

Black: Editor's comments

Blue: Author's reply

We appreciate the Editor's additional comments and feedback. Below, we provide our response.

The authors have revised the manuscript according to the referees' suggestions. I have one minor additional comment that I suggest incorporating before it is published - specifically to provide an actual value for the temporal and spatial co-incidence of the AirCore with the ground-based FTIR data, somewhere presumably in Section 2.2. I don't think this affects any conclusions, but it would be useful for the reader to know this.

After including this information, the manuscript should be published.

Some of this information is already included in Section 4.2 (Inter-comparison with AirCore and aircraft profiles); however, we have expanded the description. The revised paragraph is as follows:

“To maximize the number of profile comparisons, and considering the relatively stable nature of CH₄ and N₂O, we compare FTIR profiles obtained within a 6-hour time window of the AirCore descent time. The mean distance between the AirCore descent location and the FTIR site is 76.8 ± 26.5 km, while the mean distance between the FTIR site and the AirCore landing point is 101.1 ± 28.5 km. The same approach is undertaken when comparing with aircraft observations but the aircraft profiles generally extend up to around 6 km asl altitude whereas the aircore profiles extend up to 20 km or higher. As mentioned in Section 2.3, aircraft observations are conducted approximately 100 km northeast of the FTIR site.”