




AE33A-3117 - High-speed Video Observation of a Lightning Flash Producing X-rays

 Wednesday, 11 December 2019

 13:40 - 18:00

 *Moscone South - Poster Hall*

Abstract

We report a well-documented case of a negative cloud-to-ground lightning dart leader producing x-rays. Four leaders in this seven-stroke flash followed the same path to ground. X-rays were only observed during the fifth leader before the return stroke with the highest peak current. This work presents the first simultaneous x-ray measurement and high-speed video observation of the propagation of a lightning leader producing x-rays. It was capable of determining the leader distance from the x-ray measurement and the conditions of the pre-existing channel during the leader propagation. The fact that the other three leaders following the same path to ground did not produce detectable x-rays confirms that leader line charge density is likely an important factor that determines x-ray production. The moment of the x-rays detection during the propagation of the fifth leader suggests that the orientation of the leader channel plays an important role in the detection of x-rays.



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X-ray and Gamma-ray Emissions from Thunderstorms and Lightning

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Process of A Multiple-Stroke Positive Cloud-to-Ground Lightning and Its Trigger Effect to the Upward Lightning

Shanfeng Yuan¹, **Xiushu Qie**², **Rubin Jiang**¹, **Dongfang Wang**¹, **Zhuling Sun**¹ and **Abhay Srivastava**¹, (1)Key Laboratory of Middle Atmosphere and Global Environment Observation (LAGEO), Institute of Atmospheric Physics, Chinese Academy of Sciences, Beijing, China, (2)Key Laboratory of Middle Atmosphere and Global Environment Observation (LAGEO), Insititute of Atmospheric Physics, Chinese Academy of Sciences, Beijing, China

Mapping the Impact of Local Terrain on Lightning Ground Attachment Location

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Ultra-high Speed Video Observations of Intracloud Lightning Flashes

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