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EARTH OBSERVATION WITH AUTONOMOUS SYSTEMS ON BOARD SOUNDING BALLOONS

Abstract

Small sounding balloons provide a quick and economical means of transporting scientific equipment to altitudes exceeding 35 km in the stratosphere; specialized instruments can be utilized during both the ascent and descent stages to monitor atmospheric conditions, while optical payloads can be employed for Earth Observation purposes. The work will showcase two distinct payloads launched from Lajatico area in Tuscany: one payload was specifically designed to identify sources of Artificial Light on ground and therefore launched during night-time, while the other focused on remote crop field monitoring and carried out its mission during daytime. Both payloads were equipped with commercial cameras and autonomously captured images of ground areas using specialized filters. This work will present main results achieved in both missions from post flight analysis of image datasets; particular focus will be on the effort required in trajectory and attitude reconstruction to achieve accurate georeferencing, since the flight train was not actively controlled in either trajectory or attitude.