Compelling Evidence Supporting The Boundary Layer Dynamics Model of Substorms

Gordon Rostoker
Department of Physics, University of Alberta

Over the past three decades, it has been customary to try to understand substorms by appealing to magnetic field line reconnection in the center of the magnetotail. Further discussion involves attempting to explain the substorm current wedge as the only manifestation of the substorm as detected by magnetometers in space and on the ground. In this talk I will present a view of the substorm as dominated by directly driven activity, with emphasis on the uniquely different aspects of substorm activity that appear on the poleward and equatorward branches of the double oval. I will support this view with data from an outstanding substorm event that will be difficult to explain in the context of any substorm model other than the boundary layer dynamics model (cf. Rostoker,G., Journal of Geophysical Research,101, 12,955, 1996).