

Secretive solar waves stimulate X-ray bright points

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Abstract. We discuss Hinode XRT observations of temporally-related emission enhancements in solar X-ray bright points (BPs) consistent with excitation by an otherwise unseen wave. In one case, the wave source is unclear (out of the FOV), in the other the wave seems to be excited by a flaring/erupting BP. In the latter case, the wave velocity averaged $\sim 350 \text{ km s}^{-1}$ in areas of quiet Sun emission, but was reduced by $\sim 1/3$ in areas of higher emission and magnetic flux density. Larger loops were mostly unaffected by the wave's passage, while BPs could still be excited at distances of $4 \times 10^5 \text{ km}$ and more from their apparent origin. A small coronal dimming region (displaying characteristic evolution properties in EUV intensity) is seen next to the flaring BP, suggesting a small CME may have been associated with the event. We speculate on the origin and properties of these mysterious waves, which may prove useful tools for studying the media through which they travel.

These events are inconspicuous, showing low intensity enhancements of only selected small regions, and require high cadence, high spatial resolution data. Since they are easily overlooked and/or confused with stochastic variability, these waves may be a fairly common, but under-recognized component of the flare/CME phenomenon at small energies and spatial scales. SDO's AIA should be very useful in further study of these waves.