

气候变化背景下中国农业气候资源变化 II. 西南地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. II. Spatiotemporal change characteristics of agricultural climate resources in Southwest China.

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摘要

基于1961—2007年中国西南地区88个气象台站的地面观测资料, 结合统计方法和GIS软件, 分析了全年及温度生长期农业气候资源的时空变化特征. 结果表明: 1961—2007年, 西南地区年平均气温呈上升趋势, 平均增速为 $0.18\text{ }^{\circ}\text{C}\cdot(10\text{ a})^{-1}$; 温度生长期 $\geq 10\text{ }^{\circ}\text{C}$ 和 $\geq 15\text{ }^{\circ}\text{C}$ 积温均呈增加趋势, 平均增速分别为 $55.3\text{ }^{\circ}\text{C}\cdot\text{d}\cdot(10\text{ a})^{-1}$ 和 $37\text{ }^{\circ}\text{C}\cdot\text{d}\cdot(10\text{ a})^{-1}$. 全区年日照时数呈现由西向东逐渐减少的特征, 且东部的减少趋势较西部更显著; 温度生长期日照时数整体呈增加趋势, 但空间差异较大. 全区降水资源总体减少, 年降水量和温度生长期降水量的平均下降速率分别为 $10\text{ mm}\cdot(10\text{ a})^{-1}$ 和 $8\text{ mm}\cdot(10\text{ a})^{-1}$. 全区年参考作物蒸散量普遍降低, 其减幅小于年降水量的变化趋势, 约53%的站点温度生长期参考作物蒸散量减少.

关键词: 西南地区 农业气候资源 气候倾向率

Abstract:

Based on the 1961-2007 ground observation data from 88 meteorological stations in Southwest China, and by using statistical methods and GIS software, this paper analyzed the spatiotemporal change characteristics of agricultural climate resources in this region in the whole year and during temperature-defined growth period. In 1961-2007, the annual mean temperature in the region showed an increasing trend, with the increment averaged $0.18\text{ }^{\circ}\text{C}\cdot(10\text{ a})^{-1}$. The $\geq 10\text{ }^{\circ}\text{C}$ and $\geq 15\text{ }^{\circ}\text{C}$ accumulated temperature during temperature-defined growth period also showed an increasing trend, with the increment averaged $55.3\text{ }^{\circ}\text{C}\cdot\text{d}\cdot(10\text{ a})^{-1}$ and $37\text{ }^{\circ}\text{C}\cdot\text{d}\cdot(10\text{ a})^{-1}$, respectively. The annual sunshine hours decreased gradually from west to east, and the decreasing trend was more significant in eastern than in western region. The sunshine hours during temperature-defined growth period showed an overall increasing trend, and the spatial difference was great. The precipitation resource had an overall decrease, with the decrement in whole year and during temperature-defined growth period averaged $10\text{ mm}\cdot(10\text{ a})^{-1}$ and $8\text{ mm}\cdot(10\text{ a})^{-1}$, respectively. The annual reference crop evapotranspiration generally decreased, but the decrement was less than that of annual precipitation. The reference crop evapotranspiration during temperature-defined growth period within about 53% meteorological stations decreased.

Key words: Southwest China agricultural climate resource climatic trend rate

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