[S5-1] KAO Space Weather Monitoring System: I. Overview

조경석[1], 문용재[1], 박소영[1], 박형민[1], 박영득[1], 김연한[1], 김록순[1,2], 황보정은[1,3]
[1]한국천문연구원, [2]충남대학교 천문우주과학과, [3]충북대학교 천문우주학과

It is well known that solar activity such as Coronal Mass Ejections (CMEs) and flares cause the abrupt variations of space environment. Abrupt disturbance of space weather can result in serious effects on high technology systems as well as human. To efficiently predict the possible effects due to the disturbance, Space Weather Scales were introduced in 2000 by NOAA/SEC. The scales are divided into 3 types according to their sources and effects as follows: Radio Blackout (R), Solar Radiation storm (S), and Geomagnetic storm (G). Based on these scales, we have constructed the KAO space weather monitoring system by using ION (IDL on the Net). The monitoring system presents (1) realtime data such as x-ray flux, proton flux, and geomagnetic Kp index observed by GOES satellites; (2) the expected effects on communications and satellites automatically determined by the scales based on the realtime data; (3) 3-days forecast reports provided by NOAA/SEC; (4) propagation models that can be used to predict the arrival of interplanetary shocks and CMEs; (5) the mirror site of Active Region Monitor; and (6) web-based data base of several solar and geophysical activities. This presentation is an overview of the KAO space weather monitoring system under development, which is also well described in two poster papers. It is expected that the system can be used as a way of communication between general public and solar and space weather researchers.

[S5-2] Forecast evaluation of geoeffective CMEs using front-side halo CMEs from 1997 to 2003

김록순[1,2], 조경석[2], 문용재[2], 박영득[2], 황보정은[2,3]
[1]충남대학교 천문우주과학과, [2]한국천문연구원, [3]충북대학교 천문우주학과

Coronal Mass Ejections (CMEs) have been regarded as a main driver of severe geomagnetic storms and space weather effects. However, it is not well understood that what kind of physical parameters control their geoeffectiveness. In this study, we have selected front-side halo CMEs from 1997 to 2003 and then apply a CME propagation model to them to estimate their arrivals at the Earth. By comparing their arrivals with the minimum of Dst index within a time window of ± 24 hours, we have selected CME-geomagnetic storm pairs. By using these pairs, we made contingency tables to make the forecast evaluation of these CMEs. From these tables, we estimate successful rate, critical success index, and false alarm ratio etc. according to several selection criteria (CME speed and location) to select geoeffective CMEs. These results show that we need to study what physical parameters are critical for selecting geoeffective CMEs to improve these statistics. This work is the frist trial of the CME forecast evaluation and can be a good starting point of it.