



# BRICS Remote Sensing Satellite Constellation

Jiang Hui (cnsamsjh@126.com) China National Space Administration

07/11/2017



# Official Initiative

Since its inception, the BRICS has expanded its activities in two main streams of work: (i) coordination in meetings and international organization; and (ii) the development of an agenda for multisectorial cooperation among its members.

Eight years after the first Summit, in 2009, the intra-BRICS activities already cover 30 areas such as: (...) science and technology, (...), outer space, (...),, among others.

The political coordination between BRICS members has been and will continue to be undertaken without any element of confrontation with other countries. The BRICS are open to cooperation and constructive engagement with other countries, as well as open with international and regional organizations in dealing with current international issues.





# Official Initiative

- **7<sup>th</sup> BRICS SUMMIT IN RUSSIA, 2015**

- The leaders of the BRICS expressed the wish to intensify cooperation in areas of joint application of space technologies
- **UFA DECLARATION (2015)----**“We recognize our countries can benefit from opportunities for outer space cooperation in order to promote the application of relevant technologies for peaceful purposes. We will intensify our cooperation in the areas of joint application of space technologies, satellite navigation, including GLONASS and BeiDou, and space sciences.”





# Official Initiative



国家航天局  
CHINA NATIONAL SPACE ADMINISTRATION

Translation for reference

July 31, 2015

## Initiative on Establishing BRICS Remote Sensing Satellite Constellation

Dear Mr Jose Raimundo Braga Coelho,  
China National Space Administration (CNSA) presents its highest compliment to Brazilian Space Agency.

According to the Declaration of Ufa released during the seventh BRICS Summit in July 2015, BRICS will enhance its overall role in the international affairs and promote the cooperation on the peaceful use of the outer space. How BRICS Member States take full advantage of space technology and satellite resources together to deal with the human being challenge such as the global climate change, environment protection, major natural disasters and sustainable resource development and utilization, will be a important issue in the near future. CNSA had taken the liberty to coordinate with each space authority of BRICS MS on the Establishing BRICS Remote Sensing Satellite Constellation on the working level early and had reached a preliminary consensus on it.

On behalf of CNSA, I would like to propose the following: take full advantage of the in-orbit and existing satellites to establish the BRICS Remote Sensing Satellite Constellation ( composed of 5-6 satellites in the initial stage), therewith construct the remote sensing satellites data and applications sharing networks, which will make unique contributions to the sustainable development of the economy and society of the BRICS MS.

In order to promote the cooperation, I proposed that each space authority of BRICS designate a contact person and establish a working group, which will be responsible for the joint blue print and technical operation mechanism of the BRICS Remote Sensing Satellite Constellation.

Looking forward to your reply positively. Let us take fully use of the space science and technology for the closer, more comprehensive, solid BRICS Partnership and better future, making a greater contribution to the human being's civilization and progress.

Xu Dazhe ( Signature )  
Administrator of CNSA

地址: 中国北京市海淀区阜成路甲8号 邮编: 100048  
Add: 8A, Fucheng Road, Haidian District, Beijing, China 100048



国家航天局  
CHINA NATIONAL SPACE ADMINISTRATION

Translation for reference

July 31, 2015

## Initiative on Establishing BRICS Remote Sensing Satellite Constellation

Dear Mr Komarov Igor,  
China National Space Administration (CNSA) presents its highest compliment to Russia Federal Space Agency.

According to the Declaration of Ufa released during the seventh BRICS Summit in July 2015, BRICS will enhance its overall role in the international affairs and promote the cooperation on the peaceful use of the outer space. How BRICS Member States take full advantage of space technology and satellite resources together to deal with the human being challenge such as the global climate change, environment protection, major natural disasters and sustainable resource development and utilization, will be a important issue in the near future. CNSA had taken the liberty to coordinate with each space authority of BRICS MS on the Establishing BRICS Remote Sensing Satellite Constellation on the working level early and had reached a preliminary consensus on it.

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国家航天局  
CHINA NATIONAL SPACE ADMINISTRATION

Translation for reference

July 31, 2015

## Initiative on Establishing BRICS Remote Sensing Satellite Constellation

Dear Mr. A. S. Kiran Kumar,  
China National Space Administration (CNSA) presents its highest compliment to Indian Space Research Organization.

According to the Declaration of Ufa released during the seventh BRICS Summit in July 2015, BRICS will enhance its overall role in the international affairs and promote the cooperation on the peaceful use of the outer space. How BRICS Member States take full advantage of space technology and satellite resources together to deal with the human being challenge such as the global climate change, environment protection, major natural disasters and sustainable resource development and utilization, will be a important issue in the near future. CNSA had taken the liberty to coordinate with each space authority of BRICS MS on the Establishing BRICS Remote Sensing Satellite Constellation on the working level early and had reached a preliminary consensus on it.

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Xu Dazhe ( Signature )  
Administrator of CNSA

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Add: 8A, Fucheng Road, Haidian District, Beijing, China 100048



国家航天局  
CHINA NATIONAL SPACE ADMINISTRATION

Translation for reference

July 31, 2015

## Initiative on Establishing BRICS Remote Sensing Satellite Constellation

Dear Ms Joy-Marie Lawrence,  
China National Space Administration (CNSA) presents its highest compliment to South African National Space Agency.

According to the Declaration of Ufa released during the seventh BRICS Summit in July 2015, BRICS will enhance its overall role in the international affairs and promote the cooperation on the peaceful use of the outer space. How BRICS Member States take full advantage of space technology and satellite resources together to deal with the human being challenge such as the global climate change, environment protection, major natural disasters and sustainable resource development and utilization, will be a important issue in the near future. CNSA had taken the liberty to coordinate with each space authority of BRICS MS on the Establishing BRICS Remote Sensing Satellite Constellation on the working level early and had reached a preliminary consensus on it.

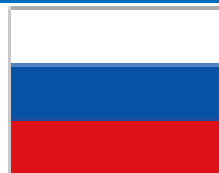
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Xu Dazhe ( Signature )  
Administrator of CNSA

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Add: 8A, Fucheng Road, Haidian District, Beijing, China 100048





# Support for the Initiative

PRÓTON/AEB  
PRE-DOC Nº 4075.15



MINISTÉRIO DA CIÊNCIA, TECNOLOGIA E INOVAÇÃO  
AGÊNCIA ESPACIAL BRASILEIRA

Letter nº 38/PRE

Brasília, 1 September, 2015.

Mr. XU DAZHE  
Administrator, China National Space Administration (CNSA)  
Fucheng Rd. Heidien District, Beijing 100037, P.R.C  
Fax: 0021-8610-88581514

Dear Mr. Xu Dazhe,


I am very honored by receiving your proposed "Initiative on Establishing BRICS Remote Sensing Satellite Constellation". We agree on the necessity that the BRICS countries make one step further towards the promotion of the cooperation on the peaceful uses of outer space.

We are favorable that such a initiative begins by encompassing the acquaintances of the Sino-Brazilian space cooperation aiming at extending its benefits to the countries participating in the BRICS.

In a promising near future, we might work on the construction of a constellation of satellites to be based on the existing capacities and fruitful exchange built through mutual knowledge and joint efforts made between China and Brazil. Through a strategic attitude of solidly paving the way to the BRICS satellite constellation, our remarkable experience should serve as the stepping stones for the upcoming multilateral efforts we will need to begin to address shortly.

On our Part, our Director of Satellites, Applications and Development, Carlos Alberto Gurgel Veras is our point of contact <dsad@neb.gov.br> regarding the BRICS satellite initiative.

Kind regards,

  
JOSÉ RAIMUNDO COELHO  
President

SPO Área 5 - Quadra 3 - Bloco A - CEP: 70610-200 - Brasília DF  
Telefone: 3411.5159 - www.aeb.gov.br  
cnasimjh@126.com; rjmlice1999@163.com; romero.mais@itamarnetv.gov.br

ГОСУДАРСТВЕННАЯ КОРПОРАЦИЯ  
ПО КОСМИЧЕСКОЙ ДЕЯТЕЛЬНОСТИ  
"РОСКОСМОС"  
(Госкорпорация "Роскосмос")

Руководителю Китайской национальной  
космической администрации  
г-ну Сюй Дачже

ГЕНЕРАЛЬНЫЙ ДИРЕКТОР  
Щекина ул., д. 42, Москва, ГСП-4, 107996  
Тел. (495) 631-97-61, Факс (495) 688-99-63.  
<http://www.roskosmos.ru>  
ОКПО 08984008 ОГРН 1157700012502  
ИНН/КПП 7702388023/770201001

О проекте по созданию спутниковой  
группировки ДЗЗ в интересах БРИКС

Уважаемый господин Сюй Дачже!

Российская сторона высоко оценивает и поддерживает намерение китайских коллег организовать многостороннее сотрудничество в космической сфере с участием Бразилии, России, Индии, Китая и ЮАР (БРИКС).

Госкорпорация «Роскосмос» изучила предложение Китайской национальной космической администрации о создании в интересах стран БРИКС совместной орбитальной группировки спутников дистанционного зондирования Земли (ДЗЗ) и соответствующей наземной структуры и готова принять участие в обсуждении данного проекта.

В целях координации усилий по реализации предлагаемого проекта представляется целесообразным создать пятистороннюю рабочую группу с участием представителей космических ведомств стран БРИКС. В рамках деятельности рабочей группы стороны смогут обсудить технические, правовые и финансовые аспекты участия в проекте, предложенном китайской стороной.

О С

И.А. Комаров

भारतीय अन्तरिक्ष अनुसंधान संगठन  
अन्तरिक्ष विभाग  
प्राप्त सम्पत्त  
अन्तरिक्ष प्रभाग  
न्यू वी ई प्लान रोड, बेंगलूरु - 560 231, भारत  
दुरध्वनि : +91-80-2341 5241 / 2217 2333  
फैक्स : +91-80-2341 5328



Indian Space Research Organisation  
Department of Space  
Government of India  
Anandapur Bhawan  
New BEL Road, Bangalore - 560 231, India  
Telephone : +91-80 2341 5241 / 2217 2333  
Fax : +91-80 2341 5328  
e-mail : chairman@isro.gov.in

आ. सी. किरण कुमार / A. S. Kiran Kumar  
अध्यक्ष / Chairman

No. SC/CH//31

Air: ust 24, 2015

Dear Mr. Xu Dazhe,

Thank you for your letter dated July 31, 2015 on the 'BRICS Remote Sensing Satellite Constellation' initiative, to promote space cooperation among BRICS member states as discussed during the seventh BRICS Summit in July 2015 at Ufa, Russia.

Indian Space Research Organisation (ISRO) is positive on this initiative and we can jointly explore the possibility of utilizing the in-orbit and existing remote sensing satellites of BRICS member states to establish the constellation, to start with.

I am designating Director of Earth Observation System, ISRO Headquarters, Bangalore (Mr. D.V.A. Raghava Murthy; Ph: +91 80 23416358; Fax: +91 80 23413806; email: raghava@isro.gov.in) as the ISRO representative for the Working Group to develop the joint mechanism for this constellation. We can discuss further on this initiative during our bilateral meeting in October 2015.

Looking forward to meet you at Bangalore,

With warm regards,

Yours sincerely,

  
(A.S. Kiran Kumar)

Mr. Xu Dazhe  
Administrator,  
China National Space Administration  
Beijing, CHINA

Cc:  
1. Director, Earth Observation System, ISRO HQ  
2. H.E. Mr Ashok K. Kantha, Ambassador, Embassy of India  
3. Dr. V.K. Dadhwal, Director, NRSC



South African National Space Agency  
Tel: +27 12 844 0500  
Fax: +27 12 844 0396  
Email: [email@sanisa.org.za](mailto:email@sanisa.org.za)  
Physical Address: SANSA Corporate Office,  
Enterprise Building, Mark Shuttleworth Street  
Innovation Hub, Pretoria; 0087  
Postal Address: PO Box 484, Silverton 0127,  
Gauteng, South Africa

19 November 2015

Xu Dazhe  
Administrator  
China National Space Administration  
8A, Fuchering Road, Haidian District,  
Beijing, China  
100048  
Tel: +86-10-88581203  
Fax: +86-10-88581518  
Mobile: +86 13311099288  
E-mail: [cnasams@126.com](mailto:cnasams@126.com)

Dear Mr. Xu Dazhe,

Your letter to the SANSA Board Chair on the "Initiative on Establishing BRICS Remote Sensing Satellite Constellation" has reference.

Thank you for the invitation to join this initiative. The South African National Space Agency (SANSA) is committed to international cooperation and is furthermore committed to contributing to BRICS initiatives.

It was a pleasure for me to meet your team in Mexico to discuss SANSA's standing with regards to your invitation. As indicated to your team then, we as SANSA are in support of this initiative and agree to form part of it. I would like to propose a high level video conference, between the Heads of the Agencies concerned, to discuss each Agency's roles and responsibilities and any matters that may be of importance. I shall also send you SANSA's working group and contact person as soon as we have held the video conference.

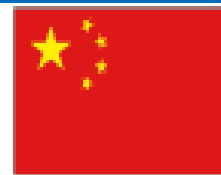
I would also like to mention that I am ready to sign our cooperation agreement. I look forward to working with you.

Yours sincerely,

  
Dr. Sandile Malinga

CEO South African National Space Agency (SANSA)

In service of humanity





# Concept Note

## Concept Note of the BRICS Remote Sensing Satellite Constellation Initiative

### I The strategic importance of the cooperation on BRICS remote sensing satellite constellation

1. To strengthen cooperation and cohesion of BRICS.
2. To accomplish the goals of resources sharing while improve the efficiency of satellite observation of BRICS countries.
3. To further promote the bilateral and multilateral relations among BRICS countries.

### II Concept of the cooperation on BRICS remote sensing satellite constellation

Phase 1: Construct Virtual Satellite Constellation

Phase 2: Construct Real Satellite Constellation

### III Suggestions

1. Support space authorities of BRICS countries to establish a Joint Working Group (JWG) to promote constellation plan and related cooperation.
2. Promote the signing of BRICS remote sensing satellite constellation cooperation agreement.
3. Promote Meeting of Heads of Space Authorities of BRICS countries

➤ **CNSA** Forwarded a **Concept Note** on BRICS Remote Sensing Satellite Constellation through **Chinese Sherpa for BRICS** channel (20160120)

- *“...take full advantage of in-orbit and existing satellites to establish the BRICS Remote Sensing Satellite Constellation...”*
- *“...construct the applications sharing networks to make unique contributions to the BRICS...”*
- *“...take use of space technologies for closer and solid BRICS partnership and better future”*





# BRICS Constellation: Vision and Content



- To intensify cooperation among BRICS members and promote bilateral and multilateral relations.
- To carry out resources sharing in order to improve the efficiency of satellite observations for the BRICS countries.
- With these in mind, the constellation would be implemented in two phases:
  - Phase 1: Virtual Satellite Constellation
  - Phase 2: Real Satellite Constellation





# Contributed Satellites and Ground-Based Infrastructures



**CBERS 04**



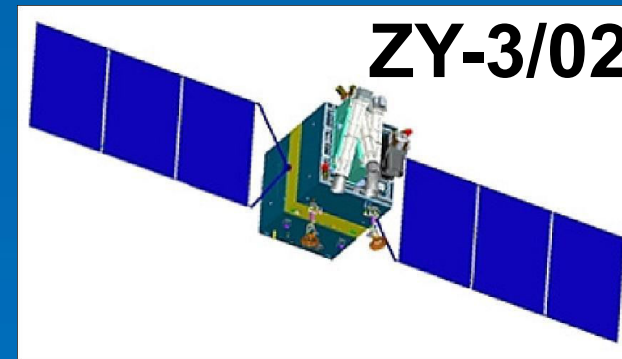
**Kanopus-V1**



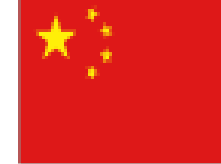
**Resourcesat-2**



**GF-1**



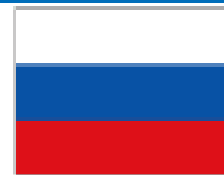
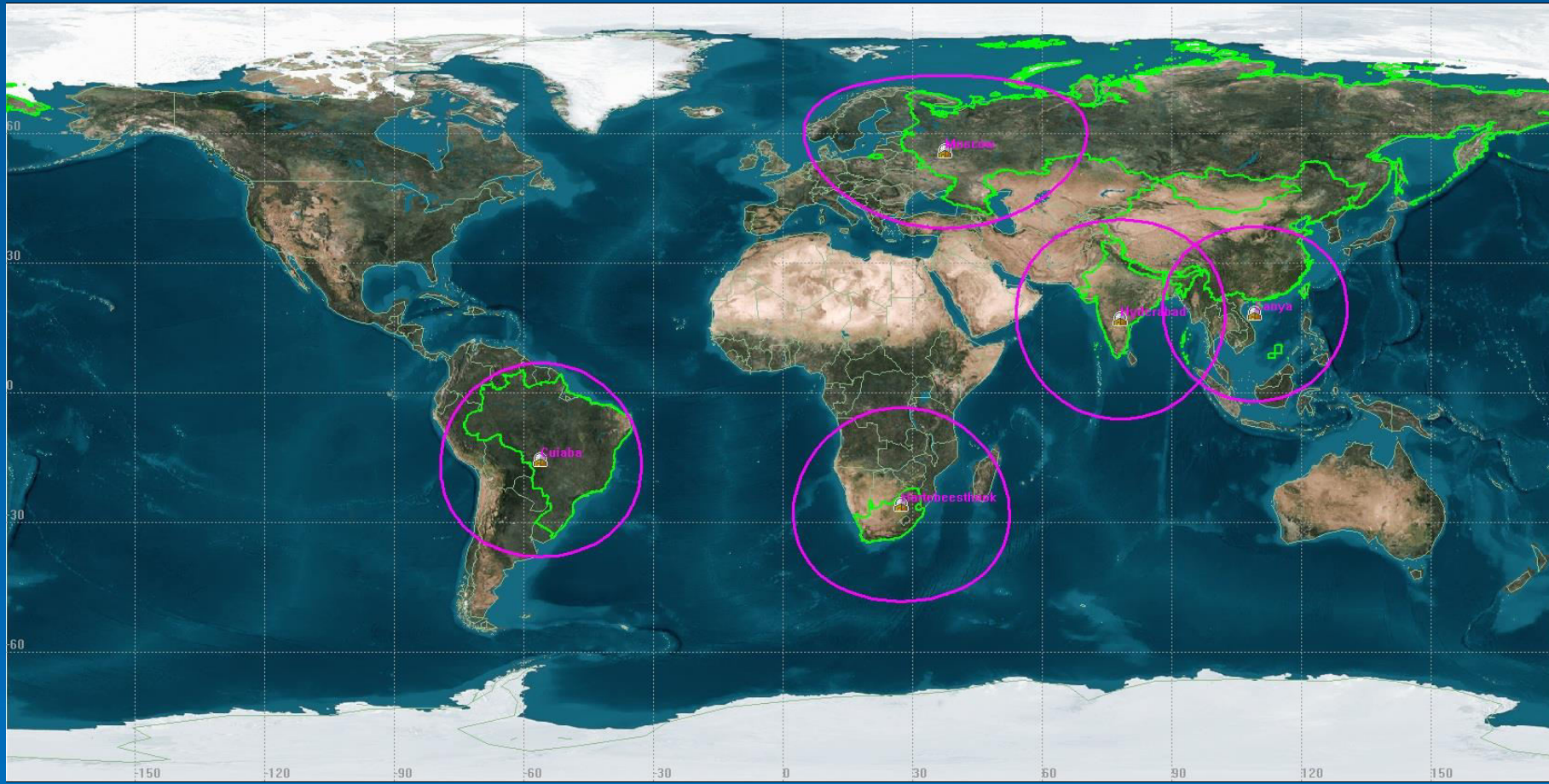
**ZY-3/02**







# Contributed Satellites and Ground-Based Infrastructures





# The Agreement

## 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 THE 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;

## 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**





# Important Meeting

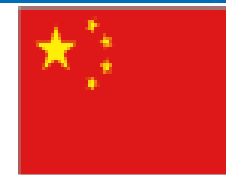


Time: 31st Oct, 2016

Place: Zhuhai, China



The Parties exchanged views on cooperation on peaceful uses of the outer space and reached a consensus on jointly establishing the BRICS Remote Sensing Satellite Constellation.





# Important Meeting



- time: 3rd July
- Place: Haikou, China

The Parties reviewed and deliberated on the progress of the BRICS Remote Sensing Satellite Constellation, and discussed the draft Agreement

**The Working Group Meeting in Zhuhai**





# Important Meeting

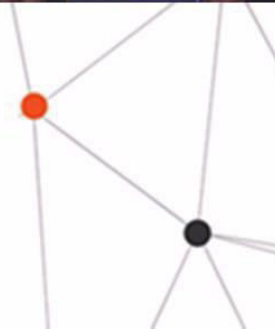


- Time: 18-20 Sept, 2017
- Place: Brasilia, Brazil

The Forum was held in a friendly, pragmatic and constructive atmosphere. The Parties expressed their satisfaction for the opportunity of having technical teams jointly discussing the prospects of the BRICS remote sensing satellite constellation.



**1<sup>st</sup> BRICS**  
Remote Sensing Satellite  
Constellation Forum



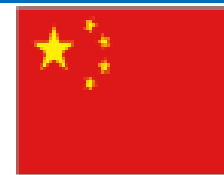


# Working Group Meeting



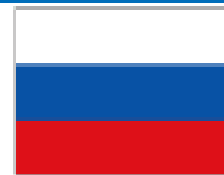
The First Meeting of  
BRICS Remote Sensing  
Constellation  
Working Group

The First Meeting of  
BRICS Remote Sensing  
Constellation  
Working Group





# Support from UNOOSA





# Chinese Sherpa for BRICS

**From:** "BRICS-CHINA" <brics-china@mfa.gov.cn>  
**Date:** 2017-05-11 18:02

**Subject:** Cooperation on BRICS Remote Sensing Satellite Constellation

Dear colleagues,

You may recall that I shared with you in January 2016 the Concept Note of BRICS Remote Sensing Satellite Constellation Cooperation Initiative, drafted by China National Space Administration (CNSA).

After more than one year's efforts, BRICS Space Authorities have reached consensus on the AGREEMENT ON COOPERATION ON BRICS REMOTE SENSING SATELLITE CONSTELLATION 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.

Today I would like to share with you the Agreement and kindly request colleagues to facilitate our respective internal approval processes. It would be appreciated if you could ask your corresponding authorities to finish the procedures as soon as possible so that the Agreement could be signed.

According to the Agreement, BRICS Space Authorities will establish a mechanism for space cooperation, namely a Joint Committee on Space Cooperation. This Joint Committee shall meet annually and the First Meeting will be held in Beijing. The plan is to have the First Meeting of BRICS Joint Committee on Space Cooperation from July 3 to 6, 2017.

I am ready to provide information at your request or you can contact Ms. JIANG Hui, Director for International Cooperation of CNSA for further information:  
Tel: +86-10-88581203  
Fax: +86-10-88581518  
Mobile: +86 13311099288  
E-mail: [brics@cnsa.gov.cn](mailto:brics@cnsa.gov.cn), [ensamsjih@126.com](mailto:ensamsjih@126.com)

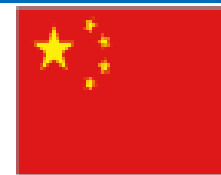
Looking forward to your early reply.

Best Regards,  
Jun

-----  
*Zhang Jun*  
*Sous-Sherpa for BRICS*  
*Director General*  
*Department of International Economic Affairs*  
*Ministry of Foreign Affairs, China*

## ➤ through Chinese Sherpa for BRICS channel (20170511)

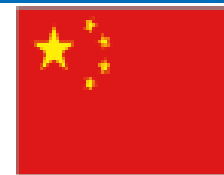
- request to facilitate the respective internal approval processes
- ask the corresponding authorities to finish the procedures as soon as possible so that the Agreement could be signed.







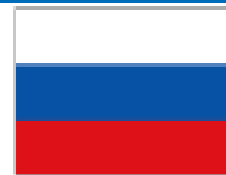
# BRICS XIAMEN SUMMIT





# BRICS Leaders Xiamen Declaration

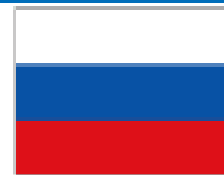
- 20. We adhere to the principle of utilizing outer space for peaceful purposes and emphasize the need to strengthen the international cooperation in space activities in order to use space technologies to respond to global climate change, environmental protection, disaster prevention and relief and other challenges faced by humankind.





# Next step

- Establish the legal framework
  - sign the Agreement
- Setup a mechanism
  - BRICS Joint Committee on Space Cooperation
  - Working group
  - Expert group
- Forum, relating to space applications, space science and commercial cooperation, shall be held at least once a year.





See you in space!

相约太空！

Vejo você no espaço!

Видеть вас в космосе !



# Vedio for BRICS Remote Sensing Satellite Constellation

