

studying the effects of land use on soil Erosion with WLC algorithm. Case of study: Agh Laghan Chay basin

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Extended abstract

1- Introduction

Land use includes all types of land uses to meet different human needs. In other words, land use refers to the type of human use of land, and this type of use is related to the value of the land and (its) natural characteristics. To understand and identify, land use changes using satellite data to provide a broad and integrated view of an area, reproducibility, easy access, high accuracy of data obtained and high analytical speed, as well as performing the classification process a suitable way to map land use. It is particularly widespread in geographical areas. These changes include changes in the hydrological system, effects on erosion, changes in soil physical and chemical properties, and vast changes in land surface morphology, so studying land use changes is one of the (necessities). (The) rain study is the cognition of the face of the earth. Identifying timely and precise land use changes is the basis for a better understanding of the relationships and interactions between humans and land resources. Soil erosion is one of the most important soil (in)fertility factors that nowadays is increasing because of poultry manure loss.

2- Methodology

The data needed in this method include topographic maps, land use, hydrological basin, soil, digital elevation model, slope of the area, as the input to the required model. Soil information is one of the most basic data needed for soil erodibility. WLC model requires soil map to scale with different soil physico-chemical properties such as soil texture, soil moisture percentage, hydraulic conductivity, bulk density. 1: 40,000 was prepared and used by Ardebil Province Natural Resources Department. Digital elevation map was prepared using 1: 25000 topographic map of the study area. In this research, using the topographic map of 1: 25000 scale and digital elevation modeling, the slope map of Agh Laghan Chay Watershed was prepared. The lithology map of the study area was prepared using the 1: 100,000 Geological Survey of Iran Geological Survey. In addition, the standardization-criticalization and weighing methods have been used.

3- Results

The results show that in 1990 the overall accuracy was 95% and the kappa coefficient was 0.93, in 2000 the overall accuracy was 90% and the kappa coefficient was 0.97 and in 2018 the overall accuracy was 93% and the kappa coefficient was 0.91. During the years (1990-2000-2018), significant changes are noticeable, most notably the rangelands and the waste land,

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which, due to intensive exploitation, gradually shifts its land to other uses such as residential and agricultural areas, dry land, that have been assigned. Increased area of land use and cropland and agricultural areas in 2000 and 2018, compared to 1990, indicate the degradation of rangelands and the reduction of waste land, which will cause significant changes in the morphological systems of the region, mainly to increase the rate erosion and sedimentation in watersheds, reduction of groundwater recharge, destructive floods and other morphological processes will be due to erosion zoning maps in the study area that in 1990 was very high risk area of 1758/82 hectares. This class of danger per year 2000 and 2018, respectively 08/1912 and 25/1914 hectare is increased and the high class area in 1990, 59/4018, 78/4219 and 31/4481 to ha respectively in 2000 and 2018 is increased. In the erosion map of the years 1990-2000-2018, mainly high-risk and high-risk areas are located in agricultural, orchard and residential land uses; therefore, different land use changes in the area have caused changes in the morphological trends of the area.

4- Discussion & Conclusions

Knowing the ratios of land uses and how they change over time is one of the most important issues in planning and policy making. Soil erosion is a global problem that threatens land-use such as changes in water resources. Land use changes are one of the most important issues in the recent world which causes many changes in land surface systems, including geomorphic systems. Land use is one of the most important factors in soil erosion. The results show more accuracy of object-oriented classification. Studies also show that monitoring land use changes using object-oriented methods yields better results when observing all parameters. In the study of land use changes over the years 1990–2012, the results showed that there were major changes in this period of time and It is related to dense rangelands that, due to intensive exploitation, have gradually devoted their land to other uses, such as residential and agricultural areas, and land use, and wasteland has declined over time and has become land and agricultural land. According to soil erosion zoning maps in the study area of Agh Laghan Chay, In the years (1990-2000-2018), mainly high risk and high risk areas are in land use, agricultural, orchard, vegetation and high risk areas. Comfy and very comfy are located in rangelands and man-made areas. The results also showed that the area of high risk class in the years (1990 - 2000 - 2018) was 11.20, 12.20 and 12.22%, respectively, and the area of high risk class in the years (1990-2000-2018), respectively. The order is 25.59, 26.65 and 28.29, which is increasing like many high-risk classes, due to the increase in residential area. It seems necessary to preserve natural areas, stabilize and legalize land use, erosion control and soil and water conservation practices in the context of high erosion potentials, within the framework of other conservation schemes. Get it. Civilians and governmental and non-governmental organizations in the region can manage and monitor land use changes.

Key Words: Object Oriented Classification - Land Use - Landsat Pictures - Soil Erosion - Ag Laghan Chay.