

Atmos. Chem. Phys. Discuss., referee comment RC2  
<https://doi.org/10.5194/acp-2022-93-RC2>, 2022  
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## Comment on acp-2022-93

Anonymous Referee #2

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Referee comment on "Impact of urban heat island on inorganic aerosol in the lower free troposphere: a case study in Hangzhou, China" by Hanqing Kang et al., Atmos. Chem. Phys. Discuss., <https://doi.org/10.5194/acp-2022-93-RC2>, 2022

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Aerosol pollution is of great concern in many megacities all over the world. It is meaningful to study how urbanization affects local meteorology and air pollution. By using WRF-CMAQ model, this manuscript assessed the effects of UHI on the distribution and formation of aerosols in urban atmosphere. The authors separated the impacts of UHI circulation, temperature and humidity, and quantified the contributions of them on inorganic aerosols in the lower free troposphere. Generally, this manuscript is well organized. The findings are very interesting, the discussion is of scientific meaning, and the results can improve the understanding of the formation of inorganic aerosols in urban areas. This manuscript could be considered for potential publication after the following minor revisions.

1) In 2.2, it is better to show the results of the comprehensive model validation for meteorological parameters, such as temperature, relative humidity and wind speed.

2) Line 145: "The NMB, NME, MFB, and MFE..." should be "The NMB, NME, IOA, MFB, and MFE...".

3) In 3.2, the process analysis technique was used, but it was not introduced in methodology. It is better to briefly describe it in section 2.

4) Lines 337-343: The authors should demonstrate that the conclusions (about the impact of UHI on inorganic aerosol in the lower free troposphere) are universal rather than just in a specific case. Although other 7 UHI cases in the 10-day simulation period were mentioned in the last paragraph, the discussion was not clear. More details about the 7 UHI cases should be provided in section 3.

5) Please check the English and avoid the typo errors.