Abstract Submitted
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Remote observation of ion heating signatures of reconnection in Earths magnetotail using energetic neutral atom imaging[1] AMY KEESEE, Univ of New Hampshire, NATALIA BUZULUKOVA, NASA Goddard Space Flight Center; University of Maryland, CHRIS MOUIKIS, Univ of New Hampshire, EARL SCIME, West Virginia University — Reconnection in Earths magnetotail transfers magnetic energy to thermal and kinetic energy in ions and electrons. These particles are injected both Earthward and tailward from the reconnection region. The Earthward particles are transported to the inner magnetosphere where they drive the ring current and radiation belts. The injections are observed in the plasma sheet in conjunction with dipolarizations of the magnetic field. The particles have been found to travel within narrow flow channels, rather than broadly across the magnetotail, in spatially and temporally localized events known as bursty bulk flows (BBF). Simulations of such events show these narrow flow channels moving from the reconnection region to the injection region. However, global observations are needed to understand how BBFs connect the reconnection region and the inner magnetosphere during storms and substorms. Ion heating has been observed with in situ measurements at the reconnection region and within the dipolarization fronts and BBFs. Using energetic neutral atom (ENA) imaging, ion temperature maps can be calculated to provide such global observations. We describe the 3 August 2016 storm-time substorm using observations from TWINS, MMS, and AMPERE along with MHD simulations.

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Amy Keesee
Univ of New Hampshire

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