

Upward Lightning Flashes: Analysis of initiation

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An investigation of the initiation mechanism for upward lightning flashes has been studied for the purposes of anticipating damage to tall structures such as telecommunication towers or wind mills. In Brazil, since 2012, we have been recording upward lightning flashes in Sao Paulo (southeast of Brazil) using different techniques to visualize this kind of lightning. Data recorded in Sao Paulo city during the summer of 2011-2012, on project CHUVA ("Cloud processes of the main precipitation systems in Brazil: A contribution to cloud resolving modeling and to the GPM - Global Precipitation Measurement") was collected from the following equipment: lightning mapping array (LMA), BrasilDAT Lightning Detection Network, fast electric field sensors and high speed cameras. After the CHUVA project, an electric field mill was added to the base of the towers on top of the hill for better investigation. This paper describes our observations for initiation and the results of the upward lightning study in Brazil.