A New Method for Gully Detection on High-Resolution Digital Elevation Models

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This research focuses on detecting exact gully locations on high-resolution terrains using a new method -- Gully Identifying Method (GIM). The high-resolution terrains tested in this study include: (1) a simulated Digital Elevation Model (DEM), and (2) a real DEM produced by airborne LiDAR system. The spatial resolutions of two DEMs are both 1 m. The study area is located at the watershed of Deji Reservoir, Taichung, Taiwan. The GIM is used to test the ability of detecting gullies both on the simulated and real DEMs, and the results are compared to those from the traditional method --Topographic Position Index (TPI). Both results are verified with aerial photographs, remote sensing images, red-relief maps and field inspections. This research shows that the GIM is more advantageous than the TPI in gully detection.

Keywords: Gully-Identifying Method, Topographic Position Index, Gully, LiDAR

