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Analysis of Blue Discharges in Thunderclouds

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The Modular Multispectral Imaging Array (MMIA) of the Atmosphere-Space Interactions Monitor (ASIM) contains 3 photometers and 2 cameras, that monitors electrical discharges in and above thunderstorms. The 3 photometers sample in the bands: 337/4 nm, the VUV band 180-230 nm and 777.4/5 nm at 100 kHz; and the 2 cameras record in the bands 337/5 nm and 777.4/3 nm, with a temporal resolution of 12 frames per second. The 337 nm band corresponds to the strongest line of N₂P, the VUV band include part of the N₂ LBH and the 777.4 nm band corresponds to the OI line which is the strongest emission line of lightning leader channel. Here, we analyse observations of flashes that are predominantly blue. We will discuss the leader/streamer nature of these flashes. The analysis incorporates satellite cloud observations and weather radar measurements for the characterization of the thunderstorm clouds and their phase of development. In our optical analysis we incorporate also comparisons with data from NASA's Lightning Imaging Sensor on the ISS (ISS-LIS) and VAISALA's lightning location network GLD360.