Biogeosciences
Discussions

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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

T. Fanin and G. R. van der Werf

t.fanin@vu.nl

We appreciate the comments of Hannes Müller on our draft. Please find a detailed response below with the reviewer's comments in italics.

Regards,

Thierry Fanin

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1. *The introduction should be better linked with the results and discussion part, by introducing clear research questions, which govern the following manuscript and allow to include sub-sections in the results and discussion part.*

   We agree with the reviewer and have modified the structure of our discussion so that our introduction, result and discussion now follow the same sequence. We now start throughout the different sections with the deforestation part, followed by the fire section including the influence of droughts, and we end with the interlinkages between fire on deforestation. We would like to refrain from using sub-headings because our manuscript is relatively short and some headings would only encompass one paragraph.

2. *I am convinced that the land use and land cover analysis could be strongly improved by including the pasture class provided by the Land use/ land cover datasetTerraClaas 2008 and 2010 (Brazilian Institute of space research (INPE)).*

   We agree with the reviewer and have looked into using the TerraClaas dataset. However, we decided to not switch mainly because TerraClaas only covers 2008 and 2010 while we studied annual dynamics for the full 2002-2012 period. However, we have added a statement on potential shortcomings of using the MODIS and referred to the TerraClaas dataset to guide future analyses on similar topics:
   "Covering our full study period, we used the MODIS MCD12Q1 Land cover type product version 051 with the International Global Biosphere Program (IGBP) global land cover classification scheme. This classification provides 17 different land cover classes, including croplands and grasslands, but not pasture which is an important land cover class in our study area. According to Peron and

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Evangelista (2004), about 27% of the Çerrado (savanna) land cover class was used as pasture by 2002. One key dataset here is TerraClass with 30 meter spatial resolution (de Almeida et al., 2009), but because this dataset is only available for the years 2008 and 2010 and is probably highly dynamic we have not used it in the current analysis "

3. *For the discussion, I think it is important to mention that the role of burning concessions and fiscalisation of illegal burning practices by IBAMA strongly increased after 2004.*

We agree with the reviewer and added more information about the collaboration between INPE and CEMAM and the real time system for detection of deforestation:
"In the same year, the collaboration between INPE and the Center for Environment Monitoring (CEMAM) from the Brazilian institute of environment and renewable natural resources (IBAMA), created the System for Detection of Deforested areas in Real Time (DETER). This new program generated maps of areas with critical forest cover changes in near real time which proved to be an important tool for law enforcement (May et al., 2011)."

de Almeida, C. A., Pinheiro, T. F., Barbosa, A. M., de Abreu, M. R. B. S., de Lucia Lobo, F., Silva, M., Gomes, A. R., Sadeck, L. W. R., de Medeiros, L. T. B., and Neves, M. F.: Metodologia para mapeamento de vegetação secundária na Amazônia Legal, doi: INPE-16621-RPQ/839, 2009.
May, P. H., Millikan, B., and Gebara, M. F.: The context of REDD+ in Brazil: Drivers, agents and institutions, CIFOR, doi: 10.17528/cifor/003287, 2011.
Peron, A. J., and Evangelista, A. R.: Degradação de pastagens em regiões de cerrado, Ciência e Agrotecnologia, 28, 655-661, 2004.

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