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# High-speed observations of Transient Luminous Events and Lightning (The 2008/2009 Ebro Valley campaign)

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Abstract. The future ASIM mission will provide x/y rays detections from space to investigate the origins of the Terrestrial Gamma-ray Flashes and its possible relation with transient luminous events (TLE). In order to support the future space observations we are setting up some ground infrastructure located at the Ebro Valley region (Northeast of Spain). At the end of 2008 and during 2009 we carried out our first observation campaign in order to acquire experience to support the future ASIM mission. From January 2008 to February 2009 we focused on the observation of TLE's with our intensified high-speed camera system. We recorded 14 sprites, 19 elves and, in three sprites, we observed also halos (Montanyà et al. 2009). Unfortunately no high-speed records of TLEs where observed in the range of the (XDDE) VHF network. However, we have recorded several tens of TLEs at normal frame rate (25 fps) which are in the XDDE range (Van der Velde et al., 2009). Additionally, in August 2009 we installed our first camera for TLE observation in the Caribean. The camera is located in San Andrés Isl. (Colombia).
From June 2009 to October 2009 we focused all of our efforts to record lightning at high-speed (10000 fps), vertical close electric fields and x-ray emissions from lightning. We recorded around 60 lightning flashes but we only clearly evidenced high energy detections in only one flash. The detections were produced during the leader phase of a cloud-to-ground flash. The leader signature on the recorded electric field was very short (around 1 ms) and, during this period, a burst of high energy emissions where detected. Then, few detections where produced just after the return stroke. The experience of this preliminary campaign has given us the basis for the future campaigns where we plan to count with two high-speed cameras and a Lightning Mapping Array.

References

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