

NONREIMBURSABLE INTERAGENCY AGREEMENT  
BETWEEN  
THE NATIONAL AERONAUTICS AND SPACE ADMINISTRATION (NASA)  
  
AND UNITED STATES DEPARTMENT OF COMMERCE  
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION (NOAA)  
  
FOR SPACE RADIATION ENVIRONMENT SUPPORT TO NASA

ARTICLE 1. AUTHORITY AND PARTIES

The National Aeronautics and Space Administration, located at 300 E Street SW, Washington, DC 20546 (hereinafter referred to as "NASA") enters into this Interagency Agreement (hereinafter referred to as "IAA") in accordance with 51 U.S.C. § 20113(e). UNITED STATES DEPARTMENT OF COMMERCE, NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION, located at 325 Broadway, Boulder, CO 80305-3337 (hereinafter referred to as "NOAA Space Weather Prediction Center"), enters into this IAA in accordance with Space Act, Other Transactions Authority (OTA), 51 U.S.C. § 20113(e). NASA and NOAA Space Weather Prediction Center may be individually referred to as a "Party" and collectively referred to as the "Parties." NOAA possesses programmatic authority pursuant to 15 U.S.C. § 1532.

ARTICLE 2. PURPOSE

The purpose of this IAA is to support interactions between NASA and NOAA to facilitate space radiation environment support to NASA for the conduct of all human space flight missions and development of advanced capabilities for operational forecasting and prediction of the space radiation environment to protect astronauts during space flight missions.

NASA conducts human space flight-related activities under its Space Operations Mission Directorate (SOMD). These activities include the International Space Station (ISS), Artemis Lunar Missions and Lunar Surface Operations, Commercial Crew Flights, and future Mars Exploration Missions. During human space flight missions, astronauts are exposed to ionizing radiation from the space environment. Under some conditions, the space radiation exposure can reach very-high, mission-impacting levels, especially for missions beyond low-Earth orbit. Space radiation environment support is necessary to provide warnings of enhanced radiation levels so that appropriate actions may be taken to protect astronauts. Decisions for mission changes to mitigate space environment radiation exposure are made by the Mission Control Center-Houston (MCC-H) with operational support from the Space Radiation Analysis Group (SRAG) both located at the NASA Johnson Space Center (JSC). SRAG maintains a real-time analytical capability to determine the exposure to astronauts from space environment radiation sources, including solar particle events.

NOAA Space Weather Prediction Center (SWPC) is the Nation's official source of spaceweather alerts and warnings, exclusive of the responsibilities of the Department of Defense (DoD), United States Air Force 557 Weather Wing. SWPC is a National Center for

Environmental Prediction within the National Weather Service. SWPC continually monitors and forecasts space weather conditions, provides accurate and reliable solar status information, and supports programs where space weather could endanger operations. SWPC synthesizes and disseminates information about past, present, and future space environment conditions to assist users in reducing adverse effects of space weather disturbances on human activities, including human space flight. NOAA SWPC has primary responsibility for providing space weather impact-based decision support services (IDSS) to NASA through the SRAG.

This IAA is in accordance with the National Space Weather Strategy and Action Plan (March 2019) released by the National Science and Technology Council, under the Office of Science and Technology Policy in the Executive Office of the President. The objectives of this strategy and action plan are to 1) Enhance the Protection of National Security, Homeland Security, and Commercial Assets and Operations against the Effects of Space Weather; 2) Develop and Disseminate Accurate and Timely Space Weather Characterization and Forecasts; and 3) Establish Plans and Procedures for Responding to and Recovering from Space Weather Events. Efforts to achieve these objectives and link outcomes among the three objectives will help safeguard national security assets and critical infrastructure, crewed and uncrewed space exploration, and foster growth in U.S. commercial space activities. The philosophy embodied in the strategy and action plan applies to the human space flight support described in this IAA between NASA and NOAA.

### ARTICLE 3. RESPONSIBILITIES

During SOMD human space flight operations, the operational implementation is between the NASA JSC SRAG and the NOAA SWPC for space weather IDSS. To the extent possible, operational communications will use existing or planned standard communication systems with standard interfaces including, but not limited to, the internet, electronic mail, and commercial voice. SRAG and SWPC will coordinate additional communication methods if existing or planned communication systems do not meet SRAG's requirements. SRAG and SWPC will negotiate solutions to address requirements beyond routinely available information. NASA SOMD and JSC SRAG understand that the availability of space weather data used, and hence the availability and quality of this information, will vary subject to NOAA SWPC observational constraints and current predictive capabilities.

NASA will use reasonable efforts to:

1. Provide SWPC with requirements for space weather information;
2. Provide SWPC with necessary alert and warning thresholds, mission support requirements, flight manifests, and other coordination information;
3. Serve as the interface between SWPC and the NASA flight control team in the MCC-H and provide decision assistance on space environment radiation conditions to the Flight Director and Flight Surgeon;
4. Directly interface with the SWPC for mission support, when necessary;
5. Working with SWPC, collaborate with other NASA entities (e.g., Community Coordinated Modeling Center (CCMC) and Moon 2 Mars (M2M) Office based at Goddard Space Flight Center (GSFC)) to advance capabilities;

6. As necessary, arrange technical interchange to facilitate information sharing and familiarization with the parties respective operations and organizations;
7. Work with SWPC to develop space weather training and educational materials;
8. Provide SWPC with access, as appropriate, to any space weather-related measurements or impacts to support the validation and improvement of SWPC data, models, and forecast products.

NOAA SWPC will use reasonable efforts to:

1. Provide support concerning space environment conditions to SRAG for launch, flight operations, de-orbit considerations, and postflight analysis;
2. Provide standard, routinely available space weather forecast products to SRAG in support of ISS missions;
3. Provide SWPC IDSS including, but not limited to, observations, briefings, 24-hour forecasts for significant space weather activity, and applicable watches, warnings and alerts for major solar flares, proton events, and geomagnetic storms in support of Artemis Lunar Missions;
4. Provide special SWPC IDSS, as required and arranged, for scientific payloads/experiments on NASA SOMD missions;
5. Provide access, as appropriate, to all necessary observations from ground-based observatories, magnetometer networks, and space-based sensors;
6. Directly interface with the SRAG for mission support, when necessary;
7. Coordinate, as necessary, (e.g., DoD sources) to obtain additional space weather information;
8. Arrange, as necessary, for backup support to ensure continuous support during SOMD missions;
9. Working with SRAG, collaborate with other NASA entities (e.g., CCMC and M2M Office based at GSFC) to advance capabilities;
10. As necessary, arrange technical interchange to facilitate information sharing and familiarization with the parties respective operations and organizations;
11. Work with SRAG to develop space weather training and educational materials.

#### ARTICLE 4. SCHEDULE AND MILESTONES

The planned major milestones for the activities defined in the "Responsibilities" Article are as follows:

ISS Missions, including Commercial Crew	Beginning 2021
Artemis I	2021
Artemis II, Crewed Mission	2023
Artemis, Lunar Surface Mission	2024
Future Artemis Missions	Beginning 2025

## ARTICLE 5. FINANCIAL OBLIGATIONS

There will be no transfer of funds between the Parties under this Agreement and each Party will fund its own participation. All activities under or pursuant to this Agreement are subject to the availability of funds, and no provision of this Agreement shall be interpreted to require obligation or payment of funds in violation of the Anti-Deficiency Act (31 U.S.C. § 1341).

## ARTICLE 6. PRIORITY OF USE

Any schedule or milestone in this IAA is estimated based upon the Parties' current understanding of the projected availability of its respective goods, services, facilities, or equipment. In the event that either Party's projected availability changes, NASA or NOAA SWPC, respectively, shall be given reasonable notice of that change, so that the schedule and milestones may be adjusted accordingly. The Parties agree that NASA's and NOAA Space Weather Prediction Center's use of its own goods, services, facilities, or equipment shall have priority over the use planned in this IAA.

## ARTICLE 7. LIABILITY AND RISK OF LOSS

Each Party agrees to assume liability for its own risks arising from or related to activities conducted under this IAA.

## ARTICLE 8. INTELLECTUAL PROPERTY RIGHTS - DATA RIGHTS

NASA and NOAA SWPC agree that the information and data exchanged in furtherance of the activities under this IAA will be exchanged without use and disclosure restrictions unless required by national security regulations (e.g., classified information) or as otherwise provided in this IAA or agreed to by NASA and other Federal Agency for specifically identified information or data (e.g., information or data specifically marked with a restrictive notice).

## ARTICLE 9. INTELLECTUAL PROPERTY RIGHTS - INVENTION AND PATENT RIGHTS

Unless otherwise agreed upon by NASA and NOAA SWPC, custody and administration of inventions made (conceived or first actually reduced to practice) under this IAA will remain with the respective inventing Party. In the event an invention is made jointly by employees of the Parties (including by employees of an Party's contractors or subcontractors for which the U.S. Government has ownership), the Parties will consult and agree as to future actions toward establishment of patent protection for the invention.

## ARTICLE 10. RELEASE OF GENERAL INFORMATION TO THE PUBLIC AND MEDIA

NASA or NOAA SWPC may, consistent with Federal law and this Agreement, release general information regarding its own participation in this IAA as desired. Insofar as participation of the other Party in this IAA is included in a public release, NASA and NOAA SWPC will seek to consult with each other prior to

any such release, consistent with the Parties' respective policies.

Pursuant to Section 841(d) of the NASA Transition Authorization Act of 2017, Public Law 115-10 (the "NTAA"), NASA is obligated to publicly disclose copies of all agreements conducted pursuant to NASA's 51 U.S.C. §20113(e) authority in a searchable format on the NASA website within 60 days after the agreement is signed by the Parties. The Parties acknowledge that, if this IAA is entered into pursuant to NASA's 51 U.S.C. §20113(e) authority, this IAA will be disclosed, without redaction, in accordance with the NTAA.

#### ARTICLE 11. TERM OF AGREEMENT

This IAA becomes effective upon the date of the last signature below ("Effective Date") and shall remain in effect until the completion of all obligations of both Parties hereto, or five years from the effective date, whichever comes first.

#### ARTICLE 12. RIGHT TO TERMINATE

Either Party may unilaterally terminate this Agreement by providing thirty (30) calendar days written notice to the other Party.

#### ARTICLE 13. CONTINUING OBLIGATIONS

The rights and obligations of the Parties that, by their nature, would continue beyond the expiration or termination of this Agreement, e.g., "Liability and Risk of Loss" and "Intellectual Property Rights" and related clauses shall survive such expiration or termination of this Agreement.

#### ARTICLE 14. POINTS OF CONTACT

The following personnel are designated as the Points of Contact between the Parties in the performance of this Agreement.

##### Management Points of Contact

##### NASA

Stephen Davison  
Program Executive  
300 E Street SW  
Washington, DC 20546  
Phone: 202-316-9813  
stephen.c.davison@nasa.gov

##### UNITED STATES DEPARTMENT OF COMMERCE

##### NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

William Murtagh  
Program Coordinator  
325 Broadway  
Boulder, CO 80305-3337  
Phone: 303-497-7492  
william.murtagh@noaa.gov

ARTICLE 15. DISPUTE RESOLUTION

All disputes concerning questions of fact or law arising under this IAA shall be referred by the claimant in writing to the appropriate person identified in this IAA as the "Points of Contact." The persons identified as the "Points of Contact" for NASA and NOAA Space Weather Prediction Center will consult and attempt to resolve all issues arising from the implementation of this IAA. If they are unable to come to agreement on any issue, the dispute will be referred to the signatories to this IAA, or their designees, for joint resolution after the Parties have separately documented in writing clear reasons for the dispute. As applicable, disputes will be resolved pursuant to The Department of the Treasury's Intragovernmental Transaction Guide (Treasury Financial Manual, Vol. 1, Chapter 2, Part 4700, Appendix 10 (hereinafter, the "Intragovernmental Transaction Guide")).

ARTICLE 16. MODIFICATIONS

Any modification to this IAA shall be executed, in writing, and signed by an authorized representative of NASA and the NOAA Space Weather Prediction Center.

ARTICLE 17. APPLICABLE LAW

U.S. Federal law governs this IAA for all purposes, including, but not limited to, determining the validity of the IAA, the meaning of its provisions, and the rights, obligations and remedies of the Parties.

ARTICLE 18. LOAN OF GOVERNMENT PROPERTY

The parties shall enter into a NASA Form 893, Loan of NASA Equipment, for NASA equipment loaned to Partner.

ARTICLE 19. SIGNATORY AUTHORITY

Approved and authorized on behalf of each Party by:

NATIONAL AERONAUTICS AND SPACE  
ADMINISTRATION

UNITED STATES DEPARTMENT OF  
COMMERCE  
NATIONAL OCEANIC AND  
ATMOSPHERIC ADMINISTRATION

**KATHRYN**  
**BY: LUEDERS**  
Kathryn L. Lueders  
Associate Administrator  
Space Operations Mission Directorate

Digitally signed by  
KATHRYN LUEDERS  
Date: 2022.01.18 11:22:49  
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**UCCELLINI, LOUIS**  
**BY: 43**  
Louis W. Uccellini  
Assistant Administrator for Weather Services  
and Director, National Weather Service

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UCCELLINI, LOUIS, WILLIAM, 136  
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Date: 2021.11.23 14:49:19 -05'00'

DATE: 01/18/2022

DATE: 11/23/2021