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Identification of interplanetary parameter schemes which drive the variability of the magnetospheric radiation environment

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The energetic particles of the outer radiation belt are highly variable in space, time and energy, due to the complex interplay between various mechanisms that contribute to their energization and/or loss. Previous studies have focused on the influence of solar wind and magnetospheric processes on the electron population dynamics, showing that the eventual effect of the various interplanetary drivers results from different combinations of IMF and solar wind parameters. Yet, all of these studies were limited in temporal, spatial and energy coverage. In this work, we take advantage of a large dataset, which includes multipoint measurements of electron fluxes covering a large energy range and various orbits (e.g. Van Allen Probes, GOES, HIMAWARI, SREM monitors, etc.), as well as approximately the whole solar cycle 24 to deduce specific interplanetary parameter schemes that drive enhancements or depletions of relativistic electrons in the outer radiation belt. Our study also investigates parameters which are correlated to the Solar Energetic Particle (SEP) environment with the long-term goal of connecting the two sets of results for coherent merging of environment models.

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