

Use of Low Coronal Images in Understanding Space Weather

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It is widely acknowledged that coronal mass ejections (CMEs) are the main driver of severe space weather. Therefore, understanding the origin of geoeffective CMEs is one of the most active research areas. Presently, we still need to better understand how CMEs in general are launched, irrespective of their associated interplanetary CMEs (ICMEs) and solar energetic particle events, and whether their widely differnet kinematic properties come from different initiation mechanisms. Although we have accumulated high-quality soft X-ray and EUV images of the Sun since the early 1990s, it is not well known how useful these images are for characterizing the heliospheric consequences of solar eruptions. In this presentation, we review our updated knowledge about the relation of CME properties with low coronal manifestations. We also discuss how to improve our understanding of geomagnetic storms by joint analyses of Xray and EUV images, white-light coronagraph data and in-situ data combined with extrapolated large-scale coronal magnetic field.