

研究论文

塔城地区沙尘天气变化特征

李新东¹,王飞²,井立军²,何琳³,高婧³,井立红⁴,朱海江⁴,马玲霞⁴

1. 新疆塔城地区气象局
2. 新疆乌苏市气象局
3. 兰州大学大气科学学院
4. 塔城地区气象局

收稿日期 2009-4-14 修回日期 2009-6-9 网络版发布日期 2009-10-14 接受日期 2009-10-14

摘要 根据1961-2005年塔城地区9个气象站地面实测资料,用线性趋势分析、Mann-Kendall、相关分析和合成分析等方法对塔城地区沙尘天气的时空分布及变化特征进行了分析,并对其机理进行了讨论。结果表明:1) 沙尘天气高发区位于沙湾、乌苏一带,次高值中心位于额敏,沙尘日数与大风日数、降水量空间分布呈反向分布的特点;2) 年均沙尘暴日数为3.8 d,主要发生在4-9月;3) 沙尘日数呈减少的趋势,其中沙尘暴日数以1.0 d/10a的速率显著减少,大风日数以10.5 d/10a的速率显著减少;4) 沙尘暴、扬沙、浮尘日数分别在1993、1992、1973年发生了显著减少的突变;5) 近半个世纪来新疆的冷空气活动强度和频率有所减弱(小),而大风日数的显著减少是沙尘日数减少的主要原因。

Abstract Based on the surface meteorological observation data from 9 stations in Tacheng region from 1961 to 2005, using the linear trend analysis, Mann-Kendall test, correlation analysis, and composite analysis, the temporal and spatial distributions and change characteristics of sand-dust weather were analyzed; and physical mechanisms for changes in sandstorms and blowing-sand weather were discussed. The results show as follows: 1) The high frequency area of sand-dust weather lies in the Wusu-Shawan area, the second high frequency area lies near Emin station. Distribution of day numbers of sand-dust (south-more-north-less) showed an opposite spatial pattern to both high wind days and precipitation (north-more-south-less). 2) The average annual sandstorm days over Tacheng region was 3.8 days, mainly in the period from April to September. 3) Sandstorm and blowing-sand days were decreasing in the period 1961-2005; sandstorm and high wind days obviously decreased at a rate of 1.0 d/10a and 10.5 d/10a, respectively. 4) An abrupt reduction in regional sandstorms, blowing-sand, and floating dust occurred in 1993, 1992, and 1973, respectively. 5) In the period 1961-2005, the northern hemispheric polar vortex showed a weakening trend in strength, and a shrinking trend in area, which was responsible for reduced intensity and frequency of the cold air activities in Xinjiang. Weakened cold air activities directly resulted in the reduction in annual mean strong winds, which was the primary reason for reduction in the day number of sandstorms.

关键词 [塔城地区](#) [沙尘天气](#) [时空分布](#) [变化特征](#)

分类号

DOI:

通讯作者:

李新东 LXD_TC6711@163.com; jinglj2001@sohu.com

作者个人主页: 李新东¹;王飞²;井立军²;何琳³;高婧³;井立红⁴;朱海江⁴;马玲霞⁴

扩展功能

本文信息

- ▶ [Supporting info](#)
- ▶ [PDF \(3922KB\)](#)
- ▶ [\[HTML全文\] \(0KB\)](#)
- ▶ [参考文献\[PDF\]](#)
- ▶ [参考文献](#)

服务与反馈

- ▶ [把本文推荐给朋友](#)
- ▶ [加入我的书架](#)
- ▶ [加入引用管理器](#)
- ▶ [引用本文](#)
- ▶ [Email Alert](#)

相关信息

- ▶ [本刊中 包含“塔城地区”的 相关文章](#)
- ▶ 本文作者相关文章

- [李新东](#)
- [王飞](#)
- [井立军](#)
- [何琳](#)
- [高婧](#)
- [井立红](#)
- [朱海江](#)
- [马玲霞](#)