

STUDY ON SUPER FAST CMEs AND THEIR GEO EFFECTIVENESS DURING SOLAR CYCLE 24 BY USING SOHO/LASCO AND STEREO

Coronal mass ejection releases large quantities of electromagnetic radiation into space above sun's surface, either near corona or farther into planetary system or beyond (ICME). CMEs are associated with solar flares. Solar flares are the small brightening observed over the sun's surface. All CMEs do not have associated with flares. CMEs without flare are weaker and slower. When the ejection is directed towards the earth and reaches it as an ICME causes geomagnetic storm which affect earth's magnetic field.

In my previous work I have investigated on geoeffective CMEs during the rising phase of solar cycle 24. I have selected 98 events from 6023 events. The selection criteria were (i) the CME should reach the earth within 1-5 days before Dst start time (ii) angular width should above 60 (iii) location of CME should be within 45 (iv) time difference between CME starting time and Dst starting time should be of the order of estimated arrival time.

Now I would like to extend my work to investigate the properties of super-fast CMEs and its geo effectiveness by using SOHO/LASCO and STEREO. Normally CMEs without flare manifestation are weaker and slower. So intensive solar flare is main criteria for the selection process. For geo effectiveness of a CME Dst index $< -100\text{nT}$.

Lawrence et al showed that the intensive flares are mostly originated in the northern hemisphere of the sun. Chandra et al also showed that SEPs source events are mostly in the northern hemisphere. This may also be a main criterion for the selection process. CMEs with larger flare duration have greater speed. From all CME data, flare data I am going to investigate the properties of super-fast CMEs and its geo effectiveness.