The interaction between urbanization and aerosols during the haze event.

Miao Yu1 , Guiqian Tang2 , Yang Yang1 , Shiguang Miao1 , Yizhou Zhang1 , Qingchun Li1

The authors investigate the interaction between aerosols and urbanization during a severe haze event via the RMAPS-ST model. Results indicate that a 100% increase in $PM_{2.5}$ (200 to 400 $\mu g \cdot m^{-3}$) reduced daytime urban-related warming by 20% (from 30-50%). However, urban-related warming increased approximately 28% in response to aerosols- important for haze formation. With regards to urbanization, the aerosol-related cooling effect was reduced by approximately 54%, changing little with aerosol increases. The study also found that aerosols reduced the urban-impact on the mixing layer, sensible heat flux, and latent heat flux by 148%, 156%, and 48.8%, respectively. In their revision, the authors appropriately addressed the reviewer suggestions and created an improved manuscript. This reviewer suggests minor changes as follows:

1) Change the title to: “The interaction between urbanization and aerosols during a typical winter haze event in Beijing.”
2) Rephrase Lines 29-32: “The effects of urbanization and aerosols were investigated during a typical winter haze event. The event, which occurred in Beijing from 15-22 December 2016, was studied via the rapid-refresh multiscale analysis and prediction system-short term (RMAPS-ST) model.”
3) Rephrase from Line 34: “Aerosols reduced urban-related warming during the daytime by 20% (from 30 to 50%) as $PM_{2.5}$ concentrations increased from 200 – 400 $\mu g\ m^{-3}$.”
4) Rephrase from Line 99: ”Cao et al. (2016) describes the first attempt to determine…”
5) Rephrase Lines to 269-271 and add to the previous paragraph.
6) Line 356: replace “smaller” with “less”.
7) Paragraph starting from Line 430: Break into two paragraphs, perhaps from line 441.