

Understanding of Soil Erosion Based on Wadies Morphometric Parameter Inconsistencies

Asep Hidayatulloh¹, Jarbou Bahrawi¹, Jaka Budiman¹, and Mohamed Elhag*^{1,2,3}

¹Department of Hydrology and Water Resources Management, Faculty of Meteorology, Environment & Arid Land Agriculture, King Abdulaziz University, Jeddah 21589, Saudi Arabia.

²Institute of Remote Sensing and Digital Earth (RADI), Chinese Academy of Science (CAS), Beijing 100094, China.

³Department of Applied Geosciences, Faculty of Science, German University of Technology in Oman, Muscat 1816, Oman.

*Correspondence: melhag@kau.edu.sa

Abstract

Morphometric parameters are parameter that can used to investigate watershed delineation and other geomorphological studies such as understand the of soil erosion problem. Extract basin parameters was done to evaluate the inconsistencies of morphometric parameters from 2 basins which adjacents to each other, Yalamlam basin and Al-Lith basin in the southeastern part of KSA. Basin delineation with 30 m spatial resolution processed by ArcGIS, NDVI value obtain from remote sensing technique using Landsat-8, and the soil eroison estimation using RUSLE method from natural factor such as errosivity factor, erodibility factor, also C, LS and P factor. The morphometric parameters comparation result shows that Al-Lith basin have high drainage densities, high elongation ratio, more circular basin, and low relief than Yalamlam basin. As landuse and landcover references, the landcover for Al-Lith basin have 2% of alluvium, 73% of Rock, and the 25% vegetation while for the landcover of Yalamlam basin is 41% of alluvium, 54% of rock, and 4% of vegetation. Based on these data, it indicates that Al-Lith basin has a high susceptibility to erosion than Yalamlam. Understanding the soil erosion based on analysis of morhometric parameter inconsistencies can provide useful knowledge about geomorphological studies and hydrological behaviour.