

## Evaluation of soil erosion and sediment yield using Mpsiac model and GIS in the Eshghabad-Sule watershed (SW of Quchan)

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### Abstract

Soil erosion and sediment yield is one of the main environmental problems in watersheds of Iran. The purpose of this study is using Mpsiac model and GIS to minimize the probable errors in soil erosion evaluation and sediment yield in the Eshghabad-Sule watershed. This area is located in the southwest of Quchan, and it has 81.365 km<sup>2</sup> area and possesses an elongate form. This basin is located in the Binaloud structural zone, and has relatively thick sequence of volcanic and sedimentary rocks. Data layers of Mpsiac model are comprised of nine effective factors in erosion and sediment yield in the watershed that were obtained by digitalizing and classifying the basic information data in GIS program. The final erosion map was obtained from all information layers. The results of Mpsiac model indicate that 46.79% (3807.1751hec) was classified at IV class with high sedimentation and 53.2% (4329.3249 hec) was classified at class III of erosion category with medium sedimentation. The mean sediment yield was calculated as 5.04 and 2.844 ton/hect by mpsiac model, respectively. The comparison of mean sediment in this watershed with mean data from the nearest hydrometry station gives acceptable results using Mpsiac method.

**Keywords:** Erosion, Sediment yield, GIS, Mpsiac