

## Effect Of Different Resolution DEM Data Generated By UAVs In Determining Drainage Networks

Mehmet Akif Günen<sup>1\*</sup>, Ümit Haluk Atasever<sup>1</sup>, Talha Taşkanat<sup>1</sup>, Erkan Beşdok<sup>1</sup>

<sup>1</sup>Department of Geomatics Engineering, Erciyes University, Kayseri, Turkey \*(talhataskanat@erciyes.edu.tr)

Email of the corresponding author

\*Corresponding author: akif@erciyes.edu.tr

<sup>+</sup>Speaker: akif@erciyes.edu.tr

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**Abstract** – The rapid increase in the world population and climate change due to industrialization require the preservation and sustainability of existing water resources. The calculation of drainage networks that are directly related to watershed management is very important in predicting the flow of water in natural disasters such as flood. Also, while master plans are being prepared, it is necessary that the residential / workplaces should not be prepared in the direction of water flow and drainage networks used as an input in determining landslide areas. Spatial data including terrain information such as Triangulated Irregular Network (TIN), Digital Line Graphs (DLG) and Digital Elevation Model (DEM) are used to construct drainage networks[1]. DEM can be produced fast, reliable and accurate thanks to Unmanned Aerial Vehicles (UAVs). In this study, direction, length and area of drainage networks were calculated in order to prevent possible flood disaster and to investigate the risk of landslide in the residential area at the Hisarcık/Kayseri. 3D spatial coordinates were obtained by using the Structure From Motion (SfM) method, which is obtained by using camera integrated UAV. The high resolution DEM model produced from the point cloud obtained was resampled to different resolutions (5,10,15,30 m) and the effect of different resolution DEM data on the drainage networks was investigated. As a result of the work done, precise calculation of drainage networks are highly dependent on DEM resolution. It has been shown that high-resolution DEM data should be used for quality of drainage networks.

**Keywords** – Digital Elevation Model (DEM), Unmanned Aerial Vehicles (UAVs), Drainage Network, Watershed