ON THE RELATIONSHIP BETWEEN CORONAL MASS EJECTIONS (CME); SOLAR FLARES, SOME MAGNETOSPHERIC PARAMETERS AND AURORAS OF DIFFERENT TYPES, DURING GREAT MAGNETIC STORMS

L.S. Yevlashin, Yu.P. Maltsev

Polar Geophysical Institute, Apatity, Murmansk region, Russia

There were analyzed 7 giant magnetic storms, during which the minimum value of Dst - variation < 250 nT: Febr. 8-9, 1986; March 13-14, 1989; Oct. 21-22, 1989; March 24-25, 1991; Oct. 28-29, 1991; Nov. 8-9, 1991 and Febr. 10-11, 1958.

All of these superstorms were preceded by solar flares and, in some events, by Coronal Mass Ejections (CMEs) as well. During these superstorms, over large areas of the Earth, there were registered bright auroras, the luminosity spectrum of which depended on the type of heliospheric source responsible for one or another type of superstorm as well as on different properties of the upper atmosphere. In some events, bright green auroras, whereas, the A-type red ones in others, were observed. Some suggestions have been made as to the nature and mechanisms of origin of similar types of luminosity.

Unfortunately, the data on the parameters of solar wind, generating those storms either are not available or are extremely scarce.

That is why, on the basis of the available data on temporal variations of the Dst parameter, there were, in theory, restored values of IMP Bz-component, as well as the estimation of the voltage difference if the electric field across the polar cap was performed. Quite large values of the voltage difference were obtained, which agrees fairly well with the results of some experiments.