

The effect of 120 days winds on flood deposits in Sistan region by sediment characteristics analyze

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Extended abstract

1-Introduction

The purpose of this research was evaluating the effect of the 120 -day's winds on flood flow entering deposit to Sistan region. At first, it became clear that flood flow path to Sistan area after the floods and droughts, according to the file work is randomly sampled from the flood deposits accumulated for a period of 3 years. Also, high deposit was measured with filed work in two periods before and after the beginning of 120-days winds. In order to study the graded sediment samples and granulometry, the parameters were determined middle (D50), Mid-average, Kurtosis, Skewness and sorting. For analyzing the winds of the region WRplot view 8 and the harvest sand rose Software were used. In statistics study parameters of graded flood flow deposit entering to Sistan shows that the average particle size of sediment is 88 microns and mainly were fine-grained sediment. By determining the threshold of peak flow deposits, the frequency of prevailing winds and also draw sand rose of stations points of study, data shows that the high cumulative flow of sediment erosion affected by winds of 120 days of Sistan region. As the frequency of winds over speed threshold is 100 percentages to study station. In study of sediments height, the results showed significant differences at 0.01 levels ($p < 0.01$) between the heights average of sediment before and after the beginning of 120 days winds in Sistan region. Therefore, according to analyzing Granulometry of Sediments transported by floods, determined threshold and the capability of carrying particles by local winds as well as field measurements, these deposits are the main resources harvested with starting 120- days winds along with flood flows intering Sistan region each year, eroding and causing a lot of problems in that region.

2- Methodology

In this research we have provided data about the direction of rivers in Afghanistan country watershed. We used accessible images of Google Earth for determining peak flow path in the Sistan area and according to the luck ontinuity of flow in the region, areas that have been affected by flood flow was determined. In the following, it was found rods of Sistan region. After the floods and droughts, during field operations, accumulated flood sediments samples were collected randomly. Also, the sediment level in scale (Sediments transported by floods and depth of drilled by wind sediments carried by wind) of the 14 points were measured. The above steps have been done during each incoming flow to the Sistan region during 3 years (2016-2018). To evaluate the constituent particles of sediment in granulometry, 60 samples were selected and analyzed in Sistan Agricultural, Natural Resources Research and Education Center lab. In the study of granulometry of sediments taken with respect to deposits collected by 20 sieves. The estimation depth of accumulated flood sediments for two stages before and after the 120-day winds flood in summer. Selected by accumulated flood sediments and high measured sediments. In order to study the graded sediment samples and granulometry, parameters were determined middle (D50), Mid-average, Kurtosis, Skewness and sorting. For winds of region analysis, we used WRplot view 8 and the harvest sand rose Software. In statistics study parameters of graded

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flood flow deposit entering to Sistan shows that the average particle size of sediment is 88 microns and mainly were fine-grained sediment.

3- Results

By determining the sediment in granulometry, frequency curve of particle was drawing for each of the study samples. Drawing on sediment size distribution for each sample, the results of the study analysis parameters, were estimated the peak flow of sediment into the Sistan region. Based on the results, the median and mean values of accumulated sediment on the bed river (Sistan River) and Hamon wetland were phi 6.2 and 6.4, respectively. Changes in these parameters are almost identical, but in some areas, the median value is greater than the average value which is due to finer grain particles. The general trend changes two parameters; the mean and median separable in study terms. In the first year, medians index was more than the average value of the samples taken which indicates that the presence of fine particles is more than coarse particles percent (the average size of silt). Whereas in the second year, the average of sediment samples taken increased the size of the fine silt particles coarser grain and reduced the fine silt particles in much finer grain. In the third year, the mean and median values are almost identical and fine silt was deposited as sediment size. The result shows that the tilting parameter values of sediment samples of peak flow was from very good tilting (0.22) until very weak tilting (2.86). Study of parameter values tilting this parameter indicates the rate of change between 0.14-0.76.

4- Discussion & Conclusions

In this study, for the first time has survey graded sediment input peak flow in Sistan. Then determine particle size and analyze the wind of the region, was estimated attrition of the sediments. In examining sediment samples in granulometry, during study period and the overall changes under the influence of mean and median and existence fine and coarse particles was perceptible in the overall trend analysis of these two parameters. Fluctuations in hydrological and hydraulic conditions prevailing in the bed of peak flow to Sistan area includes Sistan and Frahe rivers are determining particle transport in flood deposits. In support of this important Morphometry properties including sorting that reflects that the energy levels in sedimentary environments and energy situation is stable over time shows that the natural sediment sorting peak flow is not formed under the influence of hydraulic and dynamic conditions governing the flow of the river. In the other hand, because the rivers are seasonal and alluvial transmitter rivers transfer flood flows in the Sistan region, decrease the sediments have been sorted turbulent flow conditions along the river and rapid changes in river flow and erosion phenomenon over time. The results showed that sediment in granulometry of sediments transported during peak flow is always fine which has a low threshold velocity and due to the frequency and intensity of wind in the region, this has eroded sediments which effects of like phenomena dust and endangering the health of residents. Therefore, according to the analysis in granulometry of sediments transported by the floods and determined threshold, capability of carrying particles by local winds and field measurement, these deposits are the main sources of harvest starting with 120 days winds.

Key Words: Aggregation, Flood sediments, Sistan, Wind erosion, Erodibility.