



## **The relationship between the ring current population and the intensity of geomagnetic storms: preliminary results**

**J. Aguado**, E. Saiz, C. Cid y Y. Cerrato

Space Research Group-Science, Departamento de Física, Universidad de Alcalá, Spain  
(elena.saiz@uah.es)

When the interplanetary magnetic field reaches the Earth, the magnetosphere goes out from its quietness developing a geomagnetic storm. One of the signatures of these disturbances at terrestrial surface is a large decrease on the Dst geomagnetic index. This index is a proxy of the energy of the particles that populates the current ring encircling the Earth, and the minimum value of this index (the Dst peak) is used to quantify the intensity of a geomagnetic storm, and then, the enhancement of the ring current. After the  $Dst_{peak}$ , an exponential profile is observed in the Dst index, corresponding to the recovery of the magnetosphere to the quiet situation. Several physical processes are involved in this recovery phase, which are included in the recovery time,  $\tau$ . Other studies have shown that there is a relationship between the intensity of the geomagnetic storm and the recovery time. Moreover, there is a linear relationship between  $\tau$  and  $Dst_{peak}$ . In order to explain this correlation in the base of the physical processes involved, we analyze in this work the ring current population as a function of the intensity of the storm.