**Photospheric Vector Magnetic Field Parameters as A Predictor of Major Solar Flares**

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ABSTRACT

Photospheric vector magnetic field data which have several Space-weather HMI Active Region Patches (SHARP) parameters are used to study active regions that produced major solar flares. SHARP parameter data obtained from the Helioseismic Magnetic Imager (HMI) instruments onboard Solar Dynamics Observatory (SDO) have a good spatial and temporal sampling. We consider three SHARP parameters with high F-scores, namely total unsigned vertical current, total photospheric magnetic free energy, and total unsigned current helicity as a useful predictor for major solar flares. In this paper, we present the data analysis procedure and sample results focusing only on major solar flares (M and X class flares). The preliminary results showed in some cases, three SHARP parameters for the M-class flare have higher values than the X-class flare in which ideally should be the opposite.

*Keywords: photosphere, active region, magnetic field, flare, HMI*

References

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