

EGU2020-21858

<https://doi.org/10.5194/egusphere-egu2020-21858>

EGU General Assembly 2020

© Author(s) 2020. This work is distributed under the Creative Commons Attribution 4.0 License.



Simultaneous detection of lightning flashes by MMIA-ASIM and Colombia Lightning Mapping Array

Jesús Alberto López¹, Joan Montanyà¹, Oscar van der Velde¹, Ferran Fabró¹, Javier Navarro², Víctor Reglero², Olivier Chanrion³, Torsten Neubert³, Krystallia Dimitriadou³, and Nikolai Østgaard⁴

¹Lightning Research Group (LRG), Technical University of Catalonia, Terrassa, Spain

²Image Processing Laboratory (IPL), University of Valencia, Valencia, Spain

³National Space Institute (DTU Space), Denmark

⁴Centre for Space Science, University of Bergen, Bergen, Norway

Since April 2018, the Atmosphere-Space Interactions Monitor (ASIM) has been in operation on board the International Space Station (ISS). ASIM is composed of the Modular X-and Gamma Ray Sensor (MXGS) as well as a multispectral and high resolution array of photometers and cameras, called the Modular Multispectral Imaging Array (MMIA). These instruments allow us to investigate Terrestrial Gamma-Flashes, Transient Luminous Events and their interactions with thunderstorms and lightning flashes.

The Colombia Lightning Mapping Array (COL-LMA), operational since 2017, is the first VHF range network installed and working in a tropical region, and can contribute to the electrical understanding of thunderstorms and lightning leader processes associated with high energy phenomena in the upper atmosphere.

This work employs data from the MMIA array to investigate optical emission patterns at different bands (337 nm, 180-230 nm and 777.4 nm) caused by lightning leader development and cloud-to-ground flashes, derived from the COL-LMA and LINET network respectively. All cases are also correlated with optical observation from the Lightning Imaging Sensor (LIS) on board the ISS, and the Geostationary Lightning Mapper sensor on the GOES-R satellite.

The region of study is defined by the high detection-efficiency area of the COL-LMA around the Magdalena river valley. MMIA-ASIM information since July 2019 corresponding to passes over this tropical region has been analysed.