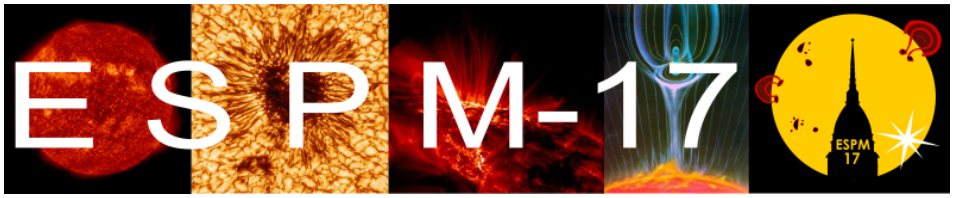

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Anticipating solar flares with zero false positives

Solar flares invariably begin with “hot onset” soft X-ray emission. This produces an initial horizontal branch in an [EM,T] diagnostic diagram (Jakimiec), a phase characterized by hot (5-20 MK) soft X-ray emission with continously growing emission measure. As detected by GOES, the hot onset may begin over up to 30 minutes prior to the flare impulsive phase. This universal property has the practical consequence of anticipating flare occurrence and magnitude. This has practical consequences as a reliable “nowcastng” technique for flare occurrence. Theoretically, this phenomenon must underpin all of the many other aspects of early flare development and termed “precursors”. The hot onset may or may not include discrete flare-like events, but also often has a smooth and featureless development suggestiveof a deflagration wave.

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