°	0.140’	145°	17.864’	6356.5	UD
73	40°	57.420’	145°	20.082’	6142.5	UD
74	40°	55.024’	145°	22.314’	6099.0	UD
75	40°	52.254’	145°	24.898’	5924.9	Katsujima
76	40°	49.533’	145°	27.208’	5787.2	Katsujima
77	40°	46.910’	145°	29.538’	5652.7	Katsujima
78	40°	44.116’	145°	31.802’	5557.2	Katsujima
JKT01A	41°	13.905’	144°	40.507’	5731.1	Katsujima
JKT02A	40°	59.810’	144°	30.777’	5661.8	Katsujima
JKT03A	40°	57.645’	144°	51.724’	4523.0	Katsujima
JKT04A	40°	48.204’	144°	51.390’	5748.2	Katsujima
JKT05A	40°	53.589’	145°	9.619’	5923.3	Katsujima
JKT06A	40°	38.418’	145°	14.981’	5795.2	Katsujima
JKT07A	40°	26.043’	145°	10.943’	5746.2	Katsujima
JKT08A	40°	25.081’	145°	30.022’	5379.5	Katsujima
JKT09A	40°	33.730’	145°	41.066’	5276.7	Katsujima
JKT10A	41°	17.417’	145°	19.337’	7052.3	UD
JKT11A	41°	2.832’	145°	32.466’	5934.6	Katsujima
JKT12A	40°	48.975’	145°	44.190’	5410.5	Katsujima
JKT13A	41°	9.636’	145°	48.810’	5832.0	Katsujima
JKT14A	40°	56.057’	145°	59.892’	5316.7	Katsujima
JKT15A	40°	40.583’	146°	2.039’	5222.7	Katsujima
JKT16A	41°	35.497’	145°	47.083’	7285.7	UD
JKT17A	41°	25.639’	145°	55.491’	5916.8	Katsujima
JKT18A	41°	12.888’	146°	7.841’	5476.2	Katsujima
JKT19A	41°	1.304’	146°	14.217’	5355.3	Katsujima
JKT20A	40°	47.681’	146°	18.773’	5212.4	Katsujima
JKT21A	41°	53.966’	145°	59.291’	5827.0	Katsujima
JKT22A	41°	26.672’	146°	16.848’	5722.6	Katsujima
JKT23A	41°	15.078’	146°	27.225’	5463.6	Katsujima
JKT24A	41°	1.092’	146°	32.926’	5293.3	Katsujima

2) CTD/XCTD observation

During the cruise, XCTD observations were conducted at three sites near site78, JKT01A, and JKT24A.

3) Bathymetry and magnetics observation

During the cruise, bathymetry and magnetics data have been recorded continuously by multi-beam echo sounder (MBES), and three-component magnetometer, respectively.

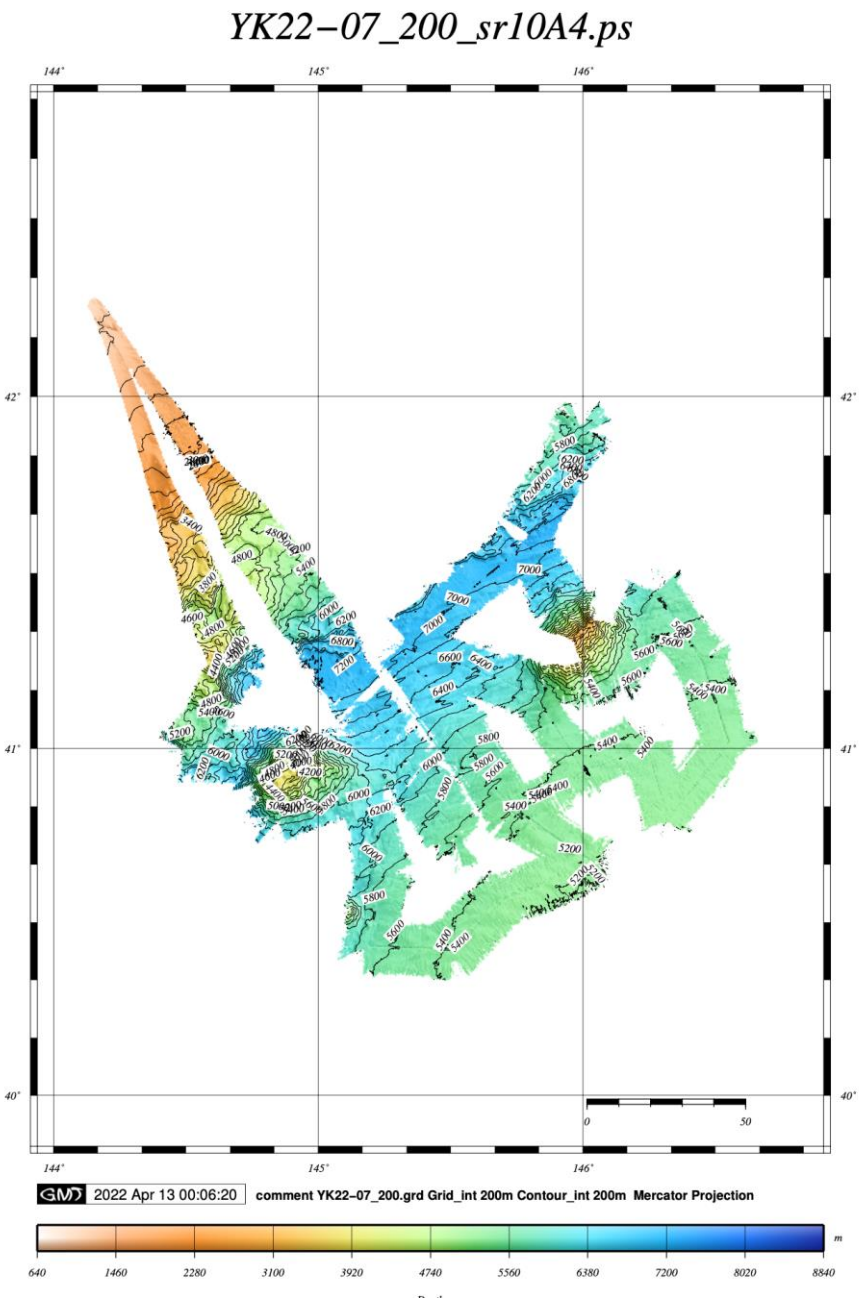


Figure 2. Bathymetry data obtained during YK22-07 cruise.

(3) Cruise Log

Date	Remarks
2022/4/3	Departure from Yokosuka.
2022/4/4	OBS deployment (site76-78).
2022/4/5	OBS deployment (site49-75)
2022/4/6	OBS deployment (site18-48).
2022/4/7	OBS deployment (site1-17, JKT01A-06A)
2022/4/8	OBS deployment (JKT07A-15A,17A-20A, 22A-24A).
2022/4/9	OBS deployment (JKT16A, 21A). SSBL measurements of OBS locations on the seafloor (JKT10A, 12A-16A, 18A-24A).
2022/4/10	SSBL measurements of OBS locations on the seafloor (site46, 47, 52-56, 59-73, JKT02A-09A).
2022/4/11	SSBL measurements of OBS locations on the seafloor (site41-45). Transit to Yokosuka.
2022/4/12	Transit to Yokosuka.
2022/4/13	Arrival at Yokosuka.

#SSBL measurements from April 9 to 11 were conducted at the sites where the OBS locations on the seafloor were not determined at the deployment. OBS locations on the seafloor were determined for all OBSs deployed during the cruise.

● 4. Notice on Using

Notice on using: Insert the following notice to users regarding the data and samples obtained.

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.
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