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# High speed video campaigns and meteorological conditions related to Gigantic Jets in Colombia

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25 gigantic jet events were recorded in Colombia from mid 2016 to late 2018, including those recorded during two intensive campaigns for high-speed camera observations for resolving the dynamics of these negative discharges as they grow out of the cloud top and connect with the ionosphere.

The first campaign, July 29 to August 23, 2017 near Santa Marta, used a camera running at 900-1200 frames per second. 4 gigantic jets were recorded, of which 2 successfully captured by the high-speed camera. The second campaign ran from 2 October to 29 November 2018, this time in Barranquilla and Cartagena in hope to be closer to gigantic jet events. 8 events were recorded, 3 with high-speed camera at 5000 frames per second. These observations show at least 11 new features that could previously not be documented, including bidirectional developments and steps.

A statistical study of meteorological environment using reanalysis data has been performed for the 25 gigantic jet events. A set of 25 null cases where storms were observed without jets have also been defined. A main result is that the vertical wind shear between 200 and 450 hPa was increased for the gigantic jets at a statistically significant level. On the other hand, gigantic jets are still observed in environments with very minimal vertical wind shear. We present also an analysis of the satellite evolution and Global Lightning Mapper detections.

Our continuing focus in Colombia is also to obtain matched events (lightning, sprites, jets etc), during overpasses of the Atmosphere-Space Interactions Monitor active on the International Space Station since spring 2018. Some events are now being analyzed.