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Reclassification of Climate Regions By Using Discriminant Analysis

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Classification of climate regions can be made by considering both precipitation and temperature. According to earlier studies, Turkey has been divided into seven main regions with respect to the precipitation regimes. In this study, annual precipitation and mean temperature values of seven observation stations which include the period of 1963-2013 were used. Stations were selected from each region randomly. Discriminant analysis was used in order to reclassify these selected stations. The method requires one categoric dependent variable and more than two metric independent variables. The most important assumption that there should not be any relationship between independent variables was confirmed by analyzing covariance matrices in the study. Whether there is a significant difference between precipitation and temperature values or not was determined. Selected stations were classified from two to seven groups. According to test results, it was clearly seen that precipitation is more explanatory than temperature. Classification results presented a high success for each step of reclassification. The correct classification ratio located between 71,6% and 100% for two-grouped samples. The percentages of correct classification were above 60% for all three, four, five and six-grouped samples. The ratio of correct classification for seven-group sample was identified as 76,5%. Compared with the random classification probability, it was obvious that predicted classification results were quite successful for all group samples. The results will be very helpful for classification of new observations in the future.

Keywords: Classification, Turkey, precipitation, temperature, discriminant analysis.