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Poster
It is widely accepted that solar flares are powered by free magnetic energy built up in the corona. However, this energy alone might not be sufficient to initiate an eruption. Flare initiation and onset mechanisms are one of the most debated subjects in solar physics. A large-scale statistical study is crucial to investigate the evolution of flare precursors and their link to flare initiation. The Detection and EUV Flare Tracking (DEFT) tool can identify flare precursors in high temporal and spatial resolution extreme-ultraviolet (EUV) solar observations (e.g. SDO/AIA and GOES/SUVI). DEFT is a fast and robust tool that can identify and track the location, magnitude and change in EUV signatures from one observation to the next. Using a comprehensive differentiation technique, it can detect potential flare precursors in a vast number and variety of EUV signatures. In a study of over 1500 flares, we found that EUV signatures are consistently observable before B, C, M and X class flares. We hypothesize that the EUV flare precursors we observe are small-scale ongoing reconnection events produced by the increasing magnetic complexity in regions that later produce flares.

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