

# Supporting Information for “Passing the Alfvén Layer by Means of Chorus Acceleration”

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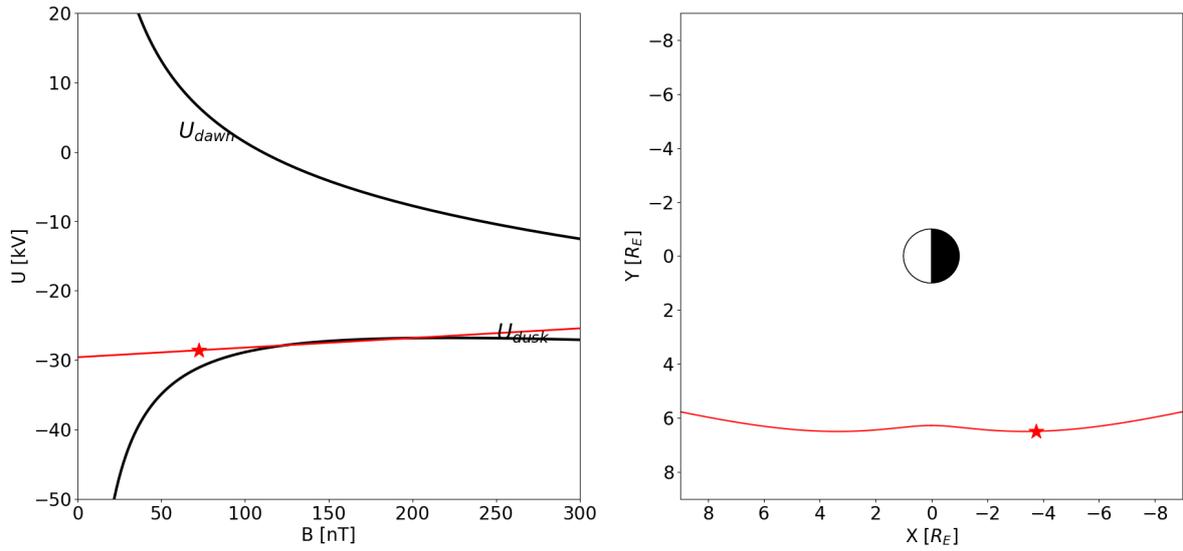
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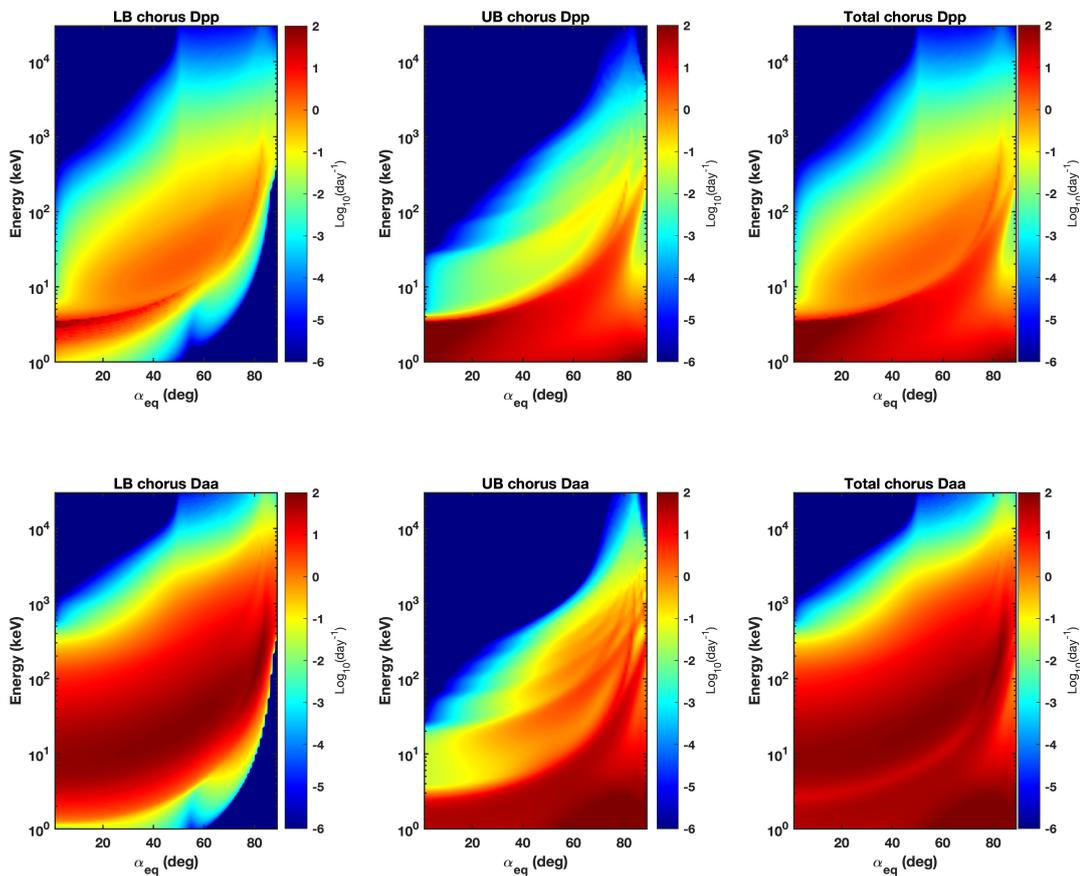
## Contents of this file

1. Figures S1 to S3

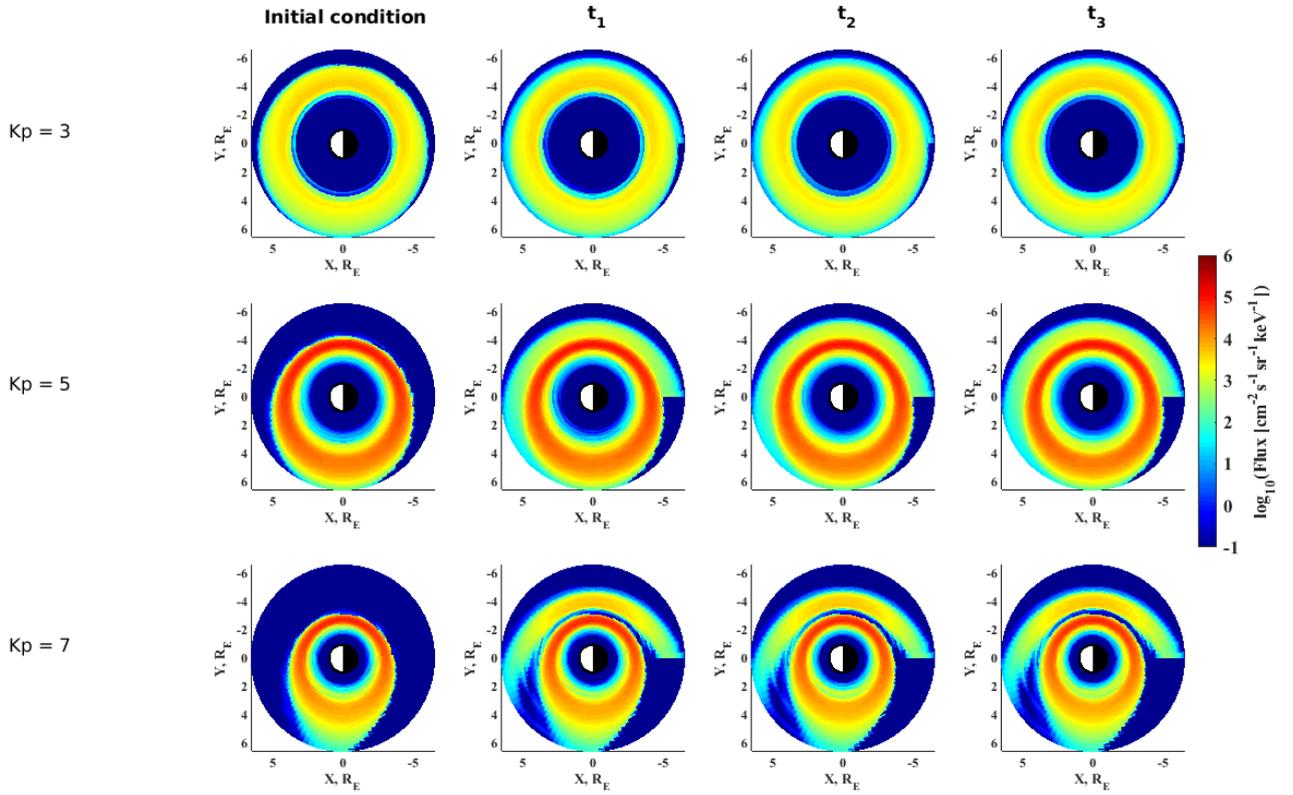
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**Figure S1.** Example of a drift trajectory of an electron in a Volland Stern electric field ( $K_p = 3$ ) and a dipole magnetic field, on an open drift path which does not pass the dawn magnetic local time sector. The drift is shown in the  $(U, B, K = 0)$  coordinate system (left). The electron starting location is marked by the red star. The lines labelled  $U_{dusk}$  and  $U_{dawn}$  show the potential at the dusk and dawn points respectively. The right panel illustrates the drift of this electron around the Earth, where the sun is on the left hand side of the figure.



**Figure S2.**  $D_{\alpha\alpha}$  and  $D_{pp}$  coefficients from the Wang et al., 2019 chorus wave model for  $L = 6$ , at  $Kp = 4$ , averaged over  $\text{MLT} = 00 - 11$ .



**Figure S3.** Electron flux at 30 keV, 75° pitch angle at Kp = 3, 5, and 7 modelled by VERB-4D, with the sub-Alfvén layer source population but without chorus wave activity. The initial condition is shown along with  $t_1 = 3$  hours,  $t_2 = 11$  hours, and  $t_3 = 19$  hours. The source population does not complete a drift.