AN ACCURACY STUDY OF A DEM GENERATED FROM SPOT

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Abstract

This study analyzes the accuracy of a digital elevation model (DEM) that was created from SPOT stereo pair images. The accuracy of the DEM will be analyzed thoroughly from all aspects. First as a raster image, the overall statistics of the elevation data will be compared with USGS 1:24,000 DEM data. A difference image will also be generated for point to point comparison. Secondly, the elevation of dozens of ground control points and triangulation check points used in image matching and DEM generation will be compared with their elevation values from 1:24,000 USGS quad maps. Thirdly, about a hundred points will be randomly picked from the entire study area and their elevation values will be compared with the quad maps as well as the DEM from USGS. Fourthly, the geographical distribution of error residual and their correlation with slopes, shadows, surrounding landscape and other factors will be studied. Finally, the relationship between image resolution and DEM reliability will be discussed. We chose our study area to be Irish Canyon, Colorado, and we use the ERDAS Digital Ortho Module to extract elevation data from SPOT stereo pair images.