

Dear anonymous Referee1:

I am very happy to receive your recommendation and very grateful for your advice. We have followed your comments to revise this manuscript. The grammar and language usage of the manuscript have been revised by a native-English speaker. In the resubmitted paper, a new text is emphasis as red text. The Referee Comments are abbreviated to “RC”, and Authors’ Response is abbreviated to “AR”.

The following are the responses of each major comment:

RC1 :

AR (1) 'I agree with the advice and have revised this problem in my manuscript. We will call for a professional company to polish the manuscript before formal publication.'

AC (1) 'Please understand my difficulties.'I understand the difficulties and efforts needed to correct the manuscript. However, it should be noted that the formal rating of the manuscript includes 'Is the language fluent and precise?' It is the reviewer's responsibility to ensure that the language meets the requirement of the journal.

Before reaching out to the 'professional company,' it is highly recommended that the authors carefully proofread the manuscript. Besides, there are free grammatical softwares (e.g., Grammarly).

AR1 :

I agree with your advice. The grammar and language usage of manuscript has been revised by a native-English speaker. In the resubmitted paper, a new text is emphasis as red text. I hope that you can be satisfied.

RC2 :

AR (2). The paper's main conclusion is that the convection electric field changed the trajectory and rotation rate, which resulted in a Shoulder structure. The TPM model is used to support this conclusion. Therefore, the following observations/data are essential to prove this conclusion: 1. The electric field should be shown. 2. The plasmaspere from the TPM model. 3. A comparison between the TPM model and real observations.

The authors kept the origin Figure 3 and added supplementary figures of the raw IMAGE/EUV. However, items 1 and 3 are still missing, making the manuscript unconvincing.

It is necessary to show the electric field's evolution, the plasmopause from the TPM model, and the real IMAGE/EUV observation. The authors can refer to the figures in the following references.

Goldstein, J., Wolf, R. A., Sandel, B. R., & Reiff, P. H. (2004). Electric fields deduced from plasmopause motion in IMAGE EUV images. *Geophysical Research Letters*, 31(1), L01801. doi:10.1029/2003GL018797.

Goldstein, J., Pascuale, S., & Kurth, W. S. (2019). Epoch-Based Model for Stormtime Plasmopause Location. *Journal of Geophysical Research: Space Physics*, 124(6), 4462-4491. doi:https://doi.org/10.1029/2018JA025996.

AR2 :

I agree with your advice. I add Figure 4 to illustrate origin observations by EUV/IMAGE and equipotential lines in the equatorial plane to supplement figure 3 in lines 143-145.

RC3 :

AR (3) Since the feature of a double plume is neither demonstrated nor observed in this manuscript, I recommend it not emphasized in the abstract.

AR3:

I agree with your advice and revised the abstract.

RC4:

Figure 4 and RC 6. AC7.

Figure 4 is still confusing to me. What do the colors mean in Figure 4b? Do they represent the test particles at different L shells (as answered in AC7)? The colors in Figure 4b should be corrected because they are not the same as the color bar in Figure 4a.

Figure 4a shows the trajectory of 14 test particles, which have different rotation rates according to Figure 4b. On the other hand, if the x-axis is both time-dependent (UT) and MLT-dependent, does it mean that these particles are co-rotating with the Earth (thus a fixed rotating rate).

AR4:

I agree with your advice and revised Figure 5, the x-axis is MLT-dependent. The time is used to drive the model running. The colors mean in Figure 4 represent the test particles at different L shells.

You can see the detailed changes in the resubmitted manuscript. If you have any problems, please contact me immediately. I am very grateful for your comment. Thank you very much.

Best Regard

Hua Zhang

The 1th author of this manuscript

Dear anonymous Referee2:

I am very happy to receive your recommendation and very grateful for your advice. We have followed your comments to revise this manuscript. The grammar and language usage of the manuscript have been revised by a native-English speaker. In the resubmitted paper, new text is emphasis as red text. The Referee Comments is abbreviated to “RC”, and Authors’ Response is abbreviated to “AR”.

The following are the response of each major comment:

RC :

Suggested language edits for the abstract are provided below. I appreciate the challenge of expressing thoughts in a non-native language. Significant editing is required for language usage throughout the text. I do not see the need to capitalize the first letter of Structure or Plume anywhere in the text other than in the first word of a sentence or in a title. I highlight text using the color red to indicate suggested language edits in the title and abstract.

Line 1, the title, “A New Perspective and Explanation for the Formation of Plasmaspheric Density Structures”

Line 11, “and a post-noon plume-like structure straddling in the between noon and dusk region.

Line 15, “reduction and spatial non-uniformity in the dawn-dusk convection electric field intensity.”

Lines 16-18, “A TPM modeled event is found to develop an initial pre-dawn asymmetric bulge that becomes a shoulder as a result of increased “co-rotation” rate with increasing L-shell that is preceded by localized outward convection.”

Lines 18-20, “The shoulder rotates eastward toward 12h MLT and develops into a single or double plume structure during an active times period.

AR :

I am agree with the advice to revise an abstract of my manuscript. The grammar and language usage of manuscript has been revised by a native-English speaker. The “Plume ”and “Shoulder” also are replaced by “plume” and “shoulder” throughout the text.

You can see the detailed changes in the resubmitted manuscript. If you have any problems, please contact me immediately. I am very grateful for your comment. Thank you very much.

Best Regard

Hua Zhang

The 1th author of this manuscript