



## **Determination of the hydrological properties of a small-scale catchment area in Northern Greece from ASTER and SRTM DEMs and accuracy assessment with a local DTM**

E.A. Tzanou (1) and G.S. Vergos (2)

(1) Department of Geomatics and Surveying, Faculty of Applied Technology, Technological Educational Institute of Serres, Serres, Greece (etzanou@yahoo.com), (2) Aristotle University of Thessaloniki, Department of Geodesy and Surveying, University Box 440, 54124, Thessaloniki, Greece, (vergos@topo.auth.gr / +30-2310-994366)

The combined use of Geographic Information Systems and recent high-resolution Digital Elevation Models (DEMs) from Remote Sensing imagery offers a unique opportunity to study the hydrological properties of basin and catchment dynamics and derive the hydrological features of specific regions of various spatial scales. Until recently, the availability of global DEMs was restricted to low-resolution and accuracy models, e.g., ETOPO5, ETOPO<sub>2</sub> and GTOPO<sub>30</sub>, compared to local Digital Terrain Models (DTMs) derived from photogrammetric methods and offered usually in the form of topographic maps of various scales. The advent of the SRTM and ASTER missions, offer some new tools and opportunities in order to use their data within a GIS to study the hydrological properties of basins and consequently validate their performance both amongst each other, as well as in terms of the results derived from a local DTM. The present work focuses on the use of the recent SRTM v2 90 m and ASTER v2 30 m DEMs along with the national 500 m DTM generated by the Hellenic Military Geographic Service (HMGS), within a GIS in order to assess their performance in determining the hydrological properties of basins. To this respect, the ArcHydro extension tool of ArcGIS v9.3 and HEC-GeoRAS v4.3 have been exploited to determine the hydrographic data of the basins under study which are located in Northern Greece. The hydrological characteristics refer to stream geometry, curve number, flooding areas, etc. as well as the topographic characteristics of the basin itself, such as aspect, hillshade, slope e.t.c..