

***Interactive comment on* “Estimation of emissions from biomass burning in China (2003–2017) based on MODIS fire radiative energy data” by Lifei Yin et al.**

Anonymous Referee #1

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In this article, the authors present a study of burning emission in China using MODIS inputs and an empirical fire radiative energy method. The fire emission issue in China is an important one due to its complexity caused by the rapid social development. This paper is well written. But There are still some issues to be discussed.

1. The land cover

Globcover 2009 is used in this study. However, during the study period, China experienced dramatic changes, including urban expansion brought about by rapid urbanization, as well as returning farmland to forests and grasslands. The emission factors are dependent on the type of vegetation. Therefore, at 1km resolution level, large emission

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uncertainties may occur due to the biases in land cover data. Maybe annual land cover data is a better choice.

2. Seasonal patterns

The authors did not show much about seasonal patterns of the results, which is very effective in evaluating the results. Due to the impact of the monsoon climate, the meteorological conditions that trigger the fire are extremely seasonal. Meanwhile, the agriculture schedules are very stable in the eastern and northeast plains, and fires from cropland only occur in and after the harvest seasons. For example the results shown in Fig.2, based on personal experience, I am very worried about the confusion of grassland and cropland fires.

3. Monte Carlo

Please explain more details in the Monte Carlo simulations, which (how many) independent variables are fitted and randomly sampled.

4. Double check the words, including CO₂ (2 subscript). Use “dry season” rather than “arid season”, different meanings.

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