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MAGNETOPAUSE RECONNECTION EVENTS: ITS ASSOCIATION WITH INTERPLANETARY PARAMETERS AND GEOMAGNETIC ACTIVITIES

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ABSTRACT

Magnetic reconnection permits rearrangements of the interplanetary and magnetospheric magnetic fields and the entry of solar wind mass, energy, and momentum into the magnetosphere. Thus, magnetic reconnection is a key issue to understand space weather. However it has not been fully understood yet when, where and how magnetic reconnection takes place at the dayside magnetopause. In the present study dayside magnetopause reconnection events are investigated using THEMIS (since 2007) and MMS (since 2015) observations in order to find the answer to those questions mentioned above. The position, plasma beta value, jet flow speed, and Hall field intensity related to those reconnection events are compared with interplanetary parameters (solar wind speed, number density, magnetic field intensity and direction, etc.) and geomagnetic indices (e.g., AE, AL, SymH, Polar Cap potential etc.). The purpose of the comparison is to clarify the solar wind – magnetopause reconnection – geomagnetic activity relationship. It is expected that the results will shed light on the understanding of the dayside magnetic reconnection process, which in turn is crucial to provide a better prediction capability for the space weather.

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