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Title: "HMI Data Driven Magnetohydrodynamic Model Predicted Active Region Photospheric Heating Rates: Their Scale Invariant, Flare Like Power Law Distributions, and Their Possible Association With Flares"

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A data driven, near photospheric, 3 D, non-force free magnetohydrodynamic model predicts time series of the complete current density, and the resistive heating rate Q at the photosphere in neutral line regions (NLRs) of 14 active regions (ARs). The model is driven by time series of the magnetic field $\mathbf{B}$ observed by the Helioseismic & Magnetic Imager on the Solar Dynamics Observatory (SDO) satellite. Spurious Doppler periods due to SDO orbital motion are filtered out of the time series for $\mathbf{B}$ in every AR pixel. Errors in $\mathbf{B}$ due to these periods can be significant. The number of occurrences $N(q)$ of values of $Q \geq q$ for each AR time series is found to be a scale invariant power law distribution, $N(Q) \propto Q^{-s}$, above an AR dependent threshold value of Q, where $0.3952 \leq s \leq 0.5298$ with mean and standard deviation of 0.4678 and 0.0454, indicating little variation between ARs. Observations show that the number of occurrences $N(E)$ of coronal flares with a total energy released $\geq E$ obeys the same type of distribution, $N(E) \propto E^{-S}$, above an AR dependent threshold value of E, with $0.38 \lesssim S \lesssim 0.60$, also with little variation among ARs. Within error margins the ranges of s and S are nearly identical. This strong similarity between $N(Q)$ and $N(E)$ suggests a fundamental connection between the process that drives coronal flares and the process that drives photospheric NLR heating rates in ARs. In addition, results suggest it is plausible that spikes in Q, several orders of magnitude above background values, are correlated with times of the subsequent occurrence of M or X flares.