

Memorando de Entendimento
Entre
Corporação Universitária para Pesquisa Atmosférica
e
Instituto Nacional de Pesquisas Espaciais
Para
Colaboração em Sistema Receptor de Navegação Global via Satélite

Este Memorando de Entendimento (MdE), efetivo a partir de 01 de julho de 2016 ("Data Efetiva"), é celebrado entre a Corporação Universitária para Pesquisa Atmosférica (UCAR), agindo em nome do Escritório do Programa COSMIC (Constelação do Sistema de Observação para Meteorologia, Ionosfera e Clima) (UCAR/COSMIC), cujo endereço é 3090 Green Center drive, Boulder, Colorado 80307, EUA e o Instituto Nacional de Pesquisas Espaciais (INPE), do Ministério da Ciência, Tecnologia, Inovação e Comunicação, cujo endereço é Av. dos Astronautas, 1758 - Jardim da Granja, São José dos Campos - SP, Brasil. Tanto a UCAR, como o INPE, podem ser doravante referidos individualmente como "Parte", ou coletivamente como "Partes".

Artigo 1 - Propósito/Objetivo:

Este Memorando de Entendimento entre a UCAR e o INPE estabelece a estrutura necessária para a colaboração em uma Estação Receptora do Sistema de Navegação Global via Satélite (GNSS), para apoiar a missão COSMIC 2 e a pesquisa na área de geodésia espacial.

Artigo 2 - Atividades:

As atividades a serem desenvolvidas no âmbito deste acordo estão sujeitas à disponibilidade de fundos e de recursos humanos em cada uma das organizações, bem como ao acordo mútuo de ambas as partes. As atividades relacionadas ao Sistema Receptor GNSS serão realizadas pela UCAR/COSMIC e pelo INPE utilizando um empenho justo como se segue:

1

- A. O INPE hospedará um Sistema Receptor GNSS fornecido pela UCAR/COSMIC. O equipamento irá coletar e transmitir dados de rastreamento de GNSS para UCAR/COSMIC em tempo real via internet, com o objetivo de apoiar o processamento do conhecimento para a missão COSMIC-2 e a pesquisa em geodésia espacial.
- B. O INPE irá fornecer um local operacional seguro, energia elétrica, um endereço IP estático, e conectividade com a internet para a transmissão dos dados.
- C. A UCAR/COSMIC irá fornecer equipamentos para um Sistema Receptor GNSS. Esse sistema inclui um receptor GNSS geodésico, antena "choke-ring" geodésica, computador, bateria reserva, cabos e acessórios relacionados ("Sistema"). A UCAR/COSMIC será responsável pelo transporte do Sistema de/para o INPE e também por todas as taxas aduaneiras envolvidas.
- D. A UCAR/COSMIC e o INPE irão apoiar a instalação do sistema e os testes necessários, bem como a manutenção operacional.
- E. A configuração do sistema será controlada pela UCAR/COSMIC em consulta com o INPE. Se surgirem preocupações operacionais (ex: problemas de rede), elas serão resolvidos através de acordo mútuo.
- F. Os dados de rastreamento GNSS deverão estar disponíveis a ambas as partes para uso não comercial. O compartilhamento de dados com terceiros que não estejam incluídos neste MdE ficará a critério da UCAR/COSMIC.

Artigo 3 - Tabela de Despesas:

Sujeitos ao artigo 2, os custos e trabalhos relacionados a este MdE serão distribuídos da seguinte forma:

 2

Custo por Item	Parte Responsável
Sistema Receptor GNSS, incluindo receptor GNSS geodésico, antena geodésica “choke-ring”, computador sem ventilação, bateria reserva, cabos, e acessórios	UCAR/COSMIC
Transporte do Sistema Receptor GNSS para/do Brasil e taxas aduaneiras envolvidas	UCAR/COSMIC
Local operacional seguro, energia elétrica, endereço IP estático, e conectividade com a internet	INPE
Instalação do Sistema GNSS e testes necessários	UCAR/COSMIC e INPE
Manutenção mínima do equipamento do Sistema, uma vez operacional	INPE
Atualizações do Sistema (ex: firmware) e reposição do hardware que apresentar falhas	UCAR/COSMIC

Se despesas adicionais surgirem, sua liquidação será decidida através de acordo mútuo. Caso haja necessidade de troca de fundos entre as duas organizações, a transferência e utilização desses fundos será definida em um acordo separado deste MdE.

Artigo 4 - Vigência do MdE, Extensões e Alterações:

Este MdE estará vigente por um período de cinco (5) anos a partir da Data Efetiva, salvo se terminado precocemente nos termos de rescisão do artigo 10 ("Termo"). Após o término deste MdE, o Sistema Receptor GNSS deverá ser devolvido à UCAR/COSMIC. Se as Partes, de comum acordo, entenderem que será de benefício mútuo estender a vigência deste MdE, as Partes deverão executar uma alteração que estenda a sua vigência, nos mesmos termos e condições aqui estabelecidos. Ambas as partes podem acordar entre si para alterar os termos deste MdE. Nenhuma alteração ou modificação deste MdE será válida a menos que feita por escrito e assinada por representantes devidamente autorizados da UCAR e do INPE. A

3


UCAR e o INPE reconhecem que assinaturas realizadas através de fax são vinculativas e constituem um método legal de executar este MdE.

Artigo 5 - Leis/Regulamentos:

Este MdE e o respectivo desempenho das Partes nos termos deste instrumento estarão sujeitos a todas as leis e regulamentos de controle de exportação aplicáveis nos Estados Unidos da América e no Brasil.

Artigo 6 - Responsabilidade de cada Parte:

Sujeito à disponibilidade de fundos e de recursos humanos, ambas as Partes concordam em usar esforços razoáveis para apoiar as atividades descritas no Artigo 2, sendo que cada uma das Partes será responsável pelo fornecimento de instalações e de outros apoios necessários que estejam mutuamente acordados para o devido suporte.

Artigo 7 - Pontos de Contato Técnicos e Contratuais:

Representante Técnico do Escritório do Programa COSMIC:	Representante Devidamente Autorizado da UCAR:
Dr. Jan Weiss Gerente, Centro de Análise de Dados e Arquivamento do COSMIC Telefone: +1 303 497 2605 E-mail: weissj@ucar.edu	Sra. Virginia L. Taberski Diretor de Contratos Telefone: +1 303 497 2132 E-mail: taberski@ucar.edu
Representante Técnico do INPE:	Representante Devidamente Autorizado do INPE:
Dr. Oswaldo Duarte Miranda Coordenação Geral de Ciências Espaciais e Atmosféricas Telefone: +55 12 3208 7191 E-mail: oswaldo.miranda@inpe.br	Dr. Leonel Fernando Perondi Diretor do INPE Telefone: +55 12 3208 6034 E-mail: diretor@inpe.br

Artigo 8 - Direitos de Publicação:

Ambas as Partes reconhecem que cada uma das Partes pode publicar trabalhos técnicos e científicos, apresentar resultados em conferências e workshops, participar de simpósios, dar seminários, ou realizar atividade semelhante, em relação a assuntos pertinentes a este MdE. Quando uma das Partes preparar uma publicação relacionada a assuntos no âmbito deste MdE, a inclusão de co-autores de ambas as Partes é considerada como apropriada. A cada Parte deve ser permitido trinta (30) dias para analisar quaisquer documentos relacionados com o assunto deste MdE antes da submissão para publicação, para que possa ser removida qualquer informação proprietária e/ou confidencial ou então referências inadequadas.

Artigo 9 - Outros acordos:

No caso de quaisquer entendimentos adicionais, tais como, mas não limitado a, aqueles relacionados ao licenciamento de tecnologia para fins de pesquisa ou de comercialização, ou a necessidade de se fazer um acordo separado para a transferência de fundos, as partes de boa fé negociarão para traduzir a uma escrita mutuamente aceitável as obrigações e os termos associados a tais entendimentos.

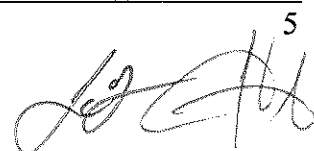
Artigo 10 - Rescisão:

Tanto a UCAR, quanto o INPE, poderão encerrar o presente MdE a qualquer momento durante o prazo indicado neste documento sem justa causa, desde que a Parte que está encerrando o Acordo dê à outra Parte 30 (trinta) dias de aviso prévio por escrito.

Artigo 11 - Força Maior:

O termo "força maior" engloba guerras, distúrbios civis, desastres naturais, greves e outros eventos semelhantes, incluindo falha de longo prazo de energia elétrica e de conexão com a internet, não causadas por intenção e fora do controle de qualquer uma das Partes.

Se uma das partes não puder cumprir tarefas especificadas neste Acordo por motivo de "força maior", o trabalho relacionado a este Acordo deverá ser suspenso no período. Neste caso,

5

ambas as Partes devem arcar com suas próprias perdas e se comunicar uma com a outra para minimizar a extensão das mesmas.

Partes

Em testemunho de que, as Partes concordaram com os termos e condições citadas neste MdE, como evidenciado abaixo pelas assinaturas dos representantes devidamente autorizados de cada Parte.

Escritório do Programa COSMIC
Corporação Universitária para Pesquisa
Atmosférica



William Schreiner, Diretor

Data July 22, 2016

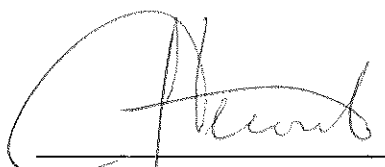
Corporação Universitária para Pesquisa
Atmosférica



Virginia L. Taberski, Diretora de Contratos

Data AUGUST 15, 2016

Instituto Nacional de Pesquisas Espaciais



Leonel Fernando Perondi, Diretor

Data 24/06/16

Memorandum of Understanding
Between
University Corporation for Atmospheric Research
and
National Institute for Space Research
on
Global Navigation Satellite System Receiver Collaboration

This Memorandum of Understanding (MOU), effective as of July 1, 2016 ("Effective Date"), is entered into by and between the University Corporation for Atmospheric Research (UCAR) acting on behalf of the COSMIC Program Office (Constellation Observing System for Meteorology, Ionosphere and Climate) (UCAR/COSMIC), having a mailing address of 3090 Center Green Drive, Boulder, Colorado 80307, USA and National Institute for Space Research (INPE), from the Ministry of Science, Technology, Innovation and Communication, having a mailing address of Av. dos Astronautas, 1758 – Jardim da Granja, São José dos Campos, SP, Brazil. UCAR and INPE may be alternately referred to herein as party, individually, or parties, collectively.

Article 1 - Purpose/Objective:

This MOU between UCAR and INPE provides a framework for collaboration on a Global Navigation Satellite System (GNSS) receiver station supporting the COSMIC-2 mission and space geodesy research.

Article 2 - Activities:

Subject to the availability of funds and personnel at each organization, and the mutual agreement of both parties, activities related to a GNSS receiver system will be undertaken by UCAR/COSMIC and INPE using reasonable efforts as follows:

- A. INPE will host a GNSS receiver system provided by UCAR/COSMIC. The equipment will collect and transmit GNSS tracking data to UCAR/COSMIC in real-time via the Internet to support science processing for the COSMIC-2 mission and research in space geodesy.
- B. INPE will provide a secure operating location, power, a static IP address, and Internet connectivity for data transmission.
- C. UCAR/COSMIC will provide equipment for a GNSS receiver system. This system includes a geodetic GNSS receiver, geodetic choke-ring antenna, computer, battery backup, cables, and related accessories ("System"). UCAR/COSMIC will be responsible for transporting the System to/from INPE and any necessary customs fees.
- D. UCAR/COSMIC and INPE will support System installation and testing as well as operational maintenance.
- E. System configuration will be controlled by UCAR/COSMIC in consultation with INPE. If operational concerns arise (e.g. networking issues) they will be settled by mutual agreement.
- F. The GNSS tracking data shall be available to both parties for non-commercial use. Sharing data with external parties not included in this MOU shall be at the discretion of UCAR/COSMIC.

Article 3 - Schedule of Expenses:

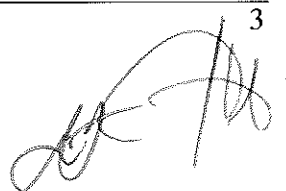
Subject to Article 2, costs and work related to this MOU shall be distributed as follows:

Cost Item	Responsible Party
GNSS receiver system, including geodetic GNSS receiver, geodetic choke-ring antenna, fanless computer, battery backup, cables, and accessories	UCAR/COSMIC
Transportation of GNSS receiver system to/from Brazil and custom fees	UCAR/COSMIC
Provision of secure operating location, power, static IP address, and Internet connectivity	INPE
GNSS receiver system installation support and testing	UCAR/COSMIC and INPE
Minor maintenance of the System equipment once operational	INPE
System updates (e.g. firmware) and replacement of failed hardware	UCAR/COSMIC

Should additional expenses arise their settlement will be arranged by mutual agreement. Should there be an exchange of funds between the two organizations, the transfer and use of such funds shall be defined in an agreement separate from this MOU.

Article 4 - Term of MOU, Extensions, and Amendments:

The Term of this MOU shall be for a period of five (5) years from the Effective Date, unless earlier terminated under the termination provisions of Article 10 ("Term"). Upon termination of this MOU, the GNSS receiver system shall be returned to UCAR/COSMIC. If the parties mutually agree that it would be to the benefit of the parties to extend the Term of this MOU, the

3

parties shall execute an amendment, which extends the Term under the same terms and conditions as recited herein. Both parties may mutually agree to amend the terms of this MOU. No amendment or modification of this MOU shall be valid unless made in writing and signed by duly authorized representatives of UCAR and INPE. UCAR and INPE further acknowledge that facsimile signatures are fully binding and constitute a legal method of executing this MOU.

Article 5 - Laws/Regulations:

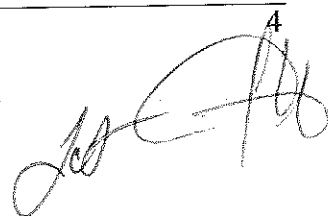
This MOU and the respective performance of the parties hereunder shall be subject to all applicable export control laws and regulations of the United States of America and Brazil.

Article 6 - Responsibility of Each Party:

Subject to the availability of funds and personnel, both parties agree to use reasonable efforts to support the activities outlined in Article 2, and each party shall be responsible for providing facilities and other mutually agreed upon support.

Article 7 - Technical and Contractual Points of Contact:

COSMIC Program Office Technical Representative:	UCAR Duly Authorized Representative:
Dr. Jan Weiss Manager, COSMIC Data Analysis and Archive Center Phone: +1 303 497 2605 E-mail: weissj@ucar.edu	Ms. Virginia L. Taberski Contracts Director Phone: +1 303 497 2132 E-mail: taberski@ucar.edu
INPE Technical Representative:	INPE Duly Authorized Representative:
Dr. Oswaldo Duarte Miranda General Coordinator of the Space and Atmospheric Science Phone: +55 12 3208 7191 E-mail: oswaldo.miranda@inpe.br	Dr. Leonel Fernando Perondi INPE's Director Phone: +55 12 3208 6034 E-mail: diretor@inpe.br



Article 8 - Publication Rights:

Both parties acknowledge that each party may publish technical and scientific papers, present results at conferences and workshops, participate in symposia, give seminars, or the like regarding the subject matter of this MOU. When either party prepares a publication related to the subject matter of this MOU, the inclusion of co-authors from both parties is encouraged as appropriate. Each party shall be permitted thirty (30) days to review any papers related to the subject matter of this MOU prior to submission for publication to remove any proprietary and/or confidential information or inappropriate references.

Article 9 - Other Agreements:

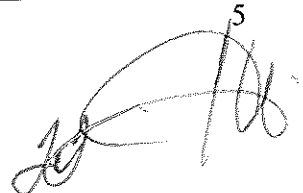
In the event any additional understandings such as, but not limited to, those related to the licensing of technology for research or commercialization purposes, or the need to enter into a separate agreement for the transfer of funds, the parties shall in good faith enter into negotiations to reduce to a mutually agreeable writing the obligations and terms associated with such understandings.

Article 10 - Termination:

Either UCAR or INPE may terminate this MOU at any time during the term stated herein without cause provided the terminating party gives the terminated party 30-days written notice.

Article 11 - Force Majeure:

The term "force majeure" means war, civil disturbances, natural disasters, strikes, and other similar events including long-term power and Internet connection failure not caused by or within the control of either party.

A handwritten signature in dark ink, followed by the number 5, is located at the bottom right of the page.

If either party fails to accomplish tasks specified in this agreement because of "force majeure", related work in this period shall be suspended. In this case both parties shall bear their own losses and communicate with each other to minimize the extent of losses.

Parties

In WITNESS WHEREOF, the parties hereto have agreed to the terms and conditions recited in this MOU as evidenced below by the signatures of each party's duly authorized representative.

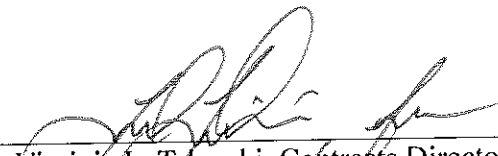
COSMIC Program Office
University Corporation for Atmospheric
Research



William Schreiner, Director

Date *July 22, 2016*

University Cooperation for Atmospheric
Research

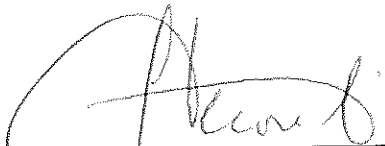


Virginia L. Taberski, Contracts Director

Date

August 15, 2016

National Institute for Space Research



Leonel Fernando Perondi, Director

Date *June 24, 2016*

AMENDMENT NO. 1

**Memorandum of Understanding
Between
University Corporation for Atmospheric Research
And
National Institute for Space Research
On
Global Navigation Satellite System Receiver Collaboration**

This amendment is made to the subject Memorandum of Understanding dated July 1, 2016, entered into by and between the University Corporation for Atmospheric Research ("UCAR") acting on behalf of the COSMIC Program Office (Constellation Observing System for Meteorology, Ionosphere and Climate) ("UCAR/COSMIC"), having a mailing address of 3090 Center Green Drive, Boulder, Colorado 80307, USA and the National Institute for Space Research ("INPE"), from the Ministry of Science, Technology, Innovation and Communication, having a mailing address of Av. dos Astronautas, 1758 - Jardim da Granja, São José dos Campos - SP, Brazil.

The purpose of this Amendment is as follows: Extend the Term of the Memorandum of Understanding ("MOU")

In accordance with Article 4, "Term of MOU, Extensions, and Amendments," INPE and UCAR agree to change this MOU, within the general scope of work, and to continue to work under the MOU as modified below (**revisions indicated in bold lettering**):

1. Article 4 – Term of MOU, Extensions, and Amendments:

The Term of this MOU shall be **July 1, 2016 to June 30, 2026**, unless earlier terminated under the termination provisions of Article 10 ("Term"). Upon termination of this MOU, the GNSS receiver system shall be returned to UCAR/COSMIC. If the parties mutually agree that it would be to the benefit of the parties to extend the Term of this MOU, the parties shall execute an amendment, which extends the Term under the same terms and conditions as recited herein. Both parties may mutually agree to amend the terms of this MOU. No amendment or modification of this MOU shall be valid unless made in writing and signed by duly authorized representatives of UCAR and INPE. UCAR and INPE further acknowledge that facsimile signatures are fully binding and constitute a legal method of executing this MOU.

Except as expressly provided in this Amendment, all provisions of said MOU remain unchanged and in full force and effect.

In WITNESS WHEREOF, the parties hereto have agreed to the terms and conditions recited in this MOU as evidenced below by the signatures of each party's duly authorized representative.

National Institute for Space Research

Signature Mônica E. R. Oliveira
Name MÔNICA ELIZABETH ROCHA DE OLIVEIRA
Title DEPUTY DIRECTOR
Date 30 de junho de 2021

University Corporation for Atmospheric Research

DocuSigned by:
Signature Antonio Busalacchi
A36D991FFBA14C1...
Name Antonio J. Busalacchi
Title President
Date 9/5/2021

UCAR Community Programs

DocuSigned by:
Signature Bill Kuo
B6BB4394E4EA4BB...
Name Ying-Hwa (Bill) Kuo
Title UCP Director
Date 9/4/2021

UCAR Proposal No. 2016-0774

AMENDMENT NO. 2

Memorandum of Understanding Between University Corporation for Atmospheric Research And National Institute for Space Research On Global Navigation Satellite System Receiver Collaboration

This amendment is made to the subject Memorandum of Understanding dated July 1, 2016, entered into by and between the University Corporation for Atmospheric Research ("UCAR") acting on behalf of the COSMIC Program Office (Constellation Observing System for Meteorology, Ionosphere and Climate) ("UCAR/COSMIC"), having a mailing address of 3090 Center Green Drive, Boulder, Colorado 80307, USA and the National Institute for Space Research ("INPE"), from the Ministry of Science, Technology, Innovation and Communication, having a mailing address of Av. dos Astronautas, 1758 - Jardim da Granja, São José dos Campos - SP, Brazil.

The purpose of this Amendment is as follows: Extend the Term of the Memorandum of Understanding ("MOU")

In accordance with Article 4, "Term of MOU, Extensions, and Amendments," INPE and UCAR agree to change this MOU, within the general scope of work, and to continue to work under the MOU as modified below **(revisions indicated in bold lettering)**:

1. Article 4 – Term of MOU, Extensions, and Amendments:

The Term of this MOU shall be extended for an additional five-years ending **on June 30, 2031**, unless earlier terminated under the termination provisions of Article 10 ("Term"). Upon termination of this MOU, the GNSS receiver system shall be returned to UCAR/COSMIC. If the parties mutually agree that it would be to the benefit of the parties to extend the Term of this MOU, the parties shall execute an amendment, which extends the Term under the same terms and conditions as recited herein. Both parties may mutually agree to amend the terms of this MOU. No amendment or modification of this MOU shall be valid unless made in writing and signed by duly authorized representatives of UCAR and INPE. UCAR and INPE further acknowledge that facsimile signatures are fully binding and constitute a legal method of executing this MOU.

Except as expressly provided in this Amendment, all provisions of said MOU remain unchanged and in full force and effect.

In WITNESS WHEREOF, the parties hereto have agreed to the terms and conditions recited in this MOU as evidenced below by the signatures of each party's duly authorized representative.

National Institute for Space Research

Signature _____

Name Antonio Miguel Vieira Monteiro

Title Director

Date _____

University Corporation for Atmospheric Research

Signed by:
Signature Eric Barron
4F1FB9916EF84F9...

Name Eric Barron

Title President

Date 7/31/2026

UCAR Community Programs

Signed by:

Signature

Christine Wiedinmyer

131400D968FE44A...

Name

Christine Wiedinmyer

Title

UCP Director

Date

7/30/2026