

Ann. Geophys. Discuss., referee comment RC2 https://doi.org/10.5194/angeo-2021-55-RC2, 2021 © Author(s) 2021. This work is distributed under the Creative Commons Attribution 4.0 License.

Comment on angeo-2021-55

Anonymous Referee #2

Referee comment on "Statistical study and corresponding evolution of plasmaspheric plumes under different levels of geomagnetic storms" by Haimeng Li et al., Ann. Geophys. Discuss., https://doi.org/10.5194/angeo-2021-55-RC2, 2021

Plasmaspheric plumes play important roles in the inner magnetosphere. The current study statistically investigates the plumes observed by Van Allen Probes. Further more, it explains the difference of the observed features of plumes by Van Allen Probes and Cluster by performing test particle simulations. The simulations results explain well these different features. This is an interesting study and contribute to our understanding about plasmaspheric plumes. I suggest this preprint be published after minor revisions and list my comments and suggestions as follows:

A general question:during these intervals under study, where were Cluster satellites? Since authors compare observation results from Cluster and Van Allen Probes, is it possible to compare their observations during the same time intervals?

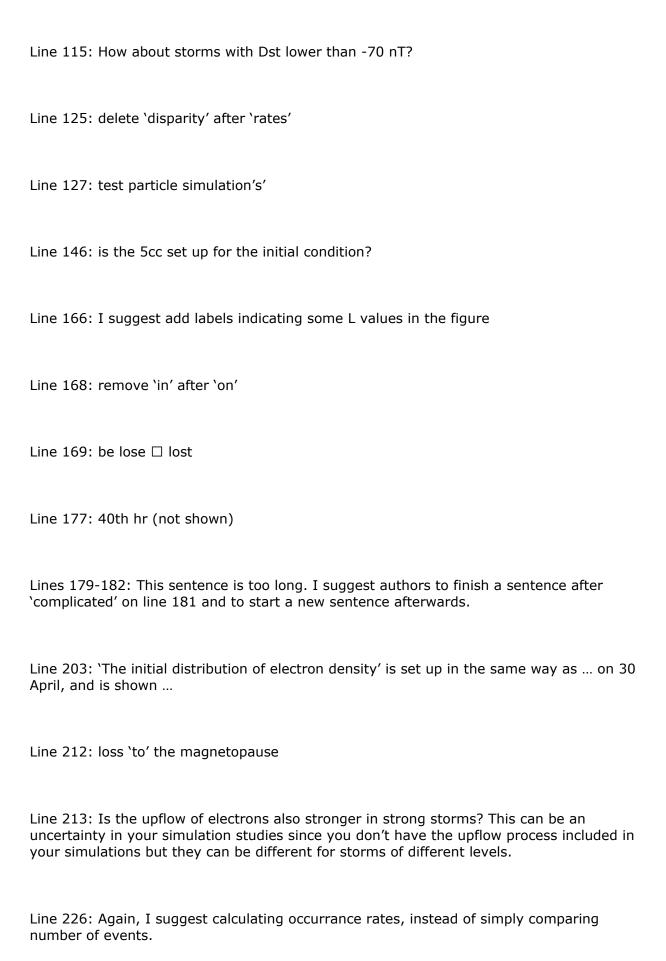
Line 55: 'In this paper', in situ measurements from Van Allen Probes are used to...

Line 73: what is the criteria for this 'sharply'?

Line 102: But the time interval of them are shorter. Could you please normalize them and compare the occurance rate rather than simple number of events?

Line 114: It would be interesting to add MLT-L dependence. Maybe authors can plot 'dial

^{&#}x27;figures like in Figure 7, but color-code occurance rate in different MLT-L bins.



Line 232: remove 'appears' after 'plume'

Line 257: lost 'to' the magnetopause

Lines 279: 'these two' factors make 'the Van Allen Probes'

Figure 1: Considering this is a study related with storm/non-storm periods, I suggest authors to add panels in this figure to show related geomagnetic indices (e.g., Dst, Kp, AU, AL, AE), and to add verticl lines indicating storm phases and the start of the storm if this is a storm period.

Figure 7 caption: line 449: on □ above