

## ***Interactive comment on “OMI observations of the anomalous 2008 Southern Hemisphere biomass burning season” by O. Torres et al.***

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OMI observations of the anomalous 2008 Southern Hemisphere biomass burning season O.Torres et al.

This manuscript deals with a very interesting and important topic. Also the manuscript is clearly written. Nonetheless I have the following major concerns which need to be addressed :

Main concerns :

- I find the proof (figure 4) to totally disregard meteorological conditions in SA as an explanation (in part) of the observed 2008 anomaly is rather weak. One should possibly better plot the anomalies in precipitation (and not just the precipitation). For example

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one would see that for the month with highest fire counts and AAOD (Sept. SA), so the peak in BB, the precipitation is clearly higher in 2006 and 2008 compared to 2007. Also the month before the peak is rather wet in 2008. This may suggest that meteorological factors are important (or at least not negligible) wrt interannual variations in BB in SA in these years. So how important is changes in precipitation in specific months ? This is not really highlighted with Fig.4. In this respect it would also be useful to see the spatial distribution of the precipitation anomalies in fig.5.

- Proof for the claimed causes for the 2008 anomaly is missing. Some evidence is needed to back-up the statement that “is very likely the result of the implementation of national and regional governmental regulations” (Discussion). Which regulations are these ? When and where have they been imposed, and what prove is there to show they actually were implemented on such a scale that could cause this large impact ? In fact in Koren et al., 2007 they claimed the 2006 low BB was a result of regulations implemented in 2006. So are the authors referring to different regulations, and what happened then in 2007 wrt these regulations ? Please also note the discussion/debate in literature regarding the 2006 ‘anomaly’, Koren et al., 2007, Schroeder et al., 2009, Koren et al., 2009. From this discussion it is clear that one must be careful in attributing causes to changes in BB. Clear evidence is needed -possibly coming from different information/data sources- to back-up any claim wrt possible causes for changes in BB.

- the manuscript focuses on 2008 as an anomalous year regarding Biomass Burning, whereas it is obvious from figure 4 that 2006 can be considered anomalous as well in this respect. However, nothing is said concerning 2006 and how the explanations brought forward for the anomalous 2008 can (or can not) also explain 2006. Given figure 4 (and figure 3) and the topic of this paper 2006 can not be ignored completely.

- Only one reference is provided addressing causes for deforestation in Amazone. References to important publications on this topic are missing (for example : Morton et al., 2007; vd Werf et al., 2008; Malhi et al., 2008; Laurance, 2007; Schroeder et al, 2009). Also in respect to the previous point references to earlier work addressing 2006 BB

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in Amazone is missing (Schroeder et al., 2009; Koren et al, 2009; Gloudemans et al., 2009). I expect to find this type of information and references in the Introduction and Discussion section.

Technical corrections : - page 21514 : 1st line Figure 2 should be Figure 4.

- Page 21514 : line 8 with peaks in September and October for SA and CA → CA and SA

- References to relevant earlier work on interannual variability of BB emissions using the TOMS-AI is missing (Duncan et al., 2003). Duncan et al., also found similar inter-annual variation in AAI for Central Africa and Brasil as shown here. Little variation in Central Africa, large interannual variation in Brasil.

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