Evaluation of Urban area extension influences on erosion/deposition changes in Polsiman watershed, East-North of Tehran by GIS and Remote sensing

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Abstract

Urbanization development is one of the unavoidable problems in incremental countries. It causes many conversions in the physical property of city and its countryside. So that Land cover/use and topography changes make soil absorbency, soil erosion/deposition and water quality changes. Therefore Sedimentation and erosion controlling plans are necessary in Polsiman sub-watershed, one of Latian watershed, east north of Tehran metropolis.

In this research, Unit Stream Power Erosion Deposition (USPED) approach in GIS interface has been used for modeling the pattern of erosion /deposition as a function of land-use/cover changes. The change of land use/cover has been mapped by the use of Landsat-MSS, TM and ETM images acquired in 1977, 1988 and 2000 respectively. Rainfall, runoff and sediment data field observations of the watershed have been used to model the trend of rainfall- runoff, runoff-sediment ratios in the area. Digital terrain models of the area have been produced using the 1:25000 Topographic maps.

Results show urbanization increase had considerable changes in watershed such as soil degradation and vegetation loss. Although rainfall amount was decreased in study period, runoff was increased from first period (1977-1988) to second period (1988-2000).Also erosion/deposition which estimated by USPED model was increased in second period. The final results will demonstrate in this paper