

Interactive comment on “Real-Time Aerosol Optical Properties, Morphology and Mixing States under Clear, Haze and Fog Episodes in the Summer of Urban Beijing” by Rui Li et al.

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Firstly, we acknowledge the comments of anonymous reviewers, and are also grateful to the efficient serving of the editor. We have already revised MS based on the reviewers' comments. We also inspected MS roundly and corrected some errors in English presentation. We are sure that the revised MS adhere to Science of the Total Environment format. The marked MS was also uploaded to be easily reviewed.

Response 1. The English thorough the manuscript have been improved by an English native speaker 2. Many new published paper have been added into the manuscript. 3. Line 16: The sentences have been changed into “Aerosol optical properties and morphologies were measured by TEM, CRDS, a nephelometer and an aethalometer

in a urban site of Beijing from 24 May to 22 June". 4. Line 17: Indeed, the sentence is meaningless and has been deleted. 5. Line 23:"which" was replaced by "and the particles". The comma has been deleted 6. Line 27: the sentences has been changed into "industry-induced haze (EP-1) and biomass burning-induced haze (EP-5) were both affected by the south air mass". 7. Line 27-28: The two sentences have been replaced by "Compared with the EP-2 and EP-4, the AOD values and the size distribution of particles during EP-1 and EP-5 were much greater because of relatively high particle concentrations." 8. Line 32-35: The sentence was replaced by "In contrast to the EP-1, a large fraction of soot which sticks to KCl, sulphate or nitrate particles was detected during the EP-5". 9. Line 35: The sentence was replaced by "Additionally, evident enhancement of light absorption was observed during the EP-5, which was mainly ascribed to both BC acceleration and other absorbing substances". 10. Line 39: The sentence has been changed into "However, soot was found mostly internally mixed with sulphate and nitrate during a soot fog episode (EP-3), resulting in evident enhancement of light absorption". 11. Line 57-58: Indeed, the sentence has been changed into "inorganic salts and light-color organic carbon have a cooling effect". 12. Line 280: The sentence was changed into "the air parcel from the North was relatively clean". 13. Line 295: The sentence was changed into "The variation of aerosol optical characters" 14. Title 3.3: The title was replaced by "Morphology and chemical composition of aerosols" 15. Line 334: The conclusion was drawn because some previous studies have confirmed that soot, organic matter, and sulfates were generated from the industrial activities, domestic cooking, and biomass burning. Many industrial activities and biomass burning have been observed in South China. 16. Line 404: Haze and fog episodes generally had a high possibility of collision, which was caused by heavy particle loading. In addition, prolonged remaining of heavy particles was also a factor leading to the collision. Many relevant references have been added in the manuscript. 17. Line 407: The title was replaced by "the relation of optical properties and the morphologies of aerosol particles".

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Please also note the supplement to this comment:

<http://www.atmos-chem-phys-discuss.net/acp-2016-976/acp-2016-976-AC3-supplement.pdf>

Interactive comment on Atmos. Chem. Phys. Discuss., doi:10.5194/acp-2016-976, 2017.

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