
Statistical study of solar wind dynamic pressure enhancements during geomagnetic storms: Preliminary results

Ji-Hye Baek, Dae-Young Lee

Dept. of Astronomy & Space Science.
Chungbuk National University

We have examined the solar wind dynamic pressure enhancements during geomagnetic storm main phase. The Dst index has been used to identify more than 100 geomagnetic storms which occurred in the time interval of 1997 to 2001. We have selected only the events having the minimum Dst value less than -50 nT. In order to identify the pressure impact, we have looked at the low latitude ground H data as well as the solar wind pressure data themselves. To supplement our analysis, we have also used the GOES geosynchronous magnetic field data. Our statistics shows that, for more than half of our storms, the occurrence frequency of the solar pressure enhancement is greater than 0.4 #/hr which is an average substorm occurrence frequency. On the other hand it has been recently found (Lee and Lyons 2004, Lee et al. 2004) that the solar pressure enhancement can also cause magnetic dipolarization and energetic particle injection that look quite similar to those of normal substorms. Our result therefore implies that the impact of solar wind pressure enhancement can contribute to the storm evolution as much as does the substorm.