



Code coupling simulation of whistler mode chorus waves during storm time

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Chorus waves, which mediate the acceleration and loss of energetic electrons in the inner magnetosphere, play a crucial role in cross-energy coupling. To investigate the temporal-spatial variations of chorus waves in the inner magnetosphere, a global simulation that incorporates the non-linearity of chorus waves is necessary. In this study, we simulated the dynamics of energetic electron distributions and the plasmasphere during the system using the RAM-SCBE simulation [Jordanova et al., 2014], which calculates the evolution of the electron distribution function and density of thermal plasma with self-consistent magnetic fields. Utilizing the simulated distribution functions and ambient density and magnetic fields provided by the RAM-SCBE, we conducted the self-consistent electron hybrid simulation [Katoh et al., 2018] to investigate generations of chorus elements including chorus bursts, and investigated how the ambient plasma distribution function and fp/fc control the non-linear characteristics of whistler mode waves during the storm time.

References

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