We appreciate the comments of the editor on our draft. Please find a detailed response below with the comments of the editor in italics. In the manuscript, modifications are highlighted in blue.

1. *Please analyse and explain by comparing their detection algorithm why GFC is detecting an increase in deforestation in dry years, but PRODES is not. This is important otherwise the reader is left with that annecdote without further added understanding.*

We clarified that PRODES only includes primary forest loss, while GFC includes every type of vegetation taller than 5m in height. This includes as secondary forests not mapped by PRODES and these are likely more vulnerable to drought because they burn more easily, one of the results of our work. There may be another potential explanation specifically related to the different algorithms. PRODES only uses band 3, 4 and 5 from Landsat, ranging from 0.63 to 1.75 μm. GFC uses the same bands but also includes band 7, another short wave infrared band between 2.09 and 2.35 μm. This additional band allows a better penetration in atmospheric particles, smoke and haze. This could allow GFC to have fewer problems in hazy regions but this is highly speculative and we rather point towards what we feel is the main reason outlined above.

In addition, we realize that the use of the degradation terminology instead of secondary forest loss (which we meant) may have created a confusion in explaining the differences between GFC and PRODES. We propose to adjust this throughout the manuscript as outline in the next point.

2. *When GFC detects forest cover loss due to deforestation AND degradation, you need to separate the two in your analysis in order to compare only deforested with burnt areas. The effects you find can also be a result of degradation influencing fire occurrence. Please revise your methods and results accordingly.*

GFC detects both deforestation and degradation, but does not distinguish between the two. Ideally we would use the combination of GFC and land cover to separate deforestation from degradation but unfortunately the land cover data is weak with regard to distinguishing primary and secondary forest. Another approach, overlaying GFC and PRODES and assuming that the forest loss detected by both is deforestation while the forest loss detected only by GFC is degradation may not work either because they target different goals.

We now realize that we could have avoided this confusion by better sticking to our main objective and focus on the relation between fire and forest loss. We therefore propose to talk about forest loss throughout the paper and only mention the deforestation versus degradation debate when we discuss why GFC and PRODES are different, and in that discussion focus on secondary forest loss instead of degradation. While synonymous to some, we realize now this is not the case for all.

3. *Please define if your definition of shrubland or savannahs includes managed pastures. A cross-comparison against TerraClass as suggested by reviewer 2 would be helpful.*

Could managed pastures influence the replacement of forest cover by this land-cover type. This would influence the interpretation of these findings as it makes a difference if these are managed pastures for cattle or abandoned grass- or shrublands that burn due to fuel built-up. The interpretation would differ a lot. Please add and revise accordingly.

We have processed the TerraClass data for the states of Mato Grosso and Pará, which have most of the fire activity in the Brazilian Legal Amazon to better assess how this dataset could help in our analyses. As mentioned before, TerraClass cannot replace the MODIS land cover in our study because it is only available for 2008 and 2010. We attached a Table of burned area for each land use type for Mato Grosso and Pará in 2008 and 2010. To avoid confusion between land use and land cover we rather not include the Table in the manuscript but we would like to add some text to address the reviewer's question and suggestion.

Title:
We have changed "land use" to "land cover" to be more precise and avoid confusion.

Datasets and methods:
"We further analysed the land use for each land cover group in the two states most affected by fires: Mato Grosso and Pará. We used the Landsat-based TerraClass land use dataset from INPE available for 2008 and 2010 for this exercise."

Results:
"In 2008, pastures as classified by TerraClass covered 15% of Mato Grosso's and 12% of Pará's surface. For a large part, pastures overlapped with our low tree cover class (80% and 65% of the pastures were in that class for those two states). In Mato Grosso pasture fires represented only 7% of all burned area in 2008 and 9% in 2010, while most fires occurred in unmanaged land use (respectively 86% and 87%). In Pará, pasture fires comprised 19% and 34% of the burned area in 2008 and 2010, also much lower than burned area in unmanaged areas (69% to 56%) "

Discussion:
"In Mato Grosso and Pará, we found that relatively speaking, less burned area in our low tree cover class occurred in pastures compared to non-managed land. This indicates that management in general decreases burned area."

Conclusion:
"…and we have shown that in Mato Grosso and Pará burned area in unmanaged land is in average 5 times more frequent than in managed pasture."

4. *The following sentence in the discussion is not backed-up by your results since you did not analyze degradation in your study: "Our study shows that, at least for the Brazilian Amazon, degradation and fire dynamics outside the tropical forest domain may be equally important in regulating atmospheric CO2 concentrations". Please revise accordingly.*

We thank the associate editor to mention our mistake. We meant to say that secondary forest loss, and not degradation, could be significant in regulating atmospheric CO2 concentration. We modified our sentence accordingly

"Our study shows that, at least for the Brazilian Amazon, secondary forest loss and fire dynamics outside the tropical forest domain may be equally important in regulating atmospheric CO2 concentrations."

5. *The data uncertainty paragraph at the end of the discussion section, references the MODIS burned area product which accounts for small-scale fires (Randerson et al. 2012). Please add how the use of this product would influence your result and finding. Please explain as well why you did not consider using this product for your analysis.*

To explain the influence of active fires on our results and explain why we omitted this dataset we added this sentence:

"The use of active fires instead of or in combination with burned area may mitigate some of these issues (Randerson et al., 2012). However, these approached rely on statistics between active fires and burned area that can only be derived from coarse scale analyses; in the study by Randerson et al. (2012) a 0.25 degree spatial resolution was used which is far too coarse for our purposes. On native resolution, active fires are still 4 times coarser than burned area but the key issue is that active fires can be associated both with a small agricultural burn in the grid cell and with a large fire consuming all biomass in the grid cell. Because of this lack of quantitative information we refrained from using active fires."

6. *In the conclusion section, the following sentence is not correct: "In other words, besides the well-documented decrease in deforestation rates we also showed that fire intensity in deforested area decreased 5 over our study period." Your study has analysed burnt area, but not fire intensity as defined, for example, by Byram et al. 1959. This needs to be corrected.*

We agree with the associate editor and have rectified the conclusion as following:
"In other words, besides the well-documented decrease in deforestation rates we also showed that burned area in deforested and degraded area decreased over our study period."