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Determination of the Relationship between Hydrologic Processes and Basin Morphometry – The Lamos Basin (Mersin, Turkey)

Ümit Yıldırım and Cüneyt Güler

Mersin Üniversitesi, Mühendislik Fakültesi, Jeoloji Mühendisliği Bölümü, 33343 Çiftlikköy, Mersin, Turkey (umit.yildirim.1907@gmail.com, cuneytguler@gmail.com)

This study has been carried out to determine the relationship between hydrologic processes and basin morphometry in the Lamos Basin, which is located at the northern part of the Mersin (SE Turkey). The morphometric parameters of the basin was derived from the 1:25K scale topographic map sheets that were digitized using ArcGIS 9.3.1 geographic information system (GIS) software. Morphometric parameters considered in this study include basin area, basin length, basin perimeter length, stream order, stream number, stream length, mean stream length, basin relief, drainage density, stream frequency, drainage texture, bifurcation ratio, form factor, elongation ratio, overland flow length, relief ratio, and hypsometric integral. The results have shown that there are 1252 individual stream reaches with a total length of 1414.1 km in the Lamos basin, which covers an area of 1358 km2 and has a length of 103 km in the N-S direction. Furthermore, the basin has a medium drainage density of 1.04 1/km with a stream frequency and drainage texture values of 0.92 and 4.33, respectively. The basin can be classified as elongated because of the low values of elongation ratio (0.48) and form factor (0.12). The hypsometric integral of the basin (0.58) indicates that it is in the youth period and thus reasonably sensitive to erosion. The values of drainage texture, drainage density, and stream frequency indicate that the Lamos basin is moderately well drained, therefore overland flow in the basin is not expected to be so quick. Thus, in case of occurrence of sudden peak flows, sensitivity to the land sliding and erosion may increase further. As a result, it is suggested that human activities in the basin should be limited in areas in fairly close proximity to the present day stream network to prevent or reduce the risk to life and property.