Week 1 Drilling and Scientific Report for IODP Expedition 386
Japan Trench Paleoseismology, 2021

20th Apr 00:00 – 26th Apr 24:00 JST Japan Standard Time (UTC+9)

1. Operations

Apr 20th: After completing MBES/SBP survey across the trench, the 1st GPC core of Expedition 386 was conducted with a 20 m barrel string at proposal site JTPS-01A. Care was taken for each work step to confirm procedures, tools and role assignment in detail. The GPC assembly was run into water at 0845 hrs, spud-in/release from Holes M0081 A and B at 1140 hrs with a near faultless tension profile, and recovered to deck by 1445 hrs. Cutting core into 1 m sections was completed by 2030 hrs.

Apr 21st: The 2nd GPC with a 20 m barrel strings was deployed at proposal site JTPS-02A at 0930 hrs. Spud-in and release from Holes M0082 A and B was confirmed at 1217 hrs with a good tension profile. Recovery of GPC assembly was completed by 1520 hrs. Section cutting into 1 m lengths while collecting sediment samples from each section bottom end was completed by 2000 hrs.

Apr 22nd: The 3rd GPC deployment was the first using a 40 m barrel string on this expedition. Preparations for GPC deployment were started during severe ship motion from 0610 hrs, and the decision to proceed with the operation was made at 0710 hrs after confirming sea conditions. The GPC assembly was spudded-in and released from Holes M0081 C and D at 0956 hrs, and run back on deck by 1300 hrs. Due to very rough sea conditions, withdrawing and cutting core were postponed to the next day. The ship evacuated to standby point off Ishinomaki.

Apr 23rd: The ship arrived at the standby point off Ishinomaki by 0830 hrs, and deck crews and GPC operation team started withdrawing and cutting core into 5 m segments while preparing 20 m GPC assembly for the next run. The science party began cutting core into 1 m sections while sampling from 1100 hrs, and completed by 1600 hrs. The ship started sailing to Site JTPC-05A at 1800 hrs.

Apr 24th: After XBT deployment, MBES and SBP site surveys were conducted along a trench axis survey line around JTPC-05A/JTPC-04B from 0545 hrs to 0800 hrs. The 4th GPC operation with a 20 m barrel string was begun at 0800 hrs. The GPC assembly was run into water at 0900 hrs, spudded-in and released from Holes M0083 A and B at 1133 hrs, and recovered to deck by 1430 hrs. Cutting core into 1 m sections while collecting sediment samples from each section bottom was completed by 1600 hrs. After preparations for the next 20 m GPC run were completed, site survey around JTPC-05A/JTPC-04B began at 1945 hrs with MBES/SBP on multiple survey lines.

Apr 25th: All planned survey lines around JTPC-05A/JTPC-04B were completed by 0330 hrs. The ship stood by at JTPC-04B due to strong wind (>15 m/s from 220 deg) and strong surface current (2 knot to 25 deg) at 0600 hrs. Weather forecast predicted wave height to increase under the influence of the strong wind and surface current, therefore the decision was made to move to Site JTPN-09A. The ship reached the site at 1430 hrs and deployed XBT, carried out MBES/SBP along the trench line, and then stood-by at Site JTPN-09A from 1645 hrs.

Apr 26th: Because strong winds blew (>18 m/s) in the morning, the 4th GPC operation using a 20 m barrel string was delayed until 1230 hrs. Sustained strong wind of <14 m/s made maintaining the ship position difficult using auto DPS mode, the Captain engaged manual mode and operations continued. The GPC assembly was run into water at 1320 hrs, spudded-in and released from Holes M0083 A and B at 1602 hrs, and returned to deck at 1840 hrs. Cutting core into 1 m sections was completed by 2100hrs. Preparations of the 20 m GPC assembly for the next run by the deck crew and GPC operation team were completed by 2300 hrs.

2. Hole summary

Site	M0081		M0082		M0081		M0083		M0084	
Latitude	36° 4.336' N		36° 06.050' N		36° 04.287' N		38° 45.413' N		40° 23.726' N	
Longitude	142° 44.14' E		142° 45.508' E		142° 44.126' E		144° 07.755' E		144° 25.328' E	
Water depth (m)	8016		7989		8011		7534		7590	
Date	Apr 20		Apr 21		Apr 22		Apr 24		Apr 26	
Spud-in time	11:40		12:17		09:56		11:33		16:02	
Hole	A	B	A	B	C	D	A	B	A	B
On deck time	14:00	14:45	15:00	15:20	12:20	13:00	13:50	14:30	18:15	18:40
Barrel length (m)	1.5	20	1.5	20	1.5	40	1.5	20	1.5	20
Cored length (m)	1.21	19.89	1.455	18.71	1.07	35.57	1.615	19.52	0.95	19.94
Number of section	2	21	3	9	2	37	3	20	2	21

3. Science

MSCL logging and IW analysis were conducted and completed for cores retrieved from Holes M0081A, B, C and D, M0082 A and B, and M0083 A and B. These preliminary data were sent to the onshore ESO team.

Hydroacoustic surveys were conducted along seven WNW-ESE survey lines at the southernmost Japan Trench basin on the night of 19–20 April. Well-stratified acoustic pattern with several acoustically transparent layers are characteristic features of these sub-bottom profiler records in this basin, similar to the SBP records along previous NNE-SSW survey lines. A few-m thick acoustically transparent layer cover the basin floor. Penetration becomes shallower from >60 m in the central and northern parts of the basin to ~45 m in the southern part, and the strength of each reflector increases in the southern two survey lines, suggesting the occurrence of coarser sediments. Site JTPC-01A is located in the central part of the basin where acoustic penetration is > 60 m.

From night on Apr 24 to early in the morning on Apr 25, hydroacoustic surveys were conducted along four N-S and six E-W lines at the JTC07 basin described by Kioka et al. (2019). Characteristic features of the bathymetry of this basin are a flat basin floor bounded by gentle eastern, and steep western slopes, and terraces to the north and south. At the Site JTPC-05A location the basin is characterized by a stratified acoustic pattern with several thick acoustically transparent layers, while a well-stratified, gently sloping pattern occurs in the terraces at the Site JTPC-04B location. This suggests different depositional process between the basin and terraces. Acoustic penetration is >50 m at sites JTPC-04B and JTPC-05A.

4. HSE Activity

Toolbox meeting before each GPC operation

5. Outreach Activity

Daily tweets on @Fleet_JAMSTEC plus two tweets on @ECORD. JAMSTEC and Science Party staff currently writing blogs for posting at later dates.

6. Figures

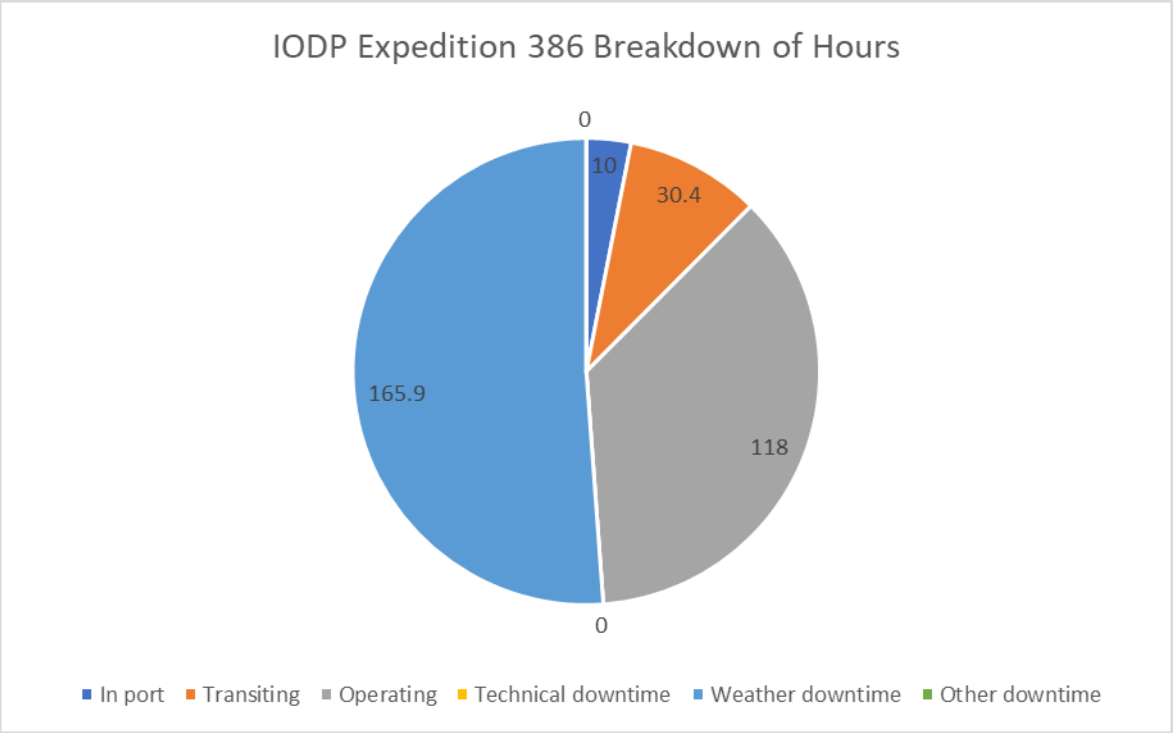

Figure 1: Breakdown of hours from 00:00 April 20rd to April 26th 2021.

		20 m GPC			1st 40 m GPC			2nd 40 m GPC			
Proposal Site	Site	Trigger core (Hole A)	GPC main (Hole B)	Date collected	Trigger core (Hole C)	GPC main (Hole D)	Date collected	Trigger core (Hole E)	GPC main (Hole F)	Date collected	% Recovered vs planned
JTPS-01A	M0081	1.21	19.89	20/04/2021	1.07	35.57	22/04/2021				55.5
JTPS-02A	M0082	1.455	18.71	21/04/2021							31.2
JTPS-05B											0.0
JTPS-06B											0.0
JTPS-07A											0.0
JTPS-09A											0.0
JTPS-10A											0.0
JTPC-01A											0.0
JTPC-02A											0.0
JTPC-03B											0.0
JTPC-04B											0.0
JTPC-05A	M0083	1.615	19.52	24/04/2021							19.5
JTPC-08A											0.0
JTPC-09A											0.0
JTPN-02A											0.0
JTPN-05A											0.0
JTPN-07A											0.0
JTPN-09A	M0084	0.95	19.94	26/04/2021							19.9
JTPN-10A											0.0

Figure 2: Cores recovered for Week 2 (20rd to 26th April 2021).

7. Photographs

1) Co-Chief Ken Ikehara, Offshore EPM Lena Maeda, and Assist Offshore EPM Nori Sakurai: just after spud-in and release (photo by NOkutsu@ECORD/IODP/JAMSTEC)

2) Captain himself operating DPS by manual mode (photo by LMaeda@ECORD/IODP/JAMSTEC)

3) The bottom end of a core after sampling (photo by LMaeda@ECORD/IODP/JAMSTEC)

4) Deck crews recovering Trigger corer (photo by LMaeda@ECORD/IODP/JAMSTEC

5) Scientist Toshiya Kanamatsu collecting IW using Rhizon sampler (photo by NOkutsu@ECORD/IODP/JAMSTEC)

6) Scientist Kana Jitsuno working on BW for microbiological study (photo by NOkutsu@ECORD/IODP/JAMSTEC)