19th IAA SYMPOSIUM ON SPACE DEBRIS (A6)
Space Debris Detection, Tracking and Characterization - SST (1)

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FIREBALLS CAPTURED BY THE UAE METEOR MONITORING NETWORK

Abstract

Space debris is often perceived as a severe threat to planet Earth. The UAE Meteor Monitoring Network (UAEMMN) was established to monitor space debris in the UAE sky. The UAEMMN is hosted by the Sharjah Academy for Astronomy, Space Sciences, and Technology (SAASST) and is sponsored by the UAE Space Agency and the University of Sharjah (UoS). Space debris can be natural ones such as meteors and fireballs or artificial like rocket boosters. The network consists of three towers distributed over three different UAE locations. The top of each tower is equipped with 17 cameras placed around a ring-like structure directed towards the sky. The system automatically captures any movement from sunset till sunrise. We are showcasing the fireballs detected by the UAEMMN system over the UAE. To analyze the detections, the UFO Analyzer and Orbit programs were utilized to define fireballs based on their apparent magnitude. From the date of operation of the system, September 2018, until December 2020, 864 fireballs were detected. The number of fireball detections varied over the period. The study reported a consistent pattern, showing that the numbers tend to increase by the end and beginning of each year and gradually decrease throughout the year. This is a unique finding. Our UAE fireballs observations help the International Meteor Organization build a worldwide database to compensate for the region's lack of reported observations.