Relativistic electron microburst induced by whistler chorus propagating at high magnetic latitudes

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Electron microburst, which is burst enhancements of precipitated electron flux during several tens ms, is likely to make an important contribution to high-energy electron flux loss in the outer radiation belt. The SAMPEX satellite frequently observed that the relativistic electron microbursts ($>$1MeV) were accompanied with the lower band whistler chorus (Lorentzen et al. (2001)). The observations suggest that whistler chorus not only accelerate radiation belt electrons through wave-particle interaction, but also decrease the electron flux. As discussed in Horne et al. (2003), relativistic electrons with small pitch angle close to a loss cone resonate with the lower band whistler chorus at relatively high magnetic latitudes ($>$30 deg.). Considering the whistler chorus propagates at the high magnetic latitudes, we investigate wave-particle interaction process between the whistler chorus and the relativistic electrons bouncing along the dipole magnetic field lines using the GEMSIS-RBW. This code is a three-dimensional relativistic test particle simulation code demonstrating electron scattering by whistler chorus in a realistic time and spatial scales. We show that a rising tone of whistler chorus scatters electrons at the high magnetic latitudes and produces a flux enhancement of precipitating electrons during several tens ms. The duration of microbusts corresponds to that of the rising tone. We compare estimated loss time scale with the strong diffusion limit and discuss how much of the electron flux is lost from the outer radiation belt.