

DEM creation using ALOS / PALSAR interferometric SAR and its accuracy evaluation.

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Digital Elevation Model (DEM) is a digital representation of the terrain on the ground surface, with the ground surface divided into equally spaced squares and the elevation of the center point of the square is given. In general, it expresses the surface of the earth that does not include vegetation, buildings, bridges, etc. DEM is often used in geographic information systems and is used as basic data in creating a three-dimensional map on a computer. There are several methods of making DEM, such as parallax measurement that combines optical pictures observed from multiple directions, interference processing of synthetic aperture radar, airborne laser surveying to find height using a laser mounted on an aircraft, etc. In this study We will prepare DEM by Synthetic Aperture Radar (SAR) and study related errors. DEM is created using synthetic aperture radar installed in ALOS and compared with DEM of Geographical Survey Institute. We measured the error, calculated the difference from the theoretical value, and evaluated its effectiveness. As a result, DEM creation by SAR was conducted for Hatoyama cho Higashi-gun (forest, residential area, Tabata), and the difference from the theoretical value occurred several centimeters to several tens of meters, but the average error was 9.94 m Therefore, through this study, we believe that practicality of DEM creation by SAR is sufficient.

Keywords: SAR, Digital Elevation Model