GLOBAL ENA IMAGING OF THE PLASMA SHEET: IMPLICATIONS FOR DIPOLARIZATION REGION AND PLASMA TRANSPORT DURING SUBSTORMS

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The high energy neutral atom (HENA) imager onoard the IMAGE spacecraft has obtained energetic neutral atom (ENA) images of the plasma sheet on several occasions. In this presentation we present the ongoing analysis of the dynamics of the plasma sheet out to at least 14 R_E observed during substorms occuring during geomagnetic storms. In general, the plasma sheet flux is enhanced before substorm onset and then rapidly decreases, first beyond $8R_E$ at about substorm onset. A couple of minutes after the plasma sheet decrease, dipolarization at geosynchronous and proton injections are observed. There appears to be an Earthward motion related with the deacrease of plasma sheet flux. An upper bound on this motion has been determined to $\sim$ 70 km/s. There are indications also of tailward motion from about $10R_E$. We will focus on giving better estimates of the motion and the spatial structure of the plasma sheet during substorms. The analysis aims at incorporating a stretched field configuration into the inversion technique used to retrieve the ion distributions from the ENA images.