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### The influence of different underlying surface on sand-dust storm in northern China

作者: SONG Yang QUAN Zhanjun

In this paper, a quantitative research on the relationship between different underlying surface and sand-dust storm has been made by using 40 years meteorological data of five different types of underlying surface in northern China, which include farmland, grassland, sandland, gobi and salt crust. These meteorological data comprise sand-dust storm days and strong wind days. By analyzing, we can find that there are certain correlations between the days of sand-dust storm and strong wind for different underlying surface, which has great influence on sand-dust storm. But there are pronounced differences in different types of underlying surface. The sand-dust storm days of grassland, gobi and salt crust, with smaller interannual variation are obviously less than strong wind days. On the other hand, the sand-dust storm days of farmland and sandland increase evidently, even in many years, are much more than strong wind days. The differences are mainly induced by the influencing mechanism of different underlying surface on sand-dust storm. Grassland, gobi and salt crust with stable underlying surface are not prone to sand-dust storm under strong wind condition. Whereas, the underlying surface of farmland and sandland is unstable, that is easy to induce sand-dust storm under strong wind condition.

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**关键词:** sand-dust storm; underlying surface; strong wind; northern China doi: 10.1360/gso50406