

Characteristics of climatic variation from the perspective of “the Silk Road Economic Belt”

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Abstract

The variance tendency of climatic and spatial-temporal equilibrium characteristics of major cities along the SREB were systematically described through moving mean method, Kriging interpolation method, Bernaola-Galvan algorithm and correlation analysis based on monthly scale data of global weather stations released by the National Climatic Data Center website since 1951. Some conclusions cloud be drawn: (1) The precipitation showed a downward trend in other districts with significant seasonal differences except the Europe. The annual precipitation was “N” type distribution in Central Asia, while showed an “inverted V” and a “positive V” distribution in the East Asia and West Asia respectively, and the precipitation change was relatively gentle in Europe. The dominant factors affecting climate were different in different districts. (2) The temperature continued to increase in all districts and the seasonal temperature presented unimodal distribution, the alternation of drying and wetting was obvious in each districts as well as the temperature was complex and changeable in Europe. (3) The mutation point of temperature was detected by using Bernaola-Galvan algorithm in all districts, but the timing of the mutation was not synchronous and the mutation point of precipitation was not detected except in Europe. (4) The precipitation was decreasing from west to east in space, and the temperature showed the morphological distribution characteristics of of low in the middle but high on both sides. (5) The change of temperature were more sensitive than precipitation, the precipitation in Central Asia was inversely correlated with other districts, however, there was a high positive correlation between temperature in all districts. The inversely correlation between temperature and precipitation was the most significant in Central Asia.

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