# Reply to Comments from Editor Mark Weber

**Review**
**Title**: An Approach to Track Instrument Calibration and Produce Consistent Products with the Version-8 Total Column Ozone Algorithm (V8TOZ)
**Authors**: Zhihua Zhang, Jianguo Niu, Lawrence E. Flynn, Eric Beach, and Trevor Beck

**Public justification (visible to the public if the article is accepted and published)**:
Dear Zhihua Zhang,

your paper is nearly ready to be published in AMT. There is one minor issue which needs to be addressed. Both reviewers remarked that little motivation in the introduction is given why a new of soft calibration for OMPS is needed in the light of an existing soft-calibration approach applied to SBUVs using ice radiances. The changes you made do not completely answer this. In your reply to the reviewers, you explain that ice radiances are insufficient. So please summarise in the introduction briefly the ice radiance calibration (incl. references) and explain why it is insufficient for OMPS-NM before you explain the new approach as done in your revision.

Best wishes,
Mark Weber

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Dear Mark Weber,

A new paragraph as below starting on line 83 to line 96 was added to the Introduction that gives why a new of soft calibration for OMPS is needed in the light of an existing soft-calibration approach applied to SBUVs using ice radiances:

We start the process with the NASA S-NPP V8TOZ products. The Level 1 data records for those retrievals were calibrated to give agreement with NOAA-19 SBUV/2 total ozone at the start of the record and cross-track adjustments from ice radiance studies were used to set the effective reflectivity (McPeters et al., 2019). The NASA soft calibration using ice radiances could have been applied here for NOAA-20. That calibration is primarily for the reflectivity channels and requires seasonal observations. The equatorial Pacific is available year round with good viewing conditions and better stability. Further, the close to identical Equator-crossing-times of S-NPP, NOAA-20 and NOAA-21 allow direct comparisons of the cross-track reflectivity, aerosol and ozone patterns over that region. Both methods use the cross-track reflectivity over dark vegetative scenes as a check on the performance. The soft calibration for ozone for the NASA S-NPP used comparisons to the ozone amounts from the NOAA-19 SBUV/2 retrievals. This data set is not available for the NOAA-20 OMPS NM. Fortunately, the NPP OMPS NM dual diffuser system has been working well to track the small levels of instrument degradation. This means that ozone comparisons between NPP OMPS NM and NOAA-20 OMPS NM give a good approach for generating a consistent addition to extend the long-term record. The equatorial Pacific presents a low variability ozone field for inter-instrument result comparisons to estimate ozone channel adjustments to force agreement. The V8TOZ Radiative Transfer Lookup tables and retrieval algorithm act as a transfer between the two OMPS NM measurements at the 12 channels used in the V8TOZ.