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ABSTRACT BOOK



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Observations of Artificial Earth Satellites

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Catalogue of artificial Earth satellites is handled in the RI "NAO" to control near-Earth space, to monitor space debris dynamics, to study Earth geopotential and atmosphere density at high altitudes. The observations are carried out with two telescopes, namely, the Multi-Channel Telescope ($D=120$ mm, $F=2040$ mm) and Maksutov Robotic Telescope ($D=300$ mm, $F=1500$ mm). CCD cameras (1040/1160 pix) with thermo electric coolers are used for the observations of geostationary satellites and near-Earth objects (GSS and NEO). TV-CCD cameras ($1/2''$, $FOV=1^{\circ}23' \times 1^{\circ}02'$, frames per second – 25) are used for the observations of low-Earth objects (LEO). The telescopes allow us to control GSS orbits in the range of $105^{\circ}W$ to $32^{\circ}E$ longitude; NEO and LEO orbits in the range of 25° in any direction. The observations are carried out with unmovable telescope: GSS by combined CCD mode, NEO and LEO by quasi-strip mode. Two groups of satellites are included in the catalogue. 90 satellites of 18 telecommunication companies from 20 countries are included in a list of observed GSS. 100 objects such as rocket carriers, used space apparatus, meteo satellites, etc are included in a list of LEO. Kepler's orbit elements at a mean epoch of observations were calculated. The catalogue is available via the web site of the RI "NAO". Physical features, equatorial coordinates, orbit elements are given in the catalogue. Accuracy of single determination of (O-C) was estimated as the result of calculations of Kepler's orbit elements. The accuracies for GSS and LEO were $\pm 0.4'' \div \pm 1''$ and $\pm 3'' \div \pm 10''$, respectively.