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## ***Interactive comment on “Column aerosol optical properties and aerosol radiative forcing during a serious haze-fog month over North China Plain in 2013 based on ground-based sunphotometer measurements” by H. Che et al.***

### **Anonymous Referee #2**

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Haze-fog events frequently occurred in China in past ten years. There are many papers to discuss physical-chemical properties of aerosol particles during the haze-fog. The ground-based sunphotometer measurements are very important tools to study optical properties of aerosol particles. This paper investigate aerosol optical properties in rural, suburban and urban regions of North China Plain during a serious haze-fog month over North China Plain in 2013. It is a well-organized paper for us to comprehend aerosol optical parameters and its direct radiative effect under pollution condition of North China. These results will benefit the satellite and modelling validation studies

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about air pollution of this region in future. I recommend this paper published in ACP with some minor changes.

(1) In the authors' list, "O. Dubovic" should be corrected as "O. Dubovik". (2) P. 29691, Line 5-10. The authors should give the location information of Mauna Loa, GSFC, INM, Lille University. E.g the latitude, longitude, altitude. (3) 29712, Fig 2d. The authors should give the detailed information about the red dash lines. What does the red line mean? (4) 29695-29696. The discussion about the "tri-modal pattern during the most intense period (10–16 January)" can refer to Eck et al., 2012 JGR. I think the bi-mode submicron size distribution is related to the haze-fog and cloud processing. The smaller mode (0.12 to 0.20 micron meter) may be interstitial aerosol that were not modified by incorporation in droplets and/or aerosol that are less hygroscopic in nature. The larger one is due to the haze-fog dissipation. (5) Resolution of some Figures should be improved.

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Interactive comment on Atmos. Chem. Phys. Discuss., 13, 29685, 2013.

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