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The geomagnetic storms of 2015: Statistical analysis and forecasting results

Evangelos Paouris, Maria Gerontidou, and Helen Mavromichalaki
National and Kapodistrian University of Athens, Faculty of Physics, Athens, Greece (evpaouris@phys.uoa.gr)

The year 2015 was characterized by long geomagnetic quiet periods with a lot of geomagnetically active breaks although it is on the declining phase of the current solar cycle. As a result a number of geomagnetic storms in the G1 up to G4 scale were noticed. In this work the characteristics of these geomagnetic storms like the scale level, the origin of the storm (CME or CIR) and the duration have been studied. Furthermore, a statistical analysis of these events and a comparative study of the forecasting and the actual geomagnetic conditions are performed using data from the NOAA space weather forecasting center and from the Athens Space Weather Forecasting Center as well. These forecasting centers estimate and provide every day the geomagnetic conditions for the upcoming days giving the values of the geomagnetic index Ap. The forecasting values of Ap index for the year 2015 from these two centers and their comparison in terms of the actual values are discussed.