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# Assessment of Soil Loss Using WEPP Model and Geographical Information System

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## Abstract

Severe soil erosion has generally been regarded as a major cause of land degradation in arid and semi arid regions. A quantitative assessment of soil loss intensity is still scanty for developing appropriate soil erosion control measures in these regions. This article used the combined Water Erosion Prediction Project (WEPP) and Geographic Information System (GIS) models to estimate the average soil loss in the Halahijan watershed in Khuzestan Province, one of the priority areas for soil erosion control in Iran. Also, the sediment yield estimated by the WEPP was compared with

that estimated by Modified Pacific Southwest Interagency Committee (MPSIAC) model. The MPSIAC model is used to estimate erosion yield and erosion intensity using nine factors consisting of, geological characteristics, soil, climate, runoff, topography, vegetation cover, land use and present soil erosion. Results indicated that the soil loss estimated by the WEPP model ranged from 15.10 to 28.20 Mg ha<sup>-1</sup> yr<sup>-1</sup> with an average soil loss of 21.8 Mg ha<sup>-1</sup> yr<sup>-1</sup> in the study area. The soil loss estimated by WEPP model was highly correlated with data estimated by MPSIAC ( $R^2 = 0.97$ ). The soil erosion in this region can be attributed to rainfall intensity (which ranged from 16 to 88 mm hr<sup>-1</sup>), and high surface runoff (which ranged from 48562 to 80963 m<sup>3</sup>). Results also revealed that the WEPP model is suitable for estimating soil loss in complex watersheds.

## Keywords

Modeling, WEPP, GIS, Soil erosion, Watershed

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