Application of Remote Sensing on Spatial-temporal Analysis of Soil Erosion Due to Land Use and Cover Changes: A Case Study in Yongdam Basin, South Korea.

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(a) Purpose of study or research hypothesis

Land use and cover changes (LUCC) have tremendous consequences on ecology and the environment around the world. These changes primarily include soil erosion by water, which is considered the most important geo-environmental hazard. Soil erosion is a widespread problem, particularly in South Korea, where its terrain covers mostly mountainous areas. This study, therefore, aims to determine the effect of LUCC in the Yongdam basin on soil erosion.

(b) Key issue(s) or problem(s) addressed

This study suggests an efficient approach based on Remote Sensing (RS) and Geographic Information System (GIS) obtain the C factor and P factor in the Revised Universal Soil Loss Equation (RUSLE).This study suggests an efficient approach based on Remote Sensing (RS) and Geographic Information System (GIS) obtain the C factor and P factor in the Revised Universal Soil Loss Equation (RUSLE).

(c) Methodology or approach used

There are numerous models for predicting the magnitude of the erosion caused by water. The models range from the empirical USLE (Universal Soil Loss Equation) to physic-based models WEPP (Water Erosion Prediction Project), EUROSEM (European Soil Erosion Model), and SSEM (Surface Soil Erosion Model). Throughout this analysis, the impact of LUCC on spatial-temporal variations of soil loss from 2013 to 2021 was cleared using the RUSLE model. The model, compared with other soil erosion models, has the advantages of including few input requirements and high accuracy. In this study, RS and GIS were employed to implement.

(d) Results or conclusions derived from the project

Given the above, the first objective of this study is to estimate the impact of LUCC on spatio-temporal distribution and to identify characteristics of soil erosion of the Yongdam basin from 2013 to 2021 under urbanization. Estimates are to be made using RS and GIS technologies with free available LANDSAT 8 data from United States Geological Survey (https://earthexplorer.usgs.gov/). Provide decision-makers and planners with the knowledge to take sufficient priority steps for forest and soil protection is the second objective in this study.

(e) Implications of the project relevant to congress themes

The results of this study introduce an effective approach for estimating soil loss annually and the understanding of land use and cover trends toward the environmental problem. This will play an important role in soil conservation management and urban sustainability.The results of this study introduce an effective approach for estimating soil loss annually and the understanding of land use and cover trends toward the environmental problem. This will play an important role in soil conservation management and urban sustainability.

Keywords : *soil erosion; RUSLE; remote sensing, land-use change; Yongdam basin*