Consistency evaluation of tropospheric ozone from ozonesonde and IAGOS aircraft observations: vertical distribution, ozonesonde types and station-airport distance. IAGOS and WOUDC are the two global O_3 vertical observation programs with the most observation sites and the longest continuous observation time in the world. The O_3 vertical observation data obtained are widely used in verifying models and satellites and analyzing O_3 vertical distribution characteristics, but systematic comparisons of these two data sets are still very rare. This paper selected 23 pairs of sites between about 30°S and 55°N from 1995 to 2021 for a detailed comparative analysis and discusses the vertical distribution and the influence of ozonesonde types and station-airport distance of the two data sets. The authors obtained relatively good comparison results: "The O_3 concentration observed by ECC sondes is on average higher by 5-10% than that observed by IAGOS aircraft, and the relative bias increases modestly with altitude." and "The distance between station and airport within 4° has little effect on the comparison results." The paper's topic is well suited for Atmospheric Chemistry and Physics, and the results are interesting. However, some important information is missing, and several issues need to be revised. Therefore, a minor revision is necessary before it can be accepted.

Response: We appreciate the time and effort that the editor and the reviewers dedicated to providing feedback on our manuscript. We are grateful for the insightful comments and valuable improvements to our paper. We have incorporated most of the suggestions made by the reviewers. Those changes are highlighted in the revised manuscript. According to your suggestion, we modified the manuscript in detail and marked the revised contents with red font.

1. abstract: There is not much content in the abstract, so it does not need to be divided into two paragraphs.

Response: Thanks for your suggestions. We have modified it.

2. line 83-87, In the introduction, it is recommended that the authors add some content related to the research significance of this study. Although relevant elaboration has been made in the literature review part of the introduction, it is still necessary to create a more explicit discussion on the research significance of this article in the last paragraph of the introduction.

Response: Thanks for your suggestions. We modified it into "As shown above, the global O_3 vertical distribution datasets observed by WOUDC and IAGOS have been widely used in various studies.

Still, a long-term and multi-site systematic comparison of these two datasets is rare, especially for the observations in the past three decades. In this study, we attempt to make the most comprehensive evaluation to date of the relative biases of IAGOS and sonde profiles, using as many station pairs as possible. We identify 23 suitable pairs of sites in the WOUDC and IAGOS datasets from 1995 to 2021, compare the average vertical distribution of tropospheric O_3 shown by ozonesonde and aircraft measurements, and analyze their differences by ozonesonde type and by station-airport distance."

3. In lines 109-110, only the O_3-related content needs to be introduced.

Response: Thanks for your suggestions. We deleted the content unrelated to O_3 and modified it to: "Blot et al. (2021) evaluated the internal consistency of the O_3 measurements since 1994, which confirmed the instrumental uncertainty of ±2 ppb. Moreover, they found no bias drift amongst the different instrument units (six O_3 IAGOS-MOZAIC instruments, nine IAGOS-Core Package1 and the two instruments used in the IAGOS-CARIBIC aircraft)."

4. In Table 1, the layout is not very nice, as the minus sign before the western hemisphere longitude appears in different rows.

Response: Thanks for your suggestions. We have modified it.

5. There are some formatting problems in the article, which need to be carefully checked and modified, such as the mixed-use of "-" and "~".

Response: Thanks for your suggestions. We have modified them.

6. Line 231-232: Can you provide a more detailed discussion on the analysis of Indian-sonde? This part seems to be just a simple summary of the content in one sentence. Although the comparison between Indian-sonde and Aircraft is not good, it can be found from Table 2 that there are still some seasonal differences.

Response: Thanks for your suggestions. In lines 269-279, we modified into " The tropospheric O_3 observed by Indian-sonde in the four seasons is 43.3-79.4 ppb, 31.4-80.2 ppb, 42.2-69.6 ppb and 51.5-87.5 ppb, and that observed by aircraft in the four seasons is 22.8-60.1 ppb, 14.8-47.1 ppb, 25.0-44.1 ppb and 35.6-53.3 ppb (Fig. S4). The tropospheric O_3 observed in Indian-sonde in the four seasons increases with height almost linearly. The tropospheric O_3 observed by aircraft first increases and then decreases with altitude in spring, summer and autumn, while in winter, it first decreases and then increases with altitude. The tropospheric O_3 observed by the Indian-sonde and

the aircraft is quite different, and the RD in the four seasons is 6.3% to 47.5%, 22.6% to 52.9%, 26.4% to 40.6% and 5.13% to 39.13%. Table 2 indicates poor consistency between Indian-sonde and aircraft observations in all four seasons, with R in winter only 0.18. The bias and RMSE in winter are the largest, at 40.07 ppb and 64.99 ppb. The bias, R and RMSE in the other three seasons are smaller, and the differences between them slight."