

Density structures estimated from gravity and airborne gravity gradiometry data in Kuju area, Oita prefecture

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An airborne gravity gradiometry survey was conducted by the Japan Oil, Gas and Metals National Corporation (JOGMEC) in the Kuju volcano and surrounding area, Oita prefecture, Japan. The density structure modeling was conducted using gravity data and the six components (G_{xx} , G_{xy} , G_{xz} , G_{yy} , G_{yz} , and G_{zz}) of airborne gravity gradiometry data. The high-density (2400 -2550 kg/m³) areas were estimated below the middle and late Pleistocene volcanoes in the southern part of the study area at a depth of 0 to 2000 m below sea level. These high-density areas correspond to the distributions of the older Hohi volcanic rocks. Moreover, the high-density areas were detected in the northern area of the Hatchobaru geothermal power plant. These trends agree with the density structures estimated from the gravity data, but the differences can be seen in the shallower depth. It is possible that these differences is caused by the density of the gravity survey points and the spatial resolution between the gravity data and the airborne gravity gradiometry data.

Keywords: Gravity survey, Airborne gravity gradiometry survey, Density structure, Kuju volcano