

## ***Interactive comment on “Exploring the drivers of the elevated ozone production in Beijing in summertime during 2005–2016” by Wenjie Wang et al.***

### **Anonymous Referee #2**

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This manuscript investigated the trends of surface ozone metrics and their causes at a urban site in Beijing. Detailed measurements, TUV and RACM box model were employed. Long-term ozone trends in China is a key issue to take effective measures in this situation of rapid increasing ozone background. This manuscript investigated the impacts of meteorology, VOCs, NO<sub>x</sub> and PM<sub>2.5</sub> on ozone trend, and would be helpful to understand the formation mechanisms in North China. This manuscript is within the scope of ACP and is well organised and executed and there is no doubt about the quality of the work. It can be accepted for publication after the following comments are addressed. 1. Regional transport is also a key source of surface ozone. This work tried to assess the impact of regional O<sub>3</sub> by analyzing measurements at a

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regional background site. This is not sufficient because this site was largely affected by Beijing emissions. I suggested that other background sites can be employed or back-transjectories at typical year can be used to analyze the impact of regional transport.

2. Recent, a few heterogeneous chemical reactions are thought to be potential factors of ozone. For example, photolysis of HNO<sub>3</sub> (NO<sub>3</sub>-) adsorbed on the solid surface of aerosol particles effectively produces HONO and NO<sub>x</sub> in the gas phase (Salgado and Rossi et al., PCCP,2002; Ramazan, 2006). A short discuss should be performed.

M. S. Salgado Muñoz and M. J. Rossi, Heterogeneous reactions of HNO<sub>3</sub> with flame soot generated under different combustion conditions. Reaction mechanism and kinetics, Physical Chemistry Chemical Physics, Phys. Chem. Chem. Phys., 2002,4, 5110-5118 .

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