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黄土高原极端温度事件的时空变化(PDF)

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Title: Study on spatiotemporal changes of extreme temperature events in Loess Plateau

作者: [李志¹](#); [郑粉莉²](#); [刘文兆²](#)

1. 西北农林科技大学资源环境学院, 陕西杨凌 712100;
2. 中国科学院水利部水土保持研究所, 陕西杨凌 712100

Author(s): [LI Zhi¹](#); [ZHENG Fen-li²](#); [LIU Wen-zhao²](#)

1. College of Resources and Environment, Northwest Agriculture & Forestry University, Yangling 712100, China;
2. Institute of Soil and Water Conservation, Chinese Academy of Sciences & Ministry of Water Resources, Yangling 712100, China

关键词: [极端温度事件](#); [黄土高原](#); [空间分布](#); [变化趋势](#)

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摘要: 极端温度事件对农业生态系统有显著影响,其变化趋势需要进行评估。基于黄土高原50个站点的日序列最高和最低温度数据,经定义极端温度事件及其衡量指标(频率、强度、年极值和日温差)后,评价了黄土高原1961-2007年极端温度事件的空间分布和长期变化趋势。结果表明,1961-2007年黄土高原极端温度事件不同指标的空间分布有显著差异,基本上沿东南—西北方向呈梯度变化。多数站点极端温度事件的变化具有单调趋势,但趋势具有显著意义的站点数有很大差异,96%以上站点极端高(低)温事件的频率显著升高(降低);70%站点的日温差(46%降低和24%升高)和最低温度年极值的升高趋势具有显著性;约50%站点极端低温事件的强度和最高温度年极值的增加趋势显著;其他指标的显著性趋势较少。黄土高原极端温度事件对全球变暖的响应有其特殊性。

Abstract: Extreme temperature events(ETE) have significant impacts on agro-ecosystem,and their change trends need to be assessed.Based on daily maximum and minimum temperature data from 50 weather stations,this study assessed the spatial distribution and long term trend of ETE during 1961-2007 in the Loess Plateau after defining ETE and their indices(frequency,intensity,annual extreme value and daily temperature range).Results show that the spatial distribution of ETE indices are different and mostly change along the southeast-northwest direction with gradients.Most stations have monotonic trends in indices of ETE;however,the

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numbers of stations with significant trends were different. Over 96% stations have significant trends in frequency of ETE, upward trend for extreme maximum temperature events (ETXE) and downward trend for extreme minimum temperature events (ETNE), respectively; over 70% stations have significant trends in daily temperature range (downward trend of 46% stations and upward trend of 24% stations) and annual extreme of daily minimum temperature (upward trend), about 50% stations had upward trend in intensity of ETNE and annual extreme of daily maximum temperature. And other trends of the indices are not significant. ETE in the Loess Plateau have strong particularity in response to the recent global warming.

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作者简介: 李志(1978-), 男, 博士, 主要从事全球变化与水文生态方面的研究. E-mail: lizhibox@126.com
