The introduction, description of methods and analysis of data have been documented well and the results are presented in the lucid manner. Also the results showed consistent with those obtained by several other earlier studies. The quantitative estimates of OBB emissions would be helpful to study the fire impacts on regional and local air quality and therefore helpful in the policy-making in the future. But there are some flaws in this study. I recommend for publication but after substantial revision with the considerations provided below and proof-reading to strengthen the paper.

(1) Three methods, namely traditional bottom-up, fire radiative power (FRP)-based, and constraining, were used to estimate the OBB emissions. However, it's quite boring because the author does not put much insight into these methods, but simple quantify the OBB emissions with them. Actually, the bottom-up and FRP-based had been widely applied in the estimations of global or regional OBB emissions. The highlight of this study is the constraining method. This study should be emphasis on reporting the constraining method and describing its advantages relative to other methods.

(2) The spatial resolution of OBB emission inventories using three methods are also compared. So, what's the allocation factor (cropland or population?) of bottom-up-based OBB emission inventory in this study?

(3) The FRP data may miss amount of fire points because of the limitation of satellite overpass periods, leading to the underestimation of OBB emissions. The author should consider it in calculating the uncertainty of OBB emissions.

(4) compares model output using different inventories with an observational dataset. While interesting. I am interested in why the simulated PM10 level with Traditional_OBB input is significant higher than with FRP_OBB and Constrained_OBB inputs in Lianyungang, Fuyang, Bozhou and Bengbu, while no difference in Hefei and Chuzhou. In addition, more air pollutants, such as CO and $PM_{2.5}$ should be compared because OBB emissions is not the major contributor to PM_{10}.

(5) Specify the gird resolution in Figure 7.