Outer Radiation Belt Dynamics During Extended Quiescent Relativistic Electron Flux Periods in Different Phases of Solar Cycle 24

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It is well established that particles trapped in a dipolar magnetic field are subject to variability, especially during periods of solar wind disturbances. Hence, this work investigates two prolonged quiescent intervals of relativistic electron fluxes in the outer radiation belt: one during the descending phase of solar cycle 24 (May 19–June 9, 2015) and another near the solar minimum (July 5–25, 2018). The dynamic mechanisms behind the electron flux dropout and enhancement observed in these intervals are consistent with previous studies, which have demonstrated that wave–particle interactions are a dominant driver of electron flux variability. In both intervals analyzed, we identified enhanced ULF wave activity coinciding with the dropout and enhancement phases, whereas during the quiescent periods themselves, ULF activity remained low, even though significant solar wind structures continued to interact with the magnetosphere. Conversely, chorus waves displayed strong activity throughout the 2018 quiescent period, while remaining consistently weak during the 2015 event.