Atmos. Chem. Phys. Discuss.,
https://doi.org/10.5194/acp-2019-632-RC1, 2019

Atmospheric Chemistry and Physics Discussions

Interactive comment on "The Impacts of Biomass Burning Activities on Convective Systems in the Maritime Continent" *by* Hsiang-He Lee and Chien Wang

Anonymous Referee #2

Received and published: 18 September 2019

This paper examines the impacts of biomass burning aerosols on convective systems over the northern Sumatra and the western Borneo in the Maritime Continent based on based on long-term WRF-Chem simulations. While the paper is well written and interesting, there are some concerns that need to be addressed before the paper being publishable. (1) The resolution of inner domain at 5 km is still too coarse for simulating convective clouds. (2) The section of selected cases analysis looks vague and needs more detailed analysis. The impacts of aerosol on precipitation are very complicated (different mechanisms on different clouds under different conditions). It is too bold to get the conclusion just based on three cases even with cloud types unknown. There are so many convective cases that could be categorized them and analyzed in detail.

(3) The heating effect of fire aerosols seems too weak to have significant influence on circulation.

Here are also some specific comments:

1. Line 153: What is the time frequency of nudging?

2. Line 183: needless parenthesis

3. Line 205: How and why were these convective systems selected? Why only three?

4. Line 233: Were the model results interpolated to the resolution of TRMM before doing the comparison?

5. Line 260: Why only this example sounding is shown? You may compare with many other cases and even show a statistical comparison.

6. Line 275: Only one case captured by CALIPSO?

7. Line 311-314: It is confusing. Aerosol impact on ice-phase microphysical processes is still considered in Morrison through the CCN effect. It is the IN effect of aerosol that is missed.

8. Line 315-321: More background information of these cases are necessary. You just simply saying that one case has weaker convective systems than other two. This is too ambiguous.

9. Line 454: The temperature increase seems too small. Is this significant? Maybe the difference is within the model simulating error range.

10. Line 455-457: No figure showing this conclusion. How much land breeze and surface convergence is weakened.

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