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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Influence of the aerosol solar extinction on photochemistry during the 2010 Russian wildfires episode" *by* J. C. Péré et al.

Anonymous Referee #2

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This manuscript describes a modeling study for aerosol radiative impact on photochemical pollutants near Moscow, Russia. This second version changed slightly from its first version, e.g. Figure 6's model extinction changed its wavelength from 400nm to 500nm. However, it still has very limited model-observation comparison. Other than the single comparison with CALIOP, all the manuscript describes the model-only result, which is hard to justify. Even that comparison, which is at night, has major issue since your discussion is about photochemical impact, which occurs during daytime, right? Although this study is about the aerosol radiative impact from wildfire plume, it has very limited discussion the exact wildfire impact. How many aerosol impacts come from wildfire plume, and how many come from anthropogenic emission as Moscow is a megacity. The aerosol radiative impacts discuss throughout this paper could be partly

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due to anthropogenic influence. There is no discussion about the impact on wildfire event versus non-event. Page 11, line 4: “the important concentrations of scattering aerosols”. In my knowledge, the major distinguished characteristic of biomass burning plume from anthropogenic aerosol is about its black carbon, or absorptive aerosol. Do you have any measurement near Moscow supporting your point? The major discussion is about the change of photolysis rate and its further impact on photochemical activities. However, there is no photolysis comparison with any observations, but just the model-only result? It is hard to verify whether the model gave the right result. The second version did not change it.

Interactive comment on Atmos. Chem. Phys. Discuss., 15, 7057, 2015.