



Dipolarization fronts associated with near-Earth dissipated flux ropes

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We investigate a number of THEMIS dipolarization fronts during quiet and active periods in magnetotail at radial distance around $-10R_E$. From a previous work we have shown evidence that dipolarization fronts originate from earthward propagating magnetic structures which resemble to flux ropes. To further support this conclusion and validate our model we analyze the events by applying magnetohydrostatic Grad-Shafranov reconstruction and estimate the orientation (invariant axis) and cross section of magnetic flux ropes. Reconstruction results show that these flux ropes in the late stage of their evolution are highly perturbed, subjected to a continuous magnetic deterioration due to anti-reconnection process. Comparison is made with unperturbed flux rope events down the tail registered early in their evolution where Grad-Shafranov reconstruction is able to estimate their invariant axis orientation with no ambiguity.