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论文

1953—2005年内蒙古东部产粮区气候变化特征研究

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摘要 利用系统聚类分析和相关分析方法,根据1953—2005年内蒙古东部产粮区48个气象站的气象资料,进行了气候相似区划分;并得出各区在热量、水分的时间变化上具有较高的区域一致性。据此,以区域内各站点的温度、降水和日照时数的平均值作为区域热水光时间序列,分析了各气候要素变化特征及其对农业可能产生的影响。结果表明:各区域温度呈上升趋势,增温速率(平均增温为0.3—0.4℃/10 a)高于中国平均增温速率(0.22℃/10 a),增温幅度呈从西向东递增的趋势,平均最低气温增幅最大,平均最高气温增温幅度与海拔呈正相关,尤以1988年以后变暖趋势最为明显;降水量基本呈减少趋势,年代际波动较大;20世纪90年代至今,内蒙古东部产粮区生长季降水明显减少,气温迅速升高,暖干化趋势表现明显,温差减小和日照时数减少,水热匹配格局发生改变,粮食产量出现减少趋势的可能性较大。

关键词 气候变化 区域一致性 水热匹配 农业气象 内蒙古东部

分类号

Climatic characteristics for grain production area in the east of Inner Mongolia from 1953 to 2005

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Abstract Based on the meteorological data from 1953 to 2005 in 48 weather stations in the grain production area of the eastern Inner Mongolia,the grain production area could be divided into different parts in terms of climatic analogy by hierarchical cluster analysis and correlation analysis.Water and heat changes were of an obvious regional consistency.Using the average temperature,precipitation and sunshine duration as time series of heat,water and light,the characteristics of climate elements and their effects on agricultural production were analyzed.The results indicate that temperature has an increasing trend in each region.The tendency rate is 0.3—0.4 ℃/10 a,which is higher than that in China (0.22 ℃/10 a).Warming tendency is increasing from the western to the eastern in Inner Mongolia,and average minimum air temperature increases obviously.The relationship between the warming amplitude of average maximum air temperature and elevation is positive.Warming tendency is obvious,especially after 1988.Precipitation has a decreasing trend and its inter-decadal changes fluctuate greatly.Precipitation of growing season in the grain production of the eastern Inner Mongolia decreases obviously and air temperature increases rapidly,so warming-drying trend is obvious.Furthermore,water and heat matching pattern is changed with the decreases of temperature difference and sunshine duration.Consequently,food yield might reduce in the future.

Key words Climate change Regional consistency Water and heat matching Agricultural meteorology The eastern of Inner Mongolia

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