

Anusara Intama 2009: Preliminary Test Run of KINEROS 2 Model for Estimating Sediment Yield at Mae Sa Subwatershed, Chiang Mai Province. Master of Science (Watershed and Environmental Management), Major Field: Watershed and Environmental Management, Department of Conservation. Thesis Advisor: Assistant Professor Somnimirt Pukngam, Ph.D. 140 pages.

The main objectives of this research are to estimate sediment yield and to calibrate the accuracy of KINEROS 2 Model. Including, the models was used to predict sediment yield based on landuse policy both Watershed Classification (WSC) and slope class. The data from eleven raingage stations and only one discharge station in Mae Sa subwatershed, Chiang Mai province were collected in 2007. The results of research can be summarized as follows.

The smallest spatial unit that can be analyzed sediment yield when the minimum area as 2.50 percent of total area included all 78 plane elements and only 33 channel elements identifiable in the field. The 14 single storms were selected for estimating sediment yield by using KINEROS 2 Model. This research found that the model can be estimated runoff amount, sediment yield and it's variation, including peak of sediment flow which lower value than observed value. The results from model were found that in early rainy season is the maximum value ranges between 90-600 ton and peak of sediment flow equal to 40-50 kg/s and follow by the end rainy season ranges between 160-500 ton and peak of sediment flow equal to 20-40 kg/s while the minimum value was found in mid rainy season ranges between 80-350 ton and peak of sediment flow equal to 7-10 kg/s. According to the rainfall pattern in Thailand was "rainfall delay" meant that the rainfall in early rainy season and then stops in mid rainy season and fall again in end rainy season. The accuracy of model was about 0.8178 or 81.78 percent.

The results of scenarios based on land use policy conditions shown that the decreasing of sediment yield ranges between 12.65 to 82.90 percent. Especially in case of WSC condition was more decrease than slope class condition. However, land use utilization under slope class condition was more possible than WSC condition due to the increasing of population and the demand in land use utilization. So, land use planning based on slope class was appropriated and maximum efficiency in sediment yield decreasing but soil and water conservation will be needed.

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Thesis Advisor's signature