



University of Zabol

Faculty of Water and Soil

Department of Range and Watershed Management

**The Thesis Submitted for the Degree of M. Sc  
In the field of Watershed Management**

**Evaluation of Land Use Changes Using Remote Sensing and GIS  
Data in Hooshak Watershed of Saravan city**

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## **Abstract**

Land use is often transformed by human activities. Identifying and investigating these changes can help managers and planners identify and utilize effective land use and land cover factors at different levels of planning. The purpose of this study was to investigate land use changes using remote sensing technique and to determine land use classes in Hooshak watershed of Saravan city in Sistan and Baluchestan province. For this purpose, after determining the boundary of the study area using 1:50000 maps, land use changes in the studied watershed were done using multi-time remote sensing data. Because of its good resolution and high antiquity and short time interval and easier detection of terrain effects, Landsat satellite images were used. After geometrical, radiometric and atmospheric correction, land use classification on satellite images was determined for the time periods studied. In the next step, land use changes were compared between study periods (2001-2019). Finally, the resulting maps were compared in ArcGIS software. Based on the results, overall accuracy of land use maps for the years 2001 (97.45%) and year 2019 (98.04) is relatively good. The results also showed that residential areas have changed significantly in the time periods studied. In addition, the comparison of the maps shows the decreasing trend of the rivers in the study area. However, the area of agricultural land, residential areas and mountainous rangelands has been increasing during the statistical period (2001-2019). Most of the changes were related to mountain ranges, the main cause of which can be attributed to climate change and human interference. According to the results, the importance of planning the implementation of appropriate management plans to improve the watershed status and improve the livelihoods of the people of the region is becoming increasingly evident.

**Keywords:** Land use, Watershed, Satellite imagery, Remote sensin