



## **Probability distribution for natural downward negative lightning parameters based on accurate-stroke-count studies**

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New data collected in southeast Brazil by means of a digital high-speed camera (1,000 frames/sec) related to natural negative downward lightning is presented in terms of probability distributions. Together with other selected studies, a comparison is done with Berger's data, which has been the basis for standards on lightning protection. The parameters of downward negative lightning discussed in this study are: (a) continuing current duration, (b) time intervals between strokes, (c) number of strokes per flash and (d) total flash duration. The Brazilian Integrated Lightning Detection Network was used in order to identify the polarity of the observed flashes. A total of 233 natural downward negative flashes related to 27 different thunderstorm days were recorded from two different sites in Paraíba Valley (São Paulo State) and are analyzed here. This comparison of natural lightning parameters was done based on those "accurate-stroke-count studies", as defined by Rakov and Huffines [*Journal of Applied Meteorology*, 42, 2003]. The results of those selected studies are reliable in terms of stroke identification and therefore very useful to estimate those parameters (a-d) of natural negative cloud-to-ground lightning.