
A solar tornado caused by flares

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Abstract

An enormous solar tornado was observed by SDO/AIA on 25 September 2011. It was associated with a quiescent prominence with an overlying coronal cavity. The tornado appeared near to the active region NOAA 11303 on the south west limb of the Sun. We investigate the triggering mechanism of the solar tornado by using the data from two instruments: SDO/AIA and STEREO-A/EUVI, observing the Sun from two directions. There were three flares from the active region which directly influenced the nearby prominence-cavity system. We propose that the release of free magnetic energy from the active region during the flares resulted in a lower pressure in the active region corona and a contraction of the active region field. The neighboring cavity then expanded to fill the vacated space in the corona which triggered the tornado at the top of the prominence due to the expansion of the prominence-cavity system.

Keywords: Sun, Prominence, Coronal cavity

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