Atmospheric Chemistry and Physics Discussions

Interactive
Comment

Interactive comment on "Comment on "Improving the seasonal cycle and interannual variations of biomass burning aerosol sources" by Generoso et al." *by* Y. Ji and E. Stocker

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The commentary by Ji and Stocker continues a series of papers and discussions on the use of satellite hot spot detections for atmospheric chemistry emission modelling. This discussion started several months ago due to an unfortunate misrepresentation of the data source used in the Generoso et al. paper refered to in the title. In a commentary on this paper, Giglio and Kendall clarified the distinction between two different data products derived from the same TRMM sensor, and they highlighted some pertinent problems concerning the retrieval algorithms applied to this data set. In the present commentary, Ji and Stocker, who produced the data set that was used in the Generoso et al. study, elaborate further on the distinctive differences between

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daytime and nighttime fire products. This is a very interesting and extremely important subject, which would deserve a more detailed treatment than what is presented here. While it is generally clear that there are many more daytime fires compared to nighttime fires in most burning regions and would thus be preferrable, daytime detection is also more complicated due to higher real or apparent surface temperatures. The approach taken by Ji and Stocker is apparently meant as correction of an earlier product (which was used by Generoso et al.). They suggest to use the appearance of nighttime fires in order to increase the confidence in daytime fire observations, because they find that "in fire seasons, fires are often observed during nighttime". This argument is somewhat speculative and qualitative at best, and it would be desirable to see a much more complete discussion on this point. For example, the authors should present a map showing the impact of their filtering method on the observed number of fires, and they should quantify the number of fires removed/retained from the analysis in different regions during the process. How exactly are the daytime/nighttime ratios used? Is there observational evidence from ground validation activity to support the approach?

On a short technical note, I would also like to see more references included to the relevant literature describing the TRMM fire retrieval techniques.

If the authors could substantiate their presentation and make their line of arguments more robust, this paper could become a very important contribution to this field. For exmple, there have been several users of ATSR nighttime fire data, and they could learn more about potential errors in their method from a robust analysis of daytime/nighttime ratios. I would thus recommend to make major revisions to this manuscript before it should be accepted in ACP.

Interactive comment on Atmos. Chem. Phys. Discuss., 4, 2161, 2004.

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