

31st IAA SYMPOSIUM ON SPACE POLICY, REGULATIONS AND ECONOMICS (E3)  
Assuring a Safe, Secure and Sustainable Environment for Space Activities (4)

Author: Mrs. Marcia Alvarenga dos Santos  
National Institute for Space Research - INPE , Brazil, marcia.alvarenga@inpe.br

Prof.Dr. Marcelo Lopes de Oliveira e Souza  
Brazilian National Institute for Space Research - INPE, Brazil, marcelosouza@ig.com.br  
Dr. OLAVO DE OLIVEIRA BITTENCOURT NETO  
Catholic University of Santos, Brazil, olavo.bittencourt@usp.br

THE OSCAR SMALL SATELLITES SERIES: A CASE STUDY FOR THE DEVELOPMENT OF  
ENVIRONMENTAL SPACE LAW

**Abstract**

In the beginning of the Space Age, large, heavy, complex, high tech satellites (civil or military) with the then state of the art technologies, were built and launched by State actors, inducing the development and later applying specific provisions of Space Law. At the time, they were viewed as representing no significant environmental in-orbit concern due to their small number, long life, total monitoring and control, and/or provisions for decay, reentry or removal. A notable exception to this was the OSCAR satellites' series. These were relatively small, light, simple, low-tech satellites, built by radio-amateurs, carried along big rockets, which did not immediately lead to the creation of specific regulation. Despite not generating much attention from the international community, those space objects were the forerunners of the current trend towards increasing use of small satellites, currently justifying discussion of applicable provisions to protect the outer space environment.

The present paper aims to review and discuss the problem represented by the growing number of low-tech small satellites in Earth's orbit, as well as the insufficient amount of specific norms to avoid or reduce their impact to the outer space environment. This includes damage or destruction by interference, contamination, collision or other types of damage to (i) an area considered *res communis omnium*; (ii) operational space objects; (iii) an orbital niche; (iv) ground facilities (by risk of re-entry, fall, impact on the soil, on humans, on human facilities, on air, maritime, and terrestrial traffic); and (v) collateral activities (communication, sensing, meteorology, etc.).

The purpose of this paper is to review and discuss the Space Law upon the OSCAR series as forerunners of the Environmental Space Law upon small satellites.

The methodology proposed is to provide a review and discussion of the legal instruments induced and/or applicable to the risks represented by small satellites such as those of the OSCAR series, including the IADC Report on Space Debris (1995), the Outer Space Treaty (1967), the Liability Convention (1972) and Registration Convention (1974).

The results envisioned include review, discussion and considerations, from both technical and legal standpoints, to be developed and presented to the international community, considering applicable *de lege lata* and *de lege ferenda* initiatives.