

## Time changes of the near-earth magnetotail during substorms: Case studies of GEOTAIL observations

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We conducted case studies of the temporal variations of the near-earth tail of the distance about 20 Re in the pre-midnight sector during substorms. For the substorm started at around 1737 UT on December 15, 1996, we observed decrease of the northward magnetic field component Bz together with an increase of the total pressure during the growth phase. After the first onset, Bz showed slightly positive values in average until the sixth onset started. The flow had surprisingly fast duskward component of ~ 1000 km/s associated with the sixth onset, and Bz considerably fluctuated around zero. We can assume that the GEOTAIL was located in the very vicinity of the near-earth neutral line (NENL) during that time interval.