

Interactive comment on “Detecting the influence of fossil fuel and bio-fuel black carbon aerosols on near surface temperature changes” by G. S. Jones et al.

D. Shindell (Editor)

dshindell@giss.nasa.gov

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P20923, L16: Emissions of BC from coal-burning power plants are not well characterized, but are generally thought to be quite small (as combustion is very efficient in power plants). Sources such as diesel engines or industrial kilns & boilers would be better examples.

Section 2: The authors refer to Martin et al (2006) to describe the HadGEM1 model, and note that it gives a reasonable simulation of overall climate response. As this is a study of the impact of BC, however, I feel there needs to be at least a minimal amount of information on the BC in their model. One reviewer and the comment by Schwarz both

C11189

asked about comparisons with observations, which would of course be even better. However, I think we can all accept that models don't match the limited BC data all that well in general, and so this would illustrate that there was uncertainty due to how well BC is represented in the model. That we know. However, readers should be able to have some idea of what the BC loading in this model is. I suggest adding the global BC burden (Tg) and the global mean annual average BC lifetime (days) in this model and comparison with other models (e.g. Schulz et al., ACP, 2006 or Koch et al., ACP, 2009) to put this model into context.

P20928, L14-16: This says “Additional uncertainties are introduced due to the use of the A1B scenario for post 2000 forcings factors.” Please add a comment about how this was done for BC (which was not directly given in most A1B scenarios).

P20931, L28: The line reads “This “true” forcing is at the upper end of the forcing estimates for fossil fuel BC deduced from a number of sources (Table 2 in Forster et al., 2007)”. Similarly, the discussion on the next page refers to forcing from fossil fuels. The definition of fBC in this paper, however, includes both fossil and bio fuels, so there needs to be some description of how the grouping here (fossil+bio fuels separately from biomass burning) relates to the IPCC grouping (fossil separately from biomass).

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C11190