Geoscientific Model Development

Discussions

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Interactive comment on "Modelling African biomass burning emissions and the effect of spatial resolution" *by* Dave van Wees and Guido R. van der Werf

Anonymous Referee #2

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This paper aims to quantify the impact of resolution on a fire emission model based on MODIS burned area products. The authors distinguish and quantify three main sources of errors. The paper is very well written, generally clear and the conclusions are of great interest to the scientific community. The authors show a good grasp of the fire emission model, and of how errors can be propagated in non-linear models. The conclusion reached represent an important step towards a possible improvement of fire emissions, one of the key component for any air quality or atmospheric composition modelling enterprise. The paper can be published nearly as is as I have no general comments. A few remarks below:

C1

âĂć Page 2, line 4-6, if not too much trouble, a short comment to explain the difference between Africa's share of burned area (70%) and fire carbon emissions (roughly half) would be welcome. âĂć Page 2, it would be desirable to link better paragraphs 2 and 3, maybe by harmonizing the terms used: is the "fuel load model" of paragraph 2 a component of the "fire emission model" of paragraph 3 (for the burned area approach)? This is clarified later at line 33, but maybe a clearer definition of "fire emission model" and of its components could be a good idea. âĂć Page 4, line 25, maybe emphasize that the work focused on the burned area approach (accounting for small fires using active fire). Some of the results can certainly be used for fire estimates based on active fires (I am thinking of the biome related error for example), but probably not all of them. âĂć It would certainly help the reader to have a geographical map showing the different biomes in Africa as used in the fire emission model. This could either be a new plots, or be shown together with Figure 6, 8 or 9 for example. âĂć The impact of the meteorological input was not discussed, understandably since no consistent dataset at a resolution finer than 0.25° exist for the period considered. The ECMWF high resolution now proposes meteorological output at 0.1° resolution, so maybe for later work the impact of meteorological input could be considered as well.