

IMPROVING WORLD SPACE SITUATIONAL AWARENESS

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Improving the world's Space Situational Awareness (SSA) is a very high priority activity, but space tracking resources are limited. Observatories have great resources to contribute to this effort, but can observatories make a meaningful contribution without impacting their primary mission? Europe, the USA, and Russia have SSA efforts but are there gaps in, as an example, our knowledge of what satellites are in space?

The Ukraine Network of Optical Stations (UMOS) has, with their colleague from the United States, has found a way that uses their observing network to track critical satellites. UMOS has tracked at least three objects that do not appear in the world's (default official) satellite catalog – the US web site Space-Track.org or even in another large satellite catalog. There are several satellite catalogs, for instance the Mini_MegaTORTORA site, where some objects are left out. The same situation exists in Space-Track.org as well.

Five high inclination satellites and three lower inclination satellites were tracked from May to August of 2021. The five higher inclination objects appear in the US Space Force's Satellite Catalog but without orbital parameters being given. The three lower inclination satellites appear to not be in the Satellite Catalog. The estimates of the accuracy of the obtained positional observations are given. The mean square errors of position were $\pm(1.0-3.0)''$ in right ascension and declination for the objects in $(8-11)^{\text{mag}}$ range. Orbital elements of these satellites were calculated using software from the Odessa National University.

This presentation shows the work done to find unknown satellites, and how UMOS is prepared to make that information available. This begins a discussion of what is the best use of the observatory's resources? Where should this contribution to SSA reside?