

The authors have addressed nearly all of the reviewer comments. There is one more very minor comment from Reviewer #1 that I would like to see addressed before final publication. The comment is pasted below:

"Differences between JUS and other sites: I appreciate the added clarification from the authors, but it appears my initial comment was unclear. What I find confusing about this section is that the authors attribute small differences in CO<sub>2</sub> mole fraction between JUS and most of the other urban sites to spatial proximity, but seem to imply that a large difference between JUS and another urban site (OBS) is due to measurement error (page 12, lines 10-12 in track changes document). These two statements seem contradictory, i.e., if the measurement error means these gradients cannot be interpreted, that should apply to all of the gradients."

**Response:**

In this paragraph, we aim to show that there are small differences in CO<sub>2</sub> mole fractions at the JUS and HPP urban sites (excluding OBS), both in the observation and model data. These observed and modeled differences in CO<sub>2</sub> concentrations between urban sites are smaller than those between urban and suburban sites because of their spatial proximity, which is further linked to the spatial differences in CO<sub>2</sub> emissions.

The observed CO<sub>2</sub> difference between JUS and OBS is larger compared to their modeled difference. However, we do not imply that this large discrepancy is merely due to measurement errors. It could also be caused by factors such as inconsistencies between actual CO<sub>2</sub> emissions and those reported in inventories. Note that the collocation performance shown in Figure 5 also indicates that the RMSE for the HPP7 sensor (OBS) is comparable to that of the other HPP sensors and is not significantly larger. We have added the following sentence in the revised manuscript: "This is probably because of inconsistencies between the actual spatiotemporal distribution of intra-urban CO<sub>2</sub> emissions and those reported in the inventory."

The discussion on measurement error on page 12, lines 10-12 of the track changes document refers to all HPP sites, not just the OBS site. We have changed the word "various" to "nearly all" to better clarify it. Additionally, this point is further explained and highlighted in the conclusion section of the manuscript (See page 14, lines 6-9 in track changes document), as shown below:

"However, afternoon CO<sub>2</sub> mole fraction differences between station pairs in summer, especially the HPP stations located within the Paris city limits, are quite small, typically below 1 ppm. In these cases, the accuracy of the HPP instruments is not sufficient to identify model-observation misfits that would be generated by an error in the emission estimate in the downtown areas of Paris."