

## ***Interactive comment on “A modelling study of air quality impact of odd-even day traffic restriction scheme before, during and after the 2008 Beijing Olympic Games” by H. Cai and S. D. Xie***

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It is an interesting topic to assess the effectiveness of air quality control measures during Beijing 2008 Olympics. This work tried to conduct the analysis with an integrated modeling framework which involves traffic flow, emissions, and atmospheric dispersion. But the analysis seems not to be complete and careful enough to make the conclusion. Two main issues are vague to me: 1. The title and the main objective is to assess the air quality impact in Beijing, but actually most of the analysis are addressed on the air quality on four roads. The city-level validation of model performance and analysis of air quality improvement is missing. 2. On-road vehicles are not recognized as the major contributor of PM emissions, but the results showed that the traffic restriction policies decreased the PM concentration to a surprisingly large extent. More clarification and

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analysis need to be addressed to identify the actual contribution of traffic policies from other air pollution control measures on power plant, industry and so on. Following are some specific comments:

Section 2.1: "31 representative receptors were located along the 2nd, 3rd and 4th RR and the LRs, ....., to evaluate the temporal and spatial variation of pollutant concentrations and air quality improvement." The receptors could capture the air quality improvement on the roads, but not the whole modeling domain. The distribution of receptors is OK if the objective of the analysis is the road environment, but more comparison between the modeling results and air quality monitor data AWAY FROM THE ROADS are essential to evaluate the performance of the model in the whole domain.

Section 2.2.2: According to the text, emissions from 2nd, 3rd and 4th RR and the LRs were considered in this work. But the authors didn't tell how other emission sources are considered in the analysis, including on-road vehicle emissions from other roads and other emission sources such as power plants and industry, residential and biogenic emissions. These information are essential to the model the air quality in the whole domain.

Section 3.1: According to the context, neither the emissions for sources other than on-road vehicles, nor the policies to control them such as shutting down the industrial plants and stopping constructions, were considered in the modeling work. These information should be important in modeling the PM concentration as some previous paper indicated small contribution of PM emissions from on-road vehicle in Beijing. Thus the modeling concentrations of PM are expected to be much lower than the observation data if only on-road vehicle emissions are counted in, but it is not true from the results in this paper. The authors should make a comment on that.

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