ABSTRACT

Recent analysis of the upstream the Interplanetary Magnetic Field (IMF) indicates that substorms occur shortly after a northward turning of the IMF. The northward turning is said to "trigger" substorms. I would like to propose a simple model for triggering.

Recent simulations indicate that substorm effects can follow as a consequence of fast earthward flows in the near earth plasma sheet. During periods of southward IMF the geomagnetic field on the night side of the Earth is stretched tailward. The stretching is due to tailward stresses generated by momentum exchange between the field and plasma being convected onto the plasma sheet from the lobe regions. When the IMF turns northward convection decreases, and the unbalanced magnetic tension drives plasma earthward thus generating a substorm.