Correlation between the injections and high-speed earthward flows

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The purpose of this study is to understand the substorm mechanism comprehensively. We check the relation between high-speed earthward flows observed by Geotail in the near tail and particle injections by LANL geosynchronous satellites.

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The purpose of this study is to understand the substorm mechanism comprehensively. We check the relation between high-speed earthward flows observed by Geotail in the near tail and particle injections by LANL geosynchronous satellites. Some cases show good correlation with these signatures. In the other cases no particle injections related to high-speed flows in the near tail region are observed. In the later cases Geotail is most likely to be located in the flank sides or the deeper tail in the magnetosphere. Shiokawa et al.[1998] proposed a comprehensive substorm model, in which high-speed earthward flows are slowed down due to pressure gradient force in the neutral sheet. Our preliminary result may be interpreted in terms of the substorm model. We plan an extensive analysis to obtain more conclusive evidences.