The paper is relevant as it tries to provide a new approach to the analysis of fire regimes, by analyzing different parameters of individual fires extracted from global burned area products. This effort is relevant to better parameterize fire models, as well as to understand fire trends affected by changing climate and socio-economic conditions.

We thank the reviewer for his/her review and thoughtful suggestions. Please find a detailed response to the individual suggestion along with proposed changes below. Note that we will upload the updated manuscript using track change (in response to both reviews) in a separate post.

The main problem I found in this paper is their ambition to qualify single fire activity from a product that was not derived from this purpose. Recent papers (Padilla et al., 2015; Padilla et al., 2014) have found that global burned area products have important omission and commission errors, particularly for small fires Chuvieco et al., 2018; Roteta et al., 2018. They provide a good image of fire activity at global scale, meanwhile the analysis is done at global or at much continental scale. However, establishing characteristics of single fires from these products may be quite misleading. If the authors do not provide better validation datasets, the parameters they analyze at global scale may be in fact confusing. In my view, this is the main weakness of the paper. The authors are assuming estimations from a dataset that is not really validated. Until the MCD64A1 is fully validated, and we better understand their strengths and weaknesses, deriving such detailed analysis as presented in this paper may create more confusion than knowledge.

We appreciate this suggestion, and are aware of the shortcomings of moderate resolution (500-m) satellite imagery (e.g. omission of small fires). Unfortunately, the high resolution satellite data (e.g. Landsat or Sentinel-2) and derived products do not provide the temporal accuracy required to track individual fires and their behavior. In response to this comment, we would like to make the following clarifications. First, the use of moderate resolution satellite imagery to track individual wildfire behavior is an already widely used concept (e.g. Loboda and Csiszar, 2007; Archibald and Roy, 2009; Veraverbeke et al., 2014; Hantson et al., 2015; Benali et al., 2016; Frantz et al., 2016; Fusco et al., 2016; Nogueira et al., 2016; Oom et al., 2016; Laurent et al., 2018). Building on these previous studies, our manuscript provides an improved global approach to identify individual fires and characterize their behavior based on an algorithm that identifies ignition locations and then tracks how the fire expands through time. Second, our aim was to develop a flexible algorithm that leverages availability of daily satellite observations at moderate resolution but can be applied easily to other (global) daily burned area data sets. The MCD64A1 col. 6 burned area product (succeeding MCD45 and MCD64A1 col. 5) is currently among the most widely used and best performing global burned area products (e.g. Padilla et al., 2015; Giglio et al., 2018; Humber et al., 2018), hence our choice for this data set. The MCD64A1 col. 6 data has now been officially released by NASA and was Stage-2 validated against 108 Landsat scenes (Giglio et al., 2018), and although we are looking forward to see additional validation, we see no reason why the data should not be used in the interim. Given the aim of our work (i.e. to develop a flexible algorithm to track individual fire behavior in daily global burned area products), we focus on the quality of the derived products (e.g. burn date accuracy), rather than on absolute burned area (e.g. omission of small fires), although clearly many of these aspects are not entirely independent. During the coming years, we are looking forward continue to develop our algorithm and apply it to the latest generation of improved daily burned area products, e.g. from VIIRS. Moreover, there would be no reason why our algorithm could not be applied to high resolution (20/30m) satellite data, if (close to) a near daily revisiting time would be achieved within the next decade or so.

In response to this suggestion we will include additional validation data (see detailed response below) and we will make several textual clarifications to more extensively discuss previous work, highlight the objectives of our paper, and the dependency of our “derived” product on the underlying burned area data. Specifically, we will make the following textual changes:

Line 107 "The Global Fire Atlas algorithm can be applied to any moderate resolution daily global burned area product, and the quality of the resulting dataset depends both on the Fire Atlas algorithm as well as the underlying burned area estimates. Here we applied the algorithm to the MCD64A1 collection 6 burned area dataset (Giglio et al., 2018) and the minimum detected fire size is therefore one MODIS pixel (21 ha). Several studies have shown that the MCD64A1 col. 6 burned area product provides a considerable improvement compared to previous generation of moderate resolution global burned area products (Padilla et al., 2015; Giglio et al., 2018; Humber et al., 2018)."

Line 552: "The Global Fire Atlas methodology builds on a range of previous studies that have used daily moderate resolution satellite imagery to estimate individual fire sizes (Archibald and Roy, 2009; Hantson et al., 2015; Frantz et al., 2016; Andela et al., 2017), shape (Nogueira et al., 2017; Laurent et al., 2018), duration (Frantz et al., 2016) and spread dynamics (Loboda and Csiszar, 2007; Coen and Schroeder, 2013; Sá et al., 2017)."

Line 568: "In line with previous studies, we found that the coarser resolution (500 m) of the MODIS burned area data used to develop the Global Fire Atlas sometimes underestimated overall burned area (e.g. Randerson et al., 2012; Roteta et al., 2019), fragmenting individual large fires. However, the Landsat-based MTBS data at 30 m resolution were unable to distinguish individual fires within large burn patches of fast-moving grassland fires based on infrequent Landsat satellite overpasses (Fig. B2)."

Line 604: "The Global Fire Atlas algorithm provides a flexible framework that can be easily adjusted to work at different spatial and/or temporal resolutions."

In fact the comparison (validation is not an adequate term for what the authors include in the manuscript) analysis show a high degree of uncertainty even for the simplest variable (fire perimeter). When perimeters are compared with those derived from higher resolution data (MTBS), the correlations are low (for the authors, line 578: they are "reasonable correlations (r2 ranging from 0.3 to 0.5)", but we should remember that they imply than 70-50% of the variance is unexplained). Therefore, in my opinion the subsequent analyses derived from this dataset are quite likely to be erroneous. The comparison they made with active fires and MTBS shows also poor agreements in all biomes. What about fire speed or direction?

I suggest that they at least compare their results with specific very large fires where fire growth is available for different forest services, to check if at least for those large fires their estimations are correct. Very large fires could also be assessed using Landsat data, at least for fire perimeter-size and shape. Are you sure that Australia had a single fire of 42.000 km2? They could also compare their outputs with models of global fire weather conditions (Jolly et al., 2015; Pettinari and Chuvieco, 2017), as well as include some comparisons with fire spread and duration published by fire behavior experts.

The numbers ("r^2 ranging from 0.3 to 0.5") refer to the fire duration estimates that have higher uncertainty than perimeters (read line 578: "Reasonable correlations (r^2 ranging from 0.3 to 0.5) were found between Global Fire Atlas and fire duration estimates ..."), that show an average r^2 of 0.51 across land cover types. We appreciate that much of the variance remains unexplained, but we are encouraged by these results. For example, although Landsat-based MTBS provides better estimates of overall burned area, the underlying data lack the temporal revisit frequency to identify individual fires in low biomass ecosystems where fires are typically short and move fast. As we will show in our new supplementary figure (Fig. 1 here), the Global Fire Atlas clearly outperforms MTBS in terms of identifying individual ignition locations, which explains why the r^2 values of fire perimeters drop from 0.65 in forests to 0.38 for grasslands (a similar decline in agreement was found for fire duration, with r^2=0.51 for forest and r^2=0.33 for grasslands). This is an important finding on its own, since MTBS is a widely used dataset. Because the uncertainty arises both from the Global Fire Atlas and the (combined) MTBS and VIIRS datasets, the use of least square regression is in fact not representative for estimating data quality, we therefore also use orthogonal distance regression that accommodates uncertainties in both datasets and shows better overall agreement.

Although we agree that an extensive comparison to daily fire perimeters would be a great form of validation for day-of-burn, fire duration, expansion rates and final perimeter, these data are unfortunately not available at the ease and scale that the reviewer suggests. In response to this suggestion we have requested available data from the US Forest Service and manually compiled a small dataset consisting of 15 fires that were reasonably well documented (this is not the case for the majority of fires). In line with good agreement between Global Fire Atlas and MTBS estimates of fire perimeters in forested ecosystems (Figs. 5 and 6 in manuscript), very good agreement was found between Global Fire Atlas estimates and US Forest Service estimates of fire size (km^2; r^2=1.00), duration (days; r^2=0.87), and daily expansion (km2 day^{-1}; r^2=0.97; see Fig. 2 here). The comparison also highlights some of the shortcomings of the Global Fire Atlas data that we already discuss; for example, we observed that the Global Fire Atlas tended to somewhat underestimate fire size and overestimate (small) fire duration, resulting in conservative estimates of fire expansion.

These data also allowed us to explore how well the Global Fire Atlas characterizes fire growth dynamics (Fig. 3 here). We find very good agreement between Global Fire Atlas and US Forest Service estimates of fire size at any specific point in time (r^2=1.00), good agreement between a 3-day running average of fire expansion rates from both sources (r^2=0.94), and somewhat reduced agreement for daily expansion rates from both sources (r^2=0.79). This reduced performance for daily estimates originates from the considerable uncertainty in the exact burn date in the burned area product (see Fig. 4 in manuscript), and thus the attribution of fire expansion rates to a specific day. In addition, we find that the Global Fire Atlas data compares particularly well for large fires or expansion rates, with lower r^2 values for smaller fires and expansion rates (e.g. compare upper and lower panels of Figs. 2 and 3 here). The combination of very precise fire perimeter maps from the US Forest Service and the focus on large fires, likely explains why the Global Fire Atlas shows better agreement in Fig. 2 here compared to Fig. 5 in the manuscript. Therefore we expect that extremely large fires, like the fire in Australia the reviewer mentions, are among the fires that are best captured by the Global Fire Atlas data. Large fires are generally well mapped by moderate resolution burned area algorithms (e.g. Fusco et al., 2019) as well as easy to characterize from the Global Fire Atlas perspective.

To respond to the specific comment concerning the suggestion of comparing our estimated daily fire behavior to fire weather indices, we have great interest in this, and it is something we are currently working on in a separate manuscript.

In addition to the new figures (Fig. 1-3 here), we will make a number of textual additions/clarifications:

Line 276: “Finally, we compared Global Fire Atlas data to a small (manually compiled) dataset of daily fire perimeters from the US Forest Service.”

Line 318: “For specific large wildfires across the western USA, the US Forest Service National Infrared Operations (NIROPS; https://fsapps.nwcg.gov/nirops/) derives estimates of daily fire perimeters for fire management purposes by collecting night-time high resolution infrared imagery. This imagery is manually analyzed by trained specialists to extract the active fire front. Although these data provide a wealth of information, only few fires were completely and precisely documented. From their database we were able to extract 15 large fires for which daily perimeter information was available. Although insufficient for full scale validation, results provide valuable insights into the strengths and shortcomings of the Global Fire Atlas estimates of individual fire size, duration and expansion rates. In addition, we compared day-to-day expansion rates (km^2 day^{-1}) of individual large fires across both datasets. If multiple

Global Fire Atlas perimeters overlapped with a single US Forest Service fire perimeter, we compared the fires with the largest overlapping surface area."

Line 346: "In line with these findings, we found good agreement between a 3-day running average of Global Fire Atlas and US Forest service estimates of daily fire expansion, but reduced correspondence for daily estimates of fire growth rates due to uncertainty in the day-of-burn of the burned area product (Fig. B1)."

Line 392: "The comparison of Global Fire Atlas data to a small dataset (n = 15) of daily perimeters of large wildfires in primarily forested cover types mapped by the US Forest Service yielded good correspondence between estimates of fire size, duration, and expansion rates (Fig. 7). The improved comparison of fire size (cf. Fig. 5a and 7a) could be related to the US Forest Service data being more accurate than MTBS, but likely also represents the good performance of the Global Fire Atlas (e.g. compare Figs. 7a, b and c to Figs. 7d, e and f) and underlying burned area products (Fusco et al., 2019) for relatively large fires. In contrast to the suggested underestimate of fire duration shown in Fig. 6a, these data suggest the Global Fire Atlas may slightly overestimate fire duration. This difference may reflect the fact that active fire detections may be triggered by smoldering while the burned area product will only register the initial changes in surface reflectance from fire. Based on a small underestimate of overall burned area and overestimate of fire duration by the Global Fire Atlas, the average daily fire expansion rates based on US Forest Service data were higher than estimates based on Global Fire Atlas data (Fig. 7c and f)."

Line 583: "Moreover, the uncertainty in the burn date of the underlying burned area product is typically at least one day, resulting in a large uncertainty in the fire duration estimates of shorter fires. Global Fire Atlas data therefore performed best for large fires (Figs. 6 and 7)."

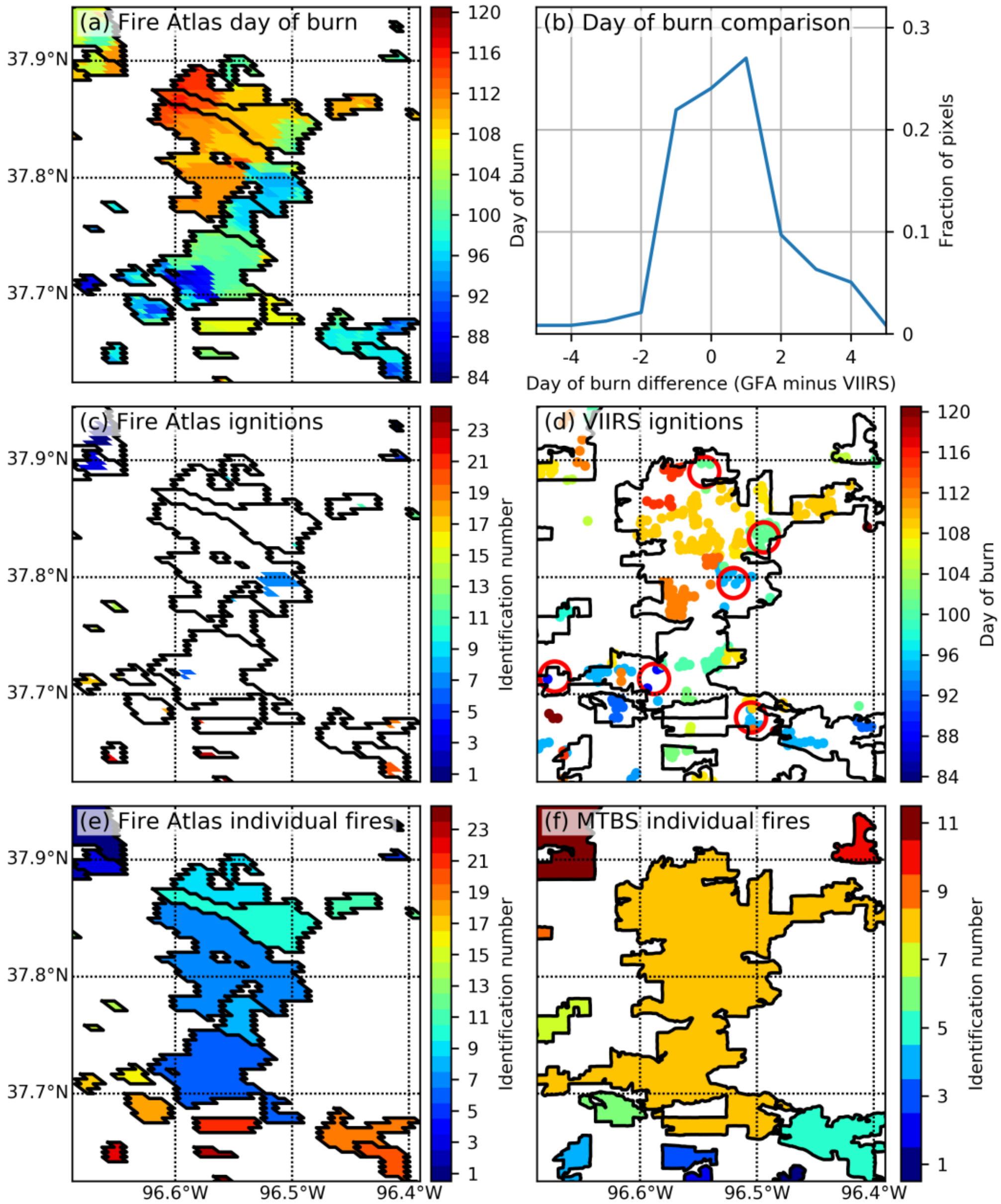

Figure 1 (Fig. B2 in updated manuscript): **Comparison of Global Fire Atlas perimeters and ignition locations to estimates based on MTBS and VIIRS for frequently-burning grasslands in Kansas, USA.** (a) Global Fire Atlas adjusted burn dates from MCD64A1, (b) per-pixel comparison of adjusted burn dates used within the Global Fire Atlas (GFA) to the day of the (first) active fire detection from VIIRS, (c) ignition points as estimated by the Global Fire Atlas, (d) manually interpreted ignition locations (red circles) based on VIIRS active fire detections on top of MTBS fire perimeters, (e) individual fires as estimated by the Global Fire Atlas, and (f) the MTBS burned area and individual fires. Here, MCD64A1 data underestimates the total burned area compared to the visual interpretation of Landsat data within the MTBS project, resulting in fragmentation of individual large fires. However, the daily temporal resolution of MODIS imagery allows the Global Fire Atlas to distinguish individual fires and ignition points within larger burn scars that cannot be resolved from infrequent Landsat observations used to delineate fire perimeters within the MTBS project. Broad patterns of ignition locations identified by the Global Fire Atlas are confirmed by manual interpretation of patterns inferred from VIIRS active fire detections (d).

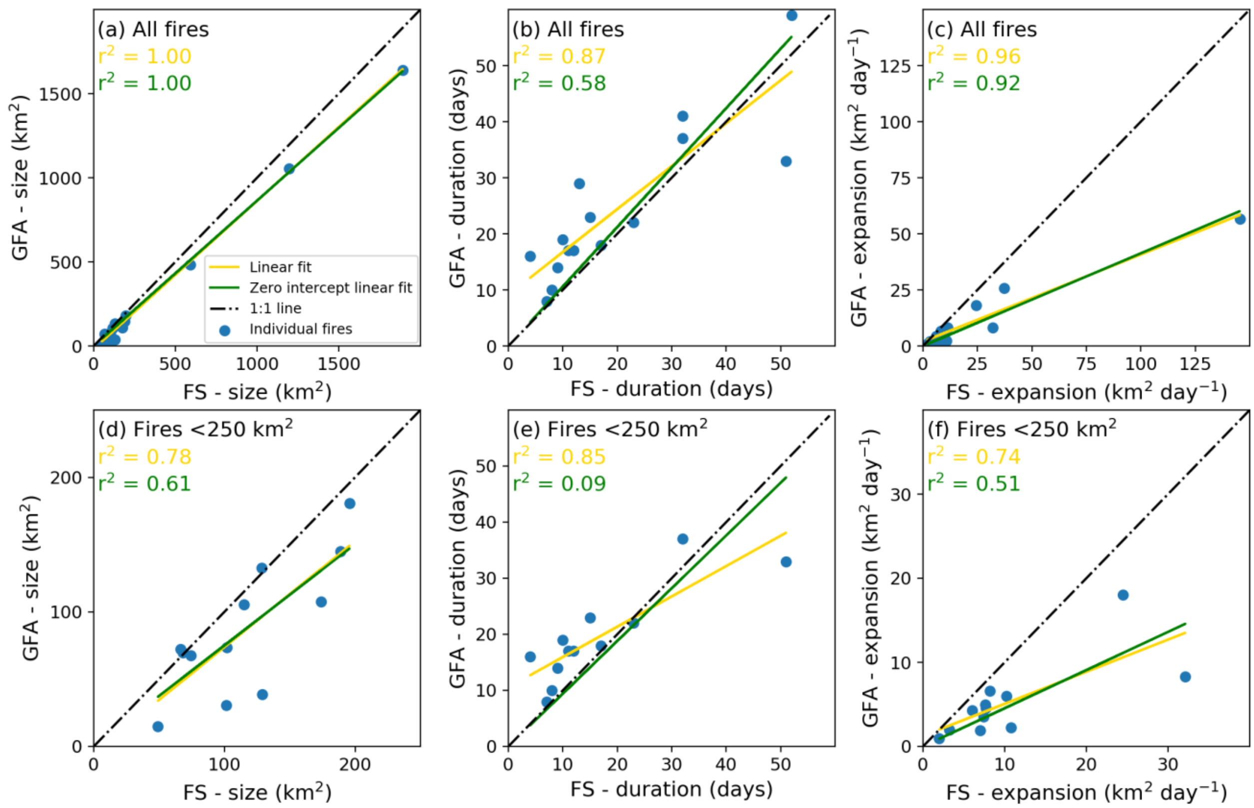

Figure 2 (new Fig. 7): **Comparison of Global Fire Atlas (GFA) and US Forest Service (FS) data for a selected number of large wildfires in the US.** Comparison of (a) fire size, (b) duration, and (c) average daily expansion rate for all fires (N=15), (d, e and f) are like (a, b and c) but for fires smaller than 250 km^2 (N=12). Correlation coefficients are provided based on linear regression with (yellow) and without (green) intercept, assuming a non-zero intercept could indicate a structural offset between both datasets.

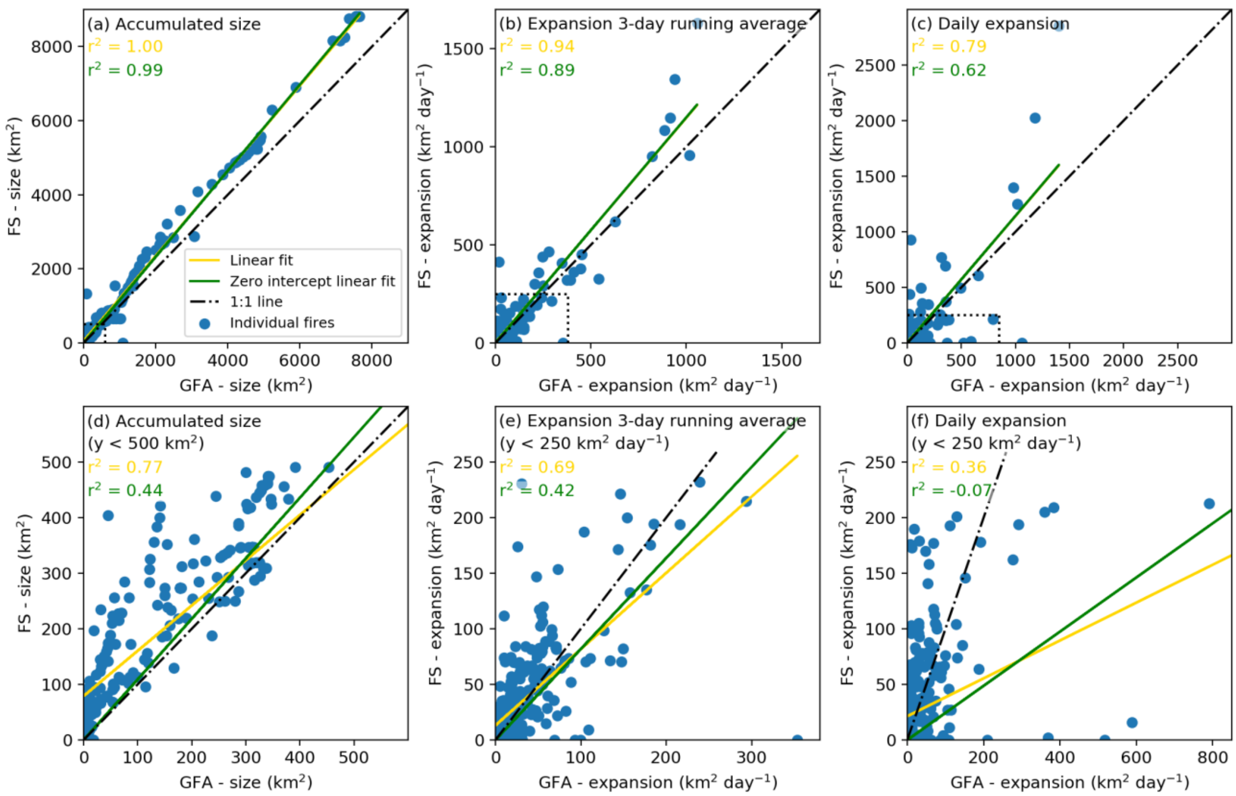

Figure 3 (new **Figure B1): Comparison of daily Global Fire Atlas and US Forest Service data for a selected number of well characterized wildfires in the US.** (a) The accumulated daily fire size (for all fires, N=15) illustrates the ability of the Global Fire Atlas to reproduce individual large fire sizes at any specific day over the fire lifetime (each blue dot indicates the size of a specific fire on a specific day). (b) A 3-day running average of the daily growth or "expansion" of each fire (km^2 day^{-1}) and (c) the daily expansion on each day of each fire. Figures (d), (e), and (f) are like (a), (b), and (c), but for US Forest Service fire sizes smaller than 500 km^2 or expansion rates lower than 250 km^2 day^{-1} and corresponding Global Fire Atlas estimates (see intermittent boxes on top-figures).

On the other hand, I doubt about the utility of providing global averages of different fire parameters, such as fire duration or progression by continent. In this regard, some of the comments included in the results section may seem quite trivial or difficult to justify empirically. What is the point of concluding that "fire duration exerted a strong control on fire size and total burned area"? Is this not the case in the vast majority of fires?

Although this may seem trivial, the vast majority of fire models currently do not include multi-day fires (e.g. Hantson et al., 2016; Rabin et al., 2017). Our study now for the first time shows that multi-day fires are the norm across all ecosystems and in some ecosystems "duration" exerts a strong control on eventual fire size and total burned area while fire speed is more important in other ecosystems. Incorporating these mechanisms into fire-enabled global ecosystem models is thus critical to capture the (changing) role of fire in the Earth system. We think it is exciting that with these new data we are now for the first time able to analyze how fire behavior influences fire size distributions and eventual burned area. We believe that summarizing these data across continental or ecosystem scales provides a good lookup table for e.g. fire modelers to see whether their model results are within the right range.

In summary, the authors should make an additional effort to really validate their product and better identify the weaknesses of current analysis.

We very much appreciate the suggestion of the reviewer that additional validation data would be helpful, but these data are unfortunately not as readily accessible as the reviewer suggests. In response to this suggestion we have manually compiled a small dataset of well characterized daily behavior of forest fires in the US. Results clearly demonstrate the ability of the Global Fire Atlas to assess individual fire behavior but also illustrate some of the specific shortcomings that we now discuss in more detail. During the coming years we are very much looking forward to further develop our data product as well as provide improved validation and optimization of parameters based on new data availability.

Specific comments

Line 45: Worldwide, fires burn an area larger than the size of the European Union every year (Randerson et al.,2012; Giglio et al., 2013). Please include total area in km2, the reader does not need to know the size of the European union to understand your sentence.

We believe the reader will understand this sentence without knowing the exact size of the European Union as we simply mean “a large area”.

Line 55: you claim that burned area reduction is occurring in the last two decades, but Andela et al., 2017 paper refers only to the 2001-2017 period (1995-2001 with more uncertainty), so you could only claim that the reduction is observed in the last few years, as you do not have date from several decades ago.

The study of Andela et al. (2017) included 18 years of data, we will change “Over the past two decades, ..” to “Over the past 18 years, ..”

Line 65: Our understanding of global fire activity is also severely constrained by the coarse resolution data we are based on our analysis. Recent analysis of burned area estimation comparing coarse and medium resolution data shows that in fact we may be losing a significant part of fire activity (Roteta et al., 2018, https://geogra.uah.es/fire_cci/sfd.php), particularly in tropical regions.

We appreciate the importance of small fires (e.g. Randerson et al., 2012), and we will more clearly discuss the advantages and limitations of the different datasets in our manuscript (see also updated Fig. B2 (Fig. 1 here) and corresponding discussion above). However, we would like to keep our introduction focused on characterizing global fire behavior instead of other important issues that we do not contribute to in this work.

Specifically, we will update line 568: “In line with previous studies, we found that the coarser resolution (500 m) of the MODIS burned area data used to develop the Global Fire Atlas sometimes underestimated overall burned area (e.g. Randerson et al., 2012; Roteta et al., 2019), fragmenting individual large fires. However, the Landsat-based MTBS data at 30 m resolution were unable to distinguish individual fires within large burn patches of fast-moving grassland fires based on infrequent Landsat satellite overpasses (Fig. B2).”

Line 88: update (Giglio et al., submitted)

Done

Lines 155-164: How did you proceed in the case of small fires (a few pixels)? You claim that local minima are deleted when they do not spread forward in time.

In case there is no "later burn date", the ignition point(s) associated with the largest possible number of iterations were retained. We will clarify this in the text.

Line 160: "For short duration fires, the ignition points were retained associated with largest possible number of iterations."

Lines 180-187: Fire spread is obviously associated to wind speed and slope, not just to fuel availability. Therefore the assumptions made by the authors seem quite arbitrary for a global product. Have they made any validation of their persistence algorithm? It is not clear what happened with areas that burned 2 times, were they assigned 6 or 8 day persistency? The thresholds are in fact overlapped.

Our "fire persistence threshold" is somewhat similar to the "cut off" value previously used in flood fill based approaches (e.g. Archibald and Roy, 2009; Hantson et al., 2015; Nogueira et al., 2016; Oom et al., 2016; Laurent et al., 2018). However, in contrast to the flood fill based algorithms, we force the fires to only move forward in time (i.e. logical progression), which can be done because we first apply the ignition point filter that removes small inconsistencies in the burn date estimates. Our threshold values (i.e. 4, 6, 8, or 10 days) were mostly based on the idea that if fire frequencies are low, the probability of multiple fires occurring in each other's vicinity is likely low, hence we can use a longer threshold. In areas of frequent (human caused) fires on the other hand, it is not unlikely to have a new ignition point in the vicinity of a burn scar from a previous fire, in this case we use a short threshold to reduce the likelihood of independent fires to be merged artificially. Fire frequency is also closely related to vegetation patterns, hence we notice that our thresholds are broadly biome dependent (e.g. typically 10-day thresholds in high fuel load boreal and temperate zones and low 4-day thresholds in frequently burning savannas and grasslands).

Following the reviewer's suggestion, we propose to make the following textual clarifications:

Line 185: We will change line 185 to ".., and a 6, 8 and 10-day fire persistence period for grid cells that burned 3 times, 2 times, or 1 time, respectively." to be more precise.

Line 560: "Interestingly, we found similar spatial patterns of fire size (cf. Fig. 8 and Archibald et al., 2013; Hantson et al., 2015), although absolute estimates may show large differences based on the "cut off" value used within the flood-fill approach (Oom et al., 2016), and to a lesser extent by the fire persistence threshold used here."

Line 195. It is not clear if two active fires that merged were assigned a single perimeter or two. It seems they were divided, but most forest services would probably consider them as single one.

We define a single fire as having one ignition point, so several fires that merge would be considered independent fire events in our dataset. This is indeed one of the reasons that our data deviate from the MTBS (also see our response to your earlier suggestions). This is explained in more detail in section 2.1.

Lines 240-: : : It is not clear what the authors did when areas were not observed by clouds or cloud shadows. What is the impact of unobserved periods in fire progression? Were the geometrical deformation effects caused by off-nadir observations taken into account?

We use the MCD64A1 burned area product without any further modification, therefore the uncertainty in the day-of-burn would likely increase during periods of cloud cover (we also mention this, e.g. lines 171-173). Similarly, the scan angle of MODIS instruments (or data-gaps) could potentially affect the correct attribution of burned area to a given day. In fact, this is the reason we let our time series start in 2003, when the combination of the MODIS instruments aboard both Terra and Aqua provide more frequent observations (see lines 89-90). Nevertheless, the uncertainty in burn date will affect Global Fire Atlas fire characterization, in particular of small and short fires. For example, a multi-pixel single day fire could easily get a longer fire duration assigned solely based on the uncertainty of the burn date in the burned area product. For large multi-day fires, these effects become smaller (e.g. Figs. 4 and 6 of manuscript). Based on the additional comparison of the Global Fire Atlas and US Forest Service data we will more clearly discuss the consequences of uncertainties in the burn date:

Line 340 "Several factors may account for the positive bias in the 500 m day of burn from burned area compared to active fire detections, including orbital coverage, cloud and smoke obscuration, and different thresholds between burned area and active fire algorithms regarding the burnt fraction of a 500 m grid cell."

Line 346 "). In line with these findings, we found good agreement between a 3-day running average of Global Fire Atlas and US Forest service estimates of daily fire expansion, but reduced correspondence for daily estimates of fire growth rates due to uncertainty in the day-of-burn of the burned area product (Fig. B1)."

Figure 3 shows direction of spread that are not very realistic, as all sort of directions are included, even for neighbor pixels (North and South directions in contiguous areas??)

The reviewer should remember that a single pixel represents 21 ha, and may contain numerous landscape features that form natural barriers to fire and could change the fire direction (e.g. vegetation patterns, gullies etc.). Nevertheless, it is true that on a per-pixel level the direction estimate may be quite uncertain, this figure mostly serves to demonstrate how the algorithm works (i.e., for each pixel between fire lines it is estimated how the fire has moved, which results in a speed and direction of spread). Because of the uncertainty at the individual pixel level (e.g. see Fig. 4), we report dominant direction including only multi-day fires larger than 10 km^2 in our global map (Fig. 9).

It is not clear why did you include MCD64 in Figure 4, as the date information should be the almost the same as the Global Fire Atlas. I would recommend changing it to a single graph showing dating accuracy for the four major biomes.

We include the MCD64A1 col. 6 data to demonstrate that despite the filters we apply, the overall adjustment of the burn date by the Global Fire Atlas algorithm was small.

Lines 343-346: "The adjustments made to the burn date here, required to effectively determine the extent and duration of individual fires, had a relatively small effect on the overall accuracy but tended to reduce the negative bias in burn dates and increase the positive bias (i.e. delayed burn date compared to active fire detection, see red and black lines in Fig 4)."

The fire dominant direction will probably be more useful for fire modelers expressed in degrees.

Converting the dominant direction to degrees can be achieved by multiplying the numerical dominant direction (ranging from 0-8) by 45. We will include this suggestion in the online user guide.

Other authors have done similar analysis, a recent one by Laurent et al., 2018. Line 440. I doubt that any fire behavior modeler would agree with: "the dominant direction typically represented less than half of the pixels". I think the approach by Laurent et al (2018) using the dominant direction of the evolving ellipsis is more adequate in this regard, as most fires have a dominant wind direction.

We appreciate that fire direction may be estimated in various ways, with likely similar outcomes. We have chosen for the approach we present in our manuscript because it is "internally consistent", in other words, fire direction and speed are derived at the same time when we calculate the most logical (i.e. shortest distance) path the fire may have followed. The exciting thing about the Global Fire Atlas and similar datasets is that, based on the characterization of about one million individual fires worldwide each year, we can now actually investigate what "most" fires do. Our first results indicate that, although dominant wind direction was important, landscape features may be more important than previously thought.

I do not understand the meaning of using average NDVI values to show extreme fires. I do not see the relation.

The NDVI map on the background provides the reader an idea of vegetation cover and available fuels, closely related to fire occurrence and behavior (e.g. Bowman et al., 2009).

We have now clarified this "The background image depicts mean MODIS normalized difference vegetation index (NDVI, 2003 – 2016), an indicator for large scale vegetation patterns and available fuels."

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