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# Modelling Nutrients Contributed by Overland Flow from the Krishna River Basin

CHANDRA SEKHAR. M.[1] and SREENIVASLU. D[1]

[1]*Department of Civil Engineering, Water & Environment Division, National Institute of Technology, Warangal - 506 004, INDIA*

Krishna river basin is one of the important region draining three important states of South India. Currently the basin plays a major role in the socio-economic development of the people in the region. The climatological conditions of the basin are characterized by long dry spells during summer and short wet spells during the monsoon and winter season. Monitoring all sources of pollution to assess the loads contributed by these sources is rather difficult/impossible and expansive and subjected to analytical errors. Hence modeling which is relatively cheaper and less time consuming allows for estimation of loadings which otherwise could not be measured. This paper presents the applicability of different models developed for predicting the nutrient loads contributed by overland flow. The discharge - concentration relationships are used to separate base flow contributions and hence, surface loads are assessed. Mass balances between the monitoring stations are useful in estimation of unit area loads (UAL). Regression models developed for prediction of nutrient loads from the river basin represented good applicability. The model predictions are tested using different data sets and the model results are found to be in good agreement with observed values. The unit area loads estimated during the study are similar to those reported in literature. Deviations in some cases are due to variations in meteorology, soil geomorphology, rainfall pattern, land use pattern, agricultural practices, etc,. Nitrogen: Phosphorous ratios are used to find out the nutrient limiting conditions in the river. The results of the study indicated that nutrient contribution is considerable from the overland flow. Hence, it is essential to take up basin wide management plans for controlling nutrient inputs into the rivers. The nutrient application rates, agricultural practices and wastewater treatment are some of the activities which need to be thoroughly monitored and controlled in order to control water quality degradation in the river. The present approach serves as a useful tool to assess nutrient loads in river basins where the availability of data is limited and financing of extensive experimental monitoring water quality programs is difficult.

Keywords: Water quality modeling; Nutrients; Regression models; Unit area loads; River basin management