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ON GEOEFFECTIVE ACTIVE REGIONS

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Geomagnetic storms are major disturbances in the terrestrial atmosphere caused by the reconnection process between the incoming plasma ejecta in the solar wind and the planetary magnetosphere. Strong geomagnetic storms lead to auroral displays at low latitudes, but can also cause both satellite and ground-based infrastructure malfunctions. The early recognition of geoeffective events based on specific features in the solar photosphere is crucial for the development of early warning systems. In this study, we explore multiple magnetic field parameters provided by the SHARP database from the SDO/HMI instrument. The analysis includes over 60 active regions that occurred during solar cycle 24 and the ongoing cycle 25. We present the statistical results between the SHARP and solar parameters, in terms of Pearson and Spearman correlation coefficients and discuss their space weather potential.