

无锡惠山三种城市游憩林内细颗粒物(PM_{2.5})浓度变化特征古琳, 王成^{**}, 王晓磊, 王艳英, 王茜

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Variation characteristics of fine particulate matter PM_{2.5} concentration in three urban recreational forests in Hui Mountain of Wuxi City, Jiangsu Province of East China.

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摘要

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摘要

在2011年秋、冬季和2012年春、夏季的游憩时段内(5:00—19:00),对无锡惠山香樟林、湿地松林和栓皮栎林3种游憩林内PM_{2.5}质量浓度进行实时监测,并同步观测气象因子,分析了游憩林内PM_{2.5}浓度的时间变化规律及其影响因素.结果表明:惠山3种游憩林内PM_{2.5}浓度年均值低于道路,湿地松林和香樟林内PM_{2.5}浓度年均值低于栓皮栎林;3种游憩林和道路的PM_{2.5}年均浓度低于无锡市背景值.游憩林内PM_{2.5}浓度的季节变化规律为夏季最低,秋季次之,春季最高;PM_{2.5}浓度在春、夏、冬季最低的是湿地松林,秋季最低的是香樟林,栓皮栎林在各季节的PM_{2.5}浓度都较高.PM_{2.5}浓度在四季的日变化近似于“单峰单谷”型,7:00—9:00和15:00—19:00各出现最大值和最小值.4个季节的湿度和温度与PM_{2.5}浓度均极显著相关,光照仅在冬季显著影响PM_{2.5}浓度,较小风速对PM_{2.5}浓度的影响不大.

关键词: PM_{2.5}浓度 城市游憩林 季节变化 气象因素

Abstract:

It is of significance to understand the controlling effects of urban forest on atmospheric fine particulate matter PM_{2.5} pollution. This paper monitored the variations of atmospheric PM_{2.5} concentrations in three typical urban recreational forests (*Cinnamomum camphora*, *Pinus elliotii*, and *Quercus variabilis*) in the Hui Mountain of Wuxi City during the day time (5:00 am-19:00 pm) in autumn and winter, 2011 and in spring and summer, 2012. The meteorological factors were observed simultaneously. The average annual PM_{2.5} concentration in the three recreational forests was lower than that above the nearby roads, and this concentration in *C. camphora* and *P. elliotii* forests was lower than that in *Q. variabilis* forest. The average annual PM_{2.5} concentration in the forests and above the nearby roads was lower than the background value in the downtown area of the City. The PM_{2.5} concentration in the three recreational forests was the lowest in summer, followed by in autumn, and the highest in spring. In addition, the PM_{2.5} concentration was the lowest in *P. elliotii* forest in spring, summer, and winter, and in *C. camphora* forest in autumn, but relatively higher in *Q. variabilis* forest in all seasons. The diurnal variation of the PM_{2.5} concentration in the three forests in four seasons all showed nearly “one peak and one vale”, with the peak and vale appeared at 7:00-9:00 and 15:00-19:00, respectively. The PM_{2.5} concentration was significantly correlated with the air moisture and temperature in four seasons, and significantly correlated with the light intensity in winter. Mild winds throughout the seasons had little effects on the PM_{2.5} concentration.

Key words: PM_{2.5} concentration urban recreational forest seasonal variation meteorological factor.

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