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Comment on angeo-2021-15 additional details supporting earlier comment

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Community comment on "Validation of SSUSI-derived auroral electron densities: comparisons to EISCAT data" by Stefan Bender et al., Ann. Geophys. Discuss., https://doi.org/10.5194/angeo-2021-15-CC2, 2021

Here are some more details on why my papers, Knight (2021) and Knight et al. (2018) (see citation information below) should be mentioned in this paper. Knight et al. (2018) goes into more detail about the auroral FUV algorithm used for SSUSI than any other published work, to the best of my knowledge. It shows plots of lookup tables and gives error analysis derivations. It also describes validation work done in SSUSI calibration/validation efforts. As I alluded to in my previous comment, Knight (2021) investigates the effect of proton precipitation on the accuracy of auroral FUV-derived NmE (maximum ionospheric E region electron density). Although an earlier study based on in situ observations found that 15% of precipitating energy flux comes from proton/ion precipitation on average (see Knight et al., 2021 for the reference), there are situations in which proton/ion precipitation produces vastly more Lyman-Birge-Hopfield (LBH) emission than electron precipitation. Knight et al. (2008, Figure 4), showing intense LBH emission during a geomagnetic storm, illustrates this well. Because of limitations of the SSJ4 and SSJ5 in situ particle flux detectors used, it could not be determined whether the vast amounts of LBH emission for proton/ion precipitation indicated errors in model LBH emissions for proton aurora (in which case there would be serious biases in auroral FUV data product algorithms) or whether the underlying cause of the large LBH emissions was simply that there were very large amounts of precipitating proton/ion energy flux. Knight (2021) resolves this issue to some extent, since it finds that there is no bias in auroral FUV-derived NmE associated with proton precipitation.

Knight, H. K., Galkin, I. A., Reinisch, B. W., and Zhang, Y.: Auroral ionospheric E region parameters obtained from satellite-based far ultraviolet and ground-based ionosonde observations: Data, methods, and comparisons, J. Geophys. Res., 123, 6065-6089, https://doi.org/10.1029/2017JA024822, 2018.

Knight, H. K.: Auroral ionospheric E region parameters obtained from satellite-based far-ultraviolet and ground-based ionosonde observations - effects of proton precipitation, Ann. Geophys., 39, 105-118, 2021.