TAILWARD AND EARTHWARD FLOW ONSETS OBSERVED BY CLUSTER IN A THIN CURRENT SHEET

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From a Cluster survey of the magnetotail during 2001-2007, we select 49 episodes of thin current sheet observations ending with local onsets. The onsets were defined as flow bursts and/or current decrease and/or B_z increase after a period of local quietness (in many cases with signatures of growth phase). Local onsets at 17-20 R_E of radial distance were accompanied mainly by tailward flows with negative B_z . At 11-17 R_E Earthward flows dominated, except the pre-midnight sector, where flows of both directions were observed. We interpret such onsets as reconnection pulses occurring on the closed field lines in the stretched magnetic configuration. Thin embedded current sheets with small B_z (average is less than 2 nT) were detected at all downtail distances. Current density was larger on average in the premidnight and midnight sector in comparison with the post-midnight.

magnetotail, plasma sheet, substorm

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