

Message transmis par J.-C. Vial

Grâce à l'obligeance de Serge Koutchmy, nous vous proposons le séminaire "impromptu" ci-dessous,
donné par Alan Title,
à l'IAP (Paris, Salle du Conseil)
le mardi 24 novembre à 14.30.

Organized Behavior of Moderate to Large Flares

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The continuous full disk observations provided by the Atmospheric Imaging Assembly (AIA) can give an observer the impression that many flare eruptions are causally related. However, both detailed analyses of a number of events as well as several statistical studies have provided only rare clear examples with clear evidence of the cause of the association. Since the mechanisms of flare triggering are not well understood, the lack of much hard evidence is not surprising. For this study we looked instead for groups of flares, clusters, where successive flares occur within a chosen fixed time. The data set used for the investigation are the flare waiting times provided by the X-ray flare detectors on the Geostationary Operational Environmental Satellites (GOES). We limited the study to flares of magnitude C3 and greater obtained during cycles 22, 23, and 24. We find that for flares above C3 clustering is especially note worthy for X flares where between 80 to 95% of all the X flares in a cycle, depending on the cycle examined, occur with a mean separation of a day. Associated with the clustering of all flares above C3 are peaks in the flare rate of six to ten times the average rate during the cycle. These high peak flare rates occur on average between 2 to 3 times per year. Similarly there are on average 2 to 3 X flare clusters/year. We suggest that this behavior implies that a component of the observed coordinated behavior originates from the MHD processes driven by the solar dynamo. The relationship between flare clusters and magnetic centers of activity is explored.