

AGREEMENT

among

**the Brazilian Space Agency, the State Space Corporation
"Roscosmos", the Indian Space Research Organization, the China
National Space Administration and the South African National
Space Agency**

on

COOPERATION ON BRICS REMOTE SENSING SATELLITE

CONSTELLATION

The Brazilian Space Agency (AEB), the State Space Corporation "Roscosmos" (ROSCOSMOS), the Indian Space Research Organization (ISRO), the China National Space Administration (CNSA) and the South African National Space Agency (SANSA), hereinafter jointly referred to as the "**Parties**" and separately as a "**Party**",

GUIDED by the provisions of the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies, of 27 January 1967 and other international agreements on the exploration and use of outer space, which their respective States have joined, as well as the Principles Relating to Remote Sensing of the Earth from Outer Space, adopted by the General Assembly of the United Nations on 3 December 1986;

ACTING IN ACCORDANCE with the Ufa Declaration of the Seventh BRICS Summit adopted on 9 July 2015 which reaffirmed the importance of strengthening international cooperation in the field of peaceful uses of outer space among BRICS States;

EXPRESSING a common desire to strengthen existing and develop new and effective forms of international cooperation in space activities that would contribute to socio-economic and cultural development for the benefit of their States;

INTENDING to establish the BRICS Remote Sensing Satellite Constellation consisting of their respective contributed remote sensing satellites and ground-based remote sensing infrastructure as a mechanism for remote sensing data sharing and development of remote sensing applications;

CONSIDERING that the implementation of such cooperation poses new practical requirements for organizational and legal regulations of the relationships in the field of remote sensing between the Parties;

RECOGNIZING the importance of developing coordinated measures aimed at promoting future forms of cooperation in the space field, including fair and mutually beneficial relations between organizations and enterprises of the States of the Parties;

HEREBY AGREE AS FOLLOWS:

Article I – Terms and Definitions

For the purposes of this Agreement, the following terms and definitions shall apply:

“BRICS Remote Sensing Satellite Constellation” shall mean a collaborative observation system composed of the Parties' respective contributed remote sensing satellites and ground-based remote sensing infrastructure, hereinafter referred to as **the Constellation**.

“contributed remote sensing satellite” shall mean the remote sensing satellite that a Party contributes to the Constellation for the purpose of sharing remote sensing data in a manner agreed by the Parties.

“coordination procedures” shall mean a set of procedures to be adopted by the Parties and/or followed among the designated organizations in the process of filing, forwarding and satisfying requests for remote sensing data acquisition.

“designated organization” shall mean an organization or entity authorized by a Party as operator of national space systems of remote sensing of the Earth to carry out remote sensing data collection, processing, storage and dissemination,

“end use” shall mean the use of remote sensing data and/or processed data for the purpose, agreed by all Parties.

“ground-based remote sensing infrastructure” shall mean the network of centers that a Party contributes for remote sensing data collection, processing, storage and dissemination and associated facilities for remote sensing data sharing.

“processed data” shall mean information in any form and on any medium, resulting from additional processing and interpretation of remote sensing data by any means.

“remote sensing” shall mean the process of acquiring data on the Earth's surface by performing observation from outer space and measurement of intrinsic and reflected radiation of land elements, the ocean and the atmosphere in various ranges of electromagnetic waves in order to determine location, describe the nature and temporal variability of natural phenomena, natural resources, environment, man-made and anthropogenic interference.

“remote sensing data” shall mean the primary data acquired by remote sensing satellites which is transmitted or delivered to the ground from outer space by electromagnetic signals, photographic film, magnetic tape or any other means, as well as products resulting from the processing of the primary data that is needed in order to make such data usable.

“remote sensing satellite” shall mean a spacecraft with equipment

designed for acquiring remote sensing data on the Earth's surface by performing observation from outer space and measurement of intrinsic and reflected radiation of land elements, the ocean and the atmosphere in various ranges of electromagnetic waves, and for transmitting such information to the ground-based infrastructure.

Article II – Purpose

The purpose of this Agreement is to establish the Constellation, which shall be intended to address, inter alia, challenges related to research of global climate change, disaster management, environmental protection, prevention of food shortage and water resources scarcity, and sustainable socio-economic development, by sharing remote sensing data obtained in the course of collaboration between the Parties and their designated organizations. To this purpose, the Parties will work cooperatively to spread the use of remote sensing applications and foster research and developmental activities of mutual interest related to remote sensing data applications.

Article III – General Principles of Cooperation

3.1 Cooperation among or between the Parties shall be based on the principles of equity and mutual benefit, and implemented with due respect for the sovereignty and interests of the States of Parties, without any prejudice to the sovereignty and territorial integrity of the States of the Parties.

3.2 Cooperation under this Agreement shall be carried out in accordance with the legislation of the States of the Parties, in compliance with relevant principles and norms of international law, Principles Relating to Remote Sensing of the Earth from Outer Space, adopted by the General Assembly of the United Nations on 3 December 1986, and without prejudice to the rights and obligations of the Parties under other international agreements to which they are Parties.

3.3 This Agreement shall be without prejudice to any existing agreements between the Parties and/or their designated organizations.

3.4 The Parties shall honor stated purposes of the end use of remote sensing data and processed data obtained under this Agreement.

3.5 In accordance with the cooperation goals stated in this Agreement, the Parties shall jointly define the corresponding list of end uses of remote sensing data and processed data.

3.6 To promote cooperation in the field of remote sensing data application, the Parties may conduct joint research and development works under the conditions and in accordance with procedures provided by specific agreements.

Article IV – Forms of Cooperation

Under this Agreement the Parties shall cooperate in the following forms:

4.1 The exchange of remote sensing data acquired from contributed remote sensing satellites with the understanding that the exchange of processed data shall be subject to specific agreements between relevant Parties.

4.2 Upgrade of existing and/or construction of new ground-based remote sensing infrastructure so that each Party could receive, store, process and disseminate the satellite data provided by the other Parties with the understanding that particular ground-based remote sensing infrastructure and the mechanism for its upgrading will be defined by additional specific agreements among the Parties.

4.3 Coordination of activities on the exchange of data processing software and sharing of experience on advanced application techniques for the purpose of meeting common remote sensing applications needs.

4.4 Carrying out of remote sensing satellite data cross-calibration and development of standards and specifications for remote sensing data products.

4.5 Specific forms of cooperation agreed by the Parties.

Article V – Cooperation Mechanism

The Parties shall agree to establish cooperation mechanism in the following manner:

5.1 A Joint Committee on Space Cooperation shall be established by the Parties which shall be represented by their Heads or their authorized representatives. The Joint Committee on Space Cooperation shall operate as the decision-making body as regards cooperation under this Agreement. The Joint Committee on Space Cooperation shall be chaired, on a rotation basis, by one of the Heads of the Parties, or its authorized representative, representing the State exercising the current BRICS Chair. The Joint Committee on Space Cooperation shall meet annually with the presiding Party responsible for hosting the meeting,

and shall adopt its decisions by consensus.

5.2 A Working Group shall be established by the Parties endowed with responsibility for the implementation of relevant decisions of the Joint Committee on Space Cooperation, drafting of cooperation plans, coordination of tasks and delivering cooperation progress reports to the Joint Committee on Space Cooperation. The Working Group leader shall be nominated by the Parties by consensus and appointed for a term agreed by the Joint Committee on Space Cooperation. The Working Group shall meet once every six months or as necessary.

Article VI – Designated Organization

6.1 To ensure an effective implementation of this Agreement, each Party may assign its designated organization.

6.2 A Party may replace its designated organization by informing other Parties of its decision. Such decisions shall enter into force once the Parties have received the corresponding notice from the Party initiating the replacement.

6.3 Each Party shall supervise and coordinate the activities of its designated organization independently according to the legislation of its State.

6.4 The Parties and/or the designated organizations shall interact on all issues related to obtaining, processing and providing remote sensing data under this Agreement in accordance with the established coordination procedures.

6.5 Any amendments to the coordination procedures shall be made by common agreement among the Parties.

6.6 The Parties and their designated organizations shall exchange the lists of their contact points responsible for the coordination of activities of the Parties and the designated organizations, respectively, in pursuance of this Agreement and the established coordination procedures.

Article VII – Contribution of the Parties

7.1 The Parties shall provide contributed remote sensing satellites and/or ground-based remote sensing infrastructure and provide remote sensing data on an equitable basis.

7.2 Contributed remote sensing satellites and/or ground-based remote

sensing infrastructure shall be listed in the annex to this Agreement which shall be an integral part thereof.

7.3 If necessary, the annex with the list of contributed remote sensing satellites and/or ground-based remote sensing infrastructure can be updated in accordance with the procedure provided for in paragraph 12.3 of this Agreement.

7.4 On the request of a Party and/or its designated organization, the designated organizations of other Parties, acting in accordance with the coordination procedures, shall decide as to what satellite among those contributed by the Parties may serve to provide remote sensing data considering the parameters of the request.

7.5 The designated organizations of the Parties shall provide remote sensing data in compliance with international and/or their national standards of remote sensing data quality.

Article VIII – Exchange of Information and Technical Data

8.1 With the purpose of implementing this Agreement, the Parties and their designated organizations shall exchange information and technical data relating to the implementation of this Agreement that do not fall within access, usage and distribution restrictions according to the legislations of their respective States.

8.2 Each Party and its designated organization shall not disclose or transfer any information or technical data provided by any other Party and/or its designated organization without obtaining a prior written consent of the Party and/or the designated organization which provided the data/information.

8.3 The Party and/or the designated organization receiving the information and/or technical data shall use such information and/or technical data under the terms defined by the Party and/or by the designated organization which provide the information and/or technical data. The Parties and/or the designated organizations shall transfer only information and technical data to which they have entitlements.

8.4 Nothing in this Agreement shall be considered as imposing on either Party or its designated organization obligations to provide any information and/or technical data within this Agreement if such provision contravenes the national security interests of the State of that Party.

Article IX – Exclusive Rights. Intellectual Property

9.1 For the purposes of this Article the term “intellectual property” shall be defined according to Article 2 of the Convention Establishing the World Intellectual Property Organization, signed at Stockholm on 14 July 1967.

9.2 The exclusive rights to remote sensing data shall belong to the Party that controls the remote sensing satellite that generated such data.

9.3 The exclusive rights on processed data shall belong to the Party that has processed the relevant remote sensing data. The Party and/or the designated organization that processed remote sensing data shall not transfer remote sensing data provided by any other Party and/or its designated organization without obtaining a prior written consent of the Party and/or the designated organization that provided such remote sensing data.

9.4 Intellectual property protection shall be maintained in accordance with the legislations of the States of the Parties. The Parties shall provide for the adequate and effective protection of intellectual property created or provided within the framework of this Agreement in accordance with international obligations as well as the legislations of their States.

Article X – Liability

10.1 As part of implementing this Agreement, each Party and its designated organization shall agree to waive any liability and indemnity claims against any other Party and its designated organization, with the sole exception of cases when the damage suffered by a Party and/or its designated organization is the result of wilful misconduct or gross negligence on the part of any other Party and/or its designated organization.

10.2 Each Party and its designated organization are liable for their actions caused to third parties in accordance with the legislations of their respective States as well as relevant applicable norms of international law that regulate the responsibility of States for remote sensing activities and damage caused by space objects.

Article XI – Settlement of Disputes

11.1 Disputes regarding the interpretation or implementation of this

Agreement that may involve two or several Parties shall be settled amicably through mutual consultations between/among those Parties.

11.2 Disputes that may involve all Parties shall be submitted to the Joint Committee on Space Cooperation in order to achieve an amicable settlement.

11.3 In case disputes referred to in paragraph 11.1 and paragraph 11.2 above, remain unresolved, the relevant Parties to any specific dispute shall undertake efforts to agree on any other settlement procedures.

11.4 When necessary, upon the concerted decision of the relevant Parties, disputes shall be referred to consultations or negotiations through diplomatic channels.

Article XII – Final Provisions

12.1 The Parties shall notify each other in writing through diplomatic channels, of the completion of domestic procedures necessary for the entry of this Agreement into force. This Agreement shall enter into force on the date of the last written notification.

12.2 This Agreement shall remain in force for a period of ten years. It shall be automatically extended for subsequent periods of ten years, unless either Party notifies the other Parties in writing of its intention to withdraw from this Agreement not less than six months before the effective date of such exit. The other Parties shall hold consultations concerning the expediency of a continued implementation of this Agreement or its termination. In case the said Parties decide to terminate this Agreement such termination shall become effective six months after the Parties complete the exchange of notes on the intention to terminate this Agreement.

12.3 This Agreement may be amended by written agreement among the Parties and any amendment to this Agreement shall enter into force in accordance with the procedure provided for in paragraph 12.1 above.

12.4 Each Party shall have the right to withdraw from this Agreement at any time by notifying the other Parties in writing through diplomatic channels, of its intention to withdraw from this Agreement. In such case the other Parties shall follow the same course of actions as provided for in paragraph 12.2 above.

12.5 Withdrawal from this Agreement of either Party or the termination of this Agreement shall not affect or terminate uncompleted programs and projects between the Parties and their designated organizations and shall

not affect the rights and obligations that have arisen prior to such withdrawal or termination.

Done at Brasilia/Moscow/Bengaluru/Beijing/Pretoria on August 18, 2021 in five original copies in the English language. The translation of this Agreement into national languages shall be at the discretion of each Party.

**For the Brazilian
Space Agency**



Mr. Carlos Augusto
Teixeira De Moura

**For the State Space
Corporation
"Roscosmos"**

Dr. Dmitry Rogozin

**For the Indian Space
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Dr. K. Sivān

**For the China National
Space Administration**

Mr. Zhang Kejian

**For the South
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Annex

LIST OF CONTRIBUTED REMOTE SENSING SATELLITES AND GROUND-BASED REMOTE SENSING INFRASTRUCTURE FOR BRICS REMOTE SENSING SATELLITE CONSTELLATION

The Brazilian Space Agency (AEB), the State Space Corporation "Roscosmos" (ROSCOSMOS), the Indian Space Research Organization (ISRO), the China National Space Administration (CNSA) and the South African National Space Agency (SANSA) agree to contribute to BRICS Remote Sensing Satellite Constellation and establish a collaborative Earth observation system composed of their respective remote sensing satellites and ground-based remote sensing infrastructure. The following infrastructure will be initially contributed from BRICS space authorities:

1. AEB and CNSA will jointly contribute CBERS-04, AEB will contribute a Ground Station located at Cuiaba (15.552S, 56.073W).
2. Roscosmos will contribute one of the Kanopus-V-type spacecraft (№ 2, 3, 4, 5, 6) and a Ground Station located at Moscow (55.86N, 37.63E).
3. ISRO will contribute Resourcesat-2 & Resourcesat-2A, and Shadnagar Earth Station (55 km south of Hyderabad).
4. CNSA will contribute GF-6 and ZY-3/02, and a Ground Station located at Sanya City, Hainan Province (18.312N, 109.309E).
5. SANSA will contribute a Ground Station located at Hartebeesthoek, Krugersdorp, Gauteng (25.89S, 27.42E).

The detailed information on the above satellites is listed in the following table.

Table: Details of the BRICS contributed satellites for BRICS Remote Sensing Satellite Constellation

Satellites	CBERS 04	Kanopus-V (№ 2, 3, 4, 5, Kanopus-V-IR 14 Jul., 2017 Kanopus-V3 01 Feb., 2018 Kanopus-V4 01 Feb., 2018 Kanopus-V5 27 Dec., 2018 Kanopus-V6	Resourcesat-2 & 2A	GF-6	ZY-3/02
Launch Date	7 Dec., 2014	20 Apr., 2011 & 07 Dec 2016	2 June, 2018	30 May, 2016	
Design Life	3 years	5 years	8 years	5 years	
Orbit	Sun-synchronous (Descending)	Sun-synchronous (Ascending)	Sun-synchronous (Descending)	Sun-synchronous (Descending)	Sun-synchronous (Descending)
Orbit Altitude	778 km	510 km	645 km	505km	
Orbit Inclination	98.5°	97.4°	98.0506°	97.421°	
LTDN(LTAN)	10:30 am	10:30 am	10:30 am	10:30AM	
Orbit Period	100.26 min	94.815 min	97.4658 min	94.716 min	
Orbit Eccentricity	0.0011	0.00135	0.001	0	0
Spacecraft Agility	±32 °	±40°	±26°	±35 °	±32°

Payloads													
	Pan/ Multispectral	Multispectral	Infrared Multispectral Camera	Wide Field Camera	Pan	Multispectral	LLSS- IV	LLSS- III	AWIFS	Pan/ Multispectral	Multispectral	Three linear Array Stereo Mapping camera	50m Multispectral camera
Bands(µm)	0.51-0.85 0.52-0.59 0.63-0.69 0.77-0.89	0.45-0.52 0.52-0.59 0.63-0.69 0.77-0.89	0.50-0.90 1.55-1.75 2.08-2.35	0.45-0.52 0.59 0.63-0.69 0.77-0.89	0.54 0.86	0.46-0.52 0.51-0.60 0.63-0.69 0.69-0.75 0.86	0.52-0.59 0.62-0.68 0.77-0.86 1.55-1.70	0.52-0.59 0.62-0.68 0.77-0.86 1.55-1.70	0.52-0.59 0.62-0.68 0.77-0.86 1.55-1.70	0.45-0.52 0.52-0.60 0.63-0.69 0.76-0.90	0.45-0.52 0.52-0.59 0.63-0.69 0.77-0.89 0.69-0.73 0.73-0.77	0.5-0.80	0.45-0.52 0.52-0.59 0.63-0.69 0.77-0.89
Spatial Resolution	5m 10m	20m	40m 80m	73m	2.5m	12m	5.8m	23.5m	56m	2m 8m	16m	frontal view2.7 Orthographic view2.5	6m
Swath Width	60km	120km	120km	866km	23.5km	20km	70km	141km	740km	90km	800km	50 (single scene) 50 (stereo)	50 (single scene)
Revisit capability	3 days	26 days	26 days	3 days	5 days	5 days	5 days	24 days	5 days	4 days	4 days	5 days	5 days
Repeat Cycle	52 days	26 days	26 days	3 days	/	/	24 days	24 days	5 days	41 days	59 days	59 days	59 days