

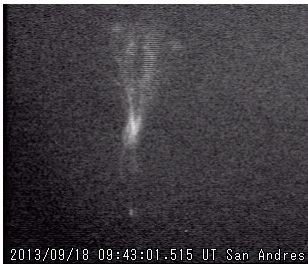
## Gigantic Jets observed from San Andrés island (southwest Caribbean)

Intended for Lightning Effects on the Middle and Upper Atmosphere (including TLEs)

Oscar van der Velde (UPC, Technical University of Catalonia, Electrical Engineering Department, Colon,1, 08222 Terrassa (Barcelona), Spain; [oscar.van.der.velde@upc.edu](mailto:oscar.van.der.velde@upc.edu)), J. Montanyà, D. Aranguren, D. Romero, S. Soula.

In the summer of 2009 a remotely operable low-light camera system was installed on the island of San Andrés of Colombia in the southwest Caribbean Sea. Severe corrosion and connectivity problems plagued the system. However, five gigantic jets (GJ) have been recorded so far (as of September 2013), and more might appear when combing through the vast number of clips. In one occasion, three GJs were recorded within little more than one hour. The observations support the expanding stages of certain storms as favorable for GJ production. Gigantic jets appear to be relatively common in this region, but extended episodes of cloudy/thunderous conditions at the camera site itself can complicate dedicated campaigns.

The first event occurred over land (Nicaragua) on 23 December 2011 and was stamped properly by a GPS time inserter. The starting time was 020550.259-279 UTC, fully developed stage 379-399 ms, brightness decreasing after 479 ms with beads remaining. This event occurred just a few nights after the system was repaired. A frame dropping issue was fixed in August 2013, but also the GPS inserter was removed. After two weeks of active operation, a new GJ was recorded east of the island (12 September 2013 092027 UTC). Its morphology looks initially similar to a carrot sprite, but with a trailing jet feature like in other GJs.



On 18 September, three GJs were recorded from one storm to the east-southeast over sea, at 084621, 084817 and 094301 UTC (PC time). All three lasted 250-350 ms, and featured an illumination (stroke) of the lowest section above the cloud top (<25 km) after this, suggesting the altitude of the leader-streamer transition. There was only one storm in the direction of the GJs. Satellite shows a cell reaching  $-40^{\circ}\text{C}$  level at 0745 UTC. By 0845 UTC the storm top reached roughly  $-70^{\circ}\text{C}$  while expanding horizontally and cooling further. This evolution looks similar to the case of 5 GJs reported from Réunion Island in the Indian Ocean (*Soula et al.* 2011). Flash rates (WWLLN, STARNET, LINET) will be analyzed for these cases and for any future GJ events. There were other optical flashes recorded from the storms in that direction, but during the GJs there was zero luminosity detected from the cloud. In contrast, over the entire dataset there were many storms at shorter distance with clear skies above, which produced a flash every 5-10 seconds, but no GJs.

