

松嫩平原潜在蒸散量的时空变化特征

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Spatiotemporal changes of potential evapotranspiration in Songnen Plain of Northeast China.

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全文: PDF (2076 KB) HTML (1 KB) 输出: BibTeX | EndNote (RIS) 背景资料

摘要 利用松嫩平原及周边地区72个气象站1961—2003年逐日气象资料, 应用Penman-Monteith方程计算潜在蒸散量, 采用气候倾向率、Mann-Kendall突变检验、累积距平法, 对松嫩平原地区潜在蒸散量变化进行定量分析, 并应用ArcGIS软件的空间分析功能对研究区潜在蒸散量的空间分布特征进行分析。结果表明: 1961—2003年, 松嫩平原年均潜在蒸散量在330~860 mm, 总体呈减小趋势, 空间分布总体特征为西南高、四周低, 呈环带状向西南方向增加; 年潜在蒸散量的气候倾向率为 $-0.21 \text{ mm} \cdot \text{a}^{-1}$; 年潜在蒸散量在1982年达最大值, 形成突变点, 而后下降, 至1995年降至最低, 此后呈增加趋势; 春、夏、秋、冬季潜在蒸散量的气候倾向率分别为 -0.19 、 0.01 、 -0.05 、 $0.03 \text{ mm} \cdot \text{a}^{-1}$, 表明春、秋季潜在蒸散量呈微弱减小趋势, 夏、冬呈微弱增加趋势。

关键词: 松嫩平原 潜在蒸散量 气候倾向率 时空变化 Penman-Monteith

Abstract: Based on the daily meteorological data from 72 weather stations from 1961-2003, a quantitative analysis was conducted on the spatiotemporal changes of the potential evapotranspiration in the Plain. The Penman-Monteith model was applied to calculate the potential evapotranspiration; the Mann-Kendall test, accumulative departure curve, and climatic change rate were adopted to analyze the change trend of the evapotranspiration; and the spatial analysis function of ArcGIS was used to detect the spatial distribution of the evapotranspiration. In 1961-2003, the mean annual potential evapotranspiration in the Plain was 330-860 mm, and presented an overall decreasing trend, with the high value appeared in southwest region, low value in surrounding areas of southwest region, and a ring-belt increasing southwestward. The climatic change rate of the annual potential evapotranspiration was $-0.21 \text{ mm} \cdot \text{a}^{-1}$. The annual potential evapotranspiration was the highest in 1982, the lowest in 1995, and increased thereafter. Seasonally, the climatic change rate of the potential evapotranspiration in spring, summer, autumn, and winter was -0.19 , 0.01 , -0.05 , and $0.03 \text{ mm} \cdot \text{a}^{-1}$, respectively, suggesting that the potential evapotranspiration had a weak increase in winter and summer and a slight decrease in spring and autumn.

Key words: Songnen Plain potential evapotranspiration climatic trend rate spatiotemporal change Penman-Monteith

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