

Estimation of Soil Erosion from a Himalayan Watershed Using GIS Technique

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ABSTRACT

The fragile ecosystem of the Himalayas has been an increasing cause of concern to environmentalists and water resources planners. The steep slopes in the Himalayas along with depleted forest cover, as well as high seismicity have been major factors in soil erosion and sedimentation in river reaches. Prediction of soil erosion is a necessity if adequate provision is to be made in the design of conservation structures to offset the ill effects of sedimentation during their lifetime. In the present study, two different soil erosion models, i.e. the Morgan model and Universal Soil Loss Equation (USLE) model, have been used to estimate soil erosion from a Himalayan watershed. Parameters required for both models were generated using remote sensing and ancillary data in GIS mode. The soil erosion estimated by Morgan model is in the order of $2200 \text{ t km}^{-2} \text{ yr}^{-1}$ and is within the limits reported for this region. The soil erosion estimated by USLE gives a higher rate. Therefore, for the present study the Morgan model gives, for area located in hilly terrain, fairly good results.