

ANALYSIS OF PULCOO MEASUREMENT DATA USING PROOF-2005

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The Pulkovo Cooperation of Optical Observers (PULCOO) includes observatories of the former Soviet Union around the world. PULCOO can provide routine tracking of the objects up to 18^m along 340° arc of the geostationary ring.

The Cooperation includes the optical observation stations such as Ussuriysk, Far East, Maidanak, Middle Asia, Abastumani and Zelenchuk, Caucasus, Nauchnyi, Crimea of Ukraine, Pulkovo near St.-Petersburg, Russia, Mayaki, near Odessa, Ukraine, Tarija, Bolivia, that are equipped with various telescopes from 22 cm to 2.6 m diameter.

ESA'S Program for Radar and Optical Observation Forecasting (PROOF) is a modular software tool for the purpose of debris model validation. Mathematical methods are used in PROOF to describe crossing rates for given sensor characteristics. Sensor specific system performance models translate the crossing rates into detection rates, assuming pre-defined shape, material and surface properties of the target objects.

In this paper, PROOF is used to support the interpretation of measurement results in the geostationary ring by analyzing the ratio of the measured detection rates; using PULCOO sensors, to the expected crossing rates, assuming an accurate debris model population. Based on the analysis, groups of detected objects will be correlated with different debris sources.