Field - aligned flows at the plasma sheet boundary layer (II)

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We analyzed about 600 events of the plasma sheet boundary layer (PSBL). 6040f the selected events have field-aligned flows at the near-tail PSBL (X>-50Re). We divided these events with field-aligned flow to three types as the following: 1) only earthward flow, 2) only tailward flow, 3) counter stream. Type 1) and 3) events are found in the whole region (X>-50Re).

We propose that these events are mainly originated in the magnet tail which is far from observation point. On the other hand, type 2) evens are rarely found. To observe only tailward flow, the flow origin should be in the near earth, and near earth reconnection may be predominant.

We have analyzed the plasma sheet boundary layer (PSBL) with the low-energy particle instrument (LEP) on board GEOTAIL. We selected bout 600 events (X>-50Re) for which GEOTAIL observed PSBL. 600f the selected events have field-aligned flows at the near-tail PSBL (X>-50Re). We divided these events into three types as the following: 1) cases where only earthward flows are ovserved, 2) cases where only tailward flows are observed, 3) cases where counter streams are observed. Type 1) and 3) events are found in the whole region examined (X>-50Re). We propose that these events are mainly originated in the magnetotail far tailward of the observation point. On the other hand, type 2) evens are rarely found. To observe type 2) events, the flow origin should be in the near-earth region.We examined IMF-Bz component, and found type 2) events are observed more frequently when IMF is directed southward. It is suggested that the origin of type 2) events is probably the near-earth reconnection.