Review comments:

This study applied an extensive dataset, including aircraft, ozonesonde and global CTMs to study the trends of global ozone changes in the troposphere. Furthermore, the authors performed sensitivity simulations from the CTM to analyze the attribution of global ozone burden changes. They found a consistent ozone burden changes from both the aircraft and ozonesonde observations from 1995 to 2017 which was also captured by the CTM with latest emission inventory. The study also compared the trends simulated by the ensemble CMIP6 models, and concluded that the higher ozone trends from the CMIP6 was potential caused by the overestimation of anthropogenic emissions used in the earlier versions of CEDS emission inventory. The manuscript is generally well-written and the presentation quality is very good as well. I have two concerns about the methods in which I want the authors to address before this manuscript accepted for publication.

1. As comparison with the multi CMIP6 models, we can see the GEOS-Chem model used here has a really coarse resolution. I wonder how this issue will affect the trend analysis especially for regions in China and India which are experiencing significant changes both in climate and emissions at urban cores.
2. When doing the attributing analysis, taking aircraft for example, the authors fixed all the other emissions at 1995 level, and then varying the aircraft emissions. Since the world is experiencing significant emission changes for both developed regions (emission decreasing) and developing regions (emission increasing), so how this method will affect the contribution from the aircraft for the ozone production without considering the realistic emissions in specific years?

Editorial comments:

L55-56: rephrase this sentence.

L57: I feel change to "The ozone lifetime ranges/spans from xxx to …" reads better. Just a suggestion.

L70-79: I would encourage the authors to summary the findings from the IPCC report, instead of citing the whole paragraph for their own paper.

L202: The units for the trend should be "Tg yr^{-1}" or "Tg $decade^{-1}$".

L214: change to "(Zheng et al., 2018)"
Fig. 1: Explain the color indications for low panel

Fig. 2: Explain the meanings in the bracket in left panels. The unit for the right panel is not accurate. Also reading the right panels for the trends of NOx CO and NMVOC, the authors can use the unit of "Tg/decade".