

The dependence of the SC triggered Substorm on the interplanetary magnetic field

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A special group of substorms are those influenced or perhaps even triggered by sudden commencements(SC)[Schieldge and Siscoe,1970: Ullaland et al.,1970: Kawasaki et al.,1971: Burch,1972: Kokubun et al.,1977: Akasofu and Chao,1980: Iyemori and Tsunomura,1983:]. Iyemori and Tsunomura[1983] found a delay between sudden commencements and substorm onsets of about 10 min and regarded it as the result of propagation effects in the magnetosphere. For the triggering of substorm, Lyons[1995,1996] proposed that the expansion phase of substorms results from a reduction in the large-scale electric field imparted to the magnetosphere from the solar wind.

Here it is suggested that the triggering of substorms is caused by the three stage for the convection and the reduction in the interplanetary magnetic field(IMF) by using the data of ACE and WIND satellites, IMAGE FUV/WIC auroral images and the ground magnetometer. The substorm is composed of 3 stage,growth phase,expansion phase,the intermediate stage between the growth phase and the expansion phase,so the redeuction phase.We explain the reduction phase resulted from the northward turning in the IMF Bz by using GOES8 and ground magnetometer and this phase is needed for the substorm expansion phase.