

Interactive comment on “Probing into the aging dynamics of biomass burning aerosol by using satellite measurements of aerosol optical depth and carbon monoxide” by Igor B. Konovalov et al.

A. M. Sayer

andrew.sayer@nasa.gov

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This is a short comment on the MODIS data used, not a full review of the paper.

I see that the authors used the Collection 5.1 MODIS data set (based on the ftp link given and papers cited). This version was superseded by the current Collection 6 in 2013 (for Aqua) and 2014 (for Terra), and in general we strongly recommend the use of the latest versions of the data set for scientific analyses. The Collection 6 reprocessing includes the whole missions, not just these latest years.

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As well as miscellaneous algorithm updates between the data versions, Collection 6 data make use of an improved level 1 MODIS sensor calibration. This improved calibration has the strongest influence on MODIS Terra, where it decreases the magnitude of artificial trends which were found in the Collection 5.1 data products.

Due to the non-linear response of top-of-atmosphere reflectances to aerosol, calibration updates may have a stronger effect on high-AOD cases such as biomass burning smoke considered in this manuscript.

More information about Collection 5.1 trending issues can be found in Levy et al. (2010), which the authors cite, as well as Lyapustin et al. (2014). The Collection 6 Dark Target land and ocean algorithm paper, with some validation results, is Levy et al. (2013).

Additionally, Collection 6 makes use of an updated land/water mask. This updated mask results in better identification of small inland water bodies, which in turn affects algorithm decisions and quantitative retrieval results. I mention this because high northern latitudes contain many areas with these small lakes and we see changes in retrievals in many of these regions (e.g. Canada, the northern USA, and Siberia). More information about the land mask updates and effects on aerosol products can be found in Carroll et al. (2016).

I would thus strongly encourage the authors, if possible, to make use of the latest versions of the aerosol products.

The Collection 6 aerosol products are available free of charge from the same web site and ftp server where the Collection 5.1 products currently used were obtained. The

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differences in file format between the two versions are minimal, and I am happy to help provide advice to the authors about updating to the latest version of the MODIS data set.

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