

THE IMPORTANCE OF INTERNATIONAL COOPERATION IN BUILDING NATIONAL SPACE DATA INFRASTRUCTURE IN ALL COUNTRIES

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*How to imagine the advancement of all mankind,
without the national development of each country?*

Abstract

The use of geospatial data and geoprocessing technology is critical for surveying and monitoring natural resources (land, water, mine), environmental changes, meteorology, hydrology, and natural, geological disasters; in creating and updating national topographic map system for territorial planning and management; in supporting economic development and administration; in researching, applying and creating new technologies for Earth observation; in implementing programmes, projects, scientific research and technology exchange with different countries, international organizations and private enterprises.

This kind of information and its benefits are today an indispensable part of a country's strategic infrastructure for national sustainable development, just as networks for transportation, healthcare, education, telecommunication and water supply systems.

Hence it is essential that each country, irrespective of its degree of economic or scientific development, have an appropriate infrastructure and human resources specialized in the knowledge and the application of modern techniques for geospatial data acquisition and processing, culture management and to reach a high level of public awareness of its usefulness in all areas of national life.

States conducting remote sensing and geographic information system programmes are called upon to make special efforts to cooperate with other States in building their national space data infrastructure, in the modes considered most effective and appropriate by the countries concerned.

The aim is that all countries should be, as soon as possible, adequately equipped to capture, analyze and apply the geospatial data indispensable for the national sustainable development, as well as for the prevention and mitigation of natural disasters.

The paper hereby proposes that this concrete objective become an integral item underlying the principle of international space cooperation. It would be, no doubt about it, for the benefit and in the interest of all countries.

1. Space Law and cooperation for national sustainable development

At the beginning, the International Space Law used to make references to cooperation, but not to cooperation for national development. The 1967 Outer Space Treaty utilizes the word "cooperation" twice in the Preamble and in five articles¹. However, the major concern is "promoting international cooperation and understanding" in the interest of "maintaining international peace and security", as it is clear in its Article II.

The world lived then the hardest Cold War times. There were only two space powers: the United States and the Soviet Union. And they were deeply involved in a mass destruction arms race. Their central legal and political objectives were to regulate – within the United Nations Charter system, convenient for both – and reduce as much as possible the potential conflicting issues between them in outer space, as well as to establish the principle of free exploration and use of the new environment and its principle of non-appropriation. It included the free use of satellite surveillance and intercontinental ballistic missiles, which fly through outer space. The non-appropriation principle, in turn, was thought to prevent the outer space acquisition or occupation by one of the rival powers.

Not by chance the American Professor Nathan C. Goldman² rightly notes: "The history of International Space Law, therefore, cannot be understood apart from its origins in the Cold War. Indeed, the development of the International Law of outer space is inextricably linked to this context of international politics and policy."

The matter at issue is that Article III of the Outer Space Treaty determines that space activities shall be carried out "in accordance with international law,

including the Charter of United Nations", and the Charter establishes as one of the purposes of United Nations the promotion of "economic and social progress and development."

Its Article 55 is very clear in this sense: "With a view to the creation of conditions of stability and well-being which are necessary for peaceful and friendly relations among nations based on respect for the principle of equal rights and self-determination of peoples, the United Nations shall promote: (a) higher standards of living, full employment, and conditions of economic and social progress and development; (b) solutions of international economic, social, health, and related problems; and international cultural and educational cooperation; and (c) universal respect for, and observance of, human rights and fundamental freedoms for all without distinction as to race, sex, language, or religion."

And Article 56 completes: "All Members pledge themselves to take joint and separate action in cooperation with the Organization for the achievement of the purposes set forth in Article 55."

By relating Article III of Outer Space Treaty to Articles 55 and 56 of the United Nations, one comes logically to the conclusion that the exploration and use of outer space by all States shall be carried out aiming at the economic and social progress and development of each nation.

This disposition could be included in Article I of Outer Space Treaty, the so-called "common benefit clause". According to it, "the exploration and use of outer space, including the Moon and celestial bodies, shall be carried out for the benefit and in the interests of all countries, irrespective of their degree of economic or scientific development, and shall be the province of all mankind." It would be entirely proper to add, after

“irrespective of their degree of economic or scientific development,” a more material reference, for instance: “with a view to promote conditions of their economic and social progress and development” (...).

Thus, Article I, § 1, could be read this way: “The exploration and use of outer space, including the Moon and celestial bodies, shall be carried out for the benefit and in the interests of all countries, irrespective of their degree of economic or scientific development, with a view to promote conditions of their economic and social progress and development, and shall be the province of all mankind.”

Of course, it is possible to give such an interpretation to the real wording of Article I, § 1, but would it reach a consensus?

However, the mentioned connection is not new. It was explicitly recognized for the first time in the 1979 Moon Agreement³. Its Article 4, § 1, says: “The exploration and use of the Moon shall be the province of all mankind and shall be carried out for the benefit and in the interests of all countries, irrespective of their degree of economic or scientific development. Due regard shall be paid to the interests of present and future generations as well as to the need to promote higher standards of living and conditions of economic and social progress and development in accordance with the Charter of the United Nations.”

The same reference is made by the Resolution on the Principles Governing the Use by States of Artificial Earth Satellites for International Direct Television Broadcasting⁴, approved by the UN General Assembly in 1982. Its Article D, § 6, says that “special consideration should be given to the needs of the developing countries in the

use of international direct television broadcasting by satellite for the purpose of accelerating their national development.”

However, there is not any mention to national development in the Resolution on the Principles Relating to Remote Sensing of the Earth from Outer Space⁵, adopted by the UN General Assembly in 1986. At that time, the States did not realize yet how indispensable remote sensing activities will become for their national development. That is one of the reasons why this UN Resolution must be updated.

Nevertheless, according to its Principle I, the sensing of the Earth’s surface from space is made “for the purpose of improving natural resources management, land use and protection of the environment.” It could be interpreted as meaning “natural resources management, land use and protection of the environment for national development”, but a further guarantee would be provided should that very wording be included to the Resolution itself. After all, obviously, there are kinds of natural resources management, land use and protection of the environment that can be seen as not corresponding to national development by a State. And all States have the sovereign right to define their own ways and programs of national development, since they are not harmful to the international community as a whole.

Depending on the interpretation, two other Principles reinforce the idea of national development, although this concept is not directly mentioned. The Principle II says that “remote sensing activities shall be carried out... taking into particular consideration the needs of the developing countries.” And Principle IV affirms that “such activities shall not be conducted in a manner detrimental to

the legitimate rights and interests of the sensed State.” In the first case, we can argue that for a developing country, logically, no need is no a more crucial than its national development. In the second case, we can surely consider that the national development is, without any doubt about it, a legitimate right, as well as one of the major interests of any State, even more a developing State, including the sensed ones.

A step ahead in the process of recognition of the exploration and use of outer space as indispensable requirement for national development is the Declaration on International Cooperation in the Exploration and Use of Outer Space for the benefit and in the Interest of All States Taking into Particular Account the Needs of Developing Countries⁶ – known as the “Space Benefit Declaration” –, adopted by the UN General Assembly in 1996.

Specially significant in this connection is the § 5 of the Declaration, which says:

“International cooperation, while taking into particular account the needs of developing countries, should aim, *inter alia*, at the following goals, considering their need for technical assistance and rational and efficient allocation of financial and technical resources:

(a) Promoting the development of space science and technology and of its applications;

(b) Fostering the development of relevant and appropriate space capabilities in interested States;

(c) Facilitating the exchange of expertise and technology among States on a mutually acceptable basis.”

Needless to say that all these activities are essential for national development by and large. It is unthinkable in the contemporary world to develop a country without consistent

programs in the most important fields of science, technology, innovation – including the space one – and its respective facilities and human capabilities. Unfounded is also to realize an isolated national development which could dispense with international cooperation and refuse to exchange expertise and technology with other countries.

The 1996 UN Declaration is in a good way. Yet it can be improved still more in vital aspects. To affirm that “States are free to determine all aspects of their participation in international cooperation”, as it is said in the § 2, happens to be obviously insufficient in such a interdependent world we all live today. It is necessary to establish, at last, that States have the duty to seek to cooperate with other countries on an equitable and mutually acceptable basis, as a kind of legitimate pressure put by international community of nations in order to stimulate as much as possible the national development in a large number of countries. Sustainable development for all Peoples is the basis of peace, justice, long life, as well as social, cultural and political advancement for the present and future generations on Earth, on the Moon, on Mars and elsewhere mankind could reach.

In this sense, the 1996 UN Declaration can serve as a platform to create new and more detailed resolution, relating for instance to the “relevant and appropriate space capabilities in interested States” – more precisely the capabilities to capture, process, analyze and intensively use geospatial data for their national development, which is the subject of the present paper.

This proposal has the support of some more general international documents, approved in the framework of United Nations in the last twenty years.

In 1986, the UN General Assembly adopted a Resolution with the Declaration on the Right to Development⁷, prepared on the basis and as a derivative of the purposes and principles of the Charter of United Nations. Its article 1, § 1, defines the right to development as “an inalienable human right by virtue of which every human person and all peoples are entitled to participate in, contribute to, and enjoy economic, social, cultural and political development, in which all human rights and fundamental freedoms can be fully realized.” The Article 3, § 1, in its turn, says that “States have the primary responsibility for the creation of national and international conditions favourable to the realization of the right to development,” meanwhile the § 3 affirms that “States have the duty to cooperate with each other in ensuring development and eliminating obstacles to development.” It is also relevant to quote also the § 1 of Article 4: “States have the duty to take steps, individually and collectively, to formulate international development policies with a view to facilitating the full realization of the right to development.” And the § 2: “Sustained action is required to promote more rapid development of developing countries. As a complement to the efforts of developing countries, effective international cooperation is essential in providing these countries with appropriate means and facilities to foster their comprehensive development.” These recommendations are fully valid for all space activities too.

It is appropriate to remember the Principle 9 of the Rio Declaration on Environment and Development⁸, proclaimed by the UN Conference on Environment and Development, held at Rio de Janeiro in 1992, which proclaims: “States should cooperate to strengthen endogenous capacity-building for

sustainable development by improving scientific understanding through exchanges of scientific and technological knowledge, and by enhancing the development, adaptation, diffusion and transfer of technologies, including new and innovative technologies”. A genuine national development lies above all upon endogenous capacity building for strategic initiatives and decisions, even recognising the necessity of international cooperation to construct this capacity.

The Space Millennium: Vienna Declaration on Space and Human Development⁹, adopted by the Third UN Conference on the Exploration and Peaceful Uses of Outer Space (UNISPACE III), held in July 1999, recommended a set of actions in order “to protect the Earth's environment and managing its resources, as well as to use space applications for human security, development and welfare.”

At last two of them deserve to be highlighted here:

“To improve knowledge-sharing by giving more importance to the promotion of universal access to space-based communication services and by devising effective policies, infrastructure, standards and applications development projects;” and

“To assist States, especially developing countries, in applying the results of space research with a view to promoting the sustainable development of all peoples.”

Following this sequence, the UN Member States have taken a remarkable decision in the § 12 of the United Nations Millennium Declaration¹⁰, adopted by the UN General Assembly in 2000: “We resolve (...) to create an environment – at the national and global levels alike – which is conducive to development and to the elimination of poverty.” This constructive environment, of course,

should include cooperative actions aiming at building the geospatial data infrastructure so needed to every nation.

Finally, it is equally worthywhile mentioning the Resolution on international cooperation in the peaceful uses of outer space, adopted by the UN General Assembly in 2005¹¹. The point of the present paper is in harmony with this resolution, as it:

“Emphasizes the need to increase the benefits of space technology and its applications and to contribute to an orderly growth of space activities favourable to sustained economic growth and sustainable development in all countries, including mitigation of the consequences of disasters, in particular in the developing countries;

“Urges the Committee [on the Peaceful Uses of Outer Space] to expand the scope of international cooperation relating to the social, economic, ethical and human dimension in space science and technological applications;

“Requests the Committee [on the Peaceful Uses of Outer Space] to identify and consider new areas and mechanisms of international cooperation in the peaceful uses of outer space to strengthen multilateralism, in accordance with the preamble to the present resolution, and to submit a report to the General Assembly at its Sixtieth Session, including its views on which subjects should be studied in the future.”

The main thesis of this paper seems to fit entirely in these recommendations, as it attempts to show how high is the importance of international cooperation in building geospatial data infrastructure in all countries for their national sustainable development, as well as for the prevention and mitigation of natural disasters.

These documents for their most part take up an International Space Law not passive, nor static, nor distant from and unaware of the existing situation, but, on the contrary, a dynamic, enterprising, active and even creative Space Law. It is an old aspiration of International Law, not always turned into reality. Wolfgang Friedmann¹² used to consider International Law as “an agent of progress and evolution.” Oscar Schachter¹³ wrote that “International Law is more than a given body of rules and obligations. It involves purposive activities undertaken by governments, directed to a variety of social ends.” And Rein Müllerson¹⁴ noted that “the only form of the existence of International Law is its functioning” and that “there are currently four major areas where the role of International Law in contributing to progress in international society and beyond is crucial: protection of the natural environment; limitation of violence both within and across national borders; promotion of democracy and human rights; facilitating economic growth and stability.”

2. Space data infrastructure for national development

To the effect of this paper, national space data infrastructure is defined as a joint of specialists, equipments and facilities that permit a country to capture, process, analyze and apply satellite data from its own satellite or from one of any other country.

Each country must have its national space data infrastructure, because it needs geo-spatial information to identify and overcome – in a most efficient manner – its territorial and climate specific difficulties for national development, as well as for prevention and mitigation as much as possible of

natural disasters. Today geospatial data is crucial for all countries, whether big or small ones, to face all their natural resources problems and challenges.

The use of geospatial information and geoprocessing technology is absolutely indispensable to: natural resources (land, water, minerals) management, including the research and development of new technologies to that end; monitoring and surveying environmental changes; meteorology; hydrology; prevention and mitigation of natural disasters; creating and updating national topographic map systems for territorial planning and management; supporting economic development; guiding the formulation and implementation of public policies; implementing programs, projects, scientific research and technology transfer activities both at national level and among different countries, international organizations and private enterprises.

National geospatial infrastructure is, therefore, a primary necessity for all nations. As technological advances in geospatial data collection and application must benefit all countries, irrespective of their degree of economic or scientific development, it is essential to foster, in each country, the establishment of an appropriate national infrastructure and the training of human resources specialized in the application of modern techniques of geo-spatial data acquisition and processing. It is basic as well to disseminate a higher level of public awareness of the usefulness of geoinformation in fundamental areas of national life.

In our days, national sustainable development depends on a number of factors, such as the availability of an adequate human and technical infrastructure that enables appropriate use

of geospatial information, as well as high quality data collection and the establishment of suitable organization and management practices. There is a need to do a better job of managing information and science, to provide decision-makers with a solid understanding of global, regional and local environmental challenges upon which to base policy decisions. Environmental administration and protection are, clearly, knowledge-intensive activities, which demand a high degree of scientific and technological expertise.

Rational allocation of resources, both in public and private-oriented activities, as well as sound environmental management decisions, should be based on accurate information about natural resources, atmospheric conditions, and also about anthropogenic elements that threaten life support systems on Earth.

The competence to use maps and geospatial data should be recognized as an integral part of a nation's infrastructure, just as a network of transportation, healthcare, education, telecommunication and water supply systems.

"In order to implement sustainable social and economic development it is necessary to apply advanced sciences and technologies. Out of a number of high technologies, remote sensing, especially satellite remote sensing, has become an effective and powerful tool to promote the sustainable development owing to its unique advantages," Professor Zhu Yilin¹⁵, former Secretary of Science and Technology Commission of Chinese Academy of Space Technology (CAST), stressed. And concluded: "Satellite remote sensing has become an indispensable technological support in the formulation of the policies for environmental protection and resources

exploitation and utilization. It has been widely used in a variety of fields of sustainable social and economic development.” According to Professor Zhu Yilin, for China the satellite remote sensing is specially useful in the following fields: Investigation and monitoring of land resources; crop output estimation and fine agriculture; forest survey and monitoring; geologic investigation of mineral, oil and gas; monitoring, prevention and control of desertification; survey and utilization of water resources; and disasters prevention and relief. To face all these tasks, China has today 500 units and over ten thousand scientists and technicians who are directly involved in research, tests or production related to the application of satellite remote sensing.

International cooperation is essential to capacity building for the development of a national geospatial data infrastructure in all interested countries. States carrying out geo-spatial activities have the opportunity to play a prominent role in the promotion of international cooperation efforts in order to develop national geospatial infrastructure in all interested countries. Such action, in line with the already referred to 1996 UN Declaration, should be conducted in the modes that are considered most effective and appropriate by the States concerned, including, *inter alia*, governmental and non-governmental; commercial and non-commercial; global, multilateral, regional or bilateral; and international cooperation among States at all levels of development.

It is symptomatic that the Convention of The Asia-Pacific Cooperation Organization (APSCO)¹⁶, signed up to now by nine countries (Bangladesh, China, Indonesia, Iran, Mongolia Pakistan, Peru, Thailand and Turkey) has begun its Preamble “recognizing the importance in peaceful

exploitation of space technology for promoting sustainable economic and social development in Asia-Pacific Region for the common prosperity of the region.”

Earth observation satellites have been increasingly providing essential data in support of projects for sustainable development. That is certainly why South African Science and Technology Minister Mosibudi Mangena has announced last July 31 the launch of a domestically built Earth observation satellite – named Sumbandilasat – next December, saying that “space assets like satellites are no longer matter of prestige for any country, but have become essential tools.” The construction of the satellite costs US\$ 3.8 million. The spacecraft will carry on an optical sensor capable of distinguishing objects with a diameter of 6.25 meters and is expected to operate for three years in a near-polar low Earth orbit at an altitude of 500 kilometers¹⁷.

Another good news in this sense is that the Inter-American Development Bank (IDB) announced last September 6 a US\$50 million loan to Argentina to finance a program to develop a satellite system and applications based on Earth observation (PROSAT)¹⁸. It is the first multilateral financing for development of an Earth observation satellite program. Managed by the National Commission for Space Activities (CONAE) as an initiative of Argentina's Science and Technology Policy and the National Development Strategy, PROSAT is expected to help increase long-term productivity and economic sustainability. As commented by the IDB project team leader, “productivity growth, necessary for long-term economic and social development, is largely determined by the level of scientific development and innovation.” He also added: “One interesting aspect of remote sensing is

that it can allow for a less costly and more rapid means of data collection over wide geographic areas than field observation." Three high impact strategic applications were selected for implementation through PROSAT: Soil humidity maps for improving agricultural productivity, to help optimize timing of decisions to sow and apply fertilizers in wheat, maize, and sunflower crops; Plant and ground cover humidity maps for the reduction of crop losses through more precise prediction of plagues that affect major crops; and hydrology models and risk maps for early warning and better management of floods in the Plata, Salado and Bermejo river basins. The program will also foster private sector participation for the development of value added services based on satellite images, as well as research and development efforts in the national and international academic community to support the development of new applications. At the same time, the program is expected to strengthen Argentina's existing science and technology capacity, positioning the country in a technological niche, and establishing meaningful collaboration with the country's industrial base and with suppliers of services and products that are necessary for the design, construction, and operation of the satellites and their applications. The loan is for a 20-year term, with a seven-year grace period at a variable interest rate. Local counterpart financing will total \$100 million, concluded the IDB information.

3. New item on agenda of the COPUOS

All these ideas have inspired the proposal "International Cooperation in Promoting the Use of Geospatial Data for Sustainable Development"¹⁹, presented by the Brazilian Delegation to the

Committee on the Peaceful Uses of Outer Space (COPUOS), in its plenary session last June. The proposal was approved and will be implemented along the next three years, beginning with the 2007 session.

The adopted text of the proposal reads as follows:

"The capacity to use geospatial information is critical to a range of activities having a direct impact on national development. Environmental monitoring, natural resources management, meteorology, prevention and mitigation of natural disasters, the creation of national topographic map systems for territorial planning are but a few examples of how geospatial data has come to play an indispensable role in the promotion of national sustainable development.

International cooperation has a prominent role to play in the promotion of such capacity. The experience of countries which have emerged in the last two decades as effective users of geospatial data makes a compelling case for expanding international cooperation in that field. Notwithstanding, in the whole globe a larger part still lacks the human, technological and institutional capacity to benefit from the use of geospatial data.

The international community should consider ways and means to foster the dissemination of such capacity, with a view to achieving its true universalization.

To that end, a proposal is submitted to the Committee on the Peaceful Uses of Outer Space to consider, during its next three sessions, a new agenda item entitled "International Cooperation in Promoting the Use of Geospatial Data for Sustainable Development".

The main purpose of this proposal is to foster international cooperation in the establishment of the national spatial

data infrastructure necessary to capture, process, analyze and apply geospatial data, as an important tool for the achievement of national sustainable development.

While discussing this issue, the Committee might wish to focus on and draw lessons from activities already undertaken in that regard by countries, regional and/or multilateral organizations and arrangements. By acknowledging and building upon these past and present experiences, the Committee would be in a better position to propose more widespread and integrated recommendations to attain the goal of universalizing that capacity.

Also, recent experiences in developing countries have suggested that these countries wield a considerable market for services and products related to the use of geospatial data. That market remains, nevertheless, largely untapped, due to gaps in terms of awareness and capacity building. International cooperation in building up national capacity to use geospatial data can thus be expected to have a significant impact on the activities of companies developing and operating space-based applications, increasing the demand for their services and products.

But a concerted international effort to create capacity, at national level, to use geospatial data, would bear effects that would not be limited to the private sphere. Much has been discussed and done about the creation of Earth observation systems, both at the regional and global levels. The positive impact that the establishment of such systems would have on the human capacity to understand and deal with a range of global challenges has been extensively acknowledged. This is undoubtedly a most welcome endeavour, one to which

the international community should continue to give its support.

A growing recognition has emerged, though, that the effectiveness of Earth observation systems in dealing with such global problems depends also on a consistent effort to integrate user communities at the country level into these systems, overcoming human, technological and institutional gaps hampering that goal. The implementation of regional or international Earth observation systems have, thus, a national dimension of its own, one which should elicit the recognition and the attention of COPUOS.

As a last point, the Committee might also wish to take stock of the activities undertaken within the UN system that are directly related to this important topic and consider ways to highlight the links existing amongst those activities and the means to give them a stronger international recognition.

A possible multi-year working plan for the discussions to be held under that new agenda item would be:

2007

- Presentations by Member States and Observers, regional/international organizations and informal coordination groups on their respective activities related to geospatial information for sustainable development. These could include UN Regional Centers for Space Science and Technology Education, GEO, CEOS, UNESCO, FAO, etc.

2008

- Expert presentations on experiences in the establishment of appropriate national infrastructure for geospatial data collection, processing and application, including human resource training, technical infrastructure and financial requirements, and institutional arrangements.

- Expert presentations on national capacity building activities and their impact on the international market for Earth observation services and applications.

2009

- Evaluation of the activities undertaken within the UN system that are directly related to the use of geospatial information for sustainable development and consideration of ways to highlight the links existing amongst those activities and the means to give them stronger international recognition.

- Drafting of a report containing recommendations on ways and means to foster international cooperation with a view to building up a national infrastructure to use geospatial data.

Conclusions

If satellite data are today a *conditio sine qua non* for national development, every country must have the required capacity to work with these data. Crucial in this capacity is a competent national infrastructure – hardware, software and specialized human resources. It can be built on the basis of the own efforts of each country and necessarily with a great international cooperation. Adopting such a constructive approach as a kind of common understanding and a practical line of actions, the community of nations will be able to actively contribute to create and strengthen a material and modern science and technology foundation indispensable for a true national development of all countries or at least the overwhelming majority of them. This way, the economic, social and cultural situation in a lot of developing States may be improved considerably in a not so long period of time, probably helping change some of the most backward aspects of the

present world. Moreover, it is a valuable opportunity for International Space Policy and Law to play a proactive role in solving fundamental issues of our own Planet.

Notes and references

(1) The word “cooperation” appears twice in the Preamble of Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies: “Desiring to contribute to broad international cooperation in the scientific as well as legal aspects of the exploration and use of outer space for peaceful purposes.”; and “Believing that such cooperation will contribute to the development of mutual understanding and to the strengthening of friendly relations between States and peoples.”; and in the following articles: Article I, § 1: “The exploration and use of outer space, including the Moon and celestial bodies, shall be carried out for the benefit and in the interests of all countries, irrespective of their degree of economic and scientific development...”; Article III: “States to the Treaty shall carry out on activities in the exploration and use of outer space, including the Moon and other celestial bodies, in accordance with international law, including the Charter of the United Nations, in the interest of maintaining international peace and security and promoting international cooperation and understanding.”; Article IX: “In the exploration and use of outer space, including the Moon and other celestial bodies, States Parties to the Treaty shall be guided by the principle of cooperation and mutual assistance and shall conduct all their activities in outer space, including the Moon and other celestial bodies, with due regard to the corresponding interests of all other States Parties to the Treaty.”; Article X: “In order to promote international cooperation in the exploration and use of outer space, including the Moon and other celestial bodies, in conformity with the purposes of this Treaty,

the States Parties to the Treaty shall consider on a basis of equality any requests by other States Parties to the Treaty to be afforded an opportunity to observe the flight of space objects launched by those States.”; Article XI: “In order to promote international cooperation in the peaceful exploration and use of outer space, States Parties to the Treaty, conducting activities in outer space, including the Moon and other celestial bodies, agree to inform the Secretary-General of the United Nations as well as the public and the international scientific community, to the greatest extent feasible and practicable, of the nature, conduct, locations and results of such activities...” See the text of the Outer Space Treaty at <http://www.unoosa.org/oosa/en/SpaceLaw/treaties.html>

(2) Goldman, Nathan C., *Space Law, in Space Politics and Policy – An Evolutionary Perspective*, edited by Eligar Sadeh, The Netherlands: Kluwer Academic Publishers, 2002, pp. 163-180.

(3) See <http://www.unoosa.org/oosa/en/SpaceLaw/treaties.html>

(4) See <http://www.unoosa.org/oosa/en/SpaceLaw/treaties.html>

(5) See <http://www.unoosa.org/oosa/en/SpaceLaw/treaties.html>

(6) See <http://www.unoosa.org/oosa/en/SpaceLaw/treaties.html>

(7) See <http://www.unhchr.ch/html/menu3/b/74.htm>

(8) See <http://www.un.org/esa/sustdev/documents/agenda21/index.htm>

(9) See <http://www.unoosa.org/pdf/reports/unispace/viennadeclE.pdf>

(10) Resolution 55/2 of September 8, 2000.

(11) Resolution 59/116 on international cooperation in the peaceful uses of outer space, adopted by the UN General Assembly on January 25, 2005.

(12) Friedmann, Wolfgang, *Mudança da Estrutura do Direito Internacional (The Changing Structure of International Law, 1964)*, Rio de Janeiro: Freitas Bastos, 1971, p. 50.

(13) Schachter, Oscar, *International Law in Theory and Practice*, The Netherlands: Martinus Nijhoff Publishers, 1991, p. 10.

(14) Müllerson, Rein, *Ordering Anarchy – International Law in International Society*, The Netherlands: Martinus Nijhoff Publishers, 2000. p. 48 and p. 79.

(15) Asia-Pacific Space Outlook, N° 2 (Serial n° 9), June 2006.

(16) See www.apmcsta.org

(17) *Space News*, August 7, 2006.

(18) Press release from Inter-American Development Bank (IDB), September 6, 2006.

(19) See http://www.unoosa.org/pdf/gadocs/A_61_20_E.pdf