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Comparison of automated watershed characteristics extraction using SRTM DEM data vs. traditional methods.

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Traditional methods for obtaining the physical characteristics of a watershed are based on manual delineation and calculation based upon contours on paper or scanned topographic maps. While giving quite accurate results, this process is very time consuming. Automated methods, on the other hand, are able to achieve similar results in just a fraction of the time needed by traditional methods, provided that an accurate digital terrain model is used as input. As accurate digital terrain models (DTM) are most often hard to come by, even more so in developing countries, the use of available digital elevation models (DEM) with global or near-global coverage presents itself as one possibility. The objective of this paper is to effectively evaluate the derived watershed characteristics using the freely available SRTM (Shuttle Radar Topography Mission) digital elevation model and the TOPAZ (Topographic Parameterization) analysis tool for watershed delineation and drainage network generation. Calculated characteristics include: watershed delineation, watershed area, average watershed slope, watercourse length and watercourse average slope. Over 100 selected watersheds in Serbia have been evaluated, with ranging watershed areas and average watershed slopes. The results show minor differences in obtained results that are insignificant compared to the time and resources saved, which is especially true for larger watersheds. The use of such automated methods enables the hydrologist to spend time and resources on other parameters which influence discharge even more than watershed parameters, such as soil and land use data.