SUBMARINE VOLCANOES EAST AND SOUTH OF IZU PENINSULA, CENTRAL JAPAN

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ABSTRACT

More than 50 volcanic centers are recognized as positive topography on the sea floor east and south of Izu Peninsula. Most of them are probably late Quaternary basaltic cones resting on the basement of Miocene submarine volcanic rocks. Recent dredge hauls have revealed that those submarine volcanoes located close to Izu Peninsula belong to the high-Al and/or high alkali basalts while those further south are either low alkali tholeiites or calk-alaki rhyolites associated with high-Al basalts. Submarine volcanoes close to Izu Peninsula are contemporaneous with a group of basaltic (and minor rhyolitic) monogenetic volcanic centers clustered in the central Izu Peninsula, which were active during the last 100,000 years.

The presence of active group of basaltic monogenetic centers along or very close to the volcanic fron is not known elsewhere

in the Japanese islands. They are typically found in the back-arc region away from the front. No clearcut zonal pattern in alkali contents of the lavas is found throughout the area of this monogenetic volcano group, although they range more than 35 km perpendicular to the volcanic front. The geographic distribution of the monogenetic centers coincides with the area of hypocenters of the recent earthquake swarms occurring in and around Izu Peninsula. A model of leaking-out of a high-Al-alkali tholeiitic magma through fractures formed only within the area of active seismicity and crustal deformation seems in harmony with available data.

The southern group of the submarine volcanoes strongly suggests en echelon arrangement of island arc magmatism accompanied with large-scale warping of the crust. Chemical zoning parallel with the volcanic front is broken where calc-alkali rhyolite occurs on the front between Izu-Oshima and Miyake islands, both are of typical low-alkali tholeiite. These complications may be caused by temporal fluctuations of the subduction regime and mode of magma generation.