

Supporting Information for “VLF Transmitters and Lightning Generated Whistlers 2: Diffusion of Radiation Belt Electrons”

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Contents of this file

Additional Supporting Information (Files uploaded separately)

1. Captions for Datasets S1 to S6

Introduction

Supporting information for this paper includes diffusion coefficients for selected values of L and energy due to VLF transmitters and lightning generated whistlers (LGW), as well as $D_{\alpha_0\alpha_0}$ and energy drag rates $|dE/dt|/E$ from Coulomb collisions. Also provided are precipitation lifetimes, which include $D_{\alpha_0\alpha_0}$ from plasmaspheric hiss but do not account for energy drag. Calculations are presented for high and low-density plasmasphere models, for all four combinations of ducted or nonducted VLF and LGW waves.

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Data Set S1. Diffusion coefficients $D_{\alpha_0\alpha_0}$, D_{α_0p} , and D_{pp} (in units of d^{-1}) for selected values of L and energy due to ducted or nonducted VLF transmitters, calculated using the high density plasmasphere model.

Data Set S2. Diffusion coefficients $D_{\alpha_0\alpha_0}$, D_{α_0p} , and D_{pp} (in units of d^{-1}) for selected values of L and energy due to ducted or nonducted VLF transmitters, calculated using the low density plasmasphere model.

Data Set S3. Diffusion coefficients $D_{\alpha_0\alpha_0}$, D_{α_0p} , and D_{pp} (in units of d^{-1}) for selected values of L and energy due to ducted or nonducted lightning generated whistlers, calculated using the high density plasmasphere model.

Data Set S4. Diffusion coefficients $D_{\alpha_0\alpha_0}$, D_{α_0p} , and D_{pp} (in units of d^{-1}) for selected values of L and energy due to ducted or nonducted lightning generated whistlers, calculated using the low density plasmasphere model.

Data Set S5. Pitch angle diffusion coefficients $D_{\alpha_0\alpha_0}$ and energy drag rates $|dE/dt|/E$ (in units of d^{-1}) for selected values of L and energy due to Coulomb collisions, calculated using the high and low density plasmasphere models.

Data Set S6. Electron lifetimes (in days) for selected values of L and energy accounting for $D_{\alpha_0\alpha_0}$ from ducted or nonducted VLF transmitter waves, ducted or nonducted lightning generated whistlers, plasmaspheric hiss, and Coulomb collisions, calculated using the high and low density plasmasphere models.