Strong diffusion of energetic electrons by chorus waves in the dawnside magnetosphere

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For sub-relativistic energetic electrons (10-100 keV), one of the promising loss mechanisms is precipitation into the atmosphere due to pitch-angle scattering by whistler chorus waves, but the efficiency of scattering has yet to be quantified. Using in-situ measurements by ERG spacecraft, here we demonstrate that full filling of energetic electron loss cones occurs quite often associated with moderate to intense (wave magnetic power of >50 pT) chorus waves. Spatial distribution of loss-cone filling indicates the efficient scattering takes place at |MLAT|< 10ˆo for the dataset used here, consistent with that of chorus waves.