Flare interval distribution for individual active regions

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Solar flare forecasting is one of the most important topic in space weather research. Although many researcher have tried to make physical forecasting models, it is unlikely to forecast a flare occurance based on underlying physics in the near future. Much of previous studies forcused on the statistical properties of flare and probabilistic forecasting. There are some kind of flare probability models which the sun is regarded as one flaring system. On the other side, a different approach which the sun is regarded as complex of many active regions is possible. Since active regions are independent of each other, a flare occurance probability on the solar disk is combination of probability of many individual active regions. I try to this approch. In this approch, making a model for flaring probability in individual active regions is essential. First of this approch, I investigate again a flare interval distribution for individual active regions. Previous study concluded that (piecewise) constant Poisson process is good model for the observed flare interval distribution in individual active regions. However, I cannot deny other distributions because nobody has tried other distribution model. I compared other distribution model with constant Poisson distribution model. I treated two distributions, lognormal distribution and Brownian passage time(BPT) distribution, which is same as inverse Gaussian distribution in statistics. I used GOES flare catalogue from 1981 to 2005. 3161 active regions produced at least one C, M or X class flare during the periods. I selected active regions which produced over 51 C, M and X class flares (this means 50 flare intervals). 55 active regions out of 3161 satisfied this conditions. The comparison method is by making use of Akaike Information Criterion(AIC). AIC is a criterion that select which model is more plausible compared with other models. The results show that lognormal distribution model is the most plausible and constant Poisson model is the least plausible model of the three. In this presentation, I first show some issues of decision of probability density function by data fitting procesure. Then I briefly introduce AIC and propose more plausible distribution for flare interval distribution by compared with constant Poisson distribution. After that, I discuss about the possible origin of flare interval distribution.