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Radial diffusion coefficients database in the frame of SafeSpace project

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Radial diffusion has been established as one of the most important mechanisms contributing the acceleration and loss of relativistic electrons in the outer radiation belt. Over the past few years efforts have been devoted to provide empirical relationships of radial diffusion coefficients (D_{LL}) for radiation belt simulations yet several studies have suggested that the difference between the various models can be orders of magnitude different at high levels of geomagnetic activity as the observed D_{LL} have been shown to be highly event-specific. In the frame of SafeSpace project we have used 12 years (2009 – 2020) of multi-point magnetic and electric field measurements from THEMIS A, D and E satellites to create a database of calculated D_{LL}. In this work we present the first statistics on the evolution of D_{LL} during the various phases of Solar cycle 24 with respect to the various solar wind parameters and geomagnetic indices.

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