Soil loss estimation and watershed prioritization for land and water conservation using GIS integrated RUSLE model

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Abstract: Land degradation, which affects over 2.6 billion people in more than 100 nations, has emerged as one of the world's worst problems. Asia has the highest rate of land degradation, with Africa and Europe following. The pace of land degradation in developing countries has increased due to anthropogenic activity and climate change. In India, 105.48 million hectares have been impacted by land. Thus, the main issues from the perspective of land and water conservation are modeling and mapping soil loss and evaluating the vulnerability threat of the current erosional processes in a region. The current work used the GIS-integrated Revised Universal Soil Loss Equation (RUSLE) to conduct rigorous modeling in an effort to assess soil loss from the ungauged Dihing watershed in the Assam state. Priority ranking was calculated for each watershed based on the amount of soil loss within their catchments, allowing for the implementation of suitable conservation measures. The quantitative findings of this study will be helpful in implementing land and water conservation strategies in the soil erosion-prone regions caused by water erosion.

Keywords: GIS, RUSLE, SOIL LOSS, WATERSHED PRIORITIZATION, UNGAUGED WATERSHED