We appreciate the reviewer’s suggestions on the manuscript to further improve the quality and the contribution of our work. Below are the authors’ responses to all of the reviewer’s suggestions. The reviewer’s suggestions are marked as **red**, while our responses are marked as **blue**.

Suggestions for revision or reasons for rejection

(visible to the public if the article is accepted and published)

This study's general summary and significance should be reaffirmed at the end of the abstract.

Respond: We have summarized and addressed the contributions of our dataset at the end of the abstract.

From line 31 to line 33 in the revised manuscript:

“The GFBS dataset provides a more precise and reliable assessment of burn severity than existing available datasets. These enhancements are crucial for understanding the ecological impacts of forest fires and for informing management and recovery efforts in affected regions worldwide.”

Fig2. The reason for underestimation and overestimation should be further clarified.

Respond: Just to clarify, figure 2 only shows the locations of ground verification burn severity sites over southeastern Australia and forest fire CBIs over CONUS. The figure does not contain any results.

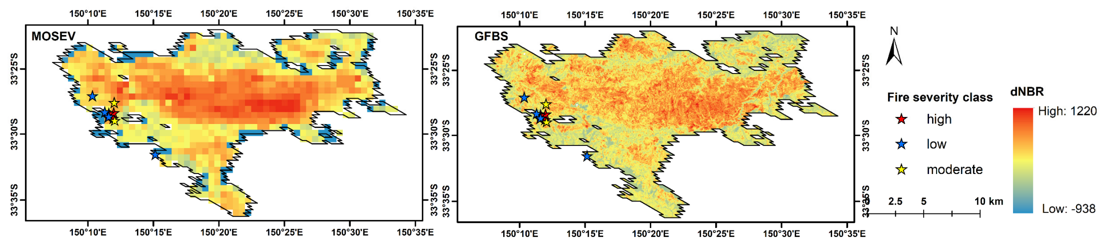
Figure 2. Locations of (a) ground verification burn severity sites over southeastern Australia and (b) forest fire CBIs over CONUS.

If the reviewer is referring to the comparison between the GFBS and MOSEV against ground validation, we have discussed the differences from line 285 to line 301 in the revised manuscript:

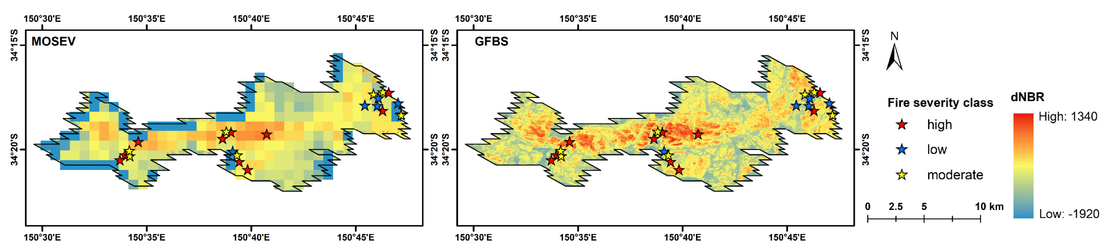
“As mentioned above, MOSEV gave relatively small dNBR values in the event on October 15 2023, where burn severity is classified from in situ measurement as high. Figure 11 (a) displays the location of the ground verification sites with the corresponding burn severity class and associated dNBR values from MOSEV and GFBS. It is noted that within one MOSEV grid cell (500 meter) four ground verification sites are located. The dNBR value from MOSEV is 295 for all four sites, while three of the sites are classified as low and only one site is classified as high severity. On the other hand, at GFBS resolution (30 meter), we can note significant spatial variation in dNBR, with GFBS dNBR being 239 for the site classified as high and 9, 16 and 68 for the sites classified as low severity. In a surrounding MOSEV pixel we note a site classified as high severity, but dNBR from MOSEV is 188 while dNBR from GFBS is 397. In the event on October 21 2023, we found that MOSEV gave relatively high dNBR values at ground verification sites that are classified as low severity. Figure 11 (b) shows the locations of ground verification sites with corresponding classified burn severity and associated dNBR values from MOSEV and GFBS. In the two adjacent MOSEV grids, the dNBR values from MOSEV are 287 and 327 respectively where both sites are classified as low severity. At GFBS resolution more significant changes between high and low dNBR are found within the same MOSEV grid, resulting in dNBR values of 30 and 32 for the ground verification sites classified as low severity. The results demonstrate the significance of GFBS high resolution data in representing the small-scale variations of dNBR and providing more granular and reliable dNBR estimations."

Fig9. The image seems a little blur.

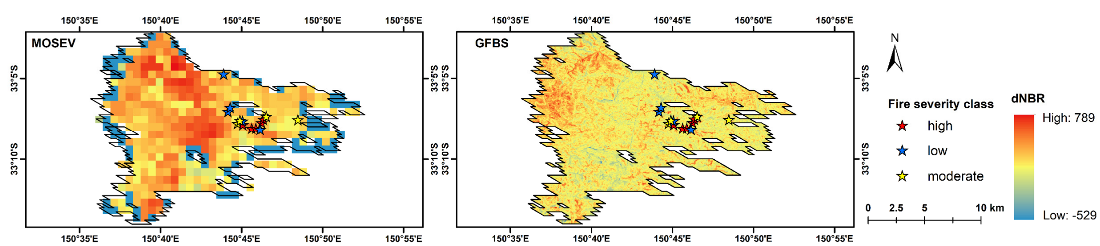
Respond: We have provided a high-resolution image in the revised manuscript.



(a)



(b)



(c)

Figure 9. Spatial patterns of dNBR for wildfires on (a) October 15 2023, (b) October 17 2023 and (c) October 21 2023, in southeastern Australia, derived from the GFBS and MOSEV datasets.