

A NEW ESTIMATION TECHNIQUE FOR SPACIAL PATTERN OF DELIVERY RATE USING GIS/RS

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The water pollution source in the river or lake can be largely divided into point source and non-point source. The point source pollutants are to be made with urban wastewater, industrial wastewater, etc., and they are characterized to be constant flow rate, high concentration, and constant location. So, it is easy to control. But, the non-point source pollutants are widely distributed in the overall watershed surface area and influenced by the land-use patterns. Especially, the non-point source pollutants are distributed in the agricultural area include so many nutrients like nitrogen and phosphorous.

They are related with the hydrologic characteristics like rainfall intensity, duration, and with the geographic characteristics like land-use condition, the slope, the river length, etc. Generally, the non-point source pollutant loading is highly fluctuant, so it is very difficult to control. To establish the effective non-point source management plan, it must be studied the non-point source model to evaluate how the water quality in the river is influenced by the change of the land use pattern..

USLE equation is the popular method to simulate non-point source pollutants, but its application has limitation to the lumped model for long term simulation of soil loss. It cannot be reflected the spatial pattern of sediment. Only constant delivery rate is used to overall watershed. Real delivery rate in the watershed is affected by concentration distance, slope, roughness coefficient and land use pattern.

A trend of delivery ratio has been observed in the recent past. A delivery ratio have often been error to carry out in water quality management. In predominantly rural watersheds of developed countries, delivery error ratio have been attributed to agricultural intensification with respect to land use change and increased fertilizer usage.

This paper presents an approach based on KOMPSAT satellite images and Geographical Information System(GIS) to estimate of delivery ratio using land use data for a watershed at Bochong stream in Geum river system. The land use data were derived from a variety of sources including maps, aerial photographs and remotely-sensed satellite images

A GIS was necessary to store, manipulate and analyze large volumes of land use data, and to carry out land use change analysis. A number of GIS routines were developed to carry out the model computations automatically. Results demonstrated that the model estimates delivery ratio with an acceptable degree of accuracy. The export coefficient model operating in GIS has significant potential for the rapid estimation of delivery ratio

using land use data derived from KOMPSAT satellite images.

In this study, the new evaluation technique of delivery rate was developed using the spatial analysis function of geographical information system (GIS). ArcView is used as GIS software. The land-use pattern can be acquired using remote sensing (RS) technique and GIS.

This technique is directly linked AnnAGNPS with GIS. In this system, the land-use pattern can be acquired using remote sensing technique and GIS.

This system was successfully calibrated, and it can be used to evaluate how the change of land-use pattern influence to the pollutant loading, so it can be used as decision making support system.

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