



Comparison of Two Successive Magnetospheric Substorms Development

Natalia Borodkova (1), Vladimir Parkhomov (2), and Georgy Zastenker (1)

(1) Space Research Institute Russian Academy of Sciences, Moscow, Russia (nlbor@mail.ru), (2) Baikal National University of Economics and Law, Irkutsk, Russia

Magnetospheric response to the onset and development of two successive substorms which occurred on August 1, 1998 under the different conditions in the solar wind was investigated. IMF was southward all the time during the both events, while the solar wind dynamic pressure strongly increased up to 14 nPa several minutes prior to second event and later on continued to increase with transient fluctuations.

First event was a typical substorm event preceded by pseudobreakup. Both phenomena, substorm and pseudobreakup can be interpreted in the terms of NENL model.

Features attributed to the typical substorm disturbance were also observed during the second event. Among these features we can mentioned appearance of Pi2 pulsations and energetic particles injections, formation of fast auroral emission and field-aligned currents intensification. However, substorm development in the second case went on with some peculiarities caused by the fact that magnetosphere was strongly compressed by the solar wind dynamic pressure enhancements. Unusual characteristic of this substorm was its localization near polarward boundary of auroral oval in the postmidnight sector. Another distinctive features of this substorm were compressive energization of plasma sheet particles, enhancement and global modulation of the magnetospheric current systems and controlling of auroral disturbance development by external factor – solar wind dynamic pressure.