



Yokosuka Cruise Report

YK17-16C

2017FY “Research project for compound disaster mitigation on the great earthquakes and tsunamis around the Nankai trough region”, northern Ryukyu arc

July 24, 2017 - July 28, 2017

Japan Agency for Marine-Earth Science and Technology

(JAMSTEC)

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1. Cruise Information

(1) **Cruise ID:** YK17-16C

(2) **Name of vessel:** Yokosuka

(3) **Title of the cruise:**

2017FY “Research project for compound disaster mitigation on the great earthquakes and tsunamis around the Nankai trough region”

(4) **Title of proposal**

Research project for compound disaster mitigation on the great earthquakes and tsunamis around the Nankai trough region

(5) **Cruise period:** July 24, 2017 – July 28, 2017

(6) **Ports of departure / call / arrival:** Kobe port to Naha port

(7) **Research area:** Northern Ryukyu arc

(8) **Research Map**

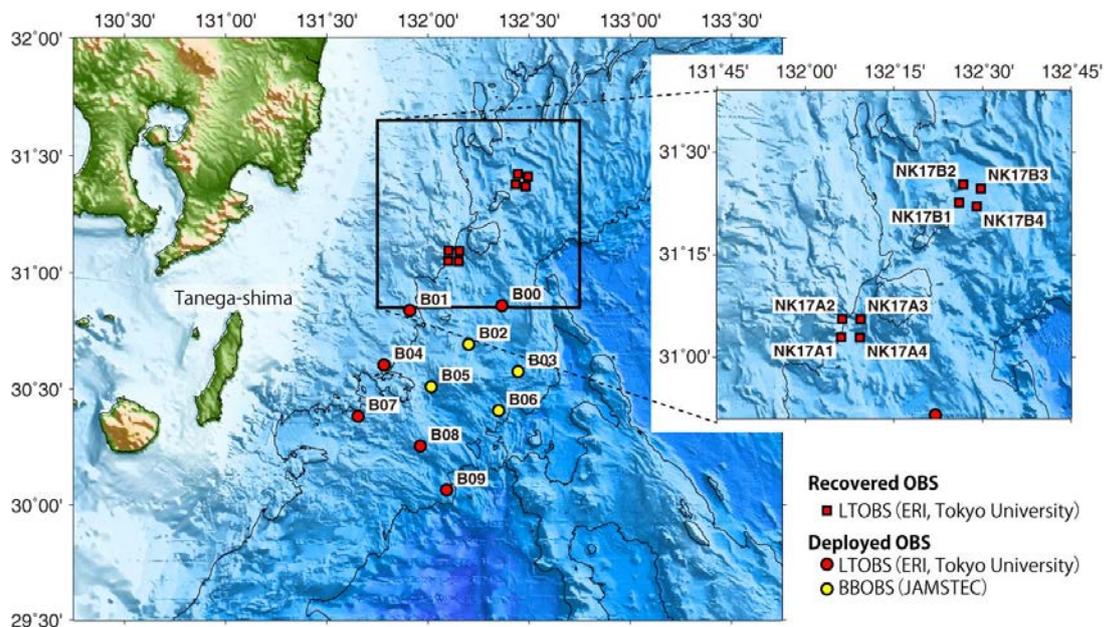


Figure 1. Map of study area. Red Squares represent recovered Long-Term OBSs (LTOBS). Red circles are the deployed LTOBSs, and yellow circles mean the deployed broadband OBSs (BBOBS). A Pressure-Temperature logger (RBR TD 10000) is fixed on the rim of the BBOBS.

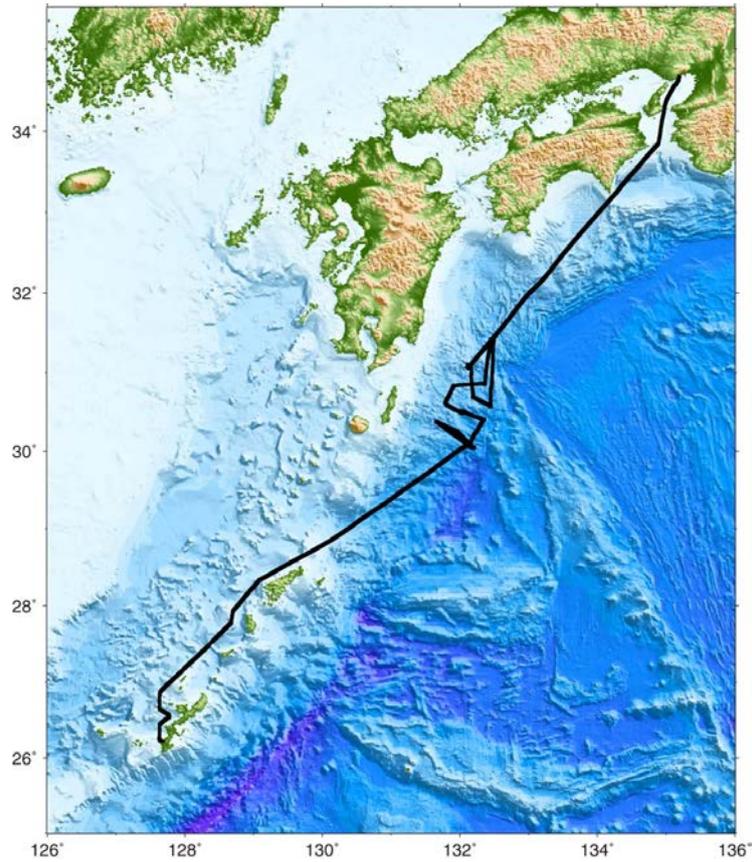


Figure 2. Ship track of YK17-16C cruise.

2. Researchers

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(2) **Representative of the science party [Affiliation]:** Shuichi Kodaira [JAMSTEC]

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3. Overview of Observations

(1) Objective

In Ryukyu subduction zone, permanent seismic observatories are deployed only on islands, and therefore island distribution causes a significant restriction of estimations of seismicity and underground structures in this area. To elucidate details of seismicity, lithospheric structures, and plate geometry of this subduction zone, we conduct a series of passive and active seismic surveys around Ryukyu arc, as a part of research project “Research project for compound disaster mitigation on the great earthquakes and tsunamis around the Nankai trough region” funded by Ministry of Education, Culture, Sports, Science and Technology (MEXT) of Japan. In this YK17-16C cruise, we recovered 8 Ocean Bottom Seismometers (OBSs) at Hyuga-nada, and deployed 10 OBSs off the east coast of Tanega-shima, southwest Japan.

(2) List of observation equipments

(a) OBS

We recovered 8 Long-Term OBSs (LTOBS) at Hyuga-nada. The LTOBS is equipped with a three-component 1 Hz or 20s seismometer. We also deployed 6 LTOBSs and 4 broadband OBSs (BBOBS) off the east coast of Tanega-shima. Deployed LTOBS is equipped with a three component 1Hz seismometer (LE3D/lite, Lennartz electronic). A BBOBS system is composed of a three-component broadband seismometer (CMG-3T, Guralp Systems) and a differential pressure gauge.

(b) Pressure-Temperature logger

A Pressure-Temperature logger “RBR TD 10000, RBR Ltd.” is fixed on the rim of the BBOBS.

(c) Bathymetry, magnetic, and gravity observations

Bathymetry, magnetic, and gravity data were recorded continuously during the survey by using a multi-narrow beam echo sounder (EM122, Kongsberg), a three-component magnetometer (SFG-1212,

Tiera Technica Ltd.), and a shipboard gravimeter (G-MODEL S-63, LaCoste & Romberg LLC), respectively.

(3) Cruise log

2017/7/24 (Mon)	Departure from Kobe port Transit to the survey area
2017/7/25 (Tue)	Arrival at the Survey area OBS recovery (NK17A1~A4, B1~B4) OBS deployment and calibration (B02, B03)
2017/7/26 (Wed)	OBS deployment and calibration (B00, B01, B04 ~ B08)
2017/7/27 (Thu)	OBS deployment and calibration (B09) Transit to Naha port
2017/7/28 (Fri)	Arrival at Naha port

Table 1. Cruise log of YK17-16C

(4) Research Information

(a) OBS recovery and deployment

We recovered 8 LTOBSs at Hyuga-nada that were deployed in Feb. 2017 by the Earthquake Research Institute, the University of Tokyo. We also deployed 6 LTOBSs and 4 BBOBS off the east coast of Tanega-shima. After the OBS deployment, we calibrated OBS positions. At B05 and B09 sites, we have replaced OBS soon after the first deployment because of unacceptably large tilt of OBS.

OBS	North Latitude		East Longitude		Depth(m)	OBS type & status
	deg	Min	deg	min		
NK17A1	31	2.930	132	6.008	2115	LTOBS, Recovered
NK17A2	31	5.617	132	6.179	1850	LTOBS, Recovered
NK17A3	31	5.561	132	9.313	2238	LTOBS, Recovered
NK17A4	31	2.859	132	9.162	2573	LTOBS, Recovered
NK17B1	31	22.636	132	26.023	2304	LTOBS, Recovered
NK17B2	31	25.313	132	26.711	2500	LTOBS, Recovered
NK17B3	31	24.685	132	29.683	2511	LTOBS, Recovered
NK17B4	31	22.099	132	29.002	2337	LTOBS, Recovered
B00	30	51.516	132	22.025	2843.8	LTOBS, Deployed
B01	30	50.233	131	54.743	1729.9	LTOBS, Deployed
B02	30	41.461	132	12.100	2592.3	BBOBS, Deployed
B03	30	34.463	132	26.805	3227	BBOBS, Deployed
B04	30	36.190	131	47.039	1930.2	LTOBS, Deployed
B05	30	30.585	132	1.038	2836.8	BBOBS, Deployed
B06	30	24.371	132	20.975	3950.9	BBOBS, Deployed
B07	30	22.959	131	39.271	2276.6	LTOBS, Deployed
B08	30	15.221	131	57.777	2824.5	LTOBS, Deployed
B09	30	3.832	132	5.556	3676.5	LTOBS, Deployed

Table 2. List of OBS positions.

(c) Bathymetry, magnetic, and gravity observations

Bathymetry, magnetic and gravity data are recorded throughout this cruise.

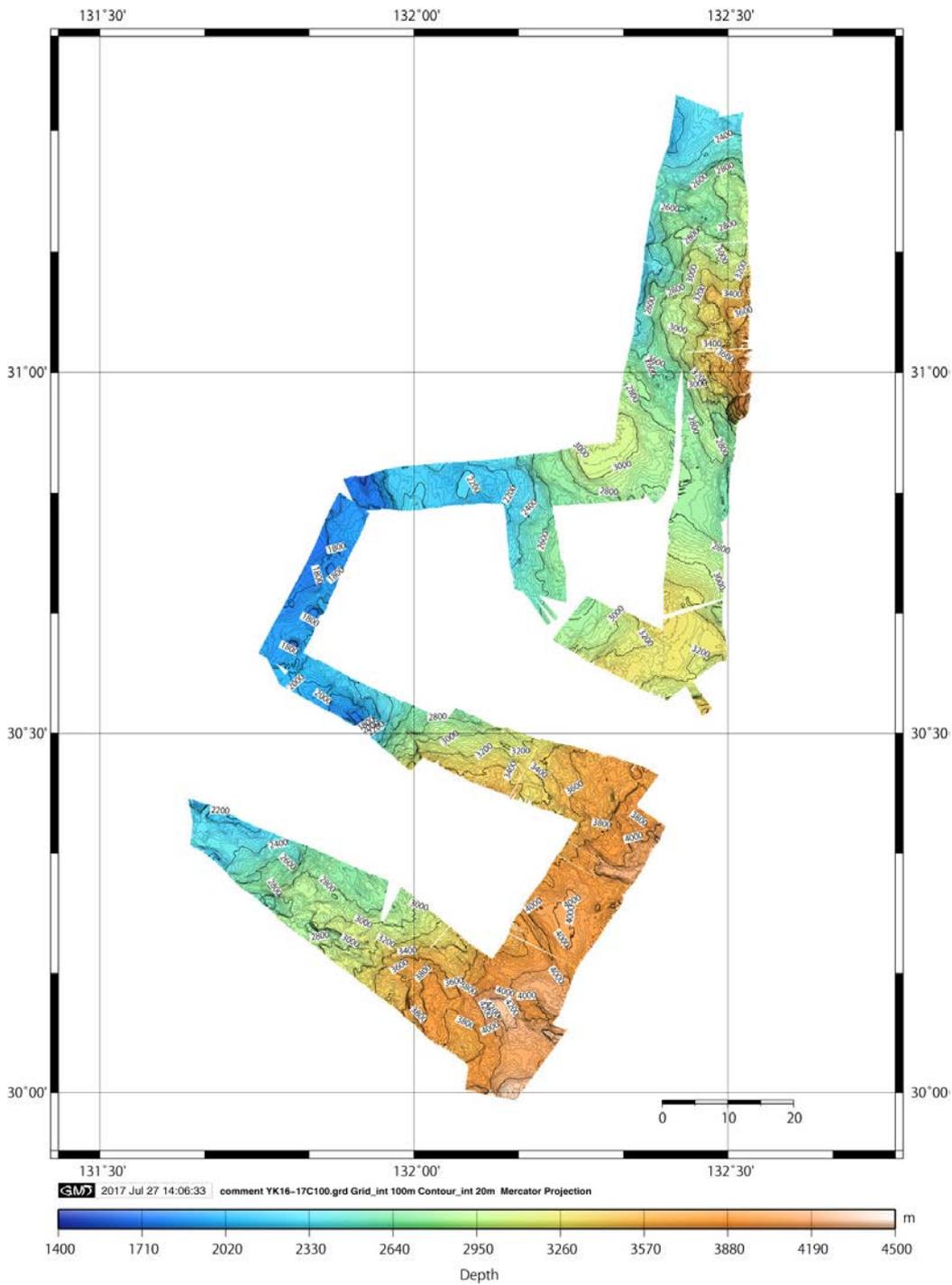


Figure 3. Bathymetry data acquired during YK17-16C cruise

4. Notice on Using

This cruise report is a preliminary documentation as of the end of the cruise.

This report may not be corrected even if changes on contents (i.e. taxonomic classifications) may be found after its publication. This report may also be changed without notice. Data on this cruise report may be raw or unprocessed. If you are going to use or refer to the data written on this report, please ask the Chief Scientists for latest information.

Users of data or results on this cruise report are requested to submit their results to the Data Management Group of JAMSTEC.

Acknowledgement

We thank the captain, Mr. Eiko Ukekura, and the crew of the R/V YOKOSUKA for their efforts in OBS deployment, OBS recovery, and other geophysical data observation. We are grateful to participants of the Research and Development center for Earthquake and Tsunami, Department of Deep Earth Structure and Dynamics Research, and Marine Technology Center in JAMSTEC for their great support in this cruise. This cruise is funded by a program “Research project for compound disaster mitigation on the great earthquakes and tsunamis around the Nankai trough region” which is part of the Special Coordination Funds for Promoting Science and Technology of the Ministry of Education, Culture, Sports, Science, and Technology. We used “The Generic Mapping Tools” by Wessel and Smith (1998) to construct the figures.

References

Wessel P, Smith WHF (1998) New improved version of generic mapping tools released, *Eos Trans. AGU*, 79(47), 579, doi: 10.1029/98EO00426.