

## Cruise Summary

### 1. Cruise Information

- Cruise ID: NT15-E04
- Name of vessel: Natsushima
- Title of the cruise: Research into the effect of the Tsunami on Tohoku Marine Ecosystems
- Chief scientist [Affiliation]: Yoshihiro Fujiwara (JAMSTEC)
- Representative of the Science Party: Yoshihiro Fujiwara (JAMSTEC)
- Title of proposal: Research into the effect of the Tsunami on Tohoku Marine Ecosystems
- Cruise period: November 9 - 23, 2015
- Ports of departure / arrival: JAMSTEC HQ / JAMSTEC HQ
- Research area: Off Sanriku
- Research map: Shown in Japanese abstract

### 2. Overview of the Observation

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Seven research dives and two test dives were conducted using ROV Crambon at five locations off Sanriku during NT15-E04 cruise from November 9 to 23, 2015. The ROV dive CRB17 was conducted around a depth of 300 m off Minamisanriku for a mapping of benthic organisms, mainly ophiuroids using a bottom mapping camera system. Total number of 4157 photographs was taken around dense aggregation of ophiuroids. The ROV dive CRB18 was conducted around a depth of 300 m off Ohtsuchi for verifying a large acoustic anomaly (ca. 70 m in length) that was discovered using a sidescan sonar in the previous cruise in March 2015. A large, sunken ship was discovered at a depth of 286 m, where many Pacific cods inhabited. The ship seemed to be sunken far before the Tohoku earthquake because of the shape and condition of the ship. Three dives (CRB19, 20 and 22) were conducted at a base of cliff where assemblage of sunken debris was occasionally reported by fishermen after the earthquake at depths between 400 and 500 m off Sendai Bay. Small assemblage of sunken debris was sparsely discovered but the total amount of the debris was almost the same as that of other locations during these dives. The ROV dive CRB21 was

conducted around a depth of 900 m off Kuji for visualizing a massive structure recorded using a PDR by Tohoku National Fisheries Research Institute. A large, sunken ship was discovered at a depth of 882 m, where many rockfish inhabited. The ship seemed to be sunken far before the Tohoku earthquake because of the shape and condition of the ship. Many fishing gears were tangled up with the ship. The ROV dive CRB23 was conducted off Minamisoma at a depth about 300 m to observe the relatively “low fishing-activity” area after the earthquake. Number of Pacific cod seemed larger and the size seemed smaller (younger) than that of the “high fishing-activity” areas. Three-dimensional mosaic mappings of the seafloor were conducted using the stereo camera system.

○ Title of project: Tohoku Ecosystem-Associated Marine Sciences