

Improvement of the calculation system of the terrain corrected gravity anomaly using 1m mesh DEM and its application

SAWADA, Akihiro^{1*}, HIRAMATSU, Yoshihiro¹, HAMADA, Masaaki², HONDA, Ryo³

¹College of Science and Engineering, Kanazawa Univ., ²Natural Science and Technology, Kanazawa Univ., ³ISV, Hokkaido Univ.

One of the purposes of the research of gravity anomaly is to obtain information on subsurface structure. The information enables to estimate the basement structure and the location of active faults, so the information of gravity anomaly is the basic one in the field of earth sciences and disaster prevention.

To use the data of gravity anomaly, we have to carry many correction processes. The terrain and the density data are required to correct the gravity data. However if their data include any errors, we cannot obtain the certain information of gravity anomaly. Therefore it is important to use accurate terrain data to obtain precise gravity anomaly data.

Honda and Kono(2005) developed and applied the 50m mesh terrain data that include land area and sea area seamlessly as the terrain data for the terrain correction. Recently the 1m mesh terrain data measured by Airborne Scanning Lidar are available. In the Noto peninsula, the 1m mesh DEM are developed by Hokuriku Electric Power Company. The development of the calculation system of the terrain correction using the 1m mesh DEM improves the accuracy of gravity anomaly distribution, leading better understanding of subsurface structure.

In this study, the main purposes are to improve the terrain correction calculation system with the 1m mesh DEM, and to obtain a higher accuracy distribution of gravity anomaly in the northern Noto peninsula. We compare and consider the difference between existing gravity anomaly distribution and improved one.

Keywords: Gravity anomaly, Terrain correction, 1m mesh DEM, Noto peninsula