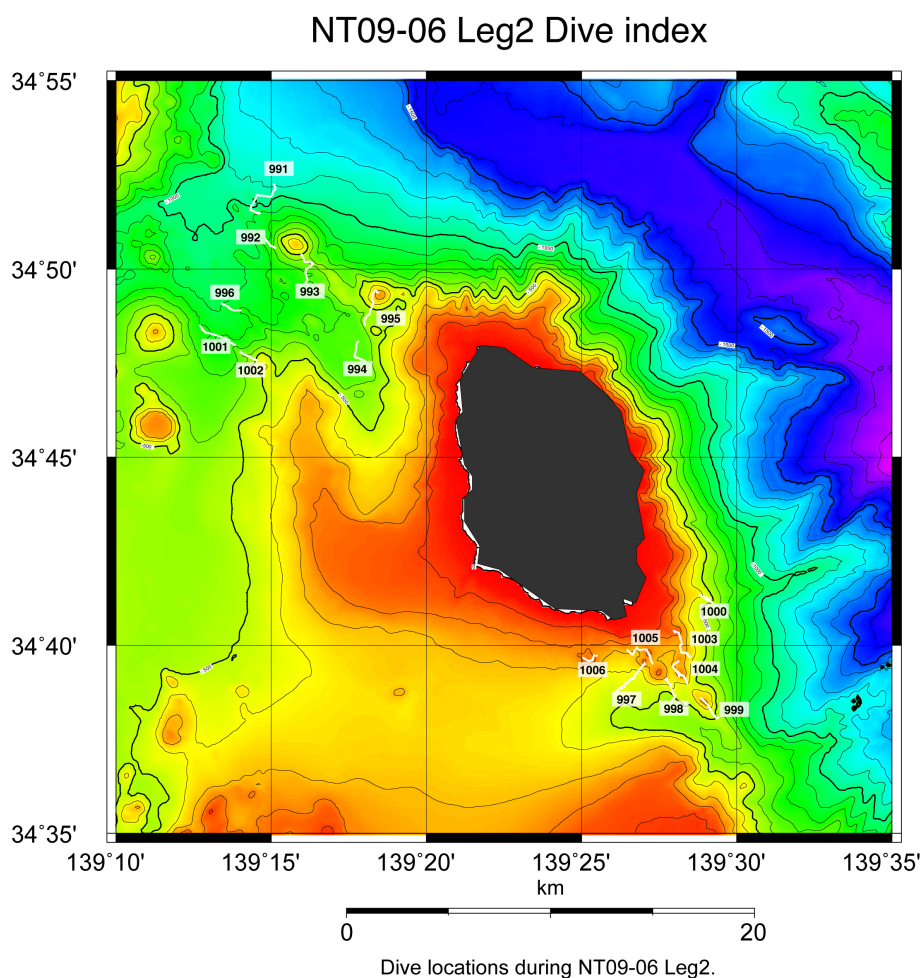
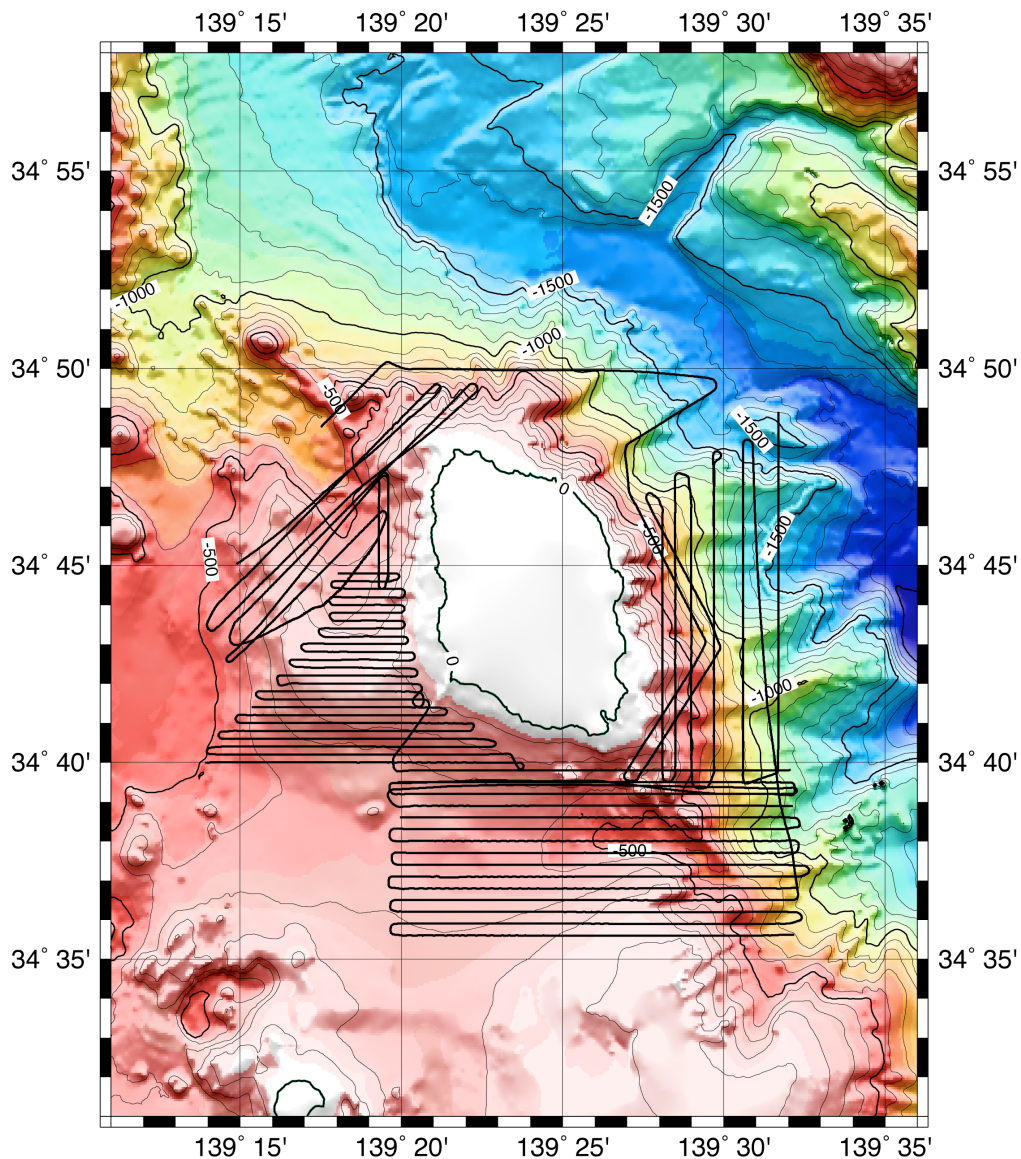


Cruise summary of NT09-06 Leg2

- 1. Cruise Name and ship:** NT09-06 Leg 2: R/V Natsushima
- 2. Title:** Revealing long-distance lateral magma transport within oceanic island arc crust by investigating magma plumbing system of Izu Oshima volcano
- 3. Chief Scientist:** Osamu Ishizuka (Geological Survey of Japan/AIST)
- 4. Representative of Scientific Party:** Osamu Ishizuka (Geological Survey of Japan/AIST)
- 5. Title of Proposal:** Revealing long-distance lateral magma transport within oceanic island arc crust by investigating magma plumbing system of Izu Oshima volcano
- 6. Cruise period:** May 6, 2009 - May 17, 2009.
- 7. Port call:** JAMSTEC to JAMSTEC
- 8. Research area:** Izu-Oshima area
- 9. Research area map:**





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Survey line for bathymetric survey conducted during NT0906 Leg2.

10. Summary of cruise results:

This study is the first attempt to investigate submarine edifices of Izu-Oshima volcano. Final goal of this study is 1) to obtain geological and petrological evidence of long-distance lateral magma transport, 2) to present a comprehensive model for the magma plumbing system of Izu-Oshima volcano incorporating lateral magma transport. Dives of ROV hyperdolphin were designed to: 1) conduct a systematic sampling of (in situ) volcanic effusives from submarine edifices. 2) observe the mode of occurrence of effusives, stratigraphic relationships among the edifices. 3) find structural features such

as faults, fissures, dykes etc. that are indicative of ground deformation possibly caused by injection of magma into crust (i.e., magma transport). 4) determine parameters of structural features (dip, strike, offset etc....).

NT0906 Cruise Leg2 accomplished 16 dives from May 9 to May 16, 2009. Dive areas are 1) NW of Izu-Oshima Island where NW-SE trending ridges and chains of volcanic edifices are distributed. "Higashi-Izu-Oki" monogenetic volcanoes are also present in this area. 2) SE of Izu-Oshima Island where chains of volcanic edifices extending in SE direction from SE termination of the island.

Major findings of diving survey include:

1) NW-SE trending ridges are eruption fissures, which erupted basaltic spatter and lava flows.

2) Basaltic effusives are petrographically similar among each ridge, while there are some noticeable difference among the chains.

3) Basalts from NW-SE trending ridges and chains of volcanoes are petrographically distinct from those from "Higashi-Izu-Oki" monogenetic volcanoes distributed in the same area (i.e., NW of Izu-Oshima).

4) Most of the NW-SE trending ridge has almost no sediment cover, implying that these eruption fissures are very recent. On the other hand, "Higashi-Izu-Oki" monogenetic volcanoes and some of the cones belonging to the Habu Spur have thicker sediment (mainly volcanic sand), implying older age of these edifices.

A bathymetric survey using SEABAT8160 was conducted during the night hours when Hyper Dolphin was not deployed. The survey was planned to complete the SEABAT coverage around Izu-Oshima, filling the major areas where data has not already been collected.

Some of the major findings of this survey are:

1) There are several volcanic ridges extending in NW-SE direction in NW of Izu-Oshima. These are subparallel. Volcanic chains extend as far as 20km from Miharayama volcano of Izu-Oshima.

2) Trend of volcanic ridges in NW of Izu-Oshima is different from that of those in SE of the island.

3) NW-SE trending ridge overlaps with Higashi-Izu-Oki monogenetic volcanoes. The ridges appear to be younger than the monogenetic cones. The size of Higashi-Izu-Oki volcanoes are generally larger than that of those belonging to NW-SE trending ridges.

4) In SE of Izu-Oshima, there are also several volcanic ridges and chains of cones extending in NW-SE direction.