

## **Lightning activity and storm characteristics associated with dancing sprites**

Intended for Lightning Effects on the Middle and Upper Atmosphere topic

Serge Soula (University of Toulouse/CNRS, Laboratory of Aerology, 14 avenue Edouard Belin, 31400 Toulouse, France, serge.soula@aero.obs-mip.fr), Martin Füllekrug, Oscar van der Velde, Joan Montanya, Andrew Mezentsev, Nicolau Pineda, Torsten Neubert, and Olivier Chanrion

During about ten years, several video cameras installed in southern France, especially at Pic du Midi (2877 m) in the range of Pyrénées, performed observations of TLEs at any period of the year. Thanks their remote control, the optical systems can monitor the same thunderstorms and allow triangulations for some cases of luminous events. The lightning activity associated with the thunderstorms producing the TLEs, issued from several detection systems, can be analyzed at different time scales. Cloud top temperature issued from radiometer data on Meteosat satellite and radar observations issued from radar networks allow characterizing the structure of the thunderclouds. The electric field radiated in the frequency range from 1 Hz to 400 kHz and recorded with several wideband digital radio receivers allow to analyze in detail the discharge processes during the sequences of TLEs. This paper makes a special focus on some sprite events which consist of successive transient luminous discharges and which are called dancing sprites. The total duration of these sequences of sprites can be larger than one second. They correspond to lightning flashes which propagate over large distances within stratiform regions and which generate multiple positive strokes to the ground along their path. The lines of sight of the luminous discharges follow the lightning propagation in the thundercloud system. Several aspects of these phenomena will be discussed.