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A Dynamic Model of the Radiation-Belt Electron Phase Space Density driven by the Inner-Magnetospheric ULF Wave Activity[1] DIMITRIS VASSILIADIS, MARK KOEPKE, MATTIAS TORNQUIST, West Virginia University — The phase space density fe of the radiation-belt relativistic-electron population is reconstructed based on measurements made by the High Sensitivity Space Telescope on board the POLAR spacecraft. The density peaks in invariant space (mu, K, L*) are shown to be responding to changes in the solar wind velocity and density, and the interplanetary magnetic field. We have associated specific types of storms with the appearance of peaks thereby producing a climatology of fe. We show that there is a strong similarity between phase space density changes during these storms and the ULF wave power in the inner magnetosphere remote-sensed by the GOES geosynchronous spacecraft and the IMAGE ground magnetometer array. We discuss numerical simulations of the particle energization via diffusive-convective models.

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