

ABSTRAK

Pemodelan tiga dimensi kompleks Gunungapi Ibu telah dilakukan untuk mengetahui struktur bawah permukaan dan keberadaan dapur magma Gunungapi Ibu sebagai mitigasi awal gunung meletus. Data yang digunakan merupakan data sekunder yang diperoleh dari website GGMplus 2013. Proses pengolahan data meliputi penentuan densitas batuan daerah penelitian menggunakan metode parsnis, koreksi bouguer untuk menghasilkan Anomali Bouguer Sederhana (ABS), koreksi medan untuk menghasilkan Anomali Bouguer Lengkap (ABL), ABL reduksi ke bidang datar menggunakan pendekatan Deret Taylor dan pemisahan anomali regional dan anomali residual menggunakan metode Uppward Continuation. Anomali residual dilakukan pemodelan tiga dimensi menggunakan software Grablox 1.7 dan software Bloxer 1.6. Kemudian, dilakukan 7 sayatan pada model tiga dimensi dan diinterpretasikan. Hasil penelitian menunjukkan struktur bawah permukaan kompleks Gunungapi Ibu tersusun atas 4 litologi batuan antara lain batuan cair (magma) dengan nilai densitas berkisar antara $1,60 - 1,70 \text{ g/cm}^3$, lava yang tersusun atas andesit sampai basalt dengan nilai densitas berkisar antara $1,85 - 2,20 \text{ g/cm}^3$, breksi andesit dengan nilai densitas berkisar antara $2,35 - 2,90 \text{ g/cm}^3$ serta batu pasir tufaan dan konglomerat berkomponen andesit dan basalt dengan nilai densitas berkisar antara $2,95 - 3,60 \text{ g/cm}^3$. Keberadaan dapur magma Gunungapi Ibu teridentifikasi pada koordinat longitude $347.93 \text{ km} - \text{UTM}$ ($127.6333^\circ \text{ BT}$) dan latitude $165.15 \text{ km} - \text{UTM}$ ($1.493734^\circ \text{ LU}$) wilayah penelitian. Dapur magma memiliki nilai densitas berkisar antara $1,60 - 1,70 \text{ g/cm}^3$ dengan kedalaman antara $800 - 3500 \text{ meter}$ di bawah permukaan.

Kata kunci: anomali gravitasi, pemodelan tiga dimensi, Gunungapi Ibu, dapur magma.

ABSTRACT

Three-dimensional modeling of the Mount Ibu complex has been carried out to determine the subsurface structure and the presence of the Mount Ibu magma chamber as an early mitigation of volcanic eruptions. The data used are secondary data obtained from the GGMplus 2013 website. The data processing process includes determining the rock density of the research area using the parasnis method, bouguer correction to produce Simple Bouguer Anomaly (ABS), field correction to produce Complete Bouguer Anomaly (ABL), ABL reduction to a flat plane using the Taylor series approach and separation of regional anomalies and residual anomalies using the Upward Continuation method. Residual anomalies are modeled in three dimensions using software Grablox 1.7 and software Bloxer 1.6. Then, 7 sections are made on the three-dimensional model and interpreted. The results of the study show that the subsurface structure of the Ibu volcano complex is composed of 4 rock lithologies, including molten rock (magma) with a density value ranging from 1,60 – 1,70 g/cm³, lava composed of andesite to basalt with a density value ranging from 1,85 – 2,20 g/cm³, andesite breccia with a density value ranging from 2,35 – 2,90 g/cm³ and tuffaceous sandstone and conglomerate with andesite and basalt components with a density value ranging from 2,95 – 3,60 g/cm³. The existence of the Ibu volcano magma chamber was identified at the longitude coordinates of 347.93 km – UTM (127.6333° East Longitude) and latitude 165.15 km – UTM (1.493734° N) The research area. The magma chamber has a density value ranging from 1,60 – 1,70 g/cm³ with a depth of between 800 – 3500 meters below the surface.

Keywords:gravitational anomaly, three-dimensional modeling, Ibu volcano, magma chamber.