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Potential changes in plant species place distribution induced by climatic pattern changes

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The work is presenting results of a GIS analyses to derivate habitat requirements of specific species that were taken into account and to predict changes in their distribution as a function of temperature and precipitation dynamics. The studied area is the Eastern side of Romania that includes Dobrogea and Moldova regions in order to have an extended area on the North-South direction. On this extended area the values of the chosen climatic variables may be different from North to South. The data used in this paper consists in gridded data for mean temperature (MeanT), maximum temperature (MaxT) and minimum temperature (MinT) and also annual precipitation amount. The grid is constructed at 0.1 degree regular latitude-longitude for the period 1961-2013 used in the analyses. The results show distribution graphs of specific plant species depending by their characteristics for each cell of the grid in the maps of characteristics temperatures and precipitation for each cell in studied area and average temperatures preferred by selected plant species. Combining data on "evolution" of the average (mean, maximum and minimum) temperatures and also with data regarding the average temperature preference of each species taken into account from the same studied area it may suggest that ascending trend of temperatures amplitude may exceed species tolerance. Thus the positive (increasing) trend will be in that way that can result in a threat on some species in the future. In a normal and gradually change (in natural conditions) of the climatic parameters the adapted species will disappear from a place and appear to another. This will be seen as a movement of their habitats. This could be a way of changes in a climatic changing world.

Biography

Marian Mierla has completed his PhD from "Alexandru Ioan Cuza" University. He works as scientific researcher within the Informational System and Geomatics Department. He has published more than 28 papers in reputed journals. His research work is related with the geographical information system analysis of environmental issues and elements in order to obtain more unrevealed information. He has 14 years of experience working with geospatial data. He has been actively involved in a number of large European research projects sponsored by the European Commission Directorate-General for Research and Innovation.

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