



Physical Mechanisms involved in geomagnetic activity

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Scientific community achieves continuous efforts in order to advance in forecasting geomagnetic activity. The presently used scheme, in which magnetic reconnection is the unique physical model involved, does not succeed making correct predictions about the intensity of the storms. Then, new engineering models based on neural networks have been developed, which let forecast without wondering the physical mechanism involved. However, we think that this is the first aim for the scientific community, and then, our aim in this work.

The analysis of Ace data, from its launch until year 2002, reveals that oscillations in z-component of IMF always appear when a sharp variation in Dst index is observed. These characteristics have guided us to propose that, together with magnetic reconnection, the response of magnetosphere to an oscillatory excitation in solar wind are the physical mechanisms involved in the disturbance of the magnetic field at the Earth surface.