

A Study on The Usability of Digital Elevation Models Obtained From Open Sources in the Production of Contours : Comparison of ALOS and SRTM DEM Data

Serhat Cabuk, Coskun Kiraci, Mustafa Kaya, Mustafa Erdogan and Oktay Eker (Turkey)

Key words: Digital Elevation Model, Contour, ALOS, SRTM

SUMMARY

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Open source digital elevation data is often for geographical applications and map productions because of no cost and easy accessibility. It can be used contour production as well as digital elevation data source. In this study, we discovered about possibility of using contours derived from ALOS (Advanced Land Observing Satellite) 30m, SRTM (Shuttle Radar Topography Mission) 1" (approximately 30m) and 3" (approximately 90m) resolution digital elevation models for 1:50k scale topographic map production. In this context, two different areas with different characteristics are selected. The first area is located in Canakkale that has high elevation differences and mountainous characteristic. The other area is located in Konya that has low elevation differences and plain territory. In the study areas, 200 control points have been identified in the different areas through stereo models created with high resolution aerial photographs. ALOS 30m, SRTM 30m and SRTM 90m resolution DEM data and data derived by applying filters or resampling from DEM data accuracy were analyzed at these control points. It was evaluated on stereo models by producing contours from each DEM data in terms of how it represented the territory. As a result of comparison, it is determined that the dataset which is the lowest standard deviation and RMS values and best represents the topographic structure of the land is ALOS 30m elevation dataset. The RMS of ALOS 30m data in Konya area is 2.35 m. and SRTM 30m is 2.82 m. In the Canakkale area RMS of ALOS 30m data is 2.54 m. and SRTM 30m is 3.95 m. Therefore, it is found that ALOS 30m DEM data gives more accurate results than SRTM DEMs in the study areas where the data generated and produced contours represent topography better.

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FIG Congress 2018

Embracing our smart world where the continents connect: enhancing the geospatial maturity of societies
Istanbul, Turkey, May 6–11, 2018