

Interactive comment on “Relationships between burned area, forest cover loss and land use change in the Brazilian Amazon based on satellite data” by T. Fanin and G. R. van der Werf

Anonymous Referee #2

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The manuscript “Relationships between burned area, forest cover loss and land use change in the Brazilian Amazon based on satellite data” by T. Fanin and G. R. van der Werf discusses relationships between spatial and temporal patterns of burned area and loss of forest in the Brazilian Legal Amazon from 2002 to 2012, based on remote-sensing data. The paper also compares information on forest loss from two programs: the Global Forest Change (GFC) and the Brazilian Amazon Deforestation Monitoring Project (PRODES). In my view, the manuscript is original and has potential for publication, but needs some improvement. The objectives and methods are clearly presented and proper credit seems to be given to previous work. My few additional comments are listed below, separated in minor and major issues, and commenced by their specific

location in the text (in most cases, pages and line numbers).

1. Minor corrections: a) On Fig 1, I would suggest replace the word “provinces” by the word “states”.

b) Page 8239 / lines 5-10: Consider that, on the other hand, active fires may be easier to identify because there is potentially less confusion for detecting the thermal signal from active fires than the appearance of burn scars.

c) Page 8250 / line 21: Replace the name “Assunçã” by “Assunção”.

2. Major corrections:

a) 8242 / 22-30 through 8243 / 1-3: According to text in these lines, the methodology applies a 5 years period after deforestation for evaluating the evolution of the burned area. Why the authors used this specific number of years? Also, could the results be different applying a different value for this period?

b) 8248 / 21-24 through 8249 / 1-2: In relation to the regulation of the concentration of CO₂ in the atmosphere, the authors should also account for the density of the vegetation biomass. The study presented accounts only for the area affected by fires.

c) 8249 / 3-11: The authors should also explain that may be harder to detect burned area than active fires, because there is potentially less confusion in detecting the strong thermal signal from active fires than the scars from burned surfaces, which may be confounded by shades or humid surfaces.

d) 8249 / 25-28: The following sentence can be misleading and should be restated: “This indicates that droughts not only enhance burned area, but also increase forest cover loss in areas not monitored by PRODES and call for including woodland dynamics in carbon cycle studies.” First, PRODES monitors the entire study region. The type of change in forest cover reported by PRODES may be different than the type of change in forest cover reported by GFC, but the areas monitored by both methods are the same. Also, woodland dynamics are already taken into account in carbon cycle

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studies. That is the case, for example, in models of the land surface participating in the last IPCC report to calculate the spatial distribution of vegetation biomass.

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