

## Izu-Ogasawara-Mariana Forearc Basin Seismic Reflection Interpretation

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We interpreted a total length of 13,700km of MSC seismic record acquired by JNOC/JOGMEC around the Izu-Ogasawara Arc area during 1978-1979 and 1998-2003. ODP Leg 125/126 data and seabed sampling data are used as control points to correlate seismic horizons to each geologic age. The Izu-Ogasawara forearc basin is about 50km wide in E-W, and extends from Mariana to offshore Boso Peninsula for more than 1000km long. Thick Tertiary sediments with a thickness of 2-3.5 sec Two Way Time, about 2500m to 6000m+, fill the Izu-Ogasawara forearc basin, and subduct at the Sagami Trough. The forearc basin consists of couples of N-S trending horsts and grabens. Horsts are about 5 to 10 km wide, 20-50km N-S long, and consist of Paleogene andesite volcanics. Paleogene sediments fill grabens. Its thickness is 0.5-2sec, max 3sec TWT, about 2000m to 5000m+. The Ohmachi Seamount (20km x 40km, Limestone of 40Ma recovered) is a horst that emerged above seafloor.

We divide the Paleogene into two seismic units. "Lower" unit consists of discontinuous high amplitude reflections, changes its thickness frequently, and interfingers with volcanic high that makes horst. "Upper" unit consists of continuous parallel bedded reflections, develops widely, and fills up horsts and grabens. We interpret the "Lower" unit is mainly composed of relatively coarse volcano-clastics, and the "Upper" unit is composed of normal sediment which is less volcanogenic. We interpret that this basin initiated by the rifting of the Paleo Izu- Ogasawara Arc in Late Eocene, and was filled up during Oligocene and early Miocene.

We divide the Neogene into four seismic units, and correlate their upper boundaries to Lower Miocene top, Upper Miocene top, and Pliocene top. "Lower Miocene" unit is continuous and transparent, and conformably onlaps the "Upper" Paleogene unit. We interpret this unit is mainly composed of fine grained sediment that deposited during a relatively calm period when volcanic activity ceased. The remaining three units deposited under strong influence of Izu-Ogasawara volcanoes. "Upper Miocene" consists of discontinuous high amplitude reflections. Its dip changes frequently and several seismic sequences are observed within the unit. "Upper Miocene" unit should be mainly composed of volcanogenic clastics derived from the Izu-Ogasawara Arc that initiated after the Shikoku Basin opened. "Pliocene" unit unconformably overlies the "Upper Miocene", and is covered by the recent volcano and its equivalent sediments. Sofugan Tectonic line is a fault moved mainly after Pliocene.

This study has been conducted as a part of a Research Project titled "Deep Sea Survey Technologies for Natural Resources in Japan" which is commissioned to JOGMEC by METI (the Ministry of Economy, Trade and Industry).

