Presentation regional model to desertification hazard zonation (Case study: southern slopes of Alborz Mountainin the Guilan province).

Abstract

Desertification is the consequence of a series of important processes which two factors of climate changes and human activities are the most important ones. Several methods for estimating the intensity and mapping of desertification in the world, each of which has been restricted to certain areas of deficiencies and other factors. In this study by ESAs method were used to evaluate the severity of desertification. ESAs has more advantageous than other methods because of its accuracy, particular weighing of layers, use of geographical information systems in overlaying of maps, use of geometric mean instead of arithmetic mean of desertification additional benefits of the methods with the other. In the present study, using multivariate regression model was used to estimate the ESAs. ESAs index as the dependent variable and factors of climate, vegetation and soil were considered as independent variables using stepwise method linear models through regression relationship between these factors and indicators of desertification ESAs presented. The results of the statistical analysis suggests that the average annual precipitation has the greatest impact are at risk of desertification. To assess the statistical measure of root mean square error and coefficient of performance of the Nash - Sutcliffe was used. The results showed that the models performance was very good and stepwise regression has accurate results regression. Also, the RMSE and E range criteria were changed between 0.22 to 0.24 and 0 to 0.43, respectively. After validating the model, the model of digital layers in GIS environment and using the capabilities of GIS, the models used in large-scale desertification hazard zonation map were developed and implemented.

Keywords: Desertification, ESAs model, Multivariate Regression, GIS, hazard zonation map.

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