

Geophysical Modelling of Meteorite Impact: Comparison of Mahsuri Ring Langkawi & Bukit Bunuh, Perak, Malaysia

ABSTRACT

The identification and discovery of meteorite impact structures are based on several observations on the field such as geomorphology, rock textures, mineral deformation, and stratigraphic relations. Based on the aerial photo and image, the geomorphology of Mahsuri Ring (MR) region in Langkawi shows a circular feature that possibly indicates the existence of meteorite impact. Integrated geophysical survey was carried out to image and detect the structure at these two different locations (Mahsuri Ring, MR and Bukit Bunuh, BB). The geophysical survey was carried out with gravity and magnetic method survey covering approximately 10 km² for both case study areas. The geophysical survey also involved resistivity imaging method and seismic refraction methods to acquire subsurface information and image the potential subsurface area. Based on geophysical survey at MR, the results from both magnetic and gravity survey show relatively low anomaly at the center of the survey area which is suspected meteorite impact area. The impact structure has been modelled by using integration of all the geophysical data (magnetic, gravity, resistivity and seismic) which were then used to produce a simple type crater model with a diameter of approximately 1.5 km and a depth of up to 800 meters. While correlation of the integrated geophysical survey in Bukit Bunuh (BB) indicated that the crater has a diameter of approximately 2.5 km with a depth up to 400 m. The interpretation of the subsurface structure in BB area indicates the formation of a complex crater structure. In conclusion, integrated geophysical method shows the possible occurrences of complex impact craters at BB and indicates a simple impact crater structure at MR.