

Spatially Distributed Model for Soil Loss Vulnerability Assessment in Mekong River Basin

H.T.Thuy*, Giha Lee**, Daeop Lee***, Try Sophal****

.....
Abstract

The Mekong which is one of the world's most significant rivers plays an extremely important role to South East Asia. Lying across six riparian countries including China, Myanmar, Thailand, Laos, Cambodia and Vietnam and being a greatly biological and ecological diversity of fishes, the river supports a huge population who living along Mekong Basin River.

Therefore, much attention has been focused on the giant Mekong Basin River, particularly, the soil erosion and sedimentation problems which rise critical impacts on irrigation, agriculture, navigation, fisheries and aquatic ecosystem.

In fact, there have been many methods to calculate these problems; however, in the case of Mekong, the available data have significant limitations because of large area (about 795 00 km²) and a failure by management agencies to analyze and publish of developing countries in Mekong Basin River.

As a result, the Universal Soil Loss Equation (USLE) model in a GIS (Geographic Information System) framework was applied in this study. The USLE factors contain the rainfall erosivity, soil erodibility, slope length, steepness, crop management and conservation practices which are represented by raster layers in GIS environment.

In the final step, these factors were multiplied together to estimate the soil erosion rate in the study area by using spatial analyst tool in the ArcGIS 10.2 software.

The spatial distribution of soil loss result will be used to support river basin management to find the sustainable management practices by showing the position and amount of soil erosion and sediment load in the dangerous areas during the selected 56- year period from 1952 to 2007.

Keywords : Soil erosion, Sediment, Mekong Basin River, USLE, Sediment transport

* Student Member, Master course, Construction& Disaster Prevention Engineering, Kyungpook National University
(E-mail: hoangthuthuy191990@gmail.com)

** Full Member, Professor, Construction&Disaster Prevention Engineering,
Kyungpook National University (E-mail: leegiha@gmail.com)

*** Full Member. Doctorate Course, Dept. of Construction & Disaster Prevention Eng, Kyungpook National University
(E-mail: hydroeop@gmail.com)

**** Student Member, Master course, Construction& Disaster Prevention Engineering, Kyungpook National University
(E-mail: trysophal001@gmail.com)