Geophysical Research Abstracts
Vol. 18, EGU2016-3729, 2016
EGU General Assembly 2016

Relationship between extreme ultraviolet microflares and small-scale magnetic fields in the quiet Sun

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Microflares are small dynamic signatures observed in X-ray and extreme-ultraviolet channels. Because of their impulsive emission enhancements and wide distribution, they are thought to be closely related to coronal heating. By using the high resolution 171 Å images from the Atmospheric Imaging Assembly and the lines-of-sight magnetograms obtained by the Helioseismic and Magnetic Imager on board the *Solar Dynamics Observatory*, we trace 10794 microflares in a quiet region near the disk center with a field of view of $960'' \times 1068''$ during 24 hr. The microflares have an occurrence rate of 4.4×10^3 hr^{-1} extrapolated over the whole Sun. Their average brightness, size, and lifetime are 1.7 I_0 (of the quiet Sun), 9.6 Mm^2, and 3.6 min, respectively. There exists a mutual positive correlation between the microflares' brightness, area and lifetime. In general, the microflares distribute uniformly across the solar disk, but form network patterns locally, which are similar to and matched with the magnetic network structures. Typical cases show that the microflares prefer to occur in magnetic cancellation regions of network boundaries. We roughly calculate the upper limit of energy flux supplied by the microflares and find that the result is still a factor of $\sim$15 below the coronal heating requirement.