

ABSTRACT

An Evaluation Of The Accuracy Of Elevation Information Generated By Elevation Models

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Elevation Models provide components which form the base data for many applications in Geographic Information Systems (GIS). Data from elevation models is used in topological processing functions inherent to GIS's, to achieve the efficient handling of spatial and thematic data.

In the past, the accuracy of elevation models was seldom adequately addressed. A comprehensive study of the accuracy of elevation information generated by an elevation model must include the biases associated with the spatial frequency distribution of the terrain, the sampling interval and resolution, the type of data structure, and the source data. The aim of the research is to assess the accuracy of the elevation information obtained from the pc-ARC/INFO and pc-TIN elevation model and to present the issues involved with respect to their particular application.

This research paper presents a comprehensive study of the errors in elevation encountered during the creation of an elevation model. The research involved three major comparisons. Firstly the comparison of elevation data acquired from ground survey, with elevation data extracted from the source map. Secondly, the comparison of elevation data acquired from ground survey, with elevation data derived from digitized contours of source map. Thirdly, the comparison of elevation data extracted from the source map, with elevation data derived from pc-ARC/INFO and pc-TIN elevation model.

The results show that scale of the topographic map used as input data, sampling interval and the interpolation process inherent to the software, influence the accuracy of the information generated by the elevation model. The results also show that the accuracy of the information generated by the elevation model is affected by variations in the terrain and for elevations low elevations the sampling interval and the interpolation process are not as critical to the resulting accuracy as they are in high terrain.