

Different flux evolutions of relativistic electrons of the outer belt associated with high-speed coronal hole streams; Arase and Van Allen Probes observations

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Relativistic and ultra-relativistic electrons increase largely during the high-speed coronal hole streams, and the enhanced flux levels are controlled by the solar wind speed and the prolonged southward IMF. Such flux enhancements associated with high-speed streams have been observed by Arase/HEP and XEP instruments as well as Van Allen Probes/MagEIS and REPT. Some coronal hole streams produce large flux enhancement of both relativistic and ultra-relativistic electrons, while other coronal holes produce large flux enhancement of relativistic electrons (~ 2 MeV) but do not produce enhancement of ultra-relativistic electrons. In this presentation, we will show evolutions of the energy spectrum of relativistic electrons during the coronal hole streams and discuss how evolutions of the energy spectrum are related to chorus wave activities that are derived from Arase/PWE measurements and the proxy data from the low-altitude satellite data.

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