Estimation of nonadiabatic motion regions in the magnetosphere during substorm

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Dynamics of the regions of nonadiabatic particle motion in the midnight sector of the near-Earth (5-15 Re) magnetosphere are estimated by CRRES spacecraft data. We used the time-dependent magnetic field model which is composed from the Tsyganenko-89 static model and the additional magnetic field produced by variable current system. The observed magnetic field perturbations on the CRRES have been used to identify the additional current loop with field-aligned currents on the edges. We assume that the parameters of the loop and the position of the loop may be arbitrary. Different time/spatial scales may been used to model the substorm growth phase and the explosive phase of the substorm. We present examples of the modeling of the configuration of magnetic field lines penetrated across the CRRES and geosynchronous satellite 1990 095 (eastward and tailward of the CRRES) during the substorm on February 9,1991. We are using the ‘kappa’ and ‘delta’ parameters for the estimation of particle nonadiabatic motion regions in the magnetic field model during substorm on the CRRES data.
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