

The authors say in lines 772-774 “Anthes et al. (2025) reported that the UCAR-processed COSMIC-2 bending angles included in ROMEX exhibit a positive bias of approximately +0.1-0.15% relative to ERA5 in the lower stratosphere, larger than the biases seen for Spire and other ROMEX datasets.” This statement by itself is incomplete and misleading. In the Anthes et al. (2025) preprint and in the final published version <https://doi.org/10.5194/amt-18-6997-2025> it is made clear that the COSMIC-2 “bias” of 0.1 to 0.15% in the lower stratosphere (specifically between 10 and 30 km) is mostly a representativeness difference and not a true bias, and is caused by the different orbits of COSMIC-2 and the other ROMEX missions around the non-spherical Earth and the associated varying radius of curvature. This is described in detail in Section 5.2 of the paper as the *azimuth effect* and results in most (about 0.1%) of the apparent bias. Because it is a representativeness difference and not a true bias, it does not affect data assimilation in models. The remaining small part of the apparent bias (less than 0.05%) is due to the sideways sliding of the occultation plane and can be easily corrected in the processing of the RO data by applying a correction to the impact height.

Reply:

We thank the EC for the comments on this important clarification and agree with the interpretation provided in Anthes et al. (2025). The statement in Lines 772–774 will be revised to more accurately reflect the findings of that study. Specifically, we will clarify that the reported 0.1–0.15% difference in COSMIC-2 bending angles in the lower stratosphere (10–30 km) is predominantly a representativeness difference rather than a true systematic bias. As described in Section 5.2 of Anthes et al. (2025), this effect is primarily attributed to orbit-related sampling differences over a non-spherical Earth (the azimuth effect), which accounts for the majority (~0.1%) of the apparent discrepancy.

We will also note that, because this is a representativeness effect, it does not significantly impact data assimilation in numerical weather prediction (NWP) systems. The remaining small component of the difference (less than 0.05%) is attributable to the sideways displacement of the occultation plane and can be mitigated by appropriate corrections to the impact height during RO data processing.

The revised text will explicitly distinguish between representativeness differences and true biases to avoid potential misunderstanding.