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Interactive comment on "Technical Note: Estimating aerosol effects on cloud radiative forcing" *by* S. J. Ghan

S. Ghan

steve.ghan@pnl.gov

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I have added the following paragraph in the introduction "Distinguishing contributions to aerosol radiative forcing from scattering and absorption of sunlight by aerosols and from aerosol-induced changes in clouds has historically been useful for understanding the mechanisms involved and the dependence of aerosol radiative forcing estimates on the representation of the associated processes." I am not proposing a new metric for the total aerosol forcing, only how it is decomposed. I make this more clear in the Recommendation section.

p.18773, line 1. I've added the paragraph on longwave flux, which is insensitive to the distinction between ΔC and $\Delta C clean$: "In principle the same approach should also be

applied to longwave radiation. However, the small size of most anthropogenic aerosol particles suggests that the difference between ΔC and $\Delta C clean$ is small for longwave radiation. Indeed, we find that for CAM5 the difference is locally less than 0.2 W m-2 (in regions where dust changes) and globally less than 0.01 W m-2. Note that there is a difference between the common clear sky estimate of longwave cloud forcing using the grid cell mean humidity and an estimate using the humidity for the clear sky fraction of the grid cell, estimated by Sohn et al. (2010) to be about 10%."

p.18775, recommendations. Aerosol-climate science literature is filled with estimates that distinguish between direct and indirect effects. As stated in the new paragraph in the introduction, such distinction is helpful for understanding the processes that produce the total forcing. Note that the recommended method of estimate aerosol effects on clouds does not depend on how aerosols affect the clear-sky flux.

Interactive comment on Atmos. Chem. Phys. Discuss., 13, 18771, 2013.