

4.084 Spatial and temporal variation of haze in the Yangtze River Delta region from 1961 to 2015.

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Abstract:

In recent years, the haze weather in the Yangtze River Delta region (YRD) has been increasingly severe, which has become one of the key problems restricting the sustainable development of the YRD. The meteorological conditions play an important role in the formation of haze. Therefore, analysing the temporal and spatial distribution of haze and the impacts of meteorological factors is important to understand the haze formation mechanism. The results of this study will provide scientific basis for regional air pollution control in the YRD region.

In this study, data quality control and quality assessment of haze weather in YRD were conducted. Based on the calculation, the interannual, inter-decadal trend of haze days, temporal and spatial distribution of haze weather in the YRD were analysed using Mann-Kendall method and sliding T-test method. In addition, the meteorological factors influencing the formation of haze were studied using correlation analysis of haze weather phenomena, surface and upper air meteorological factors, and air pollutant concentrations, under six types of topography.

The results show that the number of haze days in YRD have increased from 1961 to 2015, and the average haze days during 1961-2015 are about 21 days. The main reason for the interannual growth of haze days is the increase of anthropogenic pollutant emissions. Winter had the highest haze occurrence frequency in the YRD. The haze days gradually increase from September to December and next January, then it gradually decreases from March. Meanwhile, the haze coverage is also increasing in the YRD. The spatial distribution of haze in Jiangsu Province and Shanghai has been expanding to the whole provinces. The "isolated points" in Zhejiang province are increasing gradually.