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Title:	Human-Induced Mass Movements in Himalayas.
Authors:	Negi, Arun.
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Abstract:	Landslides are a common natural hazard in hilly terrain, impacting the lives and livelihoods of people globally. In recent years, a large number of human-induced changes were occurring all over the globe. In the hilly or mountainous terrain, a significant change in land use land cover (LULC) can be seen in the form of road construction, agricultural fields, and infrastructure development. This expansion led to a huge growth in the landslide concentration within these regions. While extensive research has been conducted on landslides inducing factors, there remains a gap regarding quantitative analysis on the landslides driven by human activities due to limited datasets. This study is focused on the “Anthropogenic Landslides”, that are landslides induced due to human activity in the Himalayan region. A quantitative assessment of landslide occurrences was conducted using high-resolution satellite data from the Planet Dataset and Google Earth Pro, alongside field surveys was carried out in three different river basins (Aasan, Beas, and Alaknanda River Basin). To analyse the landslide concentration within these river basins multiple ring buffer was utilized with the road and building layers. Multiple buffers (50 m, 100 m, 150 m, 250 m, and 300 m) were prepared to monitor the landslide distribution within these regions. A total of 8,838 landslides were mapped in all the river basins and 38.071 km 2 area was affected by these landslides. After the analysis of the data, around 30% of the total landslide were found within the 100 m distance from the road and the building. To verify the results, we used slope unit data along with field surveys. These landslides were induced due to human activities such as slope cutting and building construction in unstable zones. To detect the landslides susceptible areas for mitigation strategies, different machine learning algorithms (LR, DT, RF, and K-NN) were compared. Random Forest (RF) technique was used to prepare the susceptibility map due to its higher accuracy of 87.9%. To prepare the LSM, 14 landslide conditioning factors related to the hydrology, topography, and climate of the region were selected. Additionally, to monitor the environmental impact of the landslides, the SOC level variation was examined from the landslide affected and unaffected areas. For this analysis 20 landslide location within the Alaknanda and Beas River Basin were covered and soil samples were collected. Loss on Ignition (LOI) method was performed. During this process, we ignite the soil sample to 550°C for 3 hours and measure the weight loss. The results showed an average depletion of 53.069% SOC in Beas and 69.179%.in Alaknanda Rive Basin.
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