Development of DEM and orthoimage production program from ALOS PRISM, and its pre-launch verification

Izumi KAMIYA
Geographical Survey Institute

Abstract
A program to produce DEM and orthoimage from the PRISM sensor is developed. A calculation of the pixel and line number on the raw images from the ground coordinates needs long time for the PRISM by the used method. The program reduces the computation volume by interpolating the pixel and line number in ground grid space and along ground height axis. The program worked properly using 1.6 m grid test data obtained by the ADS40, which projection geometry is like the PRISM.
Observing control points settled mainly in open sky area, root mean square error was 1.13 m in vertical for the DEM, and 1.30 m in horizontal for the orthoimage. These values represent errors of the DEM and orthoimage production procedure, and pointing error on the orthoimage. Comparing the DEM with DSM obtained by LIDAR measurement, root mean square error of the DEM was 3.59 m in a mixed area of high buildings, low housing, woods, and crop fields. The error corresponds 5.7 m for the PRISM.