

**[표SE-36] Solar Flare Rate and Probability depending on
Sunspot Classification and Its Area Change**

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We have investigated solar flare probability depending on sunspot classification, its area, and its area change using solar white light data. For this we used the McIntosh sunspot groups with most flare-productive regions : DKI, DKC, EKI, EKC, FKI and FKC. For each group, we classified it into three sub-groups according to sunspot area change : increase, steady, and decrease. For sunspot data, we used the NOAA active region information for 11 years (from January 2000 to December 2010): daily sunspot class and its area corrected for the projection effect. As a result, we find that the mean flare rates and the flare probabilities for the "increase" sub-groups are noticeably higher than those for other sub-groups. In case of the (M+X)-class flares of 'kc' groups, the mean flare rates of the "increase" sub-groups are more than two times than those of the "steady" sub-groups. This is statistical evidence that magnetic flux emergence is an very important for triggering solar flares since sunspot area increase can be a good proxy of magnetic flux emergence. In addition, we have examined the relationship between sunspot area and solar flare probability. For this, we classified each sunspot group into two sub-groups: large and small. In the case of compact group, the solar flare probabilities noticeably increase with its area.
