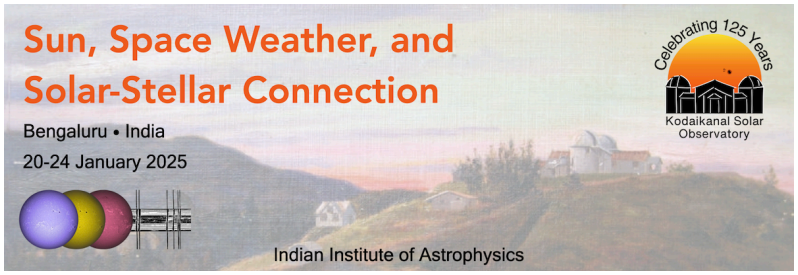

Contribution ID: **87** Type: **Poster**

Investigation of Source Regions of Geo-effective Coronal Mass Ejections (CMEs)

This study investigates the origins, characteristics, and impacts of Geo-effective Coronal Mass Ejections (CMEs) on Earth's space environment during Solar Cycle 24 th (2009-2019),with a focus on their contribution to space weather phenomena. Specifically, we examine Interplanetary Coronal Mass Ejections (ICMEs) detected at the first Lagrangian point (L1),using their key features such as enhanced magnetic field strength, magnetic field rotation, and reduced proton temperatures,Plasma-β ratio particularly within Magnetic Clouds (MCs). Our work emphasizes CMEs that triggered significant Geomagnetic disturbances, identifying their heliospheric distribution and Solar source regions. Using data from LASCO,SDO, ACE,GOES, and catalogs such as Cane and Richardson's ICME list, CDAW, ARIES, and the HESSI Flare Catalog, we trace the Solar origins of these ICMEs through the Graduated Cylindrical Shell (GCS) model and Jhelioviewer software. This research also investigates the characteristics of Solar flares associated with Geo-effective CMEs, offering insights into the link between solar activity and space weather. By analyzing the variation in Geo-magnetic storms over the Solar cycle, our findings enhance the understanding of Solar-terrestrial interactions and improve predictive capabilities for space weather events.

Keywords:
Sun: Coronal Mass Ejection; Sun: Solar Flares; Geomagnetic Storms; Model: GCS model

Contribution Type

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Theme

Connecting Solar Corona to Heliosphere

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