

**IMPLEMENTING ARRANGEMENT
FOR COOPERATION
BETWEEN THE
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION (NASA)
OF THE
UNITED STATES OF AMERICA
AND THE
BRAZILIAN SPACE AGENCY (AEB)
OF THE
FEDERATIVE REPUBLIC OF BRAZIL
IN
HELIOPHYSICS
AND
SPACE WEATHER RESEARCH**

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PREAMBLE

The National Aeronautics and Space Administration of the United States of America (hereinafter referred to as “NASA”) and the Brazilian Space Agency of the Federative Republic of Brazil (hereinafter referred to as “AEB”) (hereinafter jointly referred to as “the Parties”):

Recognizing over three decades of fruitful cooperation in the exploration and peaceful use of outer space, through the successful implementation of cooperative activities covering a broad range of space science and applications areas;

Considering the desirability of enhanced cooperation between the Parties in human space flight, space science, and the use of space for research in the Earth sciences and global change, with potential benefits to all nations;

Recalling the terms of the Framework Agreement between the Government of the United States of America and the Government of the Federative Republic of Brazil on Cooperation in the Peaceful Uses of Outer Space, signed at Brasilia March 1, 1996, as extended (hereinafter referred to as the “Framework Agreement”);

Noting the Framework Agreement between the Government of the United States of America and the Government of the Federative Republic of Brazil on Cooperation in the Peaceful Uses of Outer Space, signed at Brasilia March 19, 2011, but which has not yet entered into force;

Recalling that NASA and AEB are designated as the Principal Implementing Agencies in the Framework Agreement;

The Parties have agreed as follows:

ARTICLE 1 BACKGROUND

This Implementing Arrangement (hereinafter referred to as the “Arrangement”) is subject to and governed by the Framework Agreement. In the event of a conflict between the provisions of this Arrangement and the Framework Agreement, the terms of the Framework Agreement shall prevail.

ARTICLE 2 DEFINITIONS

For purposes of this Arrangement,

1. The term “Damage” means:
 - (i) bodily injury to, or other impairment of health of, or death of, any person;
 - (ii) damage to, loss of, or loss of use of any property;

- (iii) loss of revenue or profits; or
 - (iv) other direct, indirect, or consequential damage.
2. The term "Launch Vehicle" means an object, or any part thereof, intended for launch, launched from Earth or returning to Earth, which carries Payloads or persons, or both.
 3. The term "Payload" means all property to be flown or used on or in a Launch Vehicle.
 4. For the purpose of Article 6, the term "Protected Space Operations" means all activities conducted pursuant to this Arrangement, including Launch Vehicle activities, and Payload activities on Earth, in outer space, or in transit between Earth and air space or outer space, in implementation of this Arrangement. Protected Space Operations begins on the date of entry into force of this Arrangement and ends when all activities done in implementation of this Arrangement are completed. It includes, but is not limited to:
 - (i) research, design, development, test, manufacture, assembly, integration, operation, or use of Launch or Transfer Vehicles, Payloads, or instruments, as well as related support equipment and facilities and services; and
 - (ii) all activities related to ground support, test, training, simulation, or guidance and control equipment and related facilities or services;

The term "Protected Space Operations" excludes activities on Earth that are conducted on return from space to develop further a Payload's product or process for use other than for activities in implementation of this Arrangement.

5. The term "Related Entity" means:
 - (i) a contractor or subcontractor of a Party, at any tier;

For the purpose of Article 6, the term "Related Entity" also means:

- (ii) a user or customer of a Party, at any tier; or
- (iii) a contractor or subcontractor of a user or customer of a Party, at any tier.

For the purpose of Article 6, the terms "contractor" and "subcontractor" include suppliers of any kind.

For the purpose of Article 6, the term "Related Entity" may also apply to a State, an international organization, or an agency, department, or institution of a State, having the same relationship to a Party as described in subparagraphs (i) to (iii) above, or otherwise engaged in the implementation of Protected Space Operations as defined in Article 2, paragraph 4 above.

6. The term "Transfer Vehicle" means any vehicle that operates in space and transfers a Payload or person or both between two different space objects, between two different places on the same space object, or between a space object and the surface of a celestial body. A Transfer Vehicle also includes a vehicle that departs from and returns to the same location on a space object.

ARTICLE 3 PURPOSE OF COOPERATION

The purpose of this Arrangement is to set forth the respective responsibilities of the Parties and the terms and conditions under which they will pursue cooperation in heliophysics and space weather research. AEB's responsibilities will be performed through the Brazilian National Institute for Space Research (INPE).

NASA and INPE researchers intend to carry out joint observations and studies of the magnetospheric, ionospheric, and geomagnetic response to the influence of solar activity, with particular interest in modeling the variability related to space weather. NASA scientists are interested in conducting joint research with INPE's Space Weather program, including the Brazilian low-latitude chain of magnetometers and ionospheric monitors, as well as magnetospheric and ionospheric models developed at INPE. INPE scientists are interested in participating in NASA's magnetospheric missions, the Magnetospheric MultiScale (MMS) mission, and the Van Allen Probes mission (formerly known as Radiation Belt Storm Probes, or RBSP), through joint data analysis, theory, and modeling. Sharing the data of new NASA missions will increase scientific output and productivity to the benefit of heliophysics overall.

ARTICLE 4 RESPONSIBILITIES

4.1 NASA responsibilities

NASA will use reasonable efforts to carry out the following responsibilities:

1. Provide to INPE the information, including the Van Allen Probes space weather broadcast mode operating frequencies, the tracking speed, and the tracking cadences, needed by INPE to set up the ground assets to acquire and process space weather broadcast data from the Van Allen Probes, potentially including future NASA missions;
2. Provide the entire real-time Van Allen Probes broadcast data set compiled from multiple sources, including the set from INPE;
3. Provide opportunities for INPE researchers to participate in the working groups of the NASA MMS and Van Allen Probes missions, mainly related to data analysis and computation and theoretical modeling; and

4. Facilitate discussions about new projects for potential INPE and NASA collaboration in heliophysics and space weather research, to be covered under potential future agreements.

4.2 AEB responsibilities

AEB, through INPE, will use reasonable efforts to carry out the following responsibilities:

1. Provide the necessary ground assets to acquire and process the space weather broadcast data from the Van Allen Probes and, potentially, future NASA missions, and provide the data sets to NASA;
2. Implement measures, such as restricting personnel access and using encryption, to secure the Van Allen Probes space weather broadcast mode operating frequencies, the tracking speed, and the tracking cadences, and ensure that this information be used only by those personnel who Brazil determines would need access in support of the activities listed in this Arrangement;
3. Allow the participation of NASA researchers in the development of joint research with INPE's Center for Brazilian study and monitoring of Space Weather (Embrace/INPE), including the network of magnetometers and low-latitude ionospheric monitors, as well as magnetospheric and ionospheric models developed at INPE, with the proper acknowledgement of the Embrace/INPE-Center for providing the data; and
4. Facilitate discussions about new projects for potential NASA and INPE collaboration in heliophysics and space weather research, to be covered under potential future agreements.

ARTICLE 5 POINTS OF CONTACT

NASA and AEB designate the following points of contact responsible for coordination of the agreed-upon responsibilities of the respective agencies:

For NASA:

Dr. Ramona Kessel
Program Scientist
Heliophysics Division, Science Mission Directorate
NASA Headquarters
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For AEB:

AEB Point of Contact

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Chief, Office for International Cooperation
Brazilian Space Agency (AEB)
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INPE Points of Contact

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ARTICLE 6 CROSS-WAIVER OF LIABILITY

1. With respect to activities performed under this Arrangement, the Parties agree that a comprehensive cross-waiver of liability will further the cooperation. This cross-waiver of liability, as set out below, shall be broadly construed to achieve this objective.
2. (a) Each Party agrees to a cross-waiver of liability pursuant to which each Party waives all claims against any of the entities or persons listed in sub-paragraphs 2(a)(i) through 2(a)(iii) below based on Damage arising out of Protected Space Operations. This cross-waiver will apply only if the person, entity, or property causing the Damage is involved in Protected Space Operations and the person, entity, or property damaged is damaged by virtue of its involvement in Protected Space Operations. The cross-waiver shall apply to any claims for Damage, whatever the legal basis for such claims, against:
 - (i) the other Party;
 - (ii) a Related Entity of the other Party; and
 - (iii) the employees of any of the entities identified in sub-paragraphs (i) and (ii) immediately above.
- (b) In addition, each Party will extend the cross-waiver of liability as set forth in Article 6.2(a) to its Related Entities by requiring them, by contract or otherwise, to agree to:
 - (i) waive all claims against the entities or persons identified in Article 6.2(a)(i) through Article 6.2(a)(iii); and
 - (ii) require that their Related Entities waive all claims against the entities or persons identified in Article 6.2(a)(i) through Article 6.2(a)(iii) above.
- (c) For avoidance of doubt, this cross-waiver of liability will be applicable to claims arising under the *Convention on International Liability for Damage Caused by Space Objects*, done on March 29, 1972 (the "*Liability Convention*"), where the person, entity, or property causing the Damage is involved in Protected Space Operations and the person, entity, or property damaged is damaged by virtue of its involvement in Protected Space Operations.
- (d) Notwithstanding the other provisions of this Article, this cross-waiver of liability will not be applicable to:



- (i) claims between a Party and its Related Entity or between its own Related Entities;
- (ii) claims made by a natural person, his/her estate, survivors, or subrogees (except when a subrogee is a Party to this Arrangement or is otherwise bound by the terms of this cross-waiver) for bodily injury to, other impairment of health of, or death of such natural person;
- (iii) claims for Damage caused by willful misconduct;
- (iv) intellectual property claims;
- (v) claims for Damage resulting from a failure of a Party to extend the cross-waiver of liability to its Related Entities, pursuant to Article 6.2(b); or
- (vi) claims by or against a Party or its Related Entity arising out of or relating to the other Party's or its Related Entity's failure to perform its obligations under this Arrangement.
- (e) Nothing in this Article will be construed to create the basis for a claim or suit where none would otherwise exist.
- (f) In the event of third-party claims for which the Parties may be liable, the Parties will consult promptly to determine an appropriate and equitable apportionment of any potential liability and on the defense of any such claims.

ARTICLE 7 INTELLECTUAL PROPERTY RIGHTS

Consistent with Article 10 of the Framework Agreement, the Parties have agreed to use the following intellectual property provisions for the purposes of this Arrangement:

1. Nothing in this Arrangement shall be construed as granting, either expressly or by implication, to the other Party any rights to, or interest in, any inventions or works of a Party or its Related Entities made prior to the entry into force of, or outside the scope of, this Arrangement, including any patents (or similar forms of protection in any country) corresponding to such inventions or any copyrights corresponding to such works.
2. Any rights to, or interest in, any invention or work made in the performance of this Arrangement solely by one Party or any of its Related Entities, including any patents (or similar forms of protection in any country) corresponding to such invention or any copyright corresponding to such work, will be owned by such Party or Related Entity. Allocation of rights to, or interest in, such invention or work between such Party and its Related Entities shall be determined by applicable laws, rules, regulations, and contractual obligations.

3. It is not anticipated that there will be any joint inventions made in the performance of this Arrangement. Nevertheless, in the event that an invention is jointly made by the Parties in the performance of this Arrangement, the Parties shall, in good faith, consult and agree within 30 calendar days as to:
 - (a) the allocation of rights to, or interest in, such joint invention, including any patents (or similar forms of protection in any country) corresponding to such joint invention;
 - (b) the responsibilities, costs, and actions to be taken to establish and maintain patents (or similar forms of protection in any country) for each such joint invention; and
 - (c) the terms and conditions of any license or other rights to be exchanged between the Parties or granted by one Party to the other Party.
4. For any jointly authored work by the Parties, should the Parties decide to register the copyright in such work, they will, in good faith, consult and agree as to the responsibilities, costs, and actions to be taken to register copyrights and maintain copyright protection (in any country).
5. Subject to the provisions of Article 8 (Publication of Public Information and Results) and Article 9 (Transfer of Goods and Technical Data), each Party will have an irrevocable royalty-free right to reproduce, prepare derivative works, distribute, and present publicly and authorize others to do so on its behalf; any copyrighted work resulting from activities undertaken in the performance of this Arrangement for its own purposes, regardless of whether the work was created solely by, or on behalf of, the other Party or jointly with the other Party.

ARTICLE 8 RELEASE OF PUBLIC INFORMATION AND RESULTS

1. The Parties retain the right to release public information regarding their own activities under this Arrangement. The Parties will coordinate with each other in advance concerning releasing to the public information that relates to the other Party's responsibilities or performance under this Arrangement.
2. The Parties will make the final results obtained from their cooperation on heliophysics and space weather research available to the general scientific community through publication in appropriate journals or by presentations at scientific conferences as soon as possible and in a manner consistent with good scientific practices.
3. The Parties acknowledge that the following data or information does not constitute public information and that such data or information shall not be included in any publication or presentation by a Party under this Article without the other Party's prior written permission:
 - 1.
 - 2.
 - 3.

- (a) data furnished by the other Party in accordance with Article 9 (Transfer of Goods and Technical Data) of this Arrangement which is export-controlled or proprietary; or
- (b) information about an invention of the other Party before a patent application has been filed covering the same, or a decision not to file has been made.

ARTICLE 9 TRANSFER OF GOODS AND TECHNICAL DATA

1. The Parties are obligated to transfer only those goods and technical data (including software) necessary to fulfill their respective responsibilities under this Arrangement, in accordance with the following provisions:
 - (a) All activities under this Arrangement will be carried out in accordance with the Parties' national laws, rules, and regulations, including those laws, rules, and regulations pertaining to export control.
 - (b) The transfer of technical data with regard to interface, integration, and safety for the purposes of discharging the Parties' responsibilities under this Arrangement will normally be made without restriction, except as provided in paragraph (a) above. If design, manufacturing, processing data, and associated software, which is proprietary but not export controlled, is necessary for interface, integration, or safety purposes, the transfer shall be made and the data and associated software shall be appropriately marked.
 - (c) All transfers of goods and proprietary or export-controlled technical data are subject to the following provisions. In the event a Party or its Related Entity finds it necessary to transfer goods or to transfer proprietary or export-controlled technical data, for which protection is to be maintained, such goods will be specifically identified and such proprietary or export-controlled technical data will be marked. The identification of goods and the marking on proprietary or export-controlled technical data will indicate that the goods and proprietary or export-controlled technical data will be used by the receiving Party or its Related Entity only for the purposes of fulfilling the responsibilities of the receiving Party or its Related Entity under this Arrangement and that the identified goods and marked proprietary technical data or marked export-controlled technical data will not be disclosed or retransferred to any other entity without the prior written permission of the furnishing Party or its Related Entity. The receiving Party or its Related Entity will abide by the terms of the notice and protect any such identified goods and marked proprietary technical data or marked export-controlled technical data from unauthorized use and disclosure. The Parties to this Arrangement will cause their Related Entities to be bound by the provisions of this Article related to use, disclosure, and retransfer of identified goods and marked technical data through contractual mechanisms or equivalent measures.
2. All goods and marked proprietary or export-controlled technical data exchanged in the performance of this Arrangement will be used by the receiving Party and/or its Related

Entities exclusively for the purposes of this Arrangement. Upon completion of the activities under this Arrangement, the receiving Party, or its Related Entity will return or, at the request of the furnishing Party or its Related Entity, otherwise dispose of all goods and marked proprietary or export-controlled technical data provided under this Arrangement.

**ARTICLE 10
DATA POLICY**

The Parties will have access to and use of all data generated under this Arrangement. The scientific data generated under this Arrangement will be made available for public access as soon as practicable.

**ARTICLE 11
OWNERSHIP OF EQUIPMENT**

Equipment provided by NASA pursuant to this Arrangement will remain the property of NASA. Equipment provided by AEB through INPE pursuant to this Arrangement will remain the property of AEB. Each Party agrees to return any of the other Party's equipment in its possession to the other Party at the conclusion of the project.

**ARTICLE 12
AMENDMENTS**

This Arrangement may be amended through mutual written agreement by the Parties.

**ARTICLE 13
ENTRY INTO FORCE AND DURATION**

This Arrangement will enter into force upon signature and will remain in force for ten (10) years unless terminated by one Party providing written notice of its intent to terminate to the other Party at least sixty (60) days in advance.

DONE at Washington, DC, on the 30th day of June, 2015, in duplicate, in the English and Portuguese languages, both language versions being equally authentic.

FOR THE NATIONAL AERONAUTICS
AND SPACE ADMINISTRATION:



Charles F. Bolden, Jr.
Administrator

FOR THE BRAZILIAN SPACE
AGENCY:



José Raimundo Braga Coelho
President