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***Interactive comment on* “Quantifying immediate radiative forcing by black carbon and organic matter with the Specific Forcing Pulse” by T. C. Bond et al.**

Anonymous Referee #1

Received and published: 13 August 2010

I acknowledge the reply of the authors to my comments although differences in opinion remain. I would just like to clarify a few things I wrote in my earlier comment, which were unclear or have been misunderstood.

(9) By "overestimating the differences between SFP and AGWP", I meant indeed "overstating the difference between the two metrics and the value of the SFP". As far as I am concerned the SFP is very much the same as an AGWP. The authors argue that AGWP is a poor name for this metric, fair enough, but SFP is not really better (if some forcings are specific, then what is a non-specific forcing?). The unit is confusing -this is what I was trying to convey in my previous comment on forcing vs response- the

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unit J usually refers to quantify the heat content of a system so it is a bit weird to use it for a forcing integrated over time. It is quite deliberate that the AGWP has unit of $\text{W}\cdot\text{m}^{-2}\cdot\text{kg}^{-1}\cdot\text{yr}$ and not unit of $\text{J}\cdot\text{m}^{-2}\cdot\text{kg}^{-1}$; this was in order to make explicit the concept that it is a time integral of a forcing. Finally I don't really see the usefulness of a metric if it excludes long-lived species from its definition.

(16) If you say "BC adds 1 GJ to the system", then it reads to me that the energy content of the climate system has increased by 1 GJ because of the BC. Obviously this is not what the authors mean and I admit I've been playing devil's advocate, but I think the authors are replacing a well established way of saying something by a language that could confuse many people.

(18a) Why is the shortwave radiation absorbed by the aerosols all dissipated as heat and not partly re-radiated as longwave radiation? Surely if the particle is heated, it must emit more longwave radiation (Planck's law).

Interactive comment on Atmos. Chem. Phys. Discuss., 10, 15713, 2010.

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