

## Introduction of proper model of land slide relationship on sediment in GolGol basin system

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### Extended abstract

#### 1- Introduction

Investigating the relationship between landslides in sediment production in watersheds is one of the most important issues in the management of watersheds. The purpose of this research is to introduce a suitable model for the effect of landslide on sediment load in Gol Gol watershed in Ilam province, with the assumption that the linear relationship between the indices of landslide influence on the sediment load of the basin is dominant. Therefore, the data of Flood Basin sedimentation in two observation and annual observation methods were estimated by using the sediment curve within the groups during the 30-year period. Active basin landslides had been identified using satellite imagery and field analysis and had been analyzed using spatial correlation models in the GIS software environment. The results showed that Moran spatial autocorrelation model is the best model and landslide of cluster pattern. After analysis of factors in the overlapping model of indices, the cause of cluster pattern of landslides were introduced marl lithology of Gurpi Formation. The results of quantitative analysis of variables in the statistical software, correlated in one and two-variable regressions, showed a linear relationship between the indicators of landslide on sediment load of the basin, but this correlation in multivariate regressions showed that nonlinear relationship between the indicators of influence Landslide dominates the sediment load in this basin, and the mean slope index of landslides with a coefficient of explanation of 0.997 and landslide area with a coefficient of explanation of 0.870 has the most effect on sediment load in this basin. Of course, the use of this research method can provide better results in future research.

#### 2- Methodology

Assuming that the linear relationship between the landslide indexes is dominant over sediment load of the basin. Flood discharge basin data were analyzed in two observational and annual methods using the sediment curve of the middle classes during the 30-year period. The active lake landslides have been analyzed using spatial correlation model of mooran and this spatial analysis has shown that landslides are of cluster pattern and spatial autocorrelation is related to the indices of landslide and sediment load in the basin. There are several methods for estimating suspended sediment load. In this study, the power relationship between flow discharge and suspended sediment flux, known as depositional curve, is used. The data of water flow and discharge of the Seduce Glommed hydrometric stations were obtained from the regional waters of Ilam province. At first, daily, monthly and annual sedimentation rates were calculated over the entire statistical period. Then, the method of drawing the curve of sediment was used as the middle method. The sediment curve is plotted using statistical data of discharge flow and sediment discharge. The data series for the statistical period were used to plot the sediment yield curve. According to the available hydrometric station data, in which the annual discharge of the

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deposit was recorded simultaneously with the flow rate several times, the sediment curve was plotted on a logarithmic scale.

### 3- Results

The results of 9 active landslides in the basin area are shown as independent variables and sediment as a dependent variable in the mud GOLGOL basin. These data are analyzed in SPSS21 software and the data in the software is bi-dimensional zed to have the same unit to not have the degree of impact under the single domain. In the next step, using regression models are analyzed that step models Stepwise, forward or forward, are the best models for analyzing the correlation of variables. In general, the mean of the correlation of data is significant and in the multivariate (multiple), regression is a non-linear relationship, while if a variable or even two independent variables are analyzed with a dependent variable of the deposition, the linear relationship is shown, so that it cannot be judged, for example, the variable area has a direct relation with the increase or decrease of sediment, but it is necessary to be analyzed in the conditions of the catchment area, and taking into account the other variables that influence the landslide in the sedimentation of this process. Therefore, nonlinear relationship.

### 4- Discussion & Conclusions

The results showed that the cluster pattern of landslides was marl lithology of the Gourpi Formation and the best model was Moran spatial autocorrelation. Correlation in one and two-variable regressions shows a linear relationship between the indices of landslides influence on sediment load of the basin, but correlation in multivariate regression showed that non-linear relationship between the indices of landslide on sediment load in this basin is dominant and The mean slope index of landslides with a coefficient explanation of 0.997 and landslides area with a coefficient of explanation of 0.870 had the most effect on sediment load in this basin.

**Key Words: Sedimentary Load, GOLGOL Basin, Landslide, Indices, Moran Model.**