

Atmos. Chem. Phys. Discuss., referee comment RC2
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Comment on acp-2022-447

Anonymous Referee #2

Referee comment on "Estimation of biomass burning emission of NO₂ and CO from 2019–2020 Australia fires based on satellite observations" by Nenghan Wan et al., Atmos. Chem. Phys. Discuss., <https://doi.org/10.5194/acp-2022-447-RC2>, 2022

Overall, this is an excellent research article. In addition to the suggested revisions of the other reviewer, I would like to see improvement in the abstract as well as the summary and conclusions, which are a bit thin on the important implications of your research. For instance, you make the following statement in the summary and conclusions: "Our study on both savanna and temperate forest fire emissions demonstrates the capability and limitations of TROPOMI data for the study of the regional variability of combustion characteristics and their impacts on regional atmospheric composition and air quality." You make a similar comment in the abstract. This statement may be accurate, but I would like you to elaborate on this statement, including on how your technique may be applied to other world regions. As another example, you say: "These differences could be traced back to different measurement techniques used, their spatial resolutions, nonlinear sensitivities to gas densities in the boundary layer, and larger NO₂ natural variability due to its short lifetime, all of which suggest that further validation of satellite products and investigations of more cases are required." Could you suggest additional validation that would be most helpful to this end? How many cases are required? My recommendation is to revisit the abstract and summary and conclusions with an eye for elaborating on the broader implications of your research.