Geophysical Research Abstracts,
Vol. 10, EGU2008-A-02668, 2008
SRef-ID: 1607-7962/gra/EGU2008-A-02668
EGU General Assembly 2008

Dynamical complexity detection in Dst time series using different complexity measures

G. Balasis (1), I. A. Daglis (1) and K. Eftaxias (2)

(1) Institute for Space Applications and Remote Sensing, National Observatory of Athens, Greece, (2) Section of Solid State Physics, Department of Physics, University of Athens, Greece

Dynamic complexity detection for output time series of complex systems is one of the foremost problems in physics, biology, engineering, and economic sciences. Especially in magnetospheric physics, accurate detection of the dissimilarity between normal and abnormal states (e.g. pre-storm activity and magnetic storms) can vastly improve space weather diagnosis and, consequently, the mitigation of space weather hazards. Herein we study whether certain signatures indicate the transition from pre-storm activity to magnetic storms by analyzing Dst time series with various complexity measures. These measures are based on the concepts of fractal spectral analysis using wavelet transforms and symbolic dynamics analysis.