Determination of Erosion Severity Using Fargas and BLM Models
Case : Bandre Drainage Basin

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Introduction

Erosion is a process in which soil particles separate from their main bed and move to the other place with the help of a transferor operator where based on the type of transferor operator there will be water, wind and glacier erosion (Refahi, 2000, p.3). Nowadays we rarely can find a region in the ground that is not subjected to the erosion and destruction which the main reason is the population growth and the excessive use of land (Ahmadi, 1999, p.195). Also it is considerable that erosion has two important aspects which include the reduction of the land productivity power and the disturbance of eroded materials (Ghadiri, 1993, p. 3-6). Therefore, the compensation of eroded soil for the nature, especially in the arid regions that the condition is so inadequate for formation of soil, is so hard and long process. So, the residents of these regions must be so careful in the preservation and prevention of erosion, because erosion is naturally so intense in these regions and the possibility of soil forming is so low (Kardovani, 1998, p.7). Thus the recognition of the sensitive regions to the erosion and sedimentation in the various parts of a drainage basin is one of the most critical issues in the prioritizing of the regions for executive works of soil preservation and watershed management.

Research Methodologies

1- Preparing the geological map of form with the scale of 1:100000) that is used in the models and the extraction of basin boundary.

2- Preparing topography map of Sardasht form with the scale of 1:50000 that is used in the models and preparing the map of water way network.

3- Preparing the aerial photographs with the scale of 1:40000 that is used for increasing the resolution of the map of second part and water way network.

4- Fargas model: as it mentioned in the introduction, this method was presented by Fargas and et al in 1997. Fargas model includes only two factors, the rock type erosive and drainage density in every rock unit. The steps of implementation of this model are explained in the full paper.

5- [1]BLM model: this method was presented by the U.S Bureau of Land Management. BLM model includes seven factors; the surface erosion, the litter cover, the rock cover on the surface, the affection of destruction on the surface, the surface rill erosion, the affection of sedimentation due to the water flow and the amplification of gully erosion. The steps of implementation of this model are explained in the full paper.

Conclusion

The identification of the different areas in drainage basin (as a natural planning unit) for occurring the erosion and its severity has been always one of the most important purposes of the natural resources experts. For achieving to this purpose some experimental models have been presented that some of them have high efficiency and others have weaknesses. Fargas and BLM models are used in this research and they are run in Bandre drainage basin in Piranshahr town, West Azerbaijan province with 2840.1 hectares area. Fargas model includes only two factors, the rock type erosive and drainage density in every rock unit, Whereas BLM model includes seven factors; the surface erosion, the litter cover, the rock cover on the surface, the affection of destruction on the surface, the surface rill erosion, the affection of sedimentation due to the water flow and the amplification of gully erosion. The objective of this paper is the handling of these two models in the study area. The results of two models showed that there are two classes of low and moderate erosion in the basin, where in Fargas model 9.72% area of the basin has low erosion and 90.27% has moderate erosion and in BLM model 50.63% area of the basin has low erosion and 49.36% has moderate erosion, therefore 19.206% of the area has a low erosion and 54.64% of the area has moderate erosion, also 73.85% of the study area in Fargas and BLM models has concurrence in the erosion severity.

Keywords : Bandare basin, Model, Severity of erosion, Gully erosion, BLM, Fargas.

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