Dear editor,

Thank you for the constructive comments on our manuscript. We have carefully addressed your concerns and made appropriate revisions. Below, comments by the editor are given in black normal font, and our response is shown in blue. Newly added and modified text in the revised manuscript is given in italics.

Comment: Figure 2 and 3 captions: "Observed" diurnal cycles "averaged over the whole campaign period"? A more detailed explanation is preferred.

Response: We have revised the captions for Figure 2 and Figure 3 to explicitly state that these are average diurnal cycles based on observations collected throughout the entire campaign period.

Line 228:

"Average diurnal cycles of H_2O_2, PAN, and O_3 observed throughout the entire campaign period at the SRE-RCEES site."

Line 248:

"Average diurnal cycles of H_2O_2 and organic peroxides (ROOH) observed throughout the entire campaign period at the SRE-RCEES site."

Comment: The explanation of the H_2O_2 processes is almost good, but the reason for the minimum of organic peroxides around 19:00 has not been well explained. Is this due to instrument issues or atmospheric processes?

Response: Thank you for highlighting the need for a clearer explanation regarding the minimum concentration of organic peroxides around 19:00. The observed minimum in organic peroxide concentrations around 19:00 is primarily attributed to atmospheric processes rather than instrument issues. The minimum in ROOH concentration observed around 19:00 represents a transitional point. By this time, daytime photochemical production has largely ceased due to diminishing solar radiation, leading to a decline from its afternoon peak as removal processes continue. The subsequent increase in ROOH concentration after 19:00, which makes 19:00 a local minimum, may be attributed to nighttime chemical production primarily through (a) the ozonolysis of alkenes (O_3 + alkenes → … → RO_2 → ROOH), and (b) NO_3 radical-initiated oxidation of VOCs ($NO_2 + O_3 \rightarrow NO_3$; NO_3 + VOCs → … → RO_2 → ROOH). These processes become major sources of RO_2 (and subsequently ROOH) during the night. In contrast, H_2O_2 typically continues to decrease throughout the night. Although ozonolysis can also be a source H_2O_2, H_2O_2 generally has a higher dry deposition velocity than many ROOH species, leading to more efficient net removal overnight.

Line 266-274:

"The minimum in ROOH concentration observed around 19:00 represents a

transitional point. By this time, daytime photochemical production has largely ceased due to diminishing solar radiation, leading to a decline from its afternoon peak as removal processes continue. The subsequent increase in ROOH concentration after 19:00, which makes 19:00 a local minimum, may be attributed to nighttime chemical production primarily through (a) the ozonolysis of alkenes (O_3 + alkenes → … → RO_2 → ROOH), and (b) NO_3 radical-initiated oxidation of VOCs ($NO_2 + O_3 \rightarrow NO_3$; NO_3 + VOCs → … → RO_2 → ROOH). These processes become major sources of RO_2 (and subsequently ROOH) during the night. In contrast, H_2O_2 typically continues to decrease throughout the night. Although ozonolysis can also be a source H_2O_2, H_2O_2 generally has a higher dry deposition velocity than many ROOH species, leading to more efficient net removal overnight.”