

***Interactive comment on* “Commentary on “Improving the seasonal cycle and interannual variations of biomass burning aerosol sources” by Generoso et al.” by L. Giglio and J. D. Kendall**

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The commentary of Giglio et al. appears at the right time. During the past two years the community has seen several products of satellite derived burning information appear, and the first papers have appeared which attempt to use these products to improve the emission estimates for biomass burning products. The Giglio et al. paper highlights the importance to understand data products and their limitations before using them, and it contains a few useful examples of the intricacies involved in the algorithm development. Modelers tend to think of observational data sets as "numbers representing the truth within a certain accuracy", and in the case of a fire count product one may too easily think of the number being 0 or 1 and thus hard to get wrong. While it would be

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asking too much of a modeler to understand all details of a data set (as the discussion comment by Gregoire suggests), they should at least have an idea of what can go wrong and how far off the data can be - and they should work closely together with the data set providers in order to discuss obvious (or hidden) shortcomings. I don't think that (even) more documentation of the satellite derived data sets is needed, but a comprehensive summary, and if possible a critical comparison of data sets in a journal, which is read by non-remote sensing specialists (e.g. ACP), would be appropriate. It is frightening to see the huge difference in absolute fire detections between the Giglio et al. and the Ji and Stocker products - and both are derived from the same sensor! And this is only the first step towards a proper estimate of the emission fluxes (see paper by J. Hoelzemann et al., JGR in press).

On the other hand, I find it important to note that despite all shortcomings of various satellite fire products, they have already helped the modeling community to get a better understanding of the biomass burning seasonality and also the interannual variability. Until now, this may be mostly in a qualitative manner, but I am confident that refined algorithms and new sensors will soon allow for better quantitative estimates of burning as well. If this is brought together with inverse modeling techniques, which constrain emission fluxes by assimilated atmospheric concentrations, we may in some years time be able to routinely monitor and quantify biomass burning emissions to a reasonable degree of accuracy.

The Giglio et al paper is one small step towards this goal and as such certainly deserves publication in ACP. It is well written and focuses on a specific aspect of the retrieval. I follow the suggestions of Gregoire to doublecheck the statements made about seasonality in both products, and perhaps it would be appropriate to also name some of the shortcomings of the Giglio et al. product in order to justify the conclusion that "any data set ... is subject to errors".

Interactive comment on Atmos. Chem. Phys. Discuss., 3, 6019, 2003.