



## Dusk-side equatorial current during magnetic storm main phase

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Knowledge of the magnetic configuration on the dusk side is very important for space weather applications. At the same time, the magnetic field observations in the vicinity of geosynchronous orbit during magnetic storm main phase reveal the intense current flowing in westward direction in the dusk local time sector. Unlike conventional partial ring current this current occupies the region of extremely stretched magnetic configuration and has disk-like shape. Such a configuration can not be adequately described by existing magnetic field models with predefined current systems. Using the simultaneous magnetic field observations in the equatorial magnetosphere at GOES and THEMIS spacecraft and at low-altitudes onboard DMSP satellites we analyze potential closure paths of this current. In addition, we analyze the distribution of low-altitude proton isotropic boundaries deduced from particle measurements onboard NOAA satellites to discuss the possible scenario of the isotropic boundary formation during storm-time.