

Abstract Submitted
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Multiscale phenomena in the magnetosphere: Power-law and Weibull distributions VEERAMANI THANGAMANI, SURJA SHARMA, University of Maryland — The power law behaviour of the probability distribution of burst lifetime duration of magnetospheric substorms, studied earlier by Freeman et. al. (*Geophys. Res. Lett.*, 2000), was modelled as a combination of a power law with an exponential cutoff and a lognormal distribution. We study the interburst time or the waiting time between substorms above a threshold as quantified by the AL index. The AL index data set from January 1978 until June 1988 (1 min resolution, 5520960 data points) is analyzed and the waiting time distribution is found to exhibit a similar behaviour as that of the burst lifetime. Recent Bunde et. al. (*Phys. Rev. Lett.*, 2005) have shown the stretched exponential (Weibull distribution) behavior in the recurrence time statistics of extreme events in long term climate records. Similar result has been shown for the earthquake statistics by Turcotte (2006). The existence of such statistical order in the magnetospheric multiscale phenomena will be presented.

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