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On the geo-effective CME and flare parameters
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In this study we discuss geoeffective CME and flare parameters for the purpose of developing empirical space weather (geomagnetic storms, solar proton events, and solar flares) forecast models based on solar information. These models have been set up with the concept of probabilistic forecast using historical events. Our recent progress is as follows. First, we presented a concept of storm probability map depending on CME parameters (speed, location, and earthward direction parameter). Second, we demonstrate that the earthward direction parameter is important for the forecast of geomagnetic storms. Third, the importance of solar magnetic field orientation for storm occurrence was examined. Fouth, the importance of cone model parameters for geomagnetic storms and proton events was discussed. Fifth, a new proton event forecast method depending on flare parameters (flare strength, duration, and longitude) as well as CME parameters (speed and angular width) has been suggested. Sixth, we are examining the probability of solar flares depending on sunspot McIntosh classification and its area change (as a proxy of flux change). In addition, future prospect ont this issue will be discussed.

キーワード: Coronal Mass Ejections, Flares, Geomagnetic Storms, Solar Proton Events
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