

Comparison between two methods for the analysis of hot onsets of solar flares.

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Abstract:

Solar flares are among the most energetic phenomena in the Solar System. Flare radiation, energetic particles, and associated coronal mass ejections drive the Space Weather near Earth. Thus, understanding the physical processes that trigger solar flares is paramount to help forecast Space Weather and mitigate their effects on our technological infrastructure. We present the investigation of solar flares that occurred between 2011 and 2012 of a recently identified, and yet to be understood, phenomena in solar flares: the presence of hot (10–15 MK), low-lying and compact sources at the onset of these events. The sample of flares used in this study has been extracted from the GOES event list. For the statistical study of the hot onset, we applied two methods. The first method, the subtraction of the preflare background X-ray flux is done manually, whereas the second is an automatic method that subtracts the background level without user bias. Thus, we used both methods to investigate the hot onset solar flares of the years 2010 and 2011. Finally, we compare the results of both methods, and discuss their weakness and strengths, so as to better understand their differences.

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References:

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