

RELATIVISTIC ELECTRON LOSSES RELATED TO PROTON PRECIPITATION AND EMIC WAVES

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Long term observations of loss of relativistic electrons to the atmosphere is presented and related to SW parameters. It is shown that the L-region of relativistic electron losses match the anisotropic proton zone. In this zone the pitch angle distribution of the protons are unstable and can generate/amplify EMIC waves, which in turn scatter the electrons into the atmosphere. In spatial limited regions, located close to the plasma pause, there can be enhanced losses of protons (sometime completely filling the loss cone). These regions of proton losses (spikes) are shown to give rise to EMIC waves leading to enhance scattering of the relativistic electrons. In the main phase of the storm the proton spikes are located in the midnight/evening sector, but in the storm recovery phase they are located at all MLTs. Proton spikes are observed in all storms, but loss of relativistic electrons only takes place in some storms.

Protons, EMIC, relativistic electrons

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