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气候变化背景下中国农业气候资源变化Ⅲ. 西北干旱区农业气候资源时空变化特征

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Changes of China agricultural climate resources under the background of climate change. Ⅲ. Spatiotemporal change characteristics of agricultural climate resources in Northwest Arid Area.

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- 摘要
- 参考文献
- 相关文章

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摘要

基于1961-2007年中国西北干旱区78个气象台站的气象资料，分析了西北干旱区全年、喜凉作物和喜温作物温度生长期内热量、光照和水分的时空变化特征.结果表明：研究期间，西北干旱区年均气温呈上升趋势，其气候倾向率为0.35 ℃·(10 a)$^{-1}$；喜凉作物和喜温作物温度生长期内积温总体呈升高趋势，其气候倾向率分别为67和50 ℃·d·(10 a)$^{-1}$；研究区大部站点的年日照时数呈明显下降趋势，除新疆大部地区和宁夏平原以东的喜凉作物和喜温作物温度生长期内日照时数呈降低趋势外，其余地区均呈升高趋势；研究区大部地区的全年参考作物蒸散量呈下降趋势，而喜凉作物和喜温作物温度生长期内的参考作物蒸散量则表现为研究区西部下降、东部上升.与1961-1980年相比，1981-2007年研究区大部地区全年及喜凉作物和喜温作物温度生长期内的降水量呈增加趋势，其增幅的空间变化趋势均由西北向东南递减.

关键词： 西北干旱区 农业气候资源 时空特征

Abstract:

By using the 1961-2007 daily weather data from 78 meteorological stations in Northwest Arid Area, this paper analyzed the spatiotemporal characteristics of agricultural climate resources,*i.e.*, heat, light, and precipitation, in the area, both in the whole year and in temperature-defined growth seasons of chimonophilous and thermophilic crops. In 1961-2007, the mean annual temperature in the area had an increasing trend, and the climate tendency rate was 0.35 ℃·(10 a)$^{-1}$. The accumulated temperature in temperature-defined growth seasons of both chimonophilous and thermophilic crops also had an increasing trend, and the climate tendency rate was 67 and 50 ℃·d·(10 a)$^{-1}$, respectively. The annual sunshine hours in most stations of the research area had an obvious decreasing trend, but the sunshine hours during the temperature-defined growth seasons of chimonophilous and thermophilic crops had an increasing trend, except that in most regions of Xinjiang and east Ningxia Plain. The annual reference evapotranspiration in most regions of the study area tended to decrease, while the reference evapotranspiration during temperature-defined growth seasons of chimonophilous and thermophilic crops tended to decrease in the west but increase in the east. Compared with that in 1961-1980, the precipitation both in the whole year and in temperature-defined growth seasons of chimonophilous and thermophilic crops in 1981-2007 increased, and the increment reduced progressively from the northwest to the southeast.

Key words: Northwest Arid Area agricultural climate resources spatiotemporal characteristics

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