

Common Elements in the Latin American Mechanisms in Cooperation in the Peaceful Exploration and Use of Outer Space

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Abstract

This article studies characteristics of Latin American space cooperation mechanisms. Latin America is known by its tradition of ingenious international law thinking often ahead of time, and some of these regional rules have developed into universally standardized rules. Brief historical survey seems to indicate core notions of Latin American international law including international space law, which include independence, autonomy, non-intervention and above all the pursuit of the equality vis-à-vis the existing powers through international law. How these Latin American tradition has been translated into space cooperation practices both in the 20th century and the first 15 years of the 21st century? Research on the state practice of Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, Mexico, Peru and Venezuela leads to the conclusion as follows: the ratio of cooperation agreements and projects with the United States and European countries has been decreased in the 21st century, and that with China, India and APSCO has tremendously increased. The presence of China especially stands out in space cooperation agreements/projects in Latin America. In this regard, the concept of “south-to-south cooperation” with China and India seems to suit to the regional political inclination. However, it is at the same doubtful this can really be called “south-to-south cooperation” even in the 20th century. Another important finding is that if attention is paid to the overall volume of cooperation, not ratio only, the importance of the United States and Europe as a partner has never been diminished and seems to remain essential, considering their space capabilities including launch capability. Further, recent trends that each of the Latin American countries has stronger cooperative tie with China, APSCO, RCSSTEAP, etc. may be developed into a true regional and multilateral cooperation in Latin America with China/APSCO as a linchpin in the first stage, but later, as a truly independent existence in case Latin America would have autonomous launch capability.

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I. Introduction

This article studies characteristics of Latin American space cooperation mechanisms.

Latin America is known for its ingenious legal thinking in making international law rules including those of international space law. How such tradition has been translated in international space cooperation mechanisms in this region? Since its 52nd session held in 2013, the Legal Subcommittee (LSC) of the Committee on the Peaceful Uses of Outer Space (COPUOS) have been working on agenda item titled “[R]eview of international mechanisms for cooperation in the peaceful exploration and use of outer space” to study types of bilateral and multilateral mechanisms favored by States and other entities and to extract elements commonly found in such agreements.¹ Common elements assessed successful in enhancing and intensifying international cooperation will contribute to both spacefaring nations and space emerging nations as well as States which plan to embark on space activities, for space activities all over the world are proved to have flourished through ever-increasing international cooperation.² More examples and information, especially examples of case studies and lessons learned on the mechanisms States have employed and utilized for international cooperation are needed to develop an understanding of the range of collaborative mechanisms to extract common elements most effective for the future cooperation.³ It is desirable that examples and information come from as many countries and regions as possible in finding more universally favored mechanisms and also region-specific mechanisms, if any. Regional accent should always be taken into consideration.

This article, therefore, studies Latin American cooperative mechanisms as follows: first, characteristics of Latin American international legal thinking and their reflection in international space law is explored. Then, State practice of transnational Latin American space cooperation in the 20th century and the first 15 years of the 21st century is examined. This leads to the concluding remarks on common elements of the Latin American cooperative mechanisms in the exploration and use of outer space.

II. Latin American Thinking in International Law

Latin America is known by its tradition of ingenious international law thinking often ahead of time. It is said that in the second half of the 19th century, Latin American regional international law was identified⁴ and some regional rules

1 See, e.g., A/AC.105/1003 (10 April 2012), paras. 179-180.

2 See, e.g., A/AC.105/1113 (27 April 2016), Annex III (pp. 52-54).

3 *Ibid.*, p. 53.

4 Alejandro Alvarez, “Latin America and International Law”, *AJIL*, Vol. 3 (1909), pp. 269-353. In many international law textbooks, the Asylum Case between Colombia

even developed into universally standardized rules in the 20th century. One example is a flexible treaty reservation system originally utilized in the Pan-American Union. This has later become a universal custom through the advisory opinion of the International Court of Justice (ICJ) in 1951 and more decisively through the 1969 Vienna Convention on the Law of Treaties (Arts. 19-23).⁵ Other examples influenced the course of the development of mainstream international law rules include the Calvo Doctrine (Calvo Clause), the Drago Doctrine, Uti Posidetis principle, the Estrada Doctrine, etc.⁶

In making concession contracts with foreign partners, it has been the practice of Latin American States to insert a so-called “Calvo Clause” requiring foreign governments not to resort to the diplomatic protection until the local remedies are exhausted. This doctrine was introduced in 1863 by Argentine scholar and diplomat, Dr. Carlos Calvo in his treatise on international law.⁷ While the validity of the Calvo Clause has to be denied in theory because a private contract cannot renounce the right of a sovereign State to exercise diplomatic protection, it could be substantially effective as a tribunal may interpret a Calvo Clause as an evidence that a foreign contractor forfeits the right of the protection of its national State in respect of the implementation of the contract, and State practice on this point has hitherto been in accordance with its leading *North American Dredging Company of Texas Case* between Mexico and the United States in 1926.⁸ As a corollary of the Calvo Doctrine, Argentine Minister of Foreign Affairs, Luis Maria Drago dispatched a note in 1902, which claimed that no public debt should be collected from a State by the use of armed forces or through the occupation

and Peru (1950) is referred to as an example of the possible existence of regional customary international law rules along with the Case of the Right of Passage over Indian Territory (1960). See, e.g., Ian Brownlie, *Principles of Public International Law* (5th ed.) (Oxford Univ. Press, 1998), pp. 9-10. Although ICJ did not recognize the diplomatic asylum as a Latin American customary international law rule, it admitted the Latin American tradition of widely applying diplomatic asylum based on a series of regional treaties. *Haya de la Torre Case*, *ICJ Reports* (judgement, 13 June 1951), pp. 266-288. The Court held that the diplomatic asylum would constitute the intervention, thus not conformity with the Latin American legal tradition. *Ibid.*, p. 280.

- 5 ICJ Advisory Opinion of the Reservations to the Convention on the Prevention and Punishment of the Crime of Genocide (28 May 1951); Vienna Convention on the Law of Treaties, 23 May 1969. 1155 UNTS 331.
- 6 Arnulf Becker Lorca, “International Law in Latin America or Latin American International Law? Rise, Fall, and Retrieval of a Tradition of Legal Thinking and Political Imagination”, *Harvard Int’l L.J.*, Vol. 47 (2006), pp. 283-284, 302-304.
- 7 See, e.g., Takane Sugihara, et al., *Lectures on Modern International Law* (5th ed.) (in Japanese) (Yuhikaku, 2012), pp. 346-348.
- 8 *North American Dredging Company of Texas (USA) v. United Mexican States*, *RIAA*, Vol. IV (1926), pp. 26-35; see, also, *Mexican Union Railway (Ltd.) (Great Britain) v. United Mexican States*, *RIAA*, Vol. V (1930), pp. 115-129.

of the debtor territory by a foreign State.⁹ The Drago Doctrine was developed into the 1907 Hague Convention Respecting the Limitation of the Employment of Force for the Recovery of Contract Debts (“Drago-Porter Convention”).¹⁰ This Convention obligates the contracting powers to resort to arbitration before employing armed forces for collecting the debts (Art. 1). The strong orientation for excluding the intervention from the Europe also brought about the 1930 announcement by the Mexican Secretary of Foreign Relations, Mr. Don Genaro Estrada which ended the government recognition as an insulting practice.¹¹ This so-called the “Estrada Doctrine” was an early form of the non-recognition practice of the government. While the reason is not necessarily identical to the Estrada Doctrine, the practice of government recognition has been abolished by many governments by 1980s.¹² The Calvo Doctrine, Drago Doctrine and the Estrada Doctrine indicate the strong orientation of the Latin American international law: independence, autonomy, non-intervention, and above all, the pursuit of the equality vis-à-vis the European Powers through international law. In order to attain this, Latin American countries long endeavored to unite as a region, overcoming the differences among the nations in this region.¹³

III. Characteristics in Latin American Space Law Thinking and International Space Cooperation

Latin American tradition seems to play an important role in the international space law as well. For instance, Argentine proposal,¹⁴ Brazilian proposal¹⁵ and Argentina, Brazil, Chile, Mexico and Venezuela joint proposal (Latin American joint proposal)¹⁶ are characteristic among various proposals in drafting the 1986 Remote Sensing Principles¹⁷ in the COPUOS/LSC, for the right of remote sensing from outer space was first challenged, and then the prior consent by sensed States was claimed in case of disseminating the remotely-sensed data. These proposals represented one of the three most

9 Luis M. Drago & H. Edward Nettles, “The Drago Doctrine in International Law and Politics”, *Hispanic American Historical Review*, Vol. 8, No. 2 (1928), pp. 204-223.

10 36 Stat. 2241; Treaty Series 537.

11 See, e.g., Hersch Lauterpact, *Recognition in International Law* (Cambridge Univ. Press, 1947), p. 156.

12 See, e.g., Takane Sugihara, *Lectures on International Law* (2nd ed.) (in Japanese) (Yuhikaku, 2013), pp. 226-229.

13 See, e.g., Lorca, *supra* note 6, pp. 283-305.

14 A/AC.105/C.2/L.73 (26 June 1970).

15 A/AC.105/122 (1 Feb. 1974).

16 A/C.1/1047 (15 Oct. 1974).

17 A/RES/41/65 (3 Dec.1986).

influential concepts in making norms on the remote sensing activities.¹⁸ While the right of prior consent to distribute data was not eventually accepted as provided for in Principle XII of the 1986 Remote Sensing Principles, it nevertheless strongly influenced the data distribution regime in later days as long as such data was produced by the public funds as reflected in the data policy of the GEO, CEOS, Disaster Charter, etc.¹⁹

Another example is the ideas of the delimitation and definition of outer space and airspace, which is one of the most conspicuous Latin American contributions to space law.²⁰ The 1976 Bogota Declaration is a variation of the declaration of the permanent sovereignty over natural resources²¹ and reflects the movement of New International Economic Order (NIEO) shown in the Charter of Economic Rights and Duties of States²² and Art. 33.2 of the 1973 International Telecommunication Convention (Malaga Torremolinos) which provides that geostationary orbit is the “limited natural resources”. However, the Bogota Declaration collides with the basic principle of international space law, the principle that the outer space is not subject to national appropriation (Art. II, Outer Space Treaty).

Further example and the one directly relates to the theme of this article is the 1991 working paper submitted by Argentina, Brazil, Chile, Mexico, Nigeria, Pakistan, the Philippines, Uruguay and Venezuela,²³ which resulted in the 1996 Space Benefit Declaration that provides for the modes and principles of international space cooperation.²⁴ This working paper pursued “New International Order for Space” modeled by NIEO.²⁵ As consensus was not reached on the first working paper, their claims in the second working paper submitted in 1993 were watered down.²⁶ Whereas the final product does not fully reflect the Latin American proposals, nevertheless, the Latin American touch is clear when it proclaimed that “[a]ll States, particularly those with relevant space capabilities and with programmes for the exploration and use of outer space, should contribute to promoting and fostering international cooperation on an equitable and mutually acceptable basis. In this context,

18 Other two are the French/Soviet proposal (A/AC.105/C.2/L.99 (1974)) and the US proposal (A/AC.105/C.2/L.103 (1975)).

19 See, e.g., https://www.earthobservations.org/documents/dsp/201310_full_and_open_principle_interpretation_living_paper.pdf; <https://www.disasterscharter.org/web/guest/text-of-the-charter>.

20 See, e.g., A/AC.105/1112/Add.1 (12 Feb. 2016).

21 A/RES/1803 (XVII) (14 Dec. 1962).

22 A/RES/3281(XXIX) (12 Dec. 1974).

23 A/AC.105/C.2/L.182 (9 April 1991).

24 A/RES/51/122 (13 Dec. 1996).

25 Marietta Benkö & Kai Uwe Schrogl, eds., *International Space Law in the Making* (Editions Frontiers, 1993), p. 208.

26 Colombia newly joined. A/AC.105/C.2/L.182/Rev.1 (31 March 1993).

particular attention should be given to the benefit for and the interests of developing countries” (para. 3).

The Space Benefit Declaration stipulates that international space cooperation is conducted in a variety of modes “that are considered most effective and appropriate by the countries concerned, including, *inter alia*, governmental and non-governmental; commercial and non-commercial; global, multilateral, regional or bilateral” (para. 4). Based on the characteristics in Latin American international law including international space law, at first thought, it may be expected that Latin American countries have been pursuing regional integrity and autonomy as well as united stronger voice in the cooperative space mechanisms toward the advanced spacefaring nations. However, the research of Latin American space cooperation practices leads to the conclusion that the tempo of the furtherance of regional space cooperation seems somewhat slow. There exists no regional governmental space organization to jointly develop a launch vehicle or satellites. It seems that cooperative projects have been conducted more through bilateral agreements than regional mechanisms. Why has this happened? The research results of the Latin American space cooperation mechanisms and concrete projects, both in the 20th century and the first 15 years of the 21st century, are reported in some detail below. Countries studied are Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, Mexico, Peru and Venezuela.

IV. Bilateral Space Cooperation Mechanisms in Latin American Countries

IV.1. Argentina

IV.1.1. The List of the Cooperation Agreements in the 20th Century

International cooperation played a critical role for Argentine space activities since its early days. In the 20th century, according to the information provided by the UN Office for Outer Space Affairs (OOSA), Argentina concluded 33 agreements (including the extension of the agreement with a limited duration) on the peaceful uses of outer space: 11 agreements with USA, five with West Germany/Germany, three with Brazil, France and Italy, two with Belgium, Canada and the Soviet Union, and one with China and Uruguay.²⁷ It is clear from these numbers that main partners were European and North American countries as 13 agreements each were concluded with countries in Western Europe North America. Only four agreements were concluded within Latin American countries, and two with the Soviet Union and one with China.²⁸ Agreements with these countries are chronologically cited below.

27 UNOOSA, *International Agreements and Other Available Legal Documents Relevant to Space-Related Activities* (1999).

28 *Ibid.*

The United States

- i) Agreement by Exchange of Notes on Flight by the US Air Force Squadron in the Upper Atmosphere (28 April 1958);²⁹
- ii) Exchange of Notes Constituting an Agreement for the Continuation and Extension of the Co-operative Program Relating to Tracking Stations (16 March 1962);³⁰
- iii) Exchange of Notes Constituting an Agreement Concerning an Omega Navigational Station to be Installed Jointly in Chubut Province, Argentina (4 Dec. 1970);³¹
- iv) Agreement between the National Commission for Space activities (Comisión Nacional de Actividades Espaciales: CONAE) of Argentina and NASA of the US for Cooperation in the Civil Uses of Space (6 Aug. 1991);³²
- v) Memorandum of Understanding (MOU) between the Ministry of Science and Technology of Argentina and NASA of the US Concerning the SAC-B Astrophysics Mission Using an Engineering Satellite (6 Aug. 1991);³³
- vi) Agreement Extending the Agreement between the CONAE of Argentina and NASA of the US for Cooperation in the Civil Uses of Space of 6 August 1991 (29 Feb. 1996);³⁴
- vii) MOU between NASA and CONAE in Relation to the “C-Earth Observation Mission” Scientific Applications Satellite (28 Oct. 1996);³⁵
- viii) MOU between NASA and CONAE in Relation to the “C-Earth Observation Mission” Scientific Applications Satellite (15 Oct. 1997);³⁶
- ix) MOU between NASA and CONAE for Space Activities in Relation to the “A” Scientific Applications Satellite (15 Oct. 1997);³⁷
- x) MOU between CONAE and NASA on the Scientific Applications Satellite (16 Oct. 1997);³⁸
- xi) MOU between CONAE and NASA in Relation to the Flight of the SAC-A Mission (16 Oct. 1997).³⁹

29 *Ibid.*, p. 25. (This is included in space cooperation.)

30 *Ibid.*, p. 22.

31 *Ibid.*, p. 23.

32 *Ibid.*, p. 30.

33 *Ibid.*

34 *Ibid.*, p. 32.

35 *Ibid.*

36 *Ibid.*, p. 33.

37 *Ibid.*

38 *Ibid.*

39 *Ibid.*

Canada

- i) MOU between National Space Research Commission and the Canada Centre for Remote Sensing (13 June 1983);⁴⁰
- ii) MOU between Canadian Armed Forces and the Argentine Air Force Relating to Exchange of Aerospace Training and Assistance for Aerospace Training (2 June 1998).⁴¹

West Germany/Germany

- i) Agreement between Argentine Comisión Nacional de Investigaciones Espaciales (CNIE) and the Max Planck Institute for Physics and Astrophysics, Institute for Extraterrestrial Physics, on Exploration of the Upper Atmosphere (28 Nov. 1972);⁴²
- ii) Agreement Extending the Agreement between the Argentine CNIE and the Max Planck Institute for Physics and Astrophysics, Institute for Extraterrestrial Physics, on Exploration of the Upper Atmosphere, of 28 November 1972 (10 July 1975);⁴³
- iii) Agreement between CNIE and the German Aerospace Centre (DLR) concerning the Cooperation in the Fields of Space Research, Alternative Energies and Remote Sensing for Exclusively Peaceful Purposes (Nov. 1978);⁴⁴
- iv) Agreement by Exchange of Notes Extending the Competence Assigned to the Argentine Air Force for the Signature and Conclusion of Special Agreements to the National Space Research Commission (17 May 1979);⁴⁵
- v) Agreement between CONAE and DLR concerning the Cooperation in the Fields of Alternative Energies, Remote Sensing and Space Research, in Particular for Strengthening World-Wide Environmental Protection for Exclusively Peaceful and Non-Military Purposes on the Basis of the 1978 Agreement between CNIE and DLR (12 Oct. 1992).⁴⁶

France

- i) Exchange of Letters Constituting an Agreement Concerning the Installation and Operation of Launching Sites for the Implementation of the “EOLE” Project (21 March 1969);⁴⁷

⁴⁰ *Ibid.*, p. 38.

⁴¹ *Ibid.*, p. 33. (This is included in space cooperation.)

⁴² *Ibid.*, p. 36.

⁴³ *Ibid.*

⁴⁴ *Ibid.*, p. 26.

⁴⁵ *Ibid.*, p. 37.

⁴⁶ *Ibid.*, p. 30.

⁴⁷ *Ibid.*, p. 25.

- ii) Treaty between the National Space Research Centre and CNES (5 Dec. 1984);⁴⁸
- iii) Framework Cooperation Treaty in the Field of Space Activities between CONAE and CNES (26 Feb. 1996).⁴⁹

Italy

- i) Agreement on Cooperation in the Field of Research on and Use of Outer Space (6 Oct. 1992);⁵⁰
- ii) MOU between the Italian Space Agency (ASI) and Argentine CONAE for Cooperation in Relation to the “B” Scientific Applications Satellite (14 Oct. 1993);⁵¹
- iii) Agreement by Exchange of Notes Regarding the Extension of Force by Five Years as From 5 October 1997 of the Agreement on Cooperation in the Field of Research on and Use of Outer Space of 6 October 1992 (3 Dec. 1997).⁵²

Belgium

- i) Declaration of Interest Relating to Cooperation in Space Affairs (1 April 1997);⁵³
- ii) Treaty on Cooperation and (sic) the Field of Space Activities Between the National Atomic Energy Commission (CONEA) and the Federal Services for Scientific, Technical and Cultural Affairs, in Implementation of the Declaration of Interest Relating to Cooperation in Space Affairs (3 Oct. 1997).⁵⁴

The Former Soviet Union

- i) Treaty in the Field of Research on and Use of Outer Space for Peaceful Purposes (30 April 1974);⁵⁵
- ii) Treaty in the Field of Research on and Use of Outer Space for Peaceful Purposes (25 Oct. 1990).⁵⁶

Brazil

- i) Agreement on Co-operation in the Field of Outer Space Activities, Complementary to the Agreement on Scientific and Technological Co-operation (20 Oct. 1983);⁵⁷

⁴⁸ *Ibid.*, p. 38.

⁴⁹ *Ibid.*, p. 32.

⁵⁰ *Ibid.*, p. 30.

⁵¹ *Ibid.*, p. 31.

⁵² *Ibid.*, p. 33.

⁵³ *Ibid.*, pp. 32-33.

⁵⁴ *Ibid.*, p. 33.

⁵⁵ *Ibid.*, p. 26.

⁵⁶ *Ibid.*, p. 30.

⁵⁷ *Ibid.*, p. 28.

- ii) Joint Declaration on Bilateral Cooperation in the Peaceful Uses of Outer Space (23 Aug. 1989);⁵⁸
- iii) Framework Agreement on Cooperation in the Peaceful Application of Space Science and Technology (9 April 1996).⁵⁹

Uruguay

Special Agreement on Cooperation in the Aerospace Field, Supplementing the Scientific and Technological Cooperation Convention (10 Dec. 1982).⁶⁰

China

Agreement on Cooperation in Research and Development in the Field of Aerospace Science (16 May 1988).⁶¹

IV.1.2. Characteristics of the 20th Century Space Cooperation

Those agreements show the tendency that earlier cooperation projects were mainly the establishment of tracking stations to receive satellite data from the advanced spacefaring States and offered Argentine geographical location for the preferable observation for the both countries. Then gradually, joint science, technology and application programs started. More equal partnership seemed to start in the last decade of the 20th century, which coincided with the setting up of the Argentine space agency, CONAE, and Argentine ratification of the Registration Convention in 1991. Argentina registered nine satellites in the UN registry since then.⁶²

As shown in the abovementioned agreements, scientific experiments and earth observation missions such as SAC-A, SAC-B and SAC-C are the products of the intensive cooperation with the US, agreed upon by the MOU between CONAE and NASA in 1991-1997.⁶³ Concerning the latest project of this series, International Law Association (ILA) reported to the COPUOS/LSC that SAC-D/Aquarius was a typical “international cooperation between industrialized and developing countries” as an Argentine-made satellite was launched from the US territory with the instruments provided by Canada, Italy and France on board. Brazil also joined this project by making its test facilities available to Argentina.⁶⁴ Geostationary satellites ARSAT-1

⁵⁸ *Ibid.*, p. 29.

⁵⁹ *Ibid.*, p. 32.

⁶⁰ *Ibid.*, p. 27.

⁶¹ *Ibid.*, p. 29.

⁶² <http://www.unoosa.org/oosa/en/spaceobjectregister/submissions/argentina.html>. Argentina launched 11 satellites as of September 2016.

⁶³ UNOOSA, *supra* note 27, pp. 30, 33.

⁶⁴ A/AC.105/C.2/105/Add.2 (7 Jan. 2014), p. 2.

and ARSAT-2 were launched in cooperation with France,⁶⁵ and three nanosats CubeBug-1, Ñusat-1 and Ñusat-2 were launched from China.⁶⁶

IV.1.3. Characteristics of the Cooperation in the First 15 Years of the 21st Century

In the 21st century, the geographical ratio of numbers of the cooperative agreements has been changed. Argentina reported to the COPUOS/LSC that it had seven framework agreements on peaceful space cooperation with Algeria (2002), European Space Agency (ESA) (2002), Peru (2006), Ukraine (2006), Ecuador (2007), Colombia (2008) and USA (2011).⁶⁷ In addition, Argentina concluded a framework agreement with Italy in 2014.⁶⁸

Recently, cooperation with China has been noted. For instance, the agreement to establish a Chinese tracking, telemetry and controlling station in Neuquén, Las Lajas was concluded in July 2014,⁶⁹ and approved by the Argentine Congress in February 2015.⁷⁰

Below is the latest information about the Argentine space cooperation. With European partners, cooperation with Norway, Italy and ESA is conspicuous. With Norway, Argentine space agency CONAE and Norway Space Center (NSC) concluded a framework agreement in December 2015 on space cooperation in areas of the mutual benefit, which includes data sharing of SAR Observation and Communications Satellite (SAOCOM)-1A (to be launched in 2017), SAOCOM-1B (to be launched in 2018)⁷¹ and the joint use of a ground station. Based on this framework agreement, on 30 June 2016, a CONAE-owned company VENG and Kongsberg Satellite Services (KSAT) of Norway concluded an implementing agreement to jointly develop and operate a ground station to optimize satellite data reception and control. This closer tie gives CONAE to use Svalbard ground station and NSC to augment its global network for satellite operation through a ground station in Argentina.⁷² With Italy, in order to extend and strengthen the MOU between CONAE and ASI in July 2005 on the earth observation systems including Italian-Argentine

65 ST/SG/SER.E/738 (24 Feb. 2015); ST/SG/SER.E/759 (7 Dec. 2015).

66 ST/SG/SER.E/681 (27 Aug. 2013). Ñusat-1 and Ñusat-2 have not been registered yet as of September 2016.

67 A/AC.105/C.2/105/Add.1 (7 Jan. 2014), p. 2.

68 ST/LEG/SER.A/808 (June 2014), p. 8 (Treaty No. 51969).

69 <http://www.worldpoliticsreview.com/articles/14085/despite-poor-optics-china-argentina-deals-reflect-both-sides-pragmatism> (23 Sept. 2014).

70 <https://www.theguardian.com/world/2015/feb/26/argentina-congress-china-satellite-space-station> (26 Feb. 2015).

71 Both satellites will be launched by SpaceX's Falcon 9 rocket.

72 <http://www.conae.gov.ar/index.php/espanol/2016/847-acuerdo-con-noruega-para-intercambio-de-servicios-de-antenas-para-misiones-satelitales> (1 July 2016); <http://www.ksat.no/en/news/2016/july/ksat%20signs%20agreement%20in%20argentina/> (1 July 2016).

Earth Observation Disaster Management System (SIASGE),⁷³ Letter of Intent (LOI) was signed by both agencies on 17 May 2016. This LOI includes a new plan to construct SIASGE-2, which will be consisted of four of Italian COSMO-SkyMed satellites and SAOCOM-1A and SAOCOM-1B to be launched by Argentina.⁷⁴ SAOCOM-Companion Satellite to be co-operated by CONAE and ESA for disaster monitoring, etc., has been developed by ESA and planned to be piggy-backed with SAOCOM-1B.

As for a regional cooperation, a comprehensive space cooperation agreement between CONAE and Mexican Space Agency, Agencia Espacial Mexicana (AEM) was signed on 29 July 2016 with both Presidents attended the signing ceremony held in Argentina. This agreement especially provides for the cooperation in the utilization of satellite data and ground facilities for the natural disaster monitoring etc., and joint development of satellite technology.⁷⁵

IV.2. Bolivia

Increased cooperation with China is one of the characteristics of recent Bolivian space activities as evidenced by its first geostationary communications satellite, Túpac Katari, launched by a Chinese rocket in 2013. Development of this satellite and a ground station in addition to its launch was largely assisted by the loan agreement between Bolivian space agency, Agencia Boliviana Espacial (ABE) established in 2010 and China Great Wall Industry Corporation (CGWIC) backed by the Chinese government.⁷⁶ Second satellite of ABE, this time earth observation satellite “Bartolina Sisa” is also planned to be launched helped by a loan agreement with China.⁷⁷ As a non-party to the Registration Convention, Bolivia registered its first satellite based on the 1961 UNGA Resolution.⁷⁸

As a part of Bolivia’s tendency to pursue “south-south cooperation”, ABE announced on 28 August 2016 that it had concluded a MOU on the space science and technology cooperation for the peaceful purposes with Iranian Space Agency (ISA). This MOU provides that bilateral space science and technology cooperation will be enlarged for the mutual benefit in accordance with respective national laws. Director Ivan Zambrana of ABE stated that first, the preliminary cooperation in R & D in space devices and exchange of knowledge between universities, research laboratories and institutions of

⁷³ See, e.g., ASI, *Italy Space Activities Year 2009* (2010), pp. 4-5.

⁷⁴ <http://www.conae.gov.ar/index.php/espanol/2016/844-siasge-ii> (17 May 2016).

⁷⁵ <http://www.gob.mx/sct/prensa/firman-mexico-y-argentina-convenio-de-colaboracion-en-materia-espacial> (31 July 2016); <http://www.conae.gov.ar/index.php/espanol/2016/849-acuerdo-con-mexico> (29 July 2016).

⁷⁶ <http://www.cgwic.com/In-OrbitDelivery/CommunicationsSatellite/Program/Bolivia.html> (13 Dec. 2010).

⁷⁷ <http://china.aiddata.org/projects/36270> (17 July 2014).

⁷⁸ A/AC.105/INF/426 (24 June 2014).

both countries would be carried out, which may be ultimately developed in a specific joint project.⁷⁹

IV.3. Brazil

IV.3.1. Bilateral Cooperation Agreements Concluded in the 20th Century

In the 20th century, Brazil concluded about a dozen cooperative agreements with the United States, France, Germany, China and ESA.⁸⁰ Cooperation started with China in the mid-1990s has flourished through a series of China-Brazil Earth Resources Satellite (CBERS) programs. Bilateral agreements Brazil signed in the 20th century are cited below.

The United States

- i) Exchange of Notes Constituting an Agreement Relating to Tracking Stations (4 Dec. 1973 and 12 Feb. 1974);⁸¹
- ii) Exchange of Notes Constituting an Agreement on Sounding Rockets and Balloons for Space Research (with MOU) (14 Nov. 1978 and 24 Jan. 1979);⁸²
- iii) Agreement between the US and Brazil for the use of the geostationary operational environmental satellite in the Brazilian national plan for data collection platforms (14 June 1982);⁸³
- iv) MOU Concerning Co-operation in Aerospace Experiments Employing Sounding Rockets (31 Jan. 1983).⁸⁴

In addition, there is a trilateral agreement between Brazil, USA and West Germany. That is: Exchange of Notes Constituting an Agreement Relating to a Space Research Project (with MOU dated 12, 15 and 16 Oct. 1973) (17, 18 and 19 Oct. 1973).⁸⁵

France

- i) Exchange of Letters Constituting an Agreement Concerning the Installation of a Telemetry Station at Forlataze (20 June 1968);⁸⁶
- ii) Supplementary Agreement to the Franco-Brazilian Agreement on Technical and Scientific Co-operation between National Council for Scientific and Technological Development and the International Aeronautic and Space Training Centre (26 May 1982);⁸⁷

⁷⁹ <https://www.abe.bo/category/notas-prensa/> (26 August 2016).

⁸⁰ UNOOSA, *supra* note 27, pp. 22-37.

⁸¹ *Ibid.*, p. 23.

⁸² *Ibid.*, p. 37.

⁸³ *Ibid.*, p. 27.

⁸⁴ *Ibid.*, p. 37.

⁸⁵ *Ibid.*, p. 36.

⁸⁶ *Ibid.*, p. 22.

⁸⁷ *Ibid.*, p. 37.

- iii) Arrangement supplementary to the Technical and Scientific Cooperation Agreement between the Governments of France and Brazil in the Areas of Aeronautics and Space (15 Feb. 1989);⁸⁸
- iv) Agreement between the Governments of France and Brazil regarding Cooperation in the Exploration and Utilization of Outer Space for Peaceful Purposes (27 Nov. 1997).⁸⁹

West Germany

Agreement between DLR and the Centro Técnico Aeroespacial, Brazil, Concerning the Cooperation in the Field of Aeronautics (18 Nov. 1971).⁹⁰

ESA

- i) Agreement on the Establishment and Use of Tracking and Telemetry Equipment to be Installed in the Brazilian Territory (with Implementing Protocols of 19 September 1977) (4 July 1980);⁹¹
- ii) Agreement between the Brazilian Government and the ESA on the setting up and use of tracking and telemetry facilities in Brazil (3 May 1994).⁹²

China

- i) A partnership agreement was signed on 6 July 1988 by the National Institute for Space Research (Instituto Nacional de Resquisas Espaciais: INPE) of Brazil and Chinese Academy of Space Technology (CAST) “to develop a program to build and operate two advanced remote sensing satellites, named China-Brazil Earth Resources Satellite (CBERS) Program”.⁹³ CBERS-1 was successfully launched on 14 October 1999 from Chinese territory. So was CBERS-2, on 21 October 2003;
- ii) The Framework Agreement between Brazil and China on Cooperation in the Peaceful Applications of Outer Space Science and Technology (8 Nov. 1994).⁹⁴

IV.3.2. Some Examples of the Cooperation in the First 15 Years of the 21st Century

Cooperation with China continues to be most important for Brazil. In 2002, a new bilateral agreement was signed for the manufacturing, launch and operation for CBERS-3 and 4 satellites.⁹⁵ Different from the CBERS-1 and 2

⁸⁸ *Ibid.*, p. 29.

⁸⁹ *Ibid.*, p. 33.

⁹⁰ *Ibid.*, p. 26.

⁹¹ *Ibid.*, p. 23.

⁹² *Ibid.*, p. 24.

⁹³ <http://www.cbbers.inpe.br/ingles/satellites/history.php>.

⁹⁴ 2036 UNTS 335.

⁹⁵ <http://www.cbbers.inpe.br/ingles/satellites/history.php>.

program for which 70 percent of the required resources was covered by China, for the continuous two satellites, the ratio of the shared responsibilities was distributed 50 percent each.⁹⁶ In 2004, yet another agreement was signed to build the CBERS-2B,⁹⁷ and this satellite was launched on 19 September 2007. Following the failure of the CBERS-3 (9 Dec. 2013), CBERS-4 was successfully put into orbit on 7 December 2014.

As the recent CBERS developments, INPE and CAST completed critical design review (CDR) of CBERS-4A in December 2015. CBERS-4A will be launched in 2018 from China.⁹⁸ Then, the Chamber of Deputies of Brazil approved the development of CBERS-4A on 22 August 2016. As Brazil and China already agreed on a 10-year space cooperation plan (2013-2022), possible development of CBERS-5 and CBERS-6 has been currently discussed.⁹⁹

A series of CBERS project has been hailed as “a successful example of South-South cooperation in terms of high technology”,¹⁰⁰ and the MOU signed on 19 April 2010 by the heads of INPE and Chinese Center for Resources Satellite Data and Applications (CRESDA) decided to freely distribute CBERS data to Latin America and, in the future, to Africa.¹⁰¹ Brazil-China cooperation has been extended to Africa through often by Chinese initiatives. One example is the MOU between South African Space Agency (SANSA) and Chinese CRESDA, which tasked the latter for the installation, integration, and training of the CBERS-4 Satellite ground system in South Africa.¹⁰² That ground system was formally transferred to SANSA in December 2015 to provide CBERS-4 data to African countries free of charge.¹⁰³

Cooperation with the US also remains most important for Brazil. Brazil and the US signed a framework agreement in 2006,¹⁰⁴ which deepened the cooperation with the US.

As for the cooperation with Russia, based on the agreement concluded by the Brazilian space agency Agência Espacial Brasileira (AEB) and Roscosmos in November 2008, the System for Differential Corrections and Monitoring (SDCM) ground station for the exclusive use of the Russian GLONASS was

96 <http://www.globalsecurity.org/space/world/china/zy-1.htm>.

97 Complementary Protocol to the Agreement between Brazil and China in the Peaceful Application of Outer Space Science and Technology on the Joint Development of CBERS-2B (12 Nov. 2004); Complementary Protocol to the Agreement between Brazil and China in the Peaceful Application of Outer Space Science and Technology on the Cooperation of the CBERS Application System (12 Nov. 2004).

98 http://www.inpe.br/noticias/noticia.php?Cod_Noticia=4083 (23 Dec. 2015).

99 http://www.inpe.br/noticias/noticia.php?Cod_Noticia=4260 (25 Aug. 2016).

100 http://www.cbers.inpe.br/ingles/news.php?Cod_Noticia=153 (19 April 2010).

101 *Ibid.*

102 <http://www.sansa.org.za/earthobservation/resource-centre/news/1124-sansa-installs-the-new-earth-resource-terminal-cbers-04> (14 Oct. 2015).

103 <http://www.thepresidency.gov.za/pebble.asp?relid=21180> (2 Dec. 2015).

104 US-Brazil, Treaty No. 50512.

completed in February 2016. This is the fourth GLONASS monitoring station in Brazil.¹⁰⁵ Another SDCM station is expected to be completed in the latter part of 2016.¹⁰⁶ Brazil and Russia signed an agreement on 7 April 2016 to jointly carry out space debris monitoring. The telescope for that purpose will be set up at Pico dos Dias Observatory in Brazópolis, Minas Gerais. Russia would provide a \$2.7 million investment, and Brazil agreed to provide the facilities and cover operating costs.¹⁰⁷ It is said that this has been enabled by the good relationship between the two governments reflected in a series of previous space cooperation projects and the complimentary character of the two countries, technology and the convenient location.

AEB and Minister of Portuguese Science, Technology and Education discussed possible space and maritime cooperation over the next 10-15 years on 5 September 2016. Portugal already deepened space cooperation tie with Argentina, Colombia and South Africa. Thus, it seems natural enough to extend its cooperation with the country with which the language is shared.¹⁰⁸ AEB and ASI signed a LOI on space cooperation in 2008, which was followed by the 2010 strategic cooperation agreement signed by the heads of Brazil and Italy. Based on these frameworks, AEB and ASI discussed on 4 November 2015 to further advance bilateral cooperation.¹⁰⁹

IV.4. Chile

Chilean government had a cooperative agreement with the United States titled Exchange of Notes Constituting an Agreement Relating to a Temporary Tracking Station in Magallanes Province as early as 1960.¹¹⁰ After the setting up of the Chilean space agency, Agencia Chilema del Espacio (ACE) in 2001, Chile concluded cooperative agreements with China¹¹¹ and India.¹¹² During the state visit of Chilean President to India in March 2009, Chile-India Agreement on Cooperation in the Exploration and Utilization of Outer Space for Peaceful Purposes was signed.¹¹³

105 <https://sputniknews.com/science/201604211038373601-russia-brazil-ghonass-satellite/> (21 April 2016).

106 <http://www.aeb.gov.br/estacao-russa-do-sistema-de-navegacao-ghonass-inaugurada-em-recife/> (22 Feb. 2016).

107 <http://agenciabrasil.abc.com.br/node/1011181> (8 April 2016).

108 <http://www.aeb.gov.br/brasil-e-ortugal-discutem-perspectivas-de-cooperacao-na-area-espacial/> (8 Sept. 2016).

109 <http://www.aeb.gov.br/brasil-e-italia-retomam-dialogo-sobre-parceria-aeroespacial/> (6 Nov. 2015).

110 Each government signed on 9 March 1960 and 28 March 1960 respectively. UNOOSA, *supra* note 27, p. 21.

111 It is referred to in the second *Chinese White Paper on China's Space Activities* (21 Oct. 2006), "IV International Cooperation".

112 https://mea.gov.in/Portal/ForeignRelation/Chile_July_2014.pdf.

113 *Ibid.*

Chilean space authorities proposed to establish a regional space agency with Argentina, Brazil and Mexico at the fourth Space Conference of the Americas in May 2002 and this was unanimously supported,¹¹⁴ but it remains realized. As one of the latest legal development, Chilean government announced on 30 June 2016 that it had started to re-organize its space agency, abolished in March 2014, through the joint endeavor of the Ministry of Science and Technology and the Ministry of Transportation and Telecommunication.¹¹⁵ At the same time, the government announced its plan to participate in European Copernicus program.¹¹⁶ Chilean space development ministerial advisory council, set up on 29 March 2014 is reported to make its space policy shortly.¹¹⁷

Recent Chilean space cooperation includes the LOI concluded between Chilean Ministry of Transportation and Telecommunication and CNES in October 2015. It provides that both countries would cooperate in earth observation, space weather and space law through various training and capacity building programs.¹¹⁸ Further, Under-Secretary of Chilean Transportation and Telecommunication Ministry, Mr. Pedro Huichalaf discussed with Director General of China National Space Administration (CNSA), Mr. Xu Dazhe in Beijing about the possible telecommunication and space cooperation between the two countries on 1 February 2016. They agreed to conclude a MOU on aerospace cooperation when Mr. Xu visit Chile later in 2016.¹¹⁹

IV.5. Colombia

Colombian Space Committee (CCE) announced that it would establish its space agency by 2018.¹²⁰ As for the international cooperation, Colombia tries to enlarge regional cooperation through the Andean Community which owns a satellite operation company, Andesat.¹²¹ Other than Colombia, Bolivia, Ecuador and Peru are members of the Andean Community.¹²² Colombia,

114 Oscar Arenales-Vergara, *UNU-IAS Working Paper*, No. 113 (2004), p. 17.

115 <http://www.subtel.gob.cl/subsecretario-huichalaf-sostiene-reunion-de-trabajo-con-el-comite-de-ministros-para-el-desarrollo-espacial-y-comparte-principales-propuestas-para-la-creacion-de-la-agencia-espacial-en-chile/> (30 June 2016).

116 *Ibid.*

117 <http://www.subtel.gob.cl/queremos-que-chile-cuente-con-una-agencia-espacial-autonoma/> (29 March 2016).

118 <https://presse.cnes.fr/en/france-and-chile-sign-letter-intent-space-cooperation> (28 Oct. 2015).

119 <http://www.subtel.gob.cl/dialogos-bilaterales-en-area-espacial-marcaron-nueva-jornada-de-subsecretario-huichalaf-en-china/> (1 Feb. 2016).

120 <http://www.aem.gob.mx/notas/agencia-espacial-MEX-COL.html> (23 Nov. 2015).

121 The operation of the Andesat has not been necessarily smooth. A slot of the 67 degrees west longitude the Andesat used has been lost, or at least leased to SES World Skies in 2010.

122 Chile and Venezuela seceded from this Community in 1976 and 2006 respectively.

with other 11 Latin American countries, attended a Latin American and Italy space cooperation conference held in Italy in April 2016.¹²³ Further, Colombia, with other seven Latin American representatives, visited China-led Asia-Pacific Space Cooperation Organization (APSCO) headquarters in September 2015, and discussed a greater cooperation between APSCO and Latin American countries.¹²⁴

IV.6. Ecuador

According to the UNOOSA information, in the 20th century, Ecuador concluded with the United States an Agreement Relating to the Co-operative Program in Ecuador for the Observation and Tracking of Satellites and Space Vehicles (18 Sept. 1975).¹²⁵ This is relatively a new space emerging State whose space agency, Agencia Espacial Civil Ecuatoriana (EXA) was established in 2007 and launched its first two cubesats in April and November in 2013 by Chinese and Russian rocket.¹²⁶

IV.7. Mexico

In the 20th century, Mexico concluded three cooperation agreements with the United States as early as in 1960 and 1965. They are: i) Exchange of Notes Constituting an Agreement Relating to a Facility for Space Vehicle Tracking and Communication (12 April 1960);¹²⁷ ii) Exchange of Notes Constituting an Agreement Relating to the Continuation and Expanded Use of the Tracking and Communications Station at Empalme-Guaymas, Sonora (27 Feb. 1965);¹²⁸ and iii) Exchange of Notes Constituting an Agreement Relating to Space Research Programs (27 Feb. 1965).¹²⁹ Mexico adopted a Framework Agreement with Russia in 1996.¹³⁰

Among the latest developments, framework agreement concluded between AEM and CNES in April 2014 should be highlighted as this substantially advanced bilateral cooperation in the environmental and maritime observation. This framework agreement was followed by their cooperative agreement on the use of space application in the fields of the environment, meteorology and maritime domain in July 2015.¹³¹ Then, in February 2016,

123 <http://www.aeb.gov.br/agencia-espacial-brasileira-participa-de-conferencia-italia-america-latina/> (15 April 2016).

124 <http://www.apsco.int/NewsOne.asp?ID=389> (1 Sept. 2015).

125 UNOOSA, *supra* note 27, p. 23.

126 http://space.skyrocket.de/doc_sdat/nee-01-pegaso.htm;
http://space.skyrocket.de/doc_sdat/nee-02-krysaor.htm.

127 UNOOSA, *supra* note 27, p. 21.

128 *Ibid.*, p. 22.

129 *Ibid.*, p. 35.

130 UNTS, Vol. 2578, I-45946.

131 <http://www.aem.gob.mx/notas/firma-convenio-EPN-Francia.html> (17 July 2015).

both agencies held a strategic cooperation conference to review its cooperative project.¹³²

Likewise, a MOU concluded between Mexican INEGI (National Institute of Statistics and Geography) and US Department of Interior Geological Survey (USGS) on the Landsat 8 data provision in 2013 is one of the most important accomplishments.¹³³ In addition, in 2015, AEM and NASA concluded an agreement to promote space education for Spanish speaking people.¹³⁴ Further, AEM obtained International Partnership Space Programme (IPSP) support from UKSA to develop a remote sensing satellite in April 2016.¹³⁵

As for the regional cooperation, AEM and Venezuelan Agency for Space Activities, Agencia Bolivariana para Actividades Espaciales (ABAE) signed a cooperative agreement on the peaceful uses of outer space on 18 September 2015. This agreement provides that both space agencies jointly promote science and technology research, training, exchange of scientists and researchers in accordance with international law, based on the principles of equality, mutual benefit and mutual respect.¹³⁶

AEM started cooperation to develop remote sensing satellites technology for early warning and disaster monitoring with Indian Space Research Organization (ISRO) on 18 July 2016 based on the summit agreement between the Mexican President and Indian Prime Minister in June 2016.¹³⁷ Bilateral cooperation was first discussed in September 2015 during the UN General Assembly, which was followed by the summit discussion in March next year, where the comprehensive cooperation in space, energy, infrastructure development, urban planning, precision agriculture, etc. was agreed. The successful start of space cooperation in July 2016 is just one of these comprehensive cooperative projects between Mexico and India.¹³⁸

As is the case with other Latin American countries, Mexico recently deepened relationship with China and China-led APSCO. At the ninth Council meeting

132 <https://presse.cnes.fr/en/france-mexico-space-cooperation-french-mexican-strategic-council-meeting-reviews-progress> (11 Feb. 2016).

133 <https://www.doi.gov/pressreleases/secretary-jewell-and-mexican-leaders-sign-agreement-sharing-land-remote-sensing> (13 Nov. 2013).

134 <http://www.gob.mx/sct/prensa/fortalecen-acuerdo-aem-nasa-para-impulsar-educacion-espacial> (19 Dec. 2015).

135 <http://www.gob.mx/sct/prensa/participa-aem-en-international-partnership-space-programme-con-proyecto-ecologico-en-bacalar-quintana-roo> (24 April 2016).

136 <http://www.abae.gob.ve/contenido.php?id=Noticia¬icia=119>.

137 <http://www.gob.mx/sct/prensa/estrechan-cooperacion-agencias-espaciales-de-mexico-e-india-ante-desastres-naturales>.

138 Press Information Bureau, Government of India News <http://www.pib.nic.in/newsite/erelease.aspx?relid=137836>; <https://www.gob.mx/sre/prensa/la-canciller-claudia-ruiz-massieu-se-reunio-con-el-primer-ministro-de-la-india-narendra-modi> (both publicized on 11 March 2016).

of APSCO held in October 2015, Mexico's status as an observer participation in the APSCO was admitted.¹³⁹

IV.8. Peru

In the 20th century, Peruvian space agency, Comisión Nacional de Investigación y Desarrollo Aeroespacial (CONIDA) and the Indian ISRO concluded "MOU on Cooperation in the Area of Space Activities" (30 April 1998).¹⁴⁰

As for the cooperation practices in the 21st century, it has to be emphasized that Peru is the only full-fledged member of APSCO from Latin America.¹⁴¹ Peru's strong cooperative relationship with China seemed to start early years in the 21st century as it is not mentioned in the first Chinese White Paper on Space Activities published in 2000, but referred to in the second Paper in 2006.¹⁴² In January 2016, CONIDA and Russian Roscosmos discussed to conclude a cooperation agreement on the peaceful exploration and use of outer space, taking the special note for the mutual benefit in the fields of space science, application and training of a Peruvian astronaut.¹⁴³ In September 2016, high-resolution earth observation satellite, Perusat-1, was launched by Vega rocket from French Guiana.¹⁴⁴ Peru-French cooperation deepened when the remote sensing data receiving and processing facilities, located in Punta Lobos, was transferred from the French government to CONIDA in December 2012. That facility was constructed by Airbus Defence and Space (ADS) as was Perusat-1.¹⁴⁵

IV.9. Venezuela

Venezuela concludes space cooperation agreements with India (2005),¹⁴⁶ China (2005), Uruguay (2006), Brazil (2008), Argentina (2011), Bolivia (2011) and Mexico (2015).¹⁴⁷ Among them, cooperation with China is more significant in recent Venezuelan space activities as their cooperation for the last eleven years produced the first Venezuelan GEO satellite, Simon Bolivar

139 <http://www.apsco.int/NewsOne.asp?ID=402> (9 Nov. 2015).

140 UNOOSA, *supra* note 27, p. 33.

141 http://www.apsco.int/AboutApsco.asp?LinkNameW1=APSCO_Member_States&LinkCodeN=11.

142 <http://www.china.org.cn/e-white/8/index.htm> (Nov. 2000), "Part IV"; *supra* note 111.

143 <http://www.conida.gob.pe/index.php/noticias/reunion-del-grupo-de-trabajo-peruano-ruso-de-altas-tecnologias> (29 Jan. 2016).

144 http://www.spacedaily.com/reports/PeruSAT_1_takes_shape_in_Airbus_Defence_and_Spaces_cleanrooms_999.html.

145 <http://www.conida.gob.pe/index.php/noticias/entrega-de-la-infraestructura-terrestre-del-cnois>.

146 <http://pib.nic.in/newsite/PrintRelease.aspx?relid=115973>.

147 http://www.unoosa.org/pdf/SLW2016/Panel5/1._Becerra_Presetacion_UNOOSA_RB_copia.pdf.

(or called VENESAT-1) (launched on 29 Oct. 2008), the first Venezuelan remote sensing satellite, VRSS-1 (Miranda) (launched on 29 Sept. 2012), and its follow-on VRSS-2 (Sucre) project slated for launch in September 2017 as well as tracking and controlling facilities and personnel training. The second GEO satellite, VENESAT-2 is also planned in cooperation with China. On 20 July 2016, the importance of the Sino-Venezuelan cooperation was reconfirmed when senior Chinese embassy officials in Venezuela visited ABAE.¹⁴⁸

Increased cooperation not only with China, but also with APSCO has been pursued by Venezuela. Executive Director of ABAE, Mr. Mariano Imbert visited APSCO headquarters and consulted with Director General Mr. Li Ximjun of APSCO on 13 January 2016, where Venezuela expressed its willingness to participate in APSCO programs.¹⁴⁹ On 10 June 2016, Director of ABAE proposed to APSCO Director General for developing small satellites under APSCO's "Small Multi-Mission Satellites (SMMS)" project. SMMS project enables data use of China launched high-resolution Gaofen-1 (launched on 26 April 2013), Gaofen-2 (launch on 19 August 2014), CBERS-4, etc. to APSCO member States as a first step to construct an eight satellite constellation of SMMS.¹⁵⁰ Thus, if this proposal will be accepted, Venezuela may receive similar advanced data and technology without being an APSCO member.

As a regional cooperation, it should be noted that at the seventh Space Conference of Americas, held 17-19 November in 2015, in Managua, Nicaragua, Venezuela released the news that it had been disseminating data of its Simon Bolivar (VENESAT-1) to Nicaragua, Bolivia, Cuba and Uruguay and data of VRSS-1 (Miranda) to Ecuador, Bolivia, Pakistan and Nepal.¹⁵¹

It should also be noted that ABAE and Venezuelan ministry of higher education, science and technology jointly proposed its space activities bill on 17 Nov. 2015.¹⁵²

V. Conclusion

This article focused on the bilateral cooperative agreements and projects because many of substantial cooperative projects in Latin America are bilateral. Characteristics and common elements in Latin American space cooperation mechanisms/agreements seem as follows: first, the ratio of cooperation agreements and projects with European and North American countries has been decreased in the 21st century, and that of China, India and

148 <http://www.abae.gob.ve/web/noticias.php?id=170> (20 July 2016).

149 <http://www.apsco.int/NewsOne.asp?ID=422&lang=en> (13 Jan. 2016).

150 <http://www.abae.gob.ve/web/noticias.php?id=155> (10 June 2016).

151 *Supra* note 147.

152 <http://www.abae.gob.ve/web/noticias.php?id=48> (17 Nov. 2015).

APSCO has tremendously increased. Second, however, if attention is paid to the volume of cooperative activities, not ratio only, the presence of the United States and major European spacefaring States has never been diminished. Exquisite space technology, especially the launch capability of Europe and the North America will make them continue to be critical as a partner for Latin American countries. As launch capability is essential in space activities, efficient cooperation requires a country or a region with ingenious launch capability. This factor seems to determine the unique nature of space cooperation that the cooperation with advanced spacefaring nations is indispensable. And this must be the main reason that independence, autonomy and regional integration has not been seriously pursued in this region, where no one country has autonomous launch capability.

Third, the Latin American legal tradition of pursuing equality and justice vis-à-vis existing powers seems to have been translated in “south-south space cooperation”. Most of Latin American countries studied have cooperation projects with China and India as “south-south cooperation”. As much as this concept suits to Latin American political and legal thinking, however, it is doubtful if it could really be called “south-south cooperation”. China is arguably one of the three most advanced space powers today. But, even in the 1970s, China was not a south country in this regard. To a lesser degree, India is in the same position with China, for it has been a spacefaring nation for the last three decades. This concept may have been, in part, supported by the political orientation of many States in this region. While too much generalization of the regional political thinking should be avoided, a specific inclination in political stance in many Latin American States seems to facilitate to have cooperative projects with China, Russia, India and other former socialist and non-aligned countries. Another practical reason is that as often not a member States of the Missile Technology Control Regime (MTCR) and other relevant export control regimes,¹⁵³ Latin American States seem to have lower obstacles to cooperate with China and India.

Fourth, it seems that multilateral and regional cooperation in Latin America is being progressed through China. In addition to APSCO, UN Regional Center for Space Science and Technology Education in Asia Pacific (RCSSTEAP) has been recently set up in Beijing,¹⁵⁴ and China’s various governmental agencies including CNSA are closely related to APSCO and RCSSTEAP. Not only that, their functions somewhat overlap while APSCO and RSSTEAP are international governmental and non-governmental organizations and CNSA, a domestic agency. Latin American countries are ready to use this overlapped functions for their respective cooperative projects. For instance, the second RCSSTEAP Council meeting held in

153 Only Argentina (1993) and Brazil (1995) are members to the MTCR. India joined the MTCR in 2016.

154 <http://www.unoosa.org/oosa/en/ourwork/psa/regional-centres/rcssteap-china.html>.

November 2015 had an attendance of Argentina, Algeria, Bolivia, Brazil, Indonesia, Pakistan, Peru, Venezuela, APSCO and Chinese government. At that occasion, Argentine CONAE and Bangladesh Space Research and Remote Sensing Organization (SPARRSO) were accepted as new members of RCSSTEAP.¹⁵⁵ As Mexico and Brazil have the UN affiliated space education organizations, the cooperative tie with RCSSTEAP seems to be more easily strengthened.¹⁵⁶ Likewise, at present, Peru (full member), Brazil, Mexico, and Venezuela are closely related to the APSCO, and through the resources and opportunities provided by the APSCO, they may be able to strengthen Latin American regional cooperation. This may lead to a new and real Latin American multilateral “south-south cooperation” with China/APSCO as its linchpin in the first stage, and later, this framework may be developed into a truly independent existence. However, the key factor of the real independent regional cooperation would be the autonomous launch capability.

155 <http://www.cnsa.gov.cn/n1081/n7529/n308608/786139.html> (30 Nov. 2015). APSCO became an observer of the RCSSTEAP.

156 <http://www.apsco.int/NewsOne.asp?ID=475> (19 Sept. 2016). Also 10th APSCO Council was held from 6 to 8 of September 2016, when Egypt became associate member of APSCO.

