

气候变化背景下中国农业气候资源变化IV. 黄淮海平原半湿润暖温麦-玉两熟灌溉农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. IV. Spatiotemporal change characteristics of agricultural climate resources in sub-humid warm-temperate irrigated wheat-maize agricultural area of Huang-Huai-Hai Plain.

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摘要

基于中国黄淮海平原半湿润暖温麦-玉两熟灌溉农区66个气象台站1961—2007年的气候资料, 比较分析了该区域内1961—1980年和1981—2007年2个时段喜凉作物和喜温作物温度生长期长度以及温度生长期内的活动积温、日照时数、降水量、参考作物蒸散量和干燥度等农业气候资源的时空变化特征. 结果表明: 随着气候变暖, 与1961—1980年的平均状况相比, 1981—2007年研究区域喜凉作物和喜温作物温度生长期均呈延长趋势, 分别延长了7.4和6.9 d; $\geq 0\text{ }^{\circ}\text{C}$ 和 $\geq 10\text{ }^{\circ}\text{C}$ 积温总体表现为增加趋势, 其气候倾向率分别为 $4.0\sim 137.0$ 和 $1.0\sim 142.0\text{ }^{\circ}\text{C}\cdot\text{d}\cdot(10\text{ a})^{-1}$; 喜凉作物和喜温作物温度生长期日照时数均呈显著下降趋势; 全区仅安徽省北部和河南省东南部喜凉作物和喜温作物温度生长期内降水量呈增加趋势, 其他地区均呈减少趋势, 且以河北省、山东省北部的减幅最明显; 全区大部分区域喜凉作物和喜温作物温度生长期内参考作物蒸散量呈下降趋势, 干燥度呈增加趋势.

关键词: 农业气候资源 黄淮海平原 气候倾向率

Abstract:

Based on the 1961-2007 observation data from 66 meteorological stations in the sub-humid and warm-temperate irrigated wheat-maize agricultural area of Huang-Huai-Hai Plain, this paper analyzed the spatiotemporal change characteristics of agro-climate resources for chimonophilous and thermophilic crops in the area in 1961-1980 and 1981-2007. The analyzed items included the length of temperature-defined growth season and the active accumulative temperature, sunshine hours, precipitation, reference evapotranspiration, and aridity index during the temperature-defined growth season. With climate warming, the length of temperature-defined growth season of chimonophilous and thermophilic crops in the area in 1981-2007 extended by 7.4 d and 6.9 d, and the $\geq 0\text{ }^{\circ}\text{C}$ and $\geq 10\text{ }^{\circ}\text{C}$ accumulative temperature increased at a rate of $4.0\sim 137.0$ and $1.0\sim 142.0\text{ }^{\circ}\text{C}\cdot\text{d}\cdot(10\text{ a})^{-1}$, respectively, compared with those in 1961-1980. The sunshine hours during the temperature-defined growth season of the crops decreased markedly; and the precipitation during the temperature-defined growing season decreased in most parts of the area, being obvious in Hebei and north Shandong Province, but increased in north Anhui and southeast Henan Province. In most parts of the area, the reference evapotranspiration of chimonophilous and thermophilic crops during their temperature-defined growth season decreased, and the aridity index increased.

Key words: agro-climate resources Huang-Huai-Hai Plain climate change trend

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