Characteristic enhancement of lobe ion density associated with a plasmoid passage:1, Does the NENL chase a plasmoid?

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The GEOTAIL satellite has often detected a characteristic enhancement of ion density and velocity in the lobe of the distant tail. It was observed 5-30 miniutes after a plasmoid passage. A bipolar signature in Bz was observed simultaneously with it. In this paper, we analyze this kind of events in detail. Based on Siscoe's model of the relation between ion density and velocity in the lobe (mantle), we conclude that this kind of ion enhancements is caused by a configuration change of the magnetotail associated with a plasmoid passage. We also suggest that the configuration change may be due to a transition of the near-Earth neutral line (NENL) to a distant-tail neutral line, associated with a plasmoid ejection. The events may indicate that the NENL chases a plasmoid 5-30 minutes behind.

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