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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Multi-model simulations of aerosol and ozone radiative forcing for the period 1990–2015" *by* Gunnar Myhre et al.

Anonymous Referee #1

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This paper summarizes findings from the simulations by 7 models of the period 1990-2015 using updated emissions. The paper succinctly describes the results and discusses the separate roles of aerosol-radiation interactions and aerosol-cloud interactions. The paper is well-written and presents a nice description of the results. I would however strongly suggest that the authors do the following

1) Because so much of the forcing comes from the change in emissions, it would be useful to have a discussion of how those differs from the ACCMIP/RCP projections. Maybe simply trends of major precursors over the region of analysis would be sufficient?

2) The ozone forcing discussion is rather cursory and needs to be extended. Is this simply driven by NOx changes or is methane playing a role, especially over the last 5

years of the analysis period? In addition, why is the IPCC ozone forcing of opposite sign (possibly related to changes in emissions?)

3) It would be useful to put the findings in the overall context of recent forcings (volcanic, solar, stratospheric water vapor, stratospheric ozone).

While this might require an additional simulation, it would be useful to know how much variability in meteorological transport is responsible for the observed/simulated change. In particular, it would be useful to consider using one of the CTMs with a different set of meteorological analysis. Alternatively, the models driven by fixed SSTs could be used with constant emissions (similar to Barnes et al., JGR, 2016) to have a better understanding of the role of internal variability in driving trends over short periods.

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