Geophysical Research Abstracts, Vol. 9, 08317, 2007
SRef-ID: 1607-7962/gra/EGU2007-A-08317

Scaling of the waiting time distributions of B_s and AE extreme events

R. D'Amicis (1), R. Bruno (1), B. Bavassano (1), E. Pietropaolo (2), U. Villante (2), V. Carbone (3) and L. Sorriso-Valvo (4)

(1) Istituto di Fisica dello Spazio Interplanetario - INAF, Rome, ITALY, (2) Dipartimento di Fisica Università di L'Aquila, L'Aquila, ITALY, (3) Dipartimento di Fisica Università della Calabria, Coppito (Cs), ITALY, (4) Liquid Crystal Laboratory, INFM/CNR, Rende (Cs), ITALY

(raffaella.damicis@ifsi-roma.inaf.it / Phone +41 06 4993 4638 / Fax +41 06 4993 4383)

In this work, we present a statistical study on the intermittency of B_s (the southward z component of the interplanetary magnetic field) and AE (an index that reflects in some sense the state of the solar wind-magnetosphere-ionosphere dynamical system), focusing in particular on the distributions of their respective extreme events (those events that are located in the tails of the distribution and deviate from Gaussian statistics), for different phases of the solar cycle. In order to recognize the extreme events affecting our statistics, we use a technique, called local intermittency measure (LIM), based on wavelet decomposition. Once we have selected all the extreme events we can measure the elapsed time, or waiting time, between consecutive events and build the relative distribution. Our analysis shows that these distributions are characterized by well defined power laws which would discard the possibility of uncorrelated events and would suggest the existence of long term correlations typical of turbulent processes. Moreover, we find that these distributions do not depend on the particular phase of the solar cycle considered.