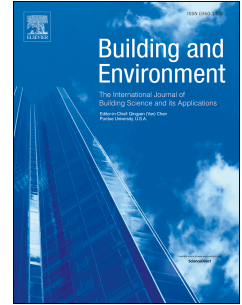


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Fine-scale variations in PM<sub>2.5</sub> and black carbon concentrations and corresponding influential factors at an urban road intersection

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1 **Fine-scale variations in PM<sub>2.5</sub> and black carbon concentrations and**  
2 **corresponding influential factors at an urban road intersection**

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14 **Abstract**

15 Road intersections have the potential to pose an additional exposure risk to surrounding dwellers or  
16 commuters; however, knowledge of the fine-scale variations of traffic pollutants especially PM<sub>2.5</sub>  
17 and black carbon (BC) remains limited. To investigate them, we conducted a three-point  
18 synchronous observation at an intersection in winter and spring. Real-time monitors with  
19 one-minute intervals were used to obtain the pollutant and meteorological data while gasoline and  
20 diesel vehicle volumes were manually collected every five minutes. Observations showed that the  
21 average PM<sub>2.5</sub> on the downwind roadside increased by approximately 9% in both seasons and that  
22 the average BC increased by 70% in winter and 97% in spring compared to those of the background  
23 site. PM<sub>2.5</sub> displayed a similar diurnal variation among the sites, but the BC variation was more

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