GEOSPATIAL INVESTIGATION OF TORRENTIAL RAINFALL-INDUCED LANDSLIDES ON THE WINDWARD SIDE OF WESTERN GHATS- A CASE STUDY OF KOOTICKAL, KERALA, INDIA

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Abstract

On the windward side of western ghats, the frequency of landslides has significantly increased in recent years. Kerala had catastrophic landslides and floods in 2018, 2019, 2020, and 2021, resulting in the loss of lives and property. In October 2021, a cloudburst occurred in middle Kerala, causing multiple devastating landslides in the districts of Kottayam and Idukki. The study focuses on how the topographic, physical, geological factors, and anthropogenic activities in the windward slope of Western Ghats influence the occurrence of landslides. The landslide susceptibility was analyzed by frequency ratio based on paleoslide locations in the Manimala river basin with special reference to Kootikal. The impact of each factor was analyzed. The findings showed that the torrential rainfall experienced in Kerala and the anthropogenic activities, especially the watershed management work performed in the area, significantly affected landslide susceptibility. About 5% of the manimala river basin is highly susceptible to landslides, and this area comes under Kootikal region. The study recommends a rigorous geophysical assessment of the influence of watershed management operations on a landslide and an EIA of roads in the Kootickal region.

Keywords: *Landslide, Kootickal, Frequency Ratio, Cloud Burst, Watershed Management Works*