

PEM024-04

Room: Function Room A

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Pressure changes in the near-Earth magnetotail associated with substorm expansion onsets: THEMIS observations

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Our previous statistical studies showed that the total pressure as well as the plasma pressure decreases in the magnetic reconnection region at about $X = -18$ Re and its surrounding regions, associated with substorm expansion onsets, while it increases in the initial dipolarization region at $X > -12$ Re. The total pressure decrease, i.e., energy release is more significant between the regions of the magnetic reconnection and the initial dipolarization than in the magnetic reconnection region. In the present study, we investigate the total pressure decrease between the magnetic reconnection and initial dipolarization regions for a few individual events observed by the THEMIS spacecraft. We discuss the relationship with particle energization and waves as well as the transport of the released energy.

Keywords: substorm, magnetotail, pressure, THEMIS, magnetic reconnection, dipolarization