

Preliminary results from the DTU automatic camera pointing system for TLE detection

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In this paper, we present the preliminary results of the DTU automatic camera pointing system for TLE detection. The system had been developed in order to operate several camera systems installed Western Europe. An algorithm allows tracking for thunderstorms 24 hours a day, 7 days a week. If any chances of activity, the system controls remotely the cameras by pointing them toward the most promising observing location and by launching a Transient Luminous Event detection program that will store optically detected activity. This tool can be extended to collaborate with others groups and will ease ground based observations in support of the space mission ASIM and TARANIS.

1. Introduction

The European activity of TLE observation using video cameras is increasing all over Europe since the first European Sprite was observed in 2000. [1]. Since 2003, DTU Space organizes optical observation campaigns from ground based stations installed in Europe: the EuroSprite campaigns. The current cameras are presently installed in the Pyrenees, in Corsica and in



2. Motivations

After having benefited from a large community of observers relaying each other's to perform observations [2], the difficulties of operating during the night has pushed DTU Space to think about using an automatic camera pointing system. The goal is to ease ground based optical observation of thunderstorms in relation with the upcoming space missions ASIM and TARANIS.

3. Principle of the method

The method is based on real-time analysis of lightning data from METEORAGE to track storms over Europe from a server located in Denmark. The criterion is based on the strength of positive Cloud to Ground lightning, which is used as an indicator for TLE production. [3]. The server in Denmark controls remotely the cameras by pointing them toward the most promising observing location and by launching a Transient Luminous Event detection program that runs locally. Every transient luminous event store locally and transmit back to Denmark the data for further analysis and archiving.

4. Preliminary results.

The preliminary results are presented giving the status of the ongoing detections.

5. References

- [1] Neubert, T. et al. Co-ordinated observations of transient luminous events during the EuroSprite2003 campaign, *J. Atm. Solar Terr. Phys.*, 67, 807-820, 2005.
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- [3] Pasko, V. P., U. S. Inan, T. F. Bell, and Y. N. Taranenko, Sprites produced by quasi-electrostatic heating and ionization in the lower ionosphere, *Journal of Geophysical Research*, 102, pp. 4529-4561, 1997.