

## NT14-11\_Cruise Summary

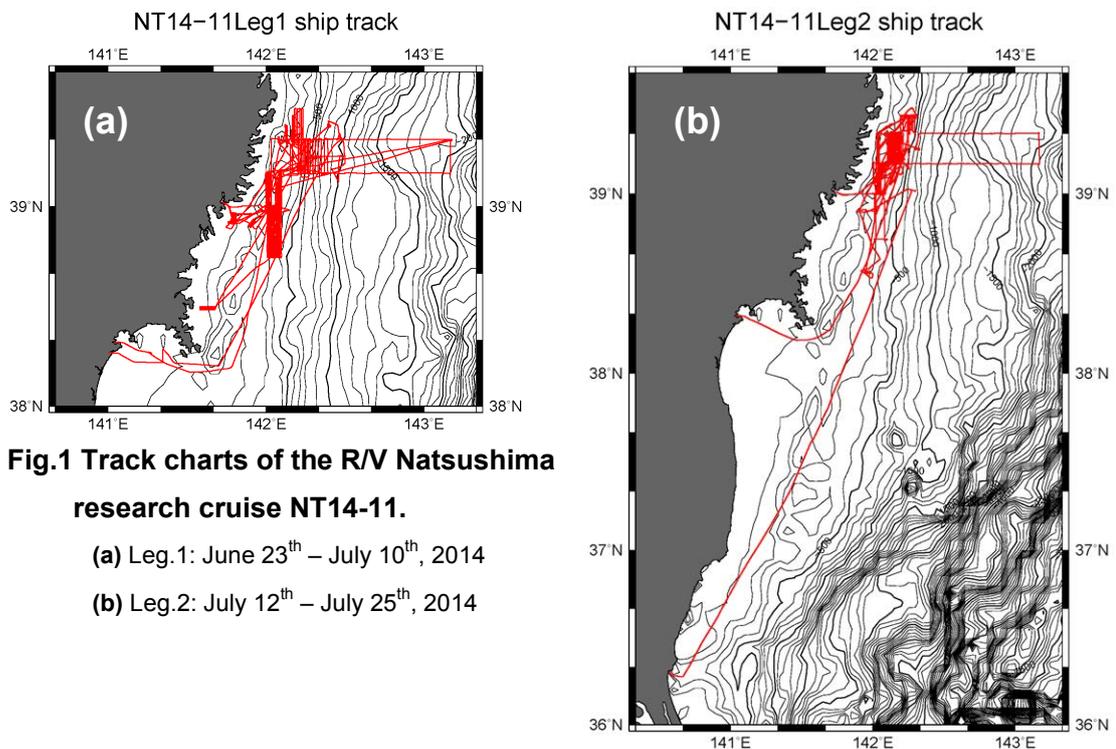
### 1. Cruise Information

- **Cruise ID:** NT14-11 (Leg.1 & Leg.2)
- **Name of vessel:** R/V Natsushima Hyper-Dolphin 3000
- **Title of the cruise:**

Elucidation of the marine ecosystem fluctuation mechanism in the Sanriku offshore area
- **Chief scientist:** Yasuo Furushima [JAMSTEC]
- **Representative of the Science Party:** Yasuo Furushima [JAMSTEC]
- **Title of proposal:**

Elucidation of the marine ecosystem fluctuation mechanism in the Sanriku offshore area
- **Cruise period:** June 23<sup>th</sup>, 2014 - July 25<sup>th</sup>, 2014
  - Leg.1: June 23<sup>th</sup> - July 10<sup>th</sup>, 2014
  - Leg.2: July 12<sup>th</sup> - July 25<sup>th</sup>, 2014
- **Ports of call:**

Sendai Shiogama Port (Miyagi) – Shiogama Port (Miyagi) – Ooarai Port (Ibaraki)
- **Research area:** Sanriku offshore area
- **Research map:**



**Fig.1 Track charts of the R/V Natsushima research cruise NT14-11.**

(a) Leg.1: June 23<sup>th</sup> – July 10<sup>th</sup>, 2014

(b) Leg.2: July 12<sup>th</sup> – July 25<sup>th</sup>, 2014

## 2. Overview of the Observation

### ➤ Overview of the observation

This following survey was conducted during the cruise for the purpose of elucidating marine ecosystem fluctuation mechanisms in off the Sanriku coast as part of "The Tohoku Ecosystem-Associated Marine Sciences (TEAMS) research program".

- Submarine topography survey using multi-beam echo sounder (MBES: Seabat8160) equipped on "Natsushima" and highly precise offshore prospecting using synthetic opening sonar (SAS: synthetic aperture sonar)
- Installation and recovery of the long-term marine environment monitoring system (lander)
- Observation of the target resembling a sunken ship confirmed by a sonar survey last year
- Recovery of a sediment trap
- Marine environment observation (such as a grid survey by XCTD, and monitoring of surface seawater)
- Distribution and movement examination of the fisheries resources organism using Biotracking system (such as the release of organisms which attached pingers, in-situ pinger mounting experiment, and environmental research with the ADCP)
- High-resolution sea bottom 3D mapping examination (SeaXerocks: high altitude 3D mapping, Serpent: high accuracy 3D mapping)
- Sampling of deep-sea organisms, seawater, bottom sediment (core), debris

The general description of the results is as follows.

- An apparatus could confirm the survey using the SAS from on board, therefore highly precise and widespread offshore prospecting was possible even if there was some fishing gear.
- The substance confirmed by a sonar survey was sunken ship. However, the sunken ship was not due to the huge tsunami of 3.11.
- In submarine canyon of the Otsuchi offshore area, we discovered white-colored sediments which spread through several kilometers to the east and west. We are analyzing whether this transmutation of the sea bottom is due to the effects of the earthquake.
- From 3D mapping survey, more detailed information on debris deposition sites were obtained as images.
- Many basic data about movements of animals such as *Chionoecetes opilio* or *Sebastolobus macrochir* were obtained due to Bio tracking system. Moreover, basics

technique to mount pinger to target organisms in in-situ was enabled by using the spear gun.

- The recovery of the sediment trap succeeded, but the 300m lander system was not recovered successfully.

In addition, each researcher are analyzing obtained many samples and marine environment data.

➤ **Title of project**

The Eastern Japan Marine Ecosystems Dynamics Project

(The Tohoku Ecosystem-Associated Marine Sciences (TEAMS) research program)