International legal cooperation of states in the fight against space debris

Adel I. Abdullin[1]
[1] Kazan Federal University, Russia
Email: global@ores.su

Dinar A. Valeev[2]
[2] Kazan Federal University, Russia
Email: russia@prescopus.com
Tel.: 89372804747

Abstract

In the current article, the authors consider the problem of debris in the near-Earth space environment, and investigate the legal and technological aspects of this issue. General and special methods of scientific knowledge are applied in the work. Analysis and synthesis are the central research methods. As a result, in the modern system of international law, public international law should create certain rules, aimed at ensuring space security and space order. In conclusion, it is necessary to fight against space debris, using a set of technical and legal mechanisms, applying the joint efforts of the whole international community.

Keywords: International Space Law, Debris, Organization.

Cooperación jurídica internacional de los Estados en la lucha contra los desechos espaciales.

Resumen

En el artículo actual, los autores consideran el problema de los escombros en el entorno espacial cercano a la Tierra e investigan los aspectos legales y tecnológicos de este problema. Métodos generales y especiales de conocimiento científico son aplicados en el trabajo. El análisis y la síntesis son los métodos de investigación centrales. Como resultado, en el moderno sistema de derecho internacional, el derecho internacional público debe crear ciertas reglas, destinadas a garantizar la seguridad y el orden del espacio. En conclusión, es necesario luchar contra los desechos espaciales, utilizando un conjunto de mecanismos técnicos y legales, aplicando los esfuerzos conjuntos de toda la comunidad internacional.

Palabras clave: derecho internacional del espacio, escombros, organización.

1. Introduction

The cooperation of states in the peaceful exploration of space is conditioned by many circumstances. Space activities are already of great benefit to mankind: scientific research, disaster mitigation, space monitoring of the ozone layer, mobile phones, satellite television and much more. However, space activity causes negative consequences, in addition to the asteroid threat. For example, more than 34 thousand objects of the so-called space debris, which threaten existing satellites in orbit, have been already cataloged. The role of international space law in these conditions is increasing. In the 21st century, the study of outer space is a fundamental task of our civilization, and that requires the common efforts of the entire community of states. Outer space is a unique resource, and its exploration should be carried out in the interests of all countries. Due to the huge financial costs, no one space power can solve the complex of problems, associated with outer space, alone (Garafova and Valeev, 2016).

It should be said, that today the issues of pollution are of particular relevance both in the doctrine, and in the practice of international legal regulation. The literature rightly notes that this problem should be viewed through the prism of two perspectives: technological and political-legal. In the context of the question raised, the issue of space debris should be considered, since this problem is of particular relevance for the safe operation of long-term orbital stations and safe space flights. The uncontrolled fall and combustion in the atmosphere of the Earth of Chinese space station Tiangong-1 in April 2018 is a clear confirmation of the relevance of the topic under consideration. In our opinion, effective protection of space and the environment from the consequences of space debris is impossible without the consolidation and international cooperation of states. Only bilateral, multilateral and regional agreements, containing the balance of interests of all parties, can be the basis of such cooperation. Relations between states should be formed on the principle of equality and mutual respect of the parties, regardless of their political orientation and economic development. In this regard, some international regulatory documents, containing provisions, aimed at fighting against space debris, will be considered further in the work.

2. Methodology

General and special methods of scientific knowledge are applied in the work. Analysis and synthesis are the central research methods. Also, such methods as formal-logical, systemic, comparative and legal, historical methods are widely used in the work.

3. Results and discussion

International legislative and regulatory framework does not contain the definition of the term space debris. In our opinion, the definition of this concept is the most accurate in the draft of the international regulatory document of 1994 on environmental protection from damage, caused by space debris: “space debris is the artificial objects in outer space, which are different from active or otherwise useful satellites, if no reasonable change in these conditions is expected in the foreseeable future” (abashidze et al., 2009: 15). The main provisions, regulating the protection of outer space from the pollution, caused by space debris, are contained in the Outer Space Treaty (1967). According to Article IX, the states must explore outer space and stellar bodies without pollution. In

the framework of the Outer Space Treaty, the scientists put forward the proposals for adoption the imperative principles, which would contain measures for the prevention of outer space pollution. In addition, there are ideas about the creation of a common system for monitoring and cataloging of all space objects (Heqi, 1987).

In addition to the Outer Space Treaty, the Convention on International Liability for Damage, Caused by Space Objects of 1972 is also aimed at fighting against space debris. Article II provides the absolute responsibility of the launching state. That is, in the event of damage to an aircraft in flight or property, or to persons on the surface of the Earth, the state, which is the holder of space debris, bears full responsibility, regardless of the fault. In turn, Article III establishes that if the space debris cause damage to a space object, or to persons, or to the property in any place, other than on the Earth's territory, then the right holder of space debris is liable only if he is guilty. The Convention on International Liability for Damage, Caused by Space Objects provides for the possibility of forming of Claims Commission, which is created to resolve the disputes, if diplomatic methods have no results. It should be noted that not only in domestic, but also in foreign literature, fixing the norms on international responsibility for illegal behavior and lawful activity is determined by one of the vectors of development of international law. In general, when analyzing the Space Liability Convention, scientists conclude, that the compensation mechanism, established by the Convention, largely protects the interests and rights of the affected party (Klyunya, 2012).

However, it is also noted in the literature that the Convention on International Liability for Damage, Caused by Space Objects of 1972 cannot fully protect states against the consequences of space debris. Firstly, the application of Article III poses the problem of determining the guilt of the launching state. Secondly, there is the question of the relationship between the concepts of space object and space debris, and as a consequence, the possibility of application the Convention for Damage to resolution of consequences, related to space debris. The UN Convention on International Liability for Damage and the UN Convention on Registration of Objects, Launched into Outer Space of 1975 interpret the concept of a space object as any artificial object (including its component parts and means of delivery) launched into outer space. It seems that in these conditions, the term space debris is narrower than the term space object, which should be interpreted widely. Based on this, it can be concluded that the UN Convention of 1972 is applicable to issues, related to space debris (Hanqin, 2003).

Speaking about international organizations, one of the goals of which is the international cooperation of States in the fight against space debris, the Inter-Agency Space Debris Coordination Committee (hereinafter - IADC) should be singled out. IADC is a specialized international institution, aimed at protection of outer space and the Earth objects from space debris. IADC proposes conceptually new ideas for solving the tasks, assigned to the Space Debris Committee. So, the Russian delegation of Roscosmos, which participated in the 36th session of the IADC, which was held in the Japanese city Tsukuba, put forward a new proposal. Its essence is that private companies can carry out the fight against space debris on a reimbursable basis. It seems to us that the implementation of this proposal will increase the effectiveness in the fight against space debris, but at the same time great attention should be paid to the safety of flights of private ships. The thesis, that the problems of responsibility for adverse changes, pollution of space and environment can be effectively addressed only with the application of the public law, and not with the law of the individual state, based on the provisions of private law, is undergoing changes (Lysenko, 2006).

One of the main mechanisms of fighting against space debris should be considered a document Space Debris Mitigation Guidelines. However, this document does not address all the problems of space debris, it does not raise the issues of collision of space objects with nuclear

sources of energy on board with space debris, the issues of removal of current space debris. It should be noted, that an effective action in the matter of reducing space debris is the increase of awareness of risks, caused by numerous orbital debris, and the sources of space debris. In our opinion, in this area, the creation of catalogs and databases of orbit pollution should be singled out. The main purpose of the catalog is the storage of information and the subsequent modeling of the orbital movement of space debris, which are necessary to predict the upcoming launches of space objects. Currently, only two states constantly update the registers of space objects - the United States and Russia. Based on them, the European Space Agency also compiles the database of space objects. It should be emphasized, that other states generally monitor space debris (Rex, 1998).

4. Summary

The analysis of the Convention on International Liability for Damage, Caused by Space Objects of 1972 makes it possible to agree with the scientists, who believe that the procedure of damage compensation, enshrined in the Convention, protects the interests and rights of affected parties in case of damage to the aircraft in flight, or on the surface of the Earth, including damage, caused by space debris. This is evidenced by the joint and several responsibilities of the perpetrators and the institute of absolute liability, enshrined in the Liability Convention. In our opinion, this mechanism is a reflection of the attempts of states to delimit the balance of power between the weak and strong side in legal relations with the participation of space countries; to improve the safety of space flights and space launches (Ria, 2018).

The possibility to establish the Claims Commission, provided by the Convention, is also a good example of international cooperation of the states, their focus on a fair trial in the case of a dispute. At the same time, it seems to us, that the mechanism for creation of the Commission is rather poorly described in the analyzed Convention. Firstly, the term of the Commission's work can be extended an unlimited number of times that creates prerequisites for delaying the Commission's work. Secondly, the Commission's decision serves as guidelines, and the parties consider it in the spirit of good will. In our opinion, such situation may move the parties forward in non-compliance with the Commission's decision, and that, in turn, may influence the effectiveness of the Commission's work. In addition, due to the practical difficulties in determining the guilt of launching state, we suppose, that the number of its parties should be increased, in order to raise the effectiveness of the Commission (it is necessary to formalize the possibility of outside observers, and to increase the number of members, elected jointly by states, for example, from 1 to 3). This will affect the impartiality, objectivity and effectiveness of functioning of the Claims Commission, the development of institutions of international cooperation in the fight against space debris (Yuzbashyan, 2009).

In our opinion, the provisions, relating to the international cooperation of states in the fight against space debris, and also the standards, aimed at prevention of outer space pollution, should be included in the framework of the Outer Space Treaty of 1967. In particular, the creation of preventive measures, contributing to the elimination of space debris from orbit, appearing as a result of the spacecraft flight, as well as the measures, aimed at the formation of waste-free space production. It is necessary to recommend the countries to conduct mutual consultations and negotiations on the technological component of space debris before launching a spacecraft, while developing and strengthening international cooperation of states in the field of space activities.

In our opinion, in the modern system of international law, public international law should create certain rules, aimed at ensuring space security and space order. In turn, in new conditions of business development in the field of space activities, international private law can be considered as an effective tool in protecting the Earth and space objects from space debris. This area can be developed through the activities of national companies, bringing economic profit, and aimed at the collection and disposal of space debris. In addition, today, in the context of development of international information broadcasting, the development of Internet communications, there is a constant launch of space satellites, servicing the listed technological innovations. The consequence of this is an increased risk of formation of new space waste, and the Kessler syndrome only enhances the likelihood of formation of space debris. In this regard, it seems to us, that the mandatory permanent exchange of data on existing space debris, the formation of a common single catalog of information on space debris, and the creation in the future of a single international body, controlling absolutely all space debris objects, will allow the countries to monitor the launches of new satellites, ensuring their safety and reducing the risk of economic costs.

5. Conclusions

In conclusion, we should agree with the Professor Kolosov:

> Close interconnection of technological and legal components in the process of international cooperation becomes increasingly noticeable and will obviously be the basic tenet in the development of international law in the 21st century (1999: 18).

To date, international legal and regulatory framework, aimed at fighting against space debris, is narrowed. Existing institutions of the international community should be modernized; the most effective ways of controlling the international space should be created. We believe that in the framework of the creation of projects, which do not lead to the pollution of outer space, it is necessary to combine legal, operational and engineering solutions, designed to help in achieving the goal of subsequent decrease of space debris in the process of any space activity. It should be noted, that although the total pollution of outer space will increase, it is necessary to fight against space debris, using a set of technical and legal mechanisms, applying the joint efforts of the whole international community. In this regard, the news about the expansion of the network of automated warning systems for dangerous situations in space, through the stations in the BRICS countries, is a good example of the positive experience of regional international cooperation.

6. Acknowledgements

The work is performed according to the Russian Government Program of Competitive Growth of Kazan Federal University.

References

ABASHIDZE, A., GENERALOV, V., SOLNTSEV, A. 2009. **Space Debris Mitigation Guidelines of 2007**. International law. Publishing house RUDN, Vol. 2. Nº 38: 283-295. Moscow. Russia.

GARAFOVA, D., and VALEEV, R., 2016. **International law and liability regimes in the context of Trans boundary transportation of hazardous waste**. International Journal of Humanities and Cultural Studies. p. 705. Tunisia.

HANQIN, X. 2003. **Trans boundary Damage in International Law**. Cambridge: Cambridge University Press, p. 1. UK.

HEQI, Z. 1987. **Towards legal Control of Environmental Hazards of Space Activities, Proceedings of the 30th Colloquium of the Law of Outer Space**, Brighton, pp. 138-141. USA.

KLYUNYA, A. 2012. **International law on the fight against space debris. International legal issues of space exploration: materials of the round table of the X annual All-Russian scientific-practical conference Actual problems of modern international law, dedicated to the memory of Professor I.P**. Blishchenko. Zhukov, M.: RUDN, pp. 129 - 130. Moscow. Russia.

KOLOSOV, Y. 1999. **Preface to the monograph of A.V. Yakovenko.** Progressive development of international space law. Actual problems. M.: Mezhdunarodnye otnosheniya, p. 8. Russia.

LYSENKO, M. 2006. **Legal problems and prospects for the prohibition of weapons in space**. Thesis for a Candidate Degree in Law Sciences. p. 25. Moscow. Russia.

REX, D. 1998. **Will space run out of space?** The orbital debris problem and its mitigation. Space policy. Nº 14. South Africa.

RIA, N. 2018. **Orbital scrapyard: how to clean up space debris more effectively**. [Electronic resource]/ URL: https://ria.ru/science/20180521/1520708036.html. (Date of access: 21.05.2018). Russia.

YUZBASHYAN, M. 2009. **International legal framework for solving the economic problems of space use**. Thesis for a Candidate Degree in Law Sciences. p. 87. Moscow. Russia.