Assessing Changes in Patterns of Spatial Autocorrelation of Maximum Temperature of Iran

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Extended Abstract

Introduction

Temperature is one of the important elements of weather, resulting in part from solar energy absorbed by the effects of the Earth's surface and is converted to thermal energy. Maximum temperatures in the hot period of the year, especially in the hours after the city, should be given more attention. Analyzing the maximum temperature can also be normal evaluation mechanism to evaluate changes and track climate change. This study aimed to identify the spatio-temporal patterns and determine the maximum monthly patches of country, so the main focus of the maximum temperature will be identified.

Research Methodology

The common statistics and homogeneous 125 synoptic stations with a common statistic period of 30 years (2010-1980) is used, then the station data using kriging interpolation software in the area of data with ArcGIS 10.2.2 of cells to dimensions 15 × 15 km was extended. In this study for investigation of the spatial structure of cells, maximum temperature coefficient of dispersion country is evaluated. As well as for investigation the pattern of the maximum temperature of Iran, the new methods of spatial statistics, spatial autocorrelation (Moran World) and cluster analysis Clusters and Outlier, shot spots to study the temporal and spatial patterns and changes in the maximum temperature is used.

Results and discussion

The results showed that the highest maximum temperature of spatial anomalies in January, February and March has happened. The result of Moran World trend proves it that changes within a year of maximum temperatures of Iran followed the cluster model and on the bases of output of statistics follows the pattern of clustering of Iran with the maximum temperatures happened in March with the amount of 0/973876. Reviews of the structure's temperature using clusters and outlier showed that in the cold months decrease maximum temperature uniformity and homogeneity in the hot summer months the maximum temperature will increase. In the meantime, based on hot spots, the maximum temperature in the coastal shores of the Caspian Sea, parts of the West and North West and North East of the country has negative spatial autocorrelation (clusters of low value) and part of the central region as well as parts the South East and central regions has positive spatial autocorrelation (clusters with high-value, respectively).

Conclusion

Based on the analysis of spatial autocorrelation, spatial autocorrelation negative areas every 12 months relates on parts of the North West, North East and the Zagros bar. Areas with positive spatial autocorrelation often located on South coast of Persian Gulf and Oman respectively. Every 12 months, the upper area of the country has no significant pattern of spatial autocorrelation. Spatial analysis showed that the maximum temperature patterns of the two spots for the maximum temperature of in the form of an island faced the South East, South, South-West and Central Iran. Low cluster areas mostly based on Zagras bar area, North West, North East and the North Coast. These areas formed the core of certain areas of the country's hot and cold. The results showed that

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latitude and altitude of the country is evident in the distribution of the maximum temperature. Results of this study with some of the previous findings in which the country's maximum temperatures were examined (Alijani, 2008: 50-64; Masoudian and kavyani, 2008: 53-66; Mojarad and Bastami, 2014: 129-152) have conformity.

Keywords: maximum temperatures, global Moran, hot spot analysis, spatial autocorrelation, Iran.

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