to the different mechanisms governing the acceleration pattern and interval, and different condition such as the acceleration location.

[구 SS-10] Dependence of solar proton peak flux on 3-dimensional CME parameter

Jinhye Park[1], Yong-Jae Moon[2], Harim Lee[2]
[1]*Department of Astronomy & Space Science, Kyung Hee University,*
[2]School of Space Research, Kyung Hee University

In the present study, we examine the dependence of solar proton peak flux at SOHO and STEREO on 3-D CME parameters (radial speed, angular width, and longitudinal angular separation between its source region and the magnetic footpoints of spacecraft). For this we consider 38 proton enhancements of 16 SEP events observed by SOHO, STEREO-A, and/or B from 2010 August to 2013 June. As a result, we find that the enhancements are strongly dependent on these three parameters. The correlation coefficient between proton peak flux and CME speed is about 0.42 for the cases the footpoints are located inside the lateral boundaries of angular widths, while

there is no correlation for the events outside the boundaries. The correlation coefficient between peak flux and angular separation is −0.51. We find that most of strong proton events occur when their angular separations are closer to zero, supporting that most of the proton fluxes are generated near the CME noses rather than their flanks.

[구 SS-11] Stereoscopic observations of front-side halo CMEs by SOHO and STEREO from 2009 to 2013

Soojeong Jang[1,2] , Yong-Jae Moon[1], Roksoon Kim[2], Harim Lee[1]
[1]*Kyung Hee University,*
[2]*Korea Astronomy and Space Science Institute*

We present a comprehensive catalog of 307 front-side halo (partial and full) CMEs during 2009 and 2013 observed by both SOHO and STEREO. This catalog includes 2D CME properties from single spacecraft (SOHO) as well as 3D ones from multi-spacecraft. To determine the 3D CME properties (speed, angular width, and source location), we use the STEREO CME analysis tool based on a triangulation method. In this paper, we compare between 2D and 3D CME properties, which is the first statistical comparison between them. As a result, we find that 2D speeds tend to be about 20% underestimated when compared to 3D ones. The 3D angular width ranges from 15° to 109°, which are much smaller than the 2D angular widths with the mean value of 225°. We also find that a ratio between 2D and 3D angular width decreases with central meridian distance. The 3D source locations from the triangulation method are similar to the flare locations. The angular width-speed relationship in 3D is much stronger than that in 2D.

[구 SS-12] Development of daily solar flare peak flux forecast models for strong flares

Seulki Shin[1], Jin-Yi Lee[1], Hyoung-Seok Chu[2], Yong-Jae Moon[1], JongYeob Park[1]
[1]*School of Space Research, Kyung Hee University, Korea,*
[2]*National Institute for Mathematical Science*

We have developed a set of daily solar flare peak flux forecast models for strong flares using multiple linear regression and artificial neural network methods. We consider input parameters as solar activity data from January 1996 to December 2013 such as sunspot area, X-ray flare peak flux and weighted total flux of previous day, and mean flare rates of McIntosh sunspot group (Zpc) and Mount Wilson magnetic classification. For a training data set, we use the same number of 61 events for each C-, M-, and X-class from Jan. 1996 to Dec. 2004, while other previous models use all flares. For a testing data set, we use all flares from Jan. 2005 to Nov. 2013. The best three parameters related to the observed flare peak flux are weighted total flare flux of previous day ($r = 0.51$), X-ray flare peak flux ($r = 0.48$), and Mount Wilson magnetic classification ($r = 0.47$). A comparison between our neural network models and the previous models based on Heidke Skill Score (HSS) shows that our model for X-class flare is much better than the models and that for M-class flares is similar to them. Since all input parameters for our models are easily available, the models can be operated steadily and automatically in near-real time for space weather service.

[초 SS-13] KASI's contributions to Space Weather over the past 10 years

Kyungsuk Cho, Young-Deuk Park, and Solar and Space Weather Group
Korea Astronomy and Space Science Institute

For the past decade, supported by the Korean