

Solar energetic particle flux as a measure of CME geoeffectiveness

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Abstract: Coronal mass ejections (CMEs) are known as principal causes of nearly all strong magnetic storms. Not all of the CMEs are geoeffective, and other solar energetic events need to be considered to be able to assess geoeffectivity. Solar energetic particle (SEP) flux associated with full halo CMEs is believed to be a predictor of enhanced geomagnetic activity. Recent models based on artificial neural networks have focused on the relations between CME speed, SEP flux and strong magnetic storms. Here we attempt to feed the model with additional information on the SEP event onset time. Unlike the impulsive SEP events we focus on the gradual SEP events generated by the CME driven shocks. With this sort of information we are yet able to discriminate between highly geoeffective CMEs from those less geoeffective.

Key words: coronal mass ejections, solar energetic particles, artificial neural networks

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