湖北省器测时期温度变化的区域差异及其对农作物产量的影响分析

摘要

近半个世纪以来，地球气候系统正在经历着一次以全球变暖为主要特征的显著变化，引起了社会各界的广泛关注。全球温度变暖的趋势越来越严峻，以至于成为了各国政府社会各界甚至普通大众都关心的问题。而对于不同地区来说，地理地貌不同，其对这种气候变化的反应速率也不一样，所以分析一些不同区域的气温变化特征对我们掌握全球气候变化规律可以提供重要帮助。

湖北省是中国国内少数地势多样化较高，农作物种类多，人口基数大的省份，地处中国东西和南北气候的过渡带，山区面积广大，且相应农业生产也具有水平和垂直过渡性，这种农业类型对气候的变化十分敏感。湖北省各个市区的平均气温差异较大，研究不同地区温度变化的速率与差异及其对农作物产量的影响，就可以做到对土地和农田资源的合理安排分配，为湖北省各地区农业的高产量和高发展提供依据。

本文以湖北省 8 个国家级气象站点在器测时期（1961~2002 年）这 42 年期间的逐日气温和 6 种主要农作物的年产量数据资料为基础，系统地分析了器测时期湖北省年平均气温变化的主要特征，并就其成因做有关探讨，根据湖北省 8 个气象站点 1961~2002 年逐日气温资料分别计算了 1961~2002 年这 42 年的年平均气温、冬季(12 月~次年 2 月)平均气温和夏季(6 月~8 月)平均气温并将其绘制折线图，分析了湖北省气温的时间分布特征，并在 SPSS 软件中进行了主要农作物产量与年月平均温度的线性相关分析，得出的结论如下：

1．湖北省器测时期的冬季、夏季和年平均气温变化起伏的分布形势与趋势基本一致，其中，年平均气温波动较小。但呈现着逐年上升的趋势；夏季平均气温逐年变化不大，在其平均值 26.8℃上下浮动；冬季平均气温整体上呈降低趋势，其速率为 0.3℃/10a；

2．所研究的 6 种农作物在器测时期间的年产量整体上呈现出逐年增长的趋势;

3．由于本次研究所获得的资料较少，相关的因素无法控制得当，导致农作物年产量与年月平均温度之间的决定系数在 0.4 至 0.6 之间，即主要农作物的年产量在一半程度在可由温度决定。

关键词：湖北省；器测时期；温度；农作物；相关性

Abstract

For nearly half a century, the Earth's climate system has undergone a significant change characterized by global warming, which has aroused widespread concern in all walks of life. As the global warming trend intensifies, climate change has become a common concern of governments and the general public. Different regions have different responses to global climate change, so it is of great practical significance to study the characteristics of regional temperature changes.

Hubei Province is one of the few provinces in China with a high diversification of land, alarge variety of crops and a large population base. It is located in the transition zone between China's east, west and north-south climates. The mountainous area is large and the corresponding agricultural production also has horizontal and vertical

transitional
characteristics. The type of agriculture is very sensitive to climate change.
There are many types of landforms in Hubei Province, and the temperature difference is quite different.Understanding the temporal and spatial characteristics of temperature changes in different regions and the correlation of crop yields is conducive to the rational distribution of land resources and the sustainable economic and agricultural development in various regions of Hubei Province. Development provides protection.

This paper systematically analyzes the instrumental measurement period in Hubei Province based on the daily temperature of the eight national meteorological stations in HubeiProvince during the 42-year period (1961-
2002) and the annual output data of sixmajor crops.The main characteristics of the annu al average temperature change, and related to the cause ofthe discussion, according to the monthly weather data of 8
meteorological stations in Hubei Province from 1961 to 2002, the annual average temperature of the 42 years from 1961 to 2002, winter (12 The average temperature of the month and the summer (February to August) and the average temperature of the summer (June to August) are plotted and plotted. The time distribution characteristics of the temperature in Hubei Province are analyzed, and the main crop yields and years are carried out in the SPSS software. The linear correlation analysis of the average temperature gives the following conclusions:

1. The distribution of winter, summer and annual average temperatures in the instrumental measurement period in Hubei Province is basically the same, and the annual average temperature fluctuation is small. However, it shows a trend of increasing year by year; the average temperature in summer does not change much year by year, and it fluctuates at an average value of 26.8 ℃ ; the average temperature in winter is generally decreasing, and its rate is 0.3 ℃/10a;

2. The annual yield of the six crops studied during the instrumental test period showed an overall increasing trend;

3. Due to the small amount of information obtained in this study the relevant factors can’t be properly controlled, resulting in a coefficient of determination between the annual yield of crops and the average annual temperature of between 0.4 and 0.6, that is, the annual yield of major crops is half the temperature is determined.

Keywords: Hubei Province; Measuring period; temperature; crop; correlation