This study focuses on the atmospheric reactivity of 3,3-dimethylbutanal (3,3-DMButanal) and 3,3-dimethylbutanone (3,3-DMButanone), two carbonyl compounds that may significantly impact atmospheric chemistry. The research investigates their degradation mechanisms with atmospheric oxidants such as Cl atoms, OH, and NO_3 radicals. Using Fourier Transform Infrared Spectroscopy (FTIR) and Gas Chromatography-Mass Spectrometry (GC-MS), the study measures reaction rate coefficients and identifies primary reaction products. Additionally, it assesses the environmental implications of these compounds, particularly their roles in tropospheric ozone formation and secondary organic aerosol (SOA) generation. However, there are still some problems with the manuscript.

1. Introduction Part. While the article mentions the environmental and industrial sources of 3,3-dimethylbutanal and 3,3-dimethylbutanone, it lacks specific data on their typical concentrations and distributions in the actual atmospheric environment. It is better to add relevant background information to help readers better understand the importance of these compounds in the atmosphere.

2. Even if the authors use the same reference compound, the parallel experimental results will get a large error in the rate constant. Is this a reasonable margin of error? How does the author explain this error?

3. How is the error calculated for each rate constant? Please elaborate.

4. The clarity of Figures 2 and 3 is not enough. Please adjust the image resolution to make the picture more visible.

5. Is the peak time of each product compared with the standard peak time of the national standard?

6. The mechanism diagrams in Figures 7 and 8 are quite confusing and recommend readjustment.

7. The author has repeatedly mentioned that these aldehydes may contribute to the production of SOA, so does the author consider supplementing the SOA experiment in this system to better evaluate its contribution to SOA?

8. Combined with SAR prediction, the authors point out that methyl groups adjacent to tert-butyl groups are the main reaction path, especially in the oxidation of OH radicals and Cl atoms, but many studies have pointed out that aldehyde groups are the most important and

possibly the only core reaction path in aldehydes. How do the authors consider this problem?

9. In Section 3.1 Kinetic study, the author points out that some wall losses, photolysis losses, etc. can be ignored. Please give specific experimental results and present them in pictures to intuitively understand the wall losses.