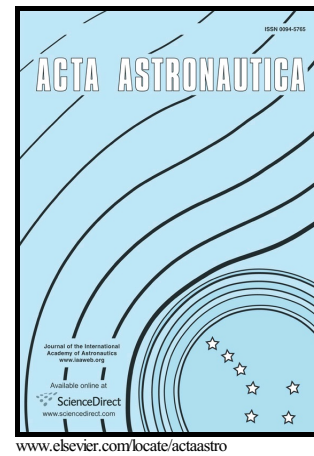


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# Natural and technogeneous contamination of near-Earth space

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## Abstract

The paper presents an analysis of ecological impact of the combined factor of natural and manmade contamination of near-Earth space on the environment around the Earth and human space activities. The near-Earth space (NES) is considered here as the enlarged notion by uniting the traditional cosmic space starting conditionally from about 100 km and the lower space filled with atmosphere. This makes analysis of some important characteristics (such as, for example, the astronomic transparency of the environment) more comprehensive and allows one evaluating those characteristics from one and the same position.

**Keywords:** space debris, manmade contamination, near-Earth space, astronomic transparency

## 1. Introduction

At present, one of the main problems of development of near-Earth space is its progressive manmade contamination. Earlier, in publications [1 - 4] it was noted that availability of a large number of manmade space objects (SO) in near-Earth space creates a great hazard to outer space activities. It was also determined that the existing population of orbital debris (OD) containing more than  $10^6$  centimeter-sized and about  $10^8$  millimeter-sized objects is a powerful unmanaged orbital group that threatens military and civilian spacecraft and ground-based strategic objects of any state. However, not only the manmade contamination of NES threatens the space activities and existence of mankind. In this paper NES is treated larger than it was used to be traditionally by uniting the cosmic space starting conditionally from about 100 km and the lower space filled with atmosphere. The problem of ecological impact of the combined factor of natural and manmade contamination of near-Earth space on the environment around the Earth and human space activities is analyzed.

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