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Assessment of Desertification (Extreme Natural Events) in Iran by ANN & IMDPA Model

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Desertification and climate change are two important factors in the arid ecosystems. More than a billion people in the world are threatening by Desertification as an Extreme Natural Events. Desertification and land degradation, are caused leading to instability and the formation of desert in arid and semi-arid lands.Many environmental and non-environmental factors are involved in this process.There are a lot of Evaluation indicators of desertification in different models and different levels.The important model of desertification evaluation include: IMDPA (Iranian Model of Desertification Potential Assessment), FAO-UNEP, LADA, (Land Degradation Assessment in Dry lands) MEDALUS, GLASOD and so forth which can be in the form of DPSIR (Driving forces, Pressure, State, Impact and Responses) studied. In the land degradation (LD) or reduced production, as well as the concepts and indicators of desertification would be used. Artificial Neural Networks (ANN), concept for the processing of information that is inspired by biological nervous systems, such as the brain, to process information.The neural network formed from number of node or single cell or neuron, which input set, is connected to the output.The ability of neural networks is to obtain meaning from complicated or imprecise data.The benefits of adaptive neural network learning, self-organizing, performing calculations in parallel, without interrupting fault tolerance and disadvantages of the absence of specific instructions to design for a specific application and the size of the training set is dependent on the accuracy of results.The main objective of this research is determine of environmental factors for the instability of the land in the study area, with environmental index of desertification and the use of artificial neural networks and genetic algorithms, and to determine the weights of each environmental indicators of desertification, optimization of environmental indicator of desertification potential by genetic algorithms.