Atmos. Chem. Phys. Discuss., 15, C9047–C9048, 2015
www.atmos-chem-phys-discuss.net/15/C9047/2015/

Atmospheric Chemistry and Physics Discussions

Interactive comment on "Global dimming and urbanization: did stronger negative SSR trends collocate with regions of population growth?" *by* A. Imamovic et al.

Anonymous Referee #1

Received and published: 7 November 2015

This study addressed the issue whether urbanization has an important impact on the observed dimming rate of surface incident solar radiation. There are a number of studies on this issue and different conclusions have been derived. The authors designed complicated methods to do their job and their conclusions are similar to recent publications. I have several comments to help the author in presenting their results more clearly: (1) How the population index (PI) and its increase relate to the urban-rural contrast of their impact on the observed global dimming? It is unclear in the current manuscript. What the increasing and decreasing of PI should impact the urban-rural contrast of dimming? and what was the observed values? (2) The observations of

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China have shown to be impacted by the quality and their performance of the instruments used (Wang et al., 2015). How the authors addressed this issue? It should be discussed at least. Wang, K., Q. Ma, Z. Li, and J. Wang (2015), Decadal variability of surface incident solar radiation over China: Observations, satellite retrievals, and reanalyses, J. Geophys. Res. Atmos., 120, 6500–6514, doi:10.1002/2015JD023420. (3) For the significant correlation of PI and dimming rate in China. During the study period, China population increased significantly and surface solar radiation decreased at same time. It is easy to understand the significant positive correlation between PI and dimming rate. However, the physical background is lacking here. PI can has a significant positive correlation with any data that show significant decreasing trend during the period. How to avoid the spurious correlation that they just occurred concurrent? (4) The author divided their result areas into Europe and Japan, Asia (China and Russia). It may introduce misunderstandings. It looks like the Japan is not in Asia, and Russia is in Asia not in Europe.

Interactive comment on Atmos. Chem. Phys. Discuss., 15, 31133, 2015.