Cruise Summary

1. Cruise Information

● Cruise ID: NT15-E02

● Name of vessel: Natsushima

● Title of the cruise: Tairiku Project:Geological and Petrological Research on Nishinoshima Volcano, Ogasawara Arc, Japan, by using Deep Ocean Floor Survey System DEEP TOW

● Chief scientist [Affiliation]: Yoshihiko Tamura [ODS, JAMSTEC]

● Representative of the Science Party [Affiliation] : Yoshihiko Tamura [ODS, JAMSTEC]

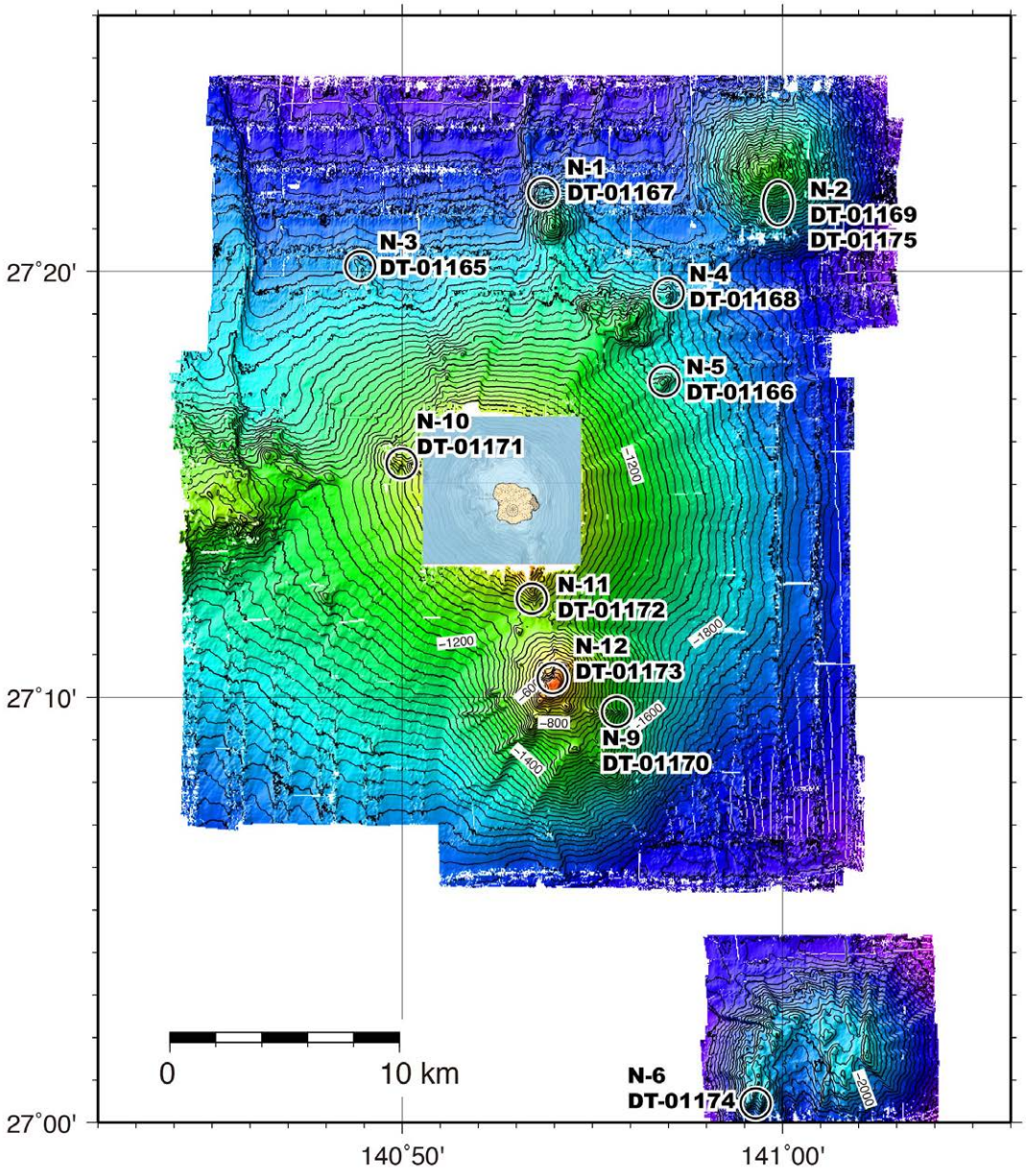
○ Title of proposal: Tairiku Project

● Cruise period: June 11 to June 21, 2015

● Ports of departure / call / arrival: Yokosuka, JAMSTEC/Yokosuka, JAMSTEC

● Research area: Nishinoshima area, Ogasawara arc

○ Research map



2. Overview of the Observation

● Overview of the observation

- Purpose, background

The incentive for this present study is the ongoing explosive eruption of Nishinoshima volcano, located about 1,000 km south of Tokyo and at 27°15' N, 140°52.5' E along the Ogasawara Arc. The current eruption began on November 2013, following 40 years of dormancy, and the eruption has continued for more than a year and a half. The eruption to date (June 2015) has produced ~100 x 10^6 m^3 of lava and has enlarged the island to an area of ~ 2.5 km^2-- about ten times its area before the eruption. Nishinoshima now has east-west and north-south dimensions of 2,000 m and 1,900 m, respectively (Japan Coast Guard, http://www1.kaiho.mlit.go.jp/). It's present island has an elevation of only ~150 m, but its

submarine flanks extend to ocean depths of 2,000-3,000 m, so the great bulk of the volcano is submarine and yet-to-be explored. However, because of the danger posed by its current explosive eruption, scientists are prohibited from sampling the lavas making up the rapidly growing island. Nishinoshima lavas erupted 40 years ago are andesitic and have compositions similar to those of continental crust. With these data as background, why does the Nishinoshima center erupt andesitic magmas?

- Observations, Activities

- Methods, Instruments

A total of 11 dives (DT-01165~DT-01175) were focused on the submarine volcanoes within the Nishinoshima area, Ogasawara arc. Previous work in the Izu-Ogasawara-Mariana arc has shown that small parasitic cones on the flanks of larger volcanoes often yield more primitive lavas than the main edifice. That is certainly true of Nishinoshima, where less differentiated olivine-bearing lavas (basaltic andesite~andesite?) were recovered from their lower flanks. R/V Natsushima also completed Seabat Surveys around the Nishinoshima island.

- Research results

etc.