



To what degree do regions of open flux located near active regions affect their eruptivity?

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Most, but not all, X-class flares are associated with CMEs. The conventional wisdom likely ascribes this association to the large amount of energy released during the flare reconnection process that then becomes available for accelerating matter upward. For those X-class flares that are non-eruptive, what properties set these apart such that there is no discernible eruption? In this study, we investigate whether active regions that produce non-eruptive X-class flares are correlated with the lack of a nearby channel of open flux in the overlying global coronal magnetic field configuration. We analyze PFSS models of the coronal magnetic field associated with 56 X-class flares (in 37 flaring active regions) occurring during Cycles 23 and 24, and evaluate whether properties the field configuration are associated with the properties of the associated flares. We find a positive correlation between whether a region is non-eruptive and the absence of nearby open magnetic field lines in the PFSS models, however the confidence we assign to this result is limited by the small number of non-eruptive X-class flares in the sample.