



Helium Isotopes of Fluids from Submarine Volcanoes in the South-Okinawa Trough

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Many active submarine volcanoes have been found in southern Okinawa Trough. Water column samples from the hydrothermal plumes above venting volcanoes were collected during the OR2-1897 and -1984 cruises. Meanwhile, diving at shallower depths were conducted several times to collect the water samples near the venting sites. In total, 122 water samples from various depths in the offshore area of NE Taiwan were collected for dissolved gases and helium isotopes measurement.

The dissolved gases of water column samples show that the CO_2 concentration and the alkalinity increase with depth and become higher at the bottom, while the result of O_2 concentration shows a reverse pattern. The $^3\text{He}/^4\text{He}$ ratios near the vicinity of active Kueishantao volcano show highest value, up to 5.5 RA, where RA is the atmospheric ratios of 1.39×10^{-6} . The plot of $^3\text{He}/^4\text{He}$ and $^3\text{He}/^{20}\text{Ne}$ ratios suggests that there may be different sources in this region. Furthermore, we will estimate the helium flux from the venting volcanoes in this area.