14th NASA Space Exploration and Space Weather Workshop

· *Navigating the Space Between Worlds* ·

June 22–26, 2026 · NASA Goddard Space Flight Center, Greenbelt, MD

Speakers marked (pending) are being confirmed. Final program subject to change.

Day 1 · Monday, June 22, 2026

Space Weather Enabling Exploration

Session 1.1 — The Current Landscape: Agency Updates & Major Milestones

Chair: Gina DiBraccio

This opening session sets the stage with programmatic, high-level updates on current architectures, recent mission outcomes, and strategic goals. It provides a comprehensive update on the Moon to Mars architecture and the Artemis program, highlighting recent successes (such as Artemis II science outcomes) and outlining the roadmap ahead.

Time	Topic	Speaker
8:00	**Registration**	
8:30	Convene & Logistics	Teresa Nieves-Chinchilla, M2M SWAO Director, Heliophysics Science Division, NASA/GSFC
8:35	Session Introduction	Gina DiBraccio, Acting Director, Solar System Exploration Division and Deputy Director, Heliophysics Science Division, NASA/GSFC
8:40	GSFC Welcome	10 mins. Jamie Dunn, Center Director, NASA/GSFC _____ 10 mins. Stephanie Getty, Acting Director, Sciences and Exploration Directorate, NASA/GSFC
9:00	Opening Remarks	Nicky Fox, Associate Administrator, Science Mission Directorate (SMD)
9:25	Human Exploration Architecture	Jake Bleacher, Chief Exploration Scientist, Human Spaceflight Mission Directorate (HSMD)

Time	Topic	Speaker
9:45	Space Weather Enabling Exploration	Jamie Favors, Director, NASA's Space Weather Program, Heliophysics Division, NASA/HQ
10:00	Daily Space Weather Tag-up	Carina Alden, M2M SWAO Analyst
10:15	**BREAK**	

Session 1.2 — Defining the Gaps: Operational & Agency Needs for Deep Space

Chair: Jamie Favors

As human exploration, along with technological infrastructure, extends beyond Low Earth Orbit (LEO), operational requirements for space weather forecasting and radiation mitigation become more stringent. This session focuses on identifying current gaps in predictive capabilities, instrumentation, and real-time support.

Time	Topic	Speaker
11:00	Session Introduction	Jamie Favors, Director, NASA's Space Weather Program, Heliophysics Division, NASA/HQ
11:10	Enabling Scientific Discovery Throughout Exploration	Debra Needham, Program Scientist, Exploration Science Strategy Integration Office (ESSIO), SMD, NASA/HQ
11:20	Science Strategy for the Robotic and Human Return to the Moon	Brad Bailey, Assistant Deputy Associate Administrator for Exploration, SMD, NASA/HQ
11:30	M2M Architecture Decomposition	Sabrina Savage, Program Scientist, Space Weather Program, Heliophysics Division, NASA/HQ
11:45	Panel Discussion	Moderator: Jamie Favors Panel Participants: Gina DiBraccio, Brad Bailey, Debra Needham, Sabrina Savage
12:15	**LUNCH**	

Session 1.3 — Cross-Agency Perspectives & Future Collaborative Solutions

Chair: Teresa Nieves-Chinchilla

Perspectives from different NASA directorates and agencies (NASA, NOAA, ESA, JAXA) on unifying efforts for sustained lunar and Martian exploration—building a resilient and interoperable space weather network. Topics include aligning global space weather operations with M2M requirements and integrating international/commercial partnerships into NASA's exploration architecture.

Time	Topic	Speaker
13:30	Session Introduction Moon to Mars Space Weather Analysis Office at NASA/GSFC	Teresa Nieves-Chinchilla, M2M SWAO Director, Heliophysics Science Division, NASA/GSFC
13:45	Space Radiation Analysis Group at NASA/JSC	Eddie Semones, SRAG Lead, NASA/JSC
14:00	Space Weather Prediction Center at NOAA	Clinton Wallace *(pending)*, Director, Space Weather Prediction Center, NOAA
14:15	ESA Space Weather Operations Center Updates	Juha-Pekka Luntama, Space Weather Office Head, ESA
14:30	NICT Space Weather Operations Updates *(virtual)*	Dr. Tsugawa, Associate Director General of the Radio Research Institute at the National Institute for Communications and Information Technology (NICT, Japan)
14:45	2nd Weather Squadron	Jennifer Benson (pending)
15:00	**BREAK**	

Session 1.4—Exploration Enabling Science—Bridging the Gap

Chair: Xia Cai

With the successful integration of science objectives within Artemis II mission operations through a console position within mission control, the connection between science and exploration is stronger than ever. This session explores the two-way street , highlighting how operational experiences inform future research and discussing the new scientific opportunities that will emerge from upcoming exploration activities.

Time	Topic	Speaker
15:30	Session Introduction Overview of the Space Weather Implementation Office	Xia Cai, Chief Scientist, Space Weather Program Implementation Office, NASA/LaRC
15:45	Artemis II Outcomes	Kelsey Young, Artemis II Lunar Observation Lead, Solar System Exploration Division, NASA/GSFC
16:00	Artemis III Science Opportunities	Barbara Cohen, Artemis III Project Scientist, Solar System Exploration Division, NASA/GSFC
16:15	Artemis IV & V Science Opportunities	Noah Petro, Artemis IV and V Project Scientist, Solar System Exploration Division, NASA/GSFC
16:30	Opportunities For The Heliophysics System Observatories To Support Artemis Science	Alex Glocer, Researcher, Heliophysics Science Division, NASA/GSFC
16:45	Panel Discussion	Moderator: Xia Cai Panel Participants: Kelsey Young, Barbara Cohen, Noah Petro, Alex Glocer
17:15	**ADJOURN**	

Day 2 · Tuesday, June 23, 2026

Safeguarding Lunar Infrastructure: Science, Observations and Predictive Capabilities

Session 2.1 — Lunar Infrastructure, Science, and Exploration Activities

Chairs: Michelangelo Romano, Antonio Niemela Celeda

As NASA and its partners transition from brief lunar visits to establishing a sustained habitat, understanding the interaction between space weather, the lunar environment, and the infrastructure supporting exploration is critical. The session reviews known and unknown science as well as the impacts of space radiation and plasma on spacecraft hardware, spacesuits, and surface infrastructure—focusing on the operational realities, scientific objectives, and environmental vulnerabilities of sustained human and robotic presence on the lunar surface and in cislunar space.

Time	Topic	Speaker
8:30	Session Introduction	Michelangelo Romano, M2M SWAO Deputy Director, Heliophysics Science Division, NASA/GSFC
8:35	Lunar Space Environment Overview	Tim Stubbs, Researcher, Solar System Exploration Division, NASA/GSFC
9:00	NESC Activities Supporting Lunar Science and Exploration	Joe Minow, Technical Fellow, Space Environments, NASA Engineering and Safety Center
9:20	Design Specification for Natural Environments (DSNE): Defining the lunar environment in support of NASA's human exploration systems	Rhianna Moore, Associate Scientist, Natural Environments Branch, NASA/MSFC/USRA
9:40	Artemis & Moon Base Natural Environments Discipline	Emily Willis, M2M Natural Environments Lead (M2M SE&I), NASA/MSFC
10:00	Daily Space Weather Tag-up	Mattie Anastopulos, M2M SWAO Analyst
10:15	**POSTER SESSION / BREAK**	
11:00	Lunar Meteoroid Ejecta Environment	Anthony DeStefano, Space Environments Engineer, NASA/MSFC
11:20	Space Radiation Risk Assessment Overview *(virtual)*	Dave Francisco, Technical Fellow for Health, Medical & Performance Standards, Office of the Chief Health and Medical Officer (OCHMO), NASA/JSC

Time	Topic	Speaker
11:40	Radiation Modeling for Artemis Missions	Luke Stegeman, Research Engineer, SRAG, NASA/JSC, Leidos
12:00	LunaNet Overview	Cheryl Gramling, Cislunar Strategist and PNT Lead, Space Communications and Navigation, NASA/HQ
12:20	**LUNCH**	

Session 2.2 — Observations and Modeling Capabilities for Lunar Exploration

Chairs: Li-Jen Chen, Elizabeth Juelfs

Operators will require robust, real-time observational data and highly accurate predictive models to safely execute exploration activities. This session covers the current state and future needs of (cis)lunar space weather monitoring — new observational assets, leveraging existing missions for lunar exploration, and the latest modeling efforts to advance operational forecasting tools. Topics include addressing "blind spots" in coverage and the Research-to-Operations-to-Research (R2O2R) pipeline.

Time	Topic	Speaker
13:30	CLPS Overview	Ryan Watkins, Program Scientist, ESSIO, NASA/HQ
13:50	THEMIS-ARTEMIS Overview	David Sibeck, THEMIS-ARTEMIS Mission Scientist, Heliophysics Science Division, NASA/GSFC
14:10	LRO Overview	Maria Banks, Planetary Scientist, Solar System Exploration Division, NASA/GSFC
14:30	DUSTER *(virtual)*	Xu Wang, Research Scientist, LASP, CU Boulder
14:50	**POSTER SESSION / BREAK**	
15:20	BlueGhost MAG	Jared Espley, Researcher, Solar System Exploration Division, NASA/GSFC
15:40	Plasma Observatory for Lunar Exploration (POLE) Instrument Suite	Glyn Collinson, Researcher, Heliophysics Science Division, NASA/GSFC
16:00	Lunar Surface Charging	Mike Zimmerman, Researcher, JHU/APL

Time	Topic	Speaker
16:20	Perspectives on Artemis Lunar EVA Analysis	Steve Johnson, Research Engineer, SRAG, NASA/JSC, KBR
16:40	SPE Heavy Ion Data Sources and Issues	Katie Whitman, Research Scientist, SRAG, NASA/JSC, KBR
17:00	**ADJOURN**	

Day 3 · Wednesday, June 24, 2026

Mars Exploration: Infrastructure, Science, Observations, Modeling

Session 3.1 — System of Systems — Challenges from Observations to Operations

Chairs: ***Gina DiBraccio, Cecilia Mac Cormack***

As NASA continues to support interplanetary exploration to Mars and advances plans for a human mission to the Red Planet, it is essential to understand the Mars environment and its interactions with solar and heliospheric activity. This session reviews the Mars environment from space to ground—known and unknown science and hazards including radiation, variable atmospheric conditions, dust storms, and radar blackouts.

Time	Topic	Speaker
8:30	Session Introduction	*Chair TBD*
8:35	Mars Space Environment Overview	Jared Espley, Researcher, Solar System Exploration Division, NASA/GSFC
9:00	Forecasting Weather on Mars	Geronimo Villanueva, Associate Director for Strategic Science, Solar System Exploration Division, NASA/GSFC
9:20	Perspective on Coupling of Space and Atmospheric Systems	Dalia Kirschbaum, Director of the Earth Sciences Division, NASA/GSFC
9:40	Design Specification for Natural Environments (DSNE) - Updates for Mars	Anthony DeStefano, Space Environments Engineer, NASA/MSFC
10:00	Daily Space Weather Tag-up	Melissa Kane, M2M SWAO Analyst
10:15	**POSTER SESSION / BREAK**	
11:00	Existing Infrastructure at Mars	Shannon Curry, Associate Professor in the Astrophysics and Planetary Sciences (APS) Department, CU Boulder
11:15	Infrastructure on the Mars Surface	Don Hassler, SWRI
11:30	Upcoming Missions at Mars	Lindsay Hays, Senior Scientist for Mars Exploration, SMD, NASA/HQ
11:45	CCMC Mars Modeling Challenge and SWx Products	Leila Mays/Lutz Rastaetter, CCMC, NASA-GSFC
12:00	**LUNCH**	

Session 3.2 — Weather & Space Weather Science

Chairs: Geronimo Villanueva, *Alyson Bergamini*

Frontiers in Mars climate modeling, weather observations, and the impact of dust and radar blackouts on crewed missions. Includes perspectives on existing observations supporting future exploration and parallels with Earth.

Time	Topic	Speaker
13:30	Mars L1 Observations	Michele Cash, Program Scientist in the Heliophysics Division of the Science Mission Directorate (SMD), NASA-HQ
13:45	JPL's space weather operations and their potential applications to M2M SWAO *(virtual presentation)*	Panagiotis Vergados, NASA's Jet Propulsion Laboratory
14:00	Sunspot Imagery from Mars	Mark Lemmon, Senior Research Scientist, Space Science Institute
14:15	Frontiers on Mars Climate Modeling	Amanda Brecht, Branch Chief (Acting), NASA/ARC
14:30	**POSTER SESSION / BREAK**	
15:00	Defining the Optimum Instrumentation for Probing Mars Weather via an OSSE System	Oreste Reale (SSAI / 693), NASA-GSFC
15:15	Martian Dust: Science and Exploration	Scott Guzewich (699), NASA-GSFC
15:30	New Techniques to Find the Missing Piece and Capture Wind Profiles on Mars	Dan Cremons, Research scientist, NASA-GSFC
15:45	Panel Discussion: *Addressing Mars Weather and its Impact on Crewed Missions*	Moderator: Geronimo Villanueva Panel Participants: Barbara Cohen, Scott Guzewich, Sara Faggi, Alain Khayat, Kathy Mandt
16:40	**ADJOURN**	
17:00	***Heliophysics Science Division (HSD) Happy Hour***	*Building 33, Room C121*

Day 4 · Thursday, June 25, 2026

Space Weather Impacts on NASA Missions: Operational Constraints, Tools, and Hazard Mitigation

Note: A Parallel Session requiring registration runs Thursday (see separate agenda).

Session 4.1 — Overview of SWx Impacts and Mitigation Strategies for NASA Missions

Chair: Joe Minow

An overview of how space weather affects NASA missions and infrastructure, highlighting real-world impacts from radiation, geomagnetic activity, and spacecraft charging, along with lessons learned from commercial activities.

Time	Topic	Speaker
8:30	Session Introduction	Joe Minow, Space Environments Technical Fellow, NASA/MSFC
8:35	Review of SWx Impacts on NASA Missions & Infrastructure	Yihua Zheng, Research Astrophysicist, NASA/GSFC
9:00	An Overview of Spacecraft Charging	Justin Likar, Space Environmental Effects Engineer, JHU/APL
9:20	Seeing the Threat Early via HELio ENA (HELENA) Remote Sensing for Artemis EVAs	Nikolaos Paschalidis, Chief Technologist, NASA/GSFC
9:40	Understanding Drag Effects on LEO Spacecraft	Katherine Garcia-Sage, Research Astrophysicist, NASA-GSFC
10:00	Daily Space Weather Tag-up	Tony Iampietro, M2M SWAO Analyst
10:15	**POSTER SESSION / BREAK**	

Session 4.2 — SWx Constraints for NASA Special Operations

Chair: Mike Campola

How space weather constrains critical NASA operations such as launches, EVAs, and spacecraft maneuvers—with lessons from missions like ESCAPADE, IMAP, and the James Webb Space Telescope. Focuses on decision-making under risk, mission-specific support needs, and how operational experience informs go/no-go criteria and planning.

Time	Topic	Speaker
11:00	Go or No-Go: Space Weather Constraints for Launches, EVAs, Maneuvers, and Special Operations	Joe Minow, Space Environments Technical Fellow, NASA/MSFC
11:15	Space Weather Impacts and Support Needs: Lessons from the ESCAPADE Mission	Shannon Curry, MAVEN/ESCAPADE Mission Director, NASA/GSFC
11:30	Space Weather Impacts and Support Needs: Experiences from the James Webb Space Telescope	Carl Hansen, Spacecraft Systems Engineer (JWST), STScI
11:45	Panel	Moderator: Michael Campola, Radiation Effects and Analysis Group Lead, NASA/GSFC Panelists: Katherine Garcia-Sage, Carl Hansen, Justin Likar, Joe Minow, Nikolaos Paschalidis, Yihua Zheng
12:15	**LUNCH**	

Session 4.3 — Data, Models, Tools, and Resources for Mission Support and Anomaly Characterization

Chair: Yihua Zheng

Current data, models, and tools used to support mission operations and characterize space-weather-related anomalies originating from environmental effects like radiation, atmospheric drag, and signal disturbances.

Time	Topic	Speaker
13:30	Tools for Environmental Anomaly Prediction, Characterization, and Visualization	Jia Yue, Research Scientist, NASA/GSFC
13:50	Beyond Radiation: Atmospheric Drag Anomalies and Lessons from SWIFT	Michael Shoemaker, Space Science Mission Operations Deputy FDL, NASA/GSFC
14:10	Tools and Models for Radiation Based Anomalies: REACH	Alexa Halford, Ionosphere, Thermosphere, Mesosphere Lab Chief, NASA/GSFC

Time	Topic	Speaker
14:30	Discriminating Between Jamming Events and Natural Environmental Effects	Alistair Funge, Space Protection Lead, NASA/GSFC
14:50	**POSTER SESSION / BREAK**	
15:05	DOD-Perspective: SET4D Awareness	Jay Moody, Space Weather Acquisition Program Manager, Space Force/Space Systems Command
15:25	NAIRAS Model Radiation Nowcast and Forecast From Earth's Atmosphere to the Martian Surface	Chris Mertens, Senior Research Physicist, NASA/LRC

Session 4.4 — SWx Impact on Debris, Meteoroids, and Dust

Chair: Chris Stubenrauch

How space weather influences debris, meteoroids, and dust risks to spacecraft and mission support — including collision avoidance activities, anomaly resolution for the International Space Station, and dust mitigation efforts for Artemis as well as other exploration activities.

Time	Topic	Speaker
15:45	NASA's Meteoroid Environment Office Overview	William Cooke, NASA Meteoroid Environments Office Lead, NASA/MSFC
16:05	SWx Effects on Satellite Collision Avoidance	Alinda Mashiku, CARA Program Manager, NASA/GSFC
16:25	Orbital Debris Presentation	Alex Fletcher, Program Scientist, NASA Headquarters
16:45	**ADJOURN**	

Day 5 · Friday, June 26, 2026

The Future of Space Weather Prediction Capabilities

Ongoing initiatives to advance space weather knowledge and predictive capabilities in support of NASA space exploration. These activities identify successes, challenges, and opportunities for the next generation of capabilities—in the context of development, testing, and validation through the research-to-operations-to-research (R2O2R) framework. Topics include AI/ML advances, next-generation models, community infrastructure, and the roadmap for operational space weather forecasting.

Session 5.1 — Model Development For the Future of Space Weather

Chair: Bob Loper

Time	Topic	Speaker
8:30	Future of Space Weather Modeling Capabilities	Leila Markus Mays, NASA/GSFC
8:45	Centers of Excellence — CLEAR	Lulu Zhao, University of Michigan
8:55	Centers of Excellence — SPARTA Challenges in Forecasting Ionospheric Scintillation	Keith Groves, Boston College
9:05	Centers of Excellence — SWORD	Thomas Berger, UCAR
9:15	AI Tools, Development and Applications for Space Weather	Matt Dosberg, NASA/GSFC
9:25	Models Panel Session	Moderator: Leila Markus Mays, NASA/GSFC Panel Participants: Lulu Zhao, Keith Groves, Thomas Berger, Matt Dosberg
10:00	Daily Space Weather Tag-up	Elizabeth Juelfs, M2M SWAO Analyst
10:15	**BREAK**	

Session 5.2 — Next Generation of Missions and Capabilities For Space Weather

Chair: Melissa Kane

Time	Topic	Speaker
10:45	SWO Overview and Future SWx Missions	Yaireska Collado-Vega, NOAA
10:55	Tools and Ingestion for Mission Support	Alex Young, Associate Director for Science, Heliophysics Science Division, NASA/GSFC
11:05	Heliophysics Digital Resource Library	Brian Thomas (or other HDRL representative), NASA/GSFC
11:15	PUNCH Mission Overview	Craig DeForest, SWRI
11:25	LASSOS Catalog	Cecilia Mac Cormack, Scientist, NASA GSFC
11:35	Radio JOVE as a Space Weather Tool + Demonstration	Chuck Higgins, Middle Tennessee State University
11:55	Next Generation Panel Session	Moderator: Alex Young, NASA/GSFC Panel Participants: Yaireska Collado-Vega, Brian Thomas, Craig DeForest, Chuck Higgins
12:25	**ADJOURN**	Teresa Nieves-Chinchilla

Day 4 · Parallel Session · A Day with a Space Weather Analyst

Thursday, June 25, 2026 ***(Registration Required)***
Chairs: Mary Aronne, Carina Alden

M2M SWAO's space weather analysts will offer a special 1-day session. This "Day with a Space Weather Analyst" will include hands-on space weather scenarios where participants can interface with the real-time space weather analysis processes and tools used by M2M SWAO to assess and predict space weather throughout the solar system.

A basic background on space weather is suggested but not required. Limited seats are available for this session—please indicate your intent to participate in the registration form.

Goal: Provide a basic understanding of performing an analysis of space weather across the solar system to support NASA mission exploration. This will be an opportunity to interface with the real-time space weather analysis that M2M SWAO conducts 7 days a week. The exercise highlights two space weather scenarios with hands-on activities.

Time	Activity
9:00 – 10:00	Introduction to key space weather events, background
10:00 – 10:20	Attend M2M SWAO space weather tag-up
Exercise 1—Coronal Hole High-Speed Streams	
10:20 – 10:30	E1: Break and transition to hands-on activity
10:30 – 10:45	E1: Introducing hands-on space weather scenario
10:45 – 11:45	E1: Independent work with help, feedback from analysts
11:45 – 12:00	E1: Discuss results of space weather scenario in Exercise 1
12:00 – 13:00	**LUNCH**
13:00 – 13:30	Introduction and background of second space weather scenario
Exercise 2 — Coronal Mass Ejection and Chain of Events	
13:30 – 15:30	E2: Independent work with help, feedback from analysts
15:30 – 16:00	E2: Discuss results of space weather scenario in Exercise 2
16:00 – 16:30	**Concluding Remarks**