
Analysis of SC23 major geomagnetic storms produced by CMEs

Oana Stere*¹, Consuelo Cid², and Marilena Mierla^{1,3}

¹Institute of Geodynamics of the Romanian Academy – 19-21 Jean-Louis Calderon St., Bucharest-37, Romania, RO-020032, Romania

²University of Alcala (UAH) – University Campus, A-2 km 33,600; 28871 Alcalá de Henares. Madrid. SPAIN, Spain

³Royal Observatory of Belgium (ROB) – Avenue Circulaire 3, Brussels, Belgium

Abstract

In this study we analysed the link between coronal mass ejection (CMEs), interplanetary CMEs (ICMEs) and major geomagnetic storms of solar cycle (SC) 23 with focus on geomagnetic response. Some of these CMEs are associated with eruptive filaments. We analyse the interdependence between geomagnetic field measurement, represented by the geomagnetic index Dst and the injected energy into terrestrial magnetosphere, using Burton equation. We find that all the 25 events in this study are framed into two distinct categories given by the trend line of the correlation coefficient, for different time intervals of the main phase of geomagnetic storms, taken into account the delay time for magnetosphere response.

Keywords: coronal mass ejection, geomagnetic storm

*Speaker