Characteristics of substorms stimulated by variations of the dynamic solar wind pressure and magnetospheric convection electric field

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By the global geomagnetic and multi-spacecraft observations the magnetosphere-ionosphere response to variations of the dynamic solar wind pressure (Pd) and the turn of IMF Bz to the north in the events of 05.03.1997 has been studied.

The following results have been obtained:
1. At a substorm growth phase the intensification of the eastern current independing on a IMF By sign at Φr~75-80°of dayside ionosphere and western (eastern) auroral electrojet in the dawn (dusk) sector, respectively, is occured. It is supposed that the current generation reflects the intensification of magnetospheric convection level and the growth of 1 and 2 zone field aligned currents intensity.
2. The substorm expansion phase, stimulated by variations of Pd, is of two-stage character of evolution:
a) At first, simultaneously with the change of Pd the global enhancement of convection disturbances takes place which is accompanied by the auroral arc brightening and Pi2 pulsation excitation in the night sector;
b) Then, 5-7 min after the substorm beginning the increase of electrojet intensity in the night sector and the poleward aurora extension are observed.
3. The sharp turn of the IMF Bz to the north leads in ~ 10 min to the global enhancement of the westward electrojet along the auroral oval, to the most powerful and more extensive in longitude injection of the energetic particles into the inner magnetosphere and to variations of the magnetotail magnetic field characterizing the current decrease across the magnetosphere.
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