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Noon-midnight difference in latitudinal occurrence of whistler-mode chorus waves observed by the Arase satellite

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We present spatial occurrence distributions of whistler-mode chorus waves and their correlation with low-energy electrons, based on 5.1-year observations of the Arase satellite. The detailed statistical analysis indicates that strong chorus waves are predominantly observed near the magnetic equator in the postmidnight sector, and the active region of chorus waves shifts to higher latitudes with moderate chorus emissions as electrons drift eastward toward the noon sector. The differences in chorus intensity and latitudinal occurrence between noon and midnight can be explained by the nonlinear growth theory of whistler waves. Specifically, these differences are influenced by threshold amplitude controlled by hot electron density and magnetic field inhomogeneity determined by geomagnetic field configuration.