



2023 Space Weather Workshop Agenda

Times in MDT

Monday, April 17 - Pre-Workshop Events

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|---------------------------|--|
| 8:00 AM - 5:00 PM | Space Weather Advisory Group (SWAG) Meeting
Location: Pearl St. Ballroom RIGHT “East-West” |
| 8:00 AM - 5:00 PM | NASA Space Environments Technical Discipline Team Meeting (TDT) (by invitation)
Location: “Foothills” Meeting Room |
| 8:00 AM - 10:00 AM | Coordination Group for Meteorological Satellites (CGMS) Data Access Meeting
Location: Pearl St Ballroom LEFT “Walnut” |
| 8:00 AM - 10:00 AM | US Space Force (USSF) Space Domain Awareness (SDA) Environmental Toolkit for Defense (SET4D) Meeting (by invitation)
Location: “Royal Arch” Meeting Room |
| 10:00 AM - 1:00 PM | International Space Environment Services (ISES) Meeting Part 1 (by invitation only. Part 2 to be held Friday April 21)
Location: Pearl St Ballroom LEFT “Walnut” |
| 1:00 PM - 5:00 PM | Space Weather Prediction Center (SWPC) User Engagement for Satellite Environment Meeting
Location: Pearl St Ballroom CENTER “Mall” |

- 12:00 AM - 2:00 PM** **Air Force Data Assimilative Photospheric Flux Transport (ADAPT) model and AF SIFT (Solar Indices Forecasting Tool) Meeting**
Location: “Royal Arch” Meeting Room
- 1:00 PM - 3:00 PM** **User Readiness for NOAA Program of Record (POR) Missions Meeting**
Location: Pearl St Ballroom LEFT “Walnut”
- 3:00 PM - 5:00 PM** **Student Program**
Location: “Royal Arch” Meeting Room
Organizers: Kaitlin Doublestein (U. of Michigan)
Bhagyashree Vijay Waghule (University of Colorado)
- 5:30 PM - 7:30 PM** **Networking Session for Space Weather Workshop Participants**
Location: NCAR Mesa Lab – Limited seating Bus Provided from/to Hotel – Please plan accordingly.

Tuesday, April 18 Location: Pearl St. Ballroom

- 8:30 AM** **Opening Remarks and Welcome**
Bill Murtagh, NOAA SWPC
- 8:40 AM - 9:35 AM** **Building National Resilience for Space Weather Storms**
Co-Chairs: Bill Murtagh, NOAA SWPC
Jinni Meehan, NWS HQ
- 8:40 AM - 8:50 AM** **Operations Perspective from the NOAA Space Weather Prediction Center**
Clinton Wallace, NOAA SWPC
- 8:50 AM - 9:00 AM** **National Security Perspective from the USAF 557th Weather Wing**
Colonel Bradley Stebbins, 557th SpWoc
- 9:00 AM - 9:10 AM** **Safeguarding the Nation's Critical Infrastructure - Perspectives from the DHS Cybersecurity and Infrastructure Security Agency (CISA)**
James Platt, CISA/DHS
- 9:10 AM - 9:20 AM** **Space Weather Advisory Group (SWAG) Recommendations and Perspectives**
Tammy Dickinson, Science Matters Consulting
- 9:20 AM - 9:35 AM** **Q&A**
- 9:35 AM - 10:35 AM** **Break and Poster Session: Solar and Interplanetary Research and Applications**
- 10:35 AM - 11:50 AM** **Space Weather Committees: Roles, Coordination, and Communication**
Co-Chairs: Jinni Meehan, NWS HQ
Gene Fisher, NASA HQ
- 10:40 AM - 10:48 AM** **Space Weather Advisory Group**
Tammy Dickinson, Science Matters Consulting

10:48 AM - 10:56 AM **National Academy of Sciences (NAS) Space Weather Roundtable**
Geoff Crowley, Orion Space Solutions

10:56 AM - 11:04 AM **Heliophysics Decadal Survey**
Stephen Fuselier, SwRI

11:04 AM - 11:12 AM **Heliophysics Decadal - Space Weather Panel**
Christina Cohen, Caltech

11:12 AM - 11:20 AM **NASA Space Weather Council**
Nicole Duncan, Ball Aerospace

11:20 AM - 11:50 AM **Panel & Audience Discussion**

11:50 AM - 1:15 PM **Lunch**

12:30 PM - 2:30 PM **SWPC Tour (for those pre-registered for the tour)**

1:15 PM - 2:30 PM **Space Traffic Coordination and Space Situational Awareness**
Co-Chairs: Janet Green, Space Hazards Applications
Erin Lynch, NOAA NESDIS

1:20 PM - 1:28 PM **Advances in Neutral Density Forecasting**
Tzu-Wei Fang, NOAA SWPC

1:28 PM - 1:36 PM **Commercial GEO Satellite Tracking**
Marcus Bever, ExoAnalytic Solutions

1:36 PM - 1:44 PM **Dragster Density Modeling Performance**
Geoff Crowley, Orion Space Solutions

1:44 PM - 1:52 PM **The Impact of R2O Data Pipelines on Satellite Drag Analysis**
Michael Contreras, Ensemble

1:52 PM - 2:00 PM **Observing and Modeling the LEO Satellite Drag Environment**
Eric Sutton, Space Weather Technology, Research, and Education Center, CU

2:00 PM - 2:08 PM **Geospace Dynamics Constellation**
Katherine Garcia-Sage, NASA Goddard Space Flight Center

2:08 PM - 2:30 PM **Q&A**

2:30 PM - 2:45 PM **Special Presentation on NOAA Space Weather Observation Program**
Elsayed Talaat, NOAA/NESDIS

2:45 PM - 3:45 PM **Break and Poster Session: Solar and Interplanetary Research and Applications**

3:45 PM - 5:00 PM **Space Weather Support for Human Exploration**
Co-Chairs: Carina Alden, NASA GSFC (M2M)
Mike Cook, Mitre

- 3:50 PM - 3:58 PM** **Artemis 1 - Mission Updates**
Janet Barzilla, NASA/SRAG, JSC
- 3:58 PM - 4:06 PM** **Operational Space Weather Support for Human Spaceflight**
Rob Steenburgh, Monty Spencer, NOAA SWPC
- 4:06 PM - 4:14 PM** **Developments in Support of Human Exploration Missions**
Yarieska Collado-Vega, M2M Team, NASA GSFC
- 4:14 PM - 4:22 PM** **Validation of the UMASEP Solar Radiation Storm Model in the Space Weather Storm Model Proving Ground**
Kim Moreland, CU CIRES/SWPC
- 4:22 PM - 4:30 PM** **NASA's HERMES and ESA's ERSA**
Bill Paterson, HERMES, ERSA
- 4:30 PM - 4:38 PM** **Moon-to-Mars (M2M) Architecture, Science and Application Objectives**
Jamie Favors, NASA HQ
- 4:38 PM - 5:00 PM** **Q&A**
- 5:00 PM - 5:30 PM** **Poster Lightning Talks: Solar and Interplanetary Research and Applications**
Chair: Holly Gilbert, NCAR High Altitude Observatory (HAO)
- Resolving CME Characteristics with Polarized White Light Data**
 Matthew West, SwRI
- Concept for Real-Time Solar Flare Predictions Using Early Flare Signatures**
 Juliana Vievering, JHU/APL
- Ensemble Modeling to Reconstruct Remote and In-Situ CME Observations**
 Nishtha Sachdeva, University of Michigan
- New Space Weather Data Mashups: Collections and Correlations Using SWx**
- TREC Space Weather Data Portal Catalog**
 Jenny Knuth, CU Boulder
- Solar Corona from Solo/Metis and SOHO/LASCO: Observations and Comparison with MAS Code Simulations**
 Francesco Frascella, University of Turin/National Institute of Astrophysics
- Does "Precursor Activity" Really Foretell Solar Energetic Events?**
 Karin Dissauer, NWRA
- Towards Advanced SEP Forecasting with the PARA-SOL Model**
 Alexandr Afanasiev, University of Turku (Finland)
- 6:00 PM - 8:00 PM** **17th Annual NOAA-American Commercial Space Weather Association (ACSWA) Summit (invitation only)**

Wednesday, April 19 Location: Pearl St. Ballroom

8:15 AM - 8:30 AM **Today's Space Weather Forecast + Q&A**
Shawn Dahl, NOAA SWPC

- 8:30 AM - 8:45 AM** **Special Presentation: View from the National Security Council at the White House**
Caitlin Durkovich, National Security Council, Executive Office of the President
- 8:45 AM - 10:05 AM** **Growing the Space Weather Enterprise: Resilience through Partnerships**
Co-Chairs: Tammy Dickinson, Science Matters Consulting
Maj. Austin Gibbons, USAF 557th Weather Wing
- 8:50 AM - 9:00 AM** **NOAA**
Ken Graham, Director, NOAA/NWS
- 9:00 AM - 9:10 AM** **NASA**
Peg Luce, Acting Director, NASA Heliophysics Division, NASA HQ
- 9:10 AM - 9:20 AM** **NSF**
Anne Johansen, Director, Division of Atmospheric and Geospace Sciences, and
Mangala Sharma, Program Director, Geospace Section, NSF
- 9:20 AM - 9:30 AM** **USAF**
Lt Col Omar Nava, Chief, Space Weather and Environmental EM Effects,
HQ USAF/A3WX
- 9:30 AM - 9:40 AM** **American Commercial Space Weather Association) (ACSWA - Commercial Sector Perspective on National Efforts**
Kent Tobiska, ACSWA and President and Chief Scientist Space Environment Technologies (SET)
- 9:40 AM - 9:50 AM** **Evolving Academic Partnerships?**
Delores Knipp, Research Professor, University of Colorado, Boulder, Aerospace Engineering Sciences
- 9:50 AM - 10:05 AM** **Q&A**
- 10:05 AM - 11:00 AM** **Break and Poster Session: Solar and Interplanetary Research and Applications; Ionosphere and Thermosphere Research and Applications; Aviation Radiation Research and Applications**
- 11:00 AM - 12:05 PM** **Space Weather: Meeting the Needs of the Energy Sector**
Co-chairs: Josh Rigler, USGS
Brent Gordon, NOAA SWPC
- 11:05 AM - 11:13 AM** **Latest Developments at the North American Electric Reliability Cooperation**
Mark Olson, North American Electric Reliability Corporation
- 11:13 AM - 11:21 AM** **Monitoring and Assessing GICs in Alberta's High Voltage Network**
Hannah Parry, University of Alberta
- 11:21 AM - 11:29 AM** **US-Canada Geoelectric Field Model**
Chris Balch, NOAA SWPC

- 11:29 AM - 11:37 AM** **NOAA/CPI CRADA to Evaluate Commercial Magnetometer Measurements**
Jenn Gannon, Computational Physics, Inc.
- 11:37 AM - 11:45 AM** **System Model Implementation and Validation**
Gary Kobet, Tennessee Valley Authority
- 11:45 AM - 12:05 PM** **Q&A**
- 12:05 AM - 1:30 PM** **Lunch and Other Activities:**
ACSWA Lunch - invitation only
Location: “Baseline” Boardroom
Student Program Lunch
Location: “Royal Arch” Meeting Room
- 1:30 PM - 2:30 PM** **Space Weather: Meeting the Needs of the Global Aviation Community**
Co-Chairs: Hazel Bain, CU CIRES/SWPC
Samantha Carlson, Federal Aviation Agency (FAA)
- 1:35 PM - 1:43 PM** **Aviation Testbed Experiment**
Michele Cash, NOAA SWPC
- 1:43 PM - 1:51 PM** **Space Weather and American Airlines**
Rondeau Flynn, American Airlines
- 1:51 PM - 1:59 PM** **United Airlines: Operating Procedures during Space Weather Storms**
Nathan Polderman, United Airlines
- 1:59 PM - 2:07 PM** **Optimizing Space Weather Advisory Issuance for Aviation: Guidance for Space Weather Centers**
Judith de Patoul, Royal Observatory of Belgium
- 2:07 PM - 2:15 PM** **Space Weather Services for ICAO – Recent Developments and Future Improvements**
Krista Hammond, UK Met Office
- 2:15 PM - 2:30 PM** **Q&A**
- 2:30 PM - 3:15 PM** **Break and Poster Session: Solar and Interplanetary Research and Applications; Ionosphere and Thermosphere Research and Applications; Aviation Radiation Research and Applications**
- 3:15 PM - 3:55 PM** **Observing and Modeling the Ionosphere: Supporting Communications and Navigation**
Co-Chairs: Tim Fuller-Rowell, CU CIRES/SWPC
Janet Machol, CU CIRES/SWPC
- 3:20 PM - 3:28 PM** **Progress and Challenges of Ionospheric Remote Sensing Using GNSS Radio Occultation**
Paul Straus, Aerospace Corporation

- 3:28 PM - 3:36 PM** **The Observation System Simulation Experiment Tool (OSSET) for Global Ionospheric Electron Density**
Joe Hughes, Orion Space Solutions
- 3:36 PM - 3:44 PM** **Assessing the Impact of RO Constellation Data on Global Ionospheric Monitoring Through Observing System Simulation Experiments**
Tomoko Matsuo, University of Colorado Aerospace Engineering Sciences
- 3:44 PM - 3:55 PM** **Q&A**
- 3:55 PM - 4:30 PM** **Space Weather Workforce Development**
Co-Chairs: Lisa Winter, NSF Geospace Section
Antti Pulkkinen, NASA GSFC
- 4:00 PM - 4:10 PM** **Enhancing Demographics and Career Pathways of the Space Physics Workforce in the US**
Fran Bagenal, University of Colorado
- 4:10 PM - 4:20 PM** **Evolving the Space Weather Workforce to be more Diverse and Inclusive**
Kristen Aponte and Samaiyah Farid, NCAR
- 4:20 PM - 4:30 PM** **Q&A**
- 4:30 PM - 5:00 PM** **Poster Lightning Talks: Ionosphere and Thermosphere Research and Applications**
Chair: Astrid Maute CU CIRES/SWPC
- Evaluation of Global Ionospheric TEC Using Simultaneous Observations from Amateur Radio Networks, International Space Station, and NeQuickG Model for Space Weather Prediction**
Gamal Zayed, Cairo University; Electronics and Communications Engineering
- Analysis of Navigation Solution Parameters Affected by High-Latitude Ionospheric Scintillation**
Genevieve Tang, United States Military Academy
- Estimation of Ionospheric Scintillation Index S4 from Rate of Change of Total Electron Content Index (ROTI) in Low Latitudes**
Teddy M. Surco Espejo, Institute for Scientific Research, Boston College
- Evaluating Thermospheric Nowcast and Forecast Performance of an Assimilative Density Specification Tool**
Marcin Pilinski, CU Boulder, Laboratory for Atmospheric and Space Physics
- Modeling the Thermospheric Response to Solar and Geomagnetic Drivers during the Feb 2022 Starlink Incident**
Joshua Pettit, GMU/NASA GSFC
- Development of Forecast Model for Ionospheric Scintillation in Canadian High Latitudes**
Lidia Nikitina, Natural Resources Canada
- Real-Time Operational Measurements of the Thermospheric State: Recent Advances and Future Possibilities**
Edward Thiemann, LASP, University of Colorado
- Low-Cost In-Situ Simultaneous Multi-Point Plasma Density Observations**

Aroh Barjatya, Embry-Riddle Aeronautical University, Space and Atmospheric Instrumentation Lab

5:00 PM - 5:30 PM **Special Presentation: The Mystery of STEVE - Snapshots of Science**

Co-Chairs: Rodney Viereck, CU CIRES/SWPC
Bill Murtagh, NOAA SWPC

5:00 PM - 5:15 PM **The Science of Steve**

Eric Donovan, University of Calgary

5:15 PM - 5:30 PM **STEVE at Starland - Photographing STEVE**

Neil Zeller, Neil Zeller Photography

7:00 PM - 9:00 PM **Banquet and after-dinner presentation:**

Achieving the Amazing: The James Webb Space Telescope

Speaker: Erin Wolf, Ball Aerospace

Thursday, April 20

Location: Pearl St. Ballroom

8:30 AM - 9:40 AM **Space Weather Research to Operations to Research (R2O2R) Applications -**

Research Opportunities in Space and Earth Sciences (ROSES) Opportunities

Co-Chairs: Jim Spann, NASA HQ
Andy Marble, CU CIRES/SWPC

8:35 AM - 8:43 AM **R202R at SWPC**

Eric Adamson, NOAA SWPC

8:43 AM - 8:51 AM **R202R at NASA**

Kelly Korreck, NASA HQ

8:51 AM - 8:59 AM **R202R at the Community Coordinated Modeling Center (CCMC)**

Masha Kuznetsova, CCMC/NASA GSFC

8:59 AM - 9:07 AM **R202R in DoD**

Bryan Davis, U.S. Space Force

9:07 AM - 9:15 AM **Development of Far-Side Magnetic Flux Measurements Using GONG Data**

Shea Hess Weber, Stanford University

9:15 AM - 9:23 AM **WSA-Optimized Technology Readiness Level upgrade**

Humberto Godinez, Los Alamos National Laboratory

9:23 AM - 9:40 AM **Q&A**

9:40 AM - 10:30 AM **Break and Poster Session: Geospace/Magnetosphere Research and Applications; Space Weather Policy and General Space Weather Contributions**

- 10:30 AM - 11:45 AM** **NSF Advancing National Space Weather Expertise and Research toward Societal Resilience (ANSWERS Space Weather Projects)**
Co-Chairs: Mangala Sharma, NSF
Michele Cash, NOAA SWPC
- 10:35 AM - 10:43 AM** **Impacts of Atmospheric Waves and Geomagnetic Disturbances on Quiet-time and Storm-time Space Weather**
Xian Lu, Clemson University
- 10:43 AM - 10:51 AM** **Prediction of Geoeffective Solar Eruptions, Geomagnetic Indices, and Thermospheric Density Using Machine Learning Methods & Impact on Satellite Drag**
Xiaoli Bai, Rutgers
- 10:51 AM - 10:59 AM** **Ion-Neutral Coupling in Geospace and its Impact on Space Weather**
Piyush Mehta, West Virginia University
- 10:59 AM - 11:07 AM** **Dynamics and Impacts of Electrons and Ions in the Earth's Magnetosphere-Ionosphere System**
Liang Wang, Princeton University
- 11:07 AM - 11:15 AM** **Understanding and Forecasting Solar Energetic Particles in the Inner Solar System and Earth's Magnetosphere**
Gang Li, University of Alabama, Huntsville
- 11:15 AM - 11:23 AM** **Solar Energetic Particles, Solar Neutrons, and a New Space Weather Facility in Hawaii**
Veronica Bindi, University of Hawaii
- 11:23 AM - 11:31 AM** **The Satellite Surface Charging Observatory for Prediction, Understanding, Learning, and Industry**
Adam Kellerman, UCLA
- 11:31 AM - 11:45 AM** **Q&A**
- 11:45 AM - 12:00 PM** **Special Presentation: NASA Science Mission Directorate - Perspectives on Space Weather**
Nicky Fox, NASA HQ Science Mission Directorate
- 12:00 PM - 1:30 PM** **Lunch**
- 12:30 PM - 2:30 PM** **SWPC Tour (for those pre-registered for the tour)**
- 1:30 PM - 1:45 PM** **Special Presentation on a National Space Weather Exercise**
Dipak Srinivasan, JHU/APL
- 1:45 PM - 2:00 PM** **Special Presentation from the Department of Commerce**
Don Graves, Deputy Secretary of Commerce with introduction by Michael Morgan, Assistant Secretary of Commerce
- 2:00 PM - 3:00 PM** **Space Weather: New and Future Observations To Advance Understanding and**

Forecasting

Co-Chairs: Mpho Tshisaphungo, South African National Space Agency (SANSA)
Simon Machin, UK MetOffice

- 2:05 PM - 2:13 PM** **Space Weather Activities and Data at Los Alamos National Laboratory**
Mike Henderson, Los Alamos National Laboratory
- 2:13 PM - 2:21 PM** **UK Space Agency Bi-lateral Science & Exploration programme**
Caroline Harper, UK Space Agency
- 2:21 PM - 2:29 PM** **ESA Space Weather Missions for Operational Applications**
Juha-Pekka Luntama, ESA Space Safety Programme Office
- 2:29 PM - 2:37 PM** **CGMS Efforts to Enable Spacecraft Anomaly Correlation with Space Weather Activity**
Andrew Monham, EUMETSAT
- 2:37 PM - 2:55 PM** **Q&A**
- 2:55 PM - 3:40 PM** **Break and Poster Session: Geospace/Magnetosphere Research and Applications; Space Weather Policy and General Space Weather Contributions**
- 3:40 PM - 4:30 PM** **Advances in Space Weather Modeling and Services - 1**
Co-Chairs: Steven Hill, NOAA SWPC
Bhagyashree Vijay Waghule, University of Colorado
- 3:45 PM - 3:53 PM** **Submarine Cable Impacts**
Shibaji Chakraborty, Center for Space Science and Engineering Research, Virginia Tech
- 3:53 PM - 4:01 PM** **Near-real-time Coronal Mass Ejection Alerts as part of an Early Warning Forecasting System for Solar Energetic Particle (SEP) Events**
Joan Burkepille, NCAR High Altitude Observatory (HAO)
- 4:01 PM - 4:09 PM** **Timeline of Machine Learning in Space Weather: Past, Present and Future**
Enrico Camporeale, CU CIRES/SWPC
- 4:09 PM - 4:17 PM** **Comparison of Drag/Density Models**
Margaret Chen, Aerospace Corporation
- 4:17 PM - 4:30 PM** **Q&A**
- 4:30 PM - 5:30 PM** **International Space Weather Contributions**
Co-Chairs: Terry Onsager, NOAA SWPC
Mario Bisi, UK Research and Innovation (UKRI) Science and Technology Facilities Council (STFC)
- 4:35 PM - 4:45 PM** **Royal Air Force**
Bryn Jones, UK SpOC, Royal Air Force

- 4:45 PM - 4:55 PM** **Australia Bureau of Meteorology (BOM)**
James Lannan, BOM
- 4:55 PM - 5:05 PM** **South African National Space Agency (SANSA)**
Lee-Anne McKinnell, SANSA
- 5:05 PM - 5:15 PM** **Latin American Space Weather Coordination**
Clezio di Nardin, National Institute for Space Research (INPE), Brazil
- 5:15 PM - 5:30 PM** **Q&A**
- 5:30 PM - 6:00 PM** **Poster Lightning Talks: Geospace/Magnetosphere Research and Applications**
Chair: Dimitrios Vassiliadis, NOAA NESDIS
- Prediction of Adverse effects of Geomagnetic Storms and Energetic Radiation (PAGER)**
Yuri Shprits, GFZ German Research Centre for Geosciences, DE
- Muon Flux Variation in Real-time and its Correlation with Space Weather Activity**
Arfa Mubashir, Georgia State University
- New Developments with Kp and The New Hourly and Half-Hourly, Kp-Like Geomagnetic Index Hpo (Hp60, Hp30)**
Jürgen Matzka, GFZ German Research Center for Geosciences, Germany
- Stormtime Geomagnetic Disturbance Events - Impact of High-Resolution Grid and Adaptive Kinetic Physics**
Timothy Keebler, University of Michigan
- Impact of Single Fluid and Multifluid MHD on GMD Forecasting: An Inner Boundary Condition Sensitivity Study**
Kaitlin Doublestein, Department of Climate and Space Science and Engineering, University of Michigan
- Observations of Relativistic Electron Wave-Particle Interactions at Geostationary Orbit by the New NOAA GOES-16, GOES-17 and GOES-18 Satellites**
Aspen Davis, University of Colorado/CIRES/NOAA/NCEI
- Localized Geomagnetic Disturbance Forecasting: Evaluating Physics and Numerics in Global Models**
El Vandegriff, University of Texas at Arlington
- Testing the Liouville Theorem Based SEP Flux Mapping Method with Multiple Cutoff Models at High Altitudes and Off the Magnetic Equator**
Shawn Young, Air Force Research Laboratory

Friday, April 21

Location: Pearl St. Ballroom

8:30 AM - 10:00 AM

Advances in Space Weather Modeling, Observations and Services - 2

Co-Chairs: Dan Welling, U. of Michigan

Frank Centinello, NOAA SWPC and NOAA Aircraft Operations Center

- 8:35 AM - 8:45 AM** **Improving Operational CME Forecasting**
Dusan Odstrcil, George Mason University
- 8:45 AM - 8:55 AM** **Real-time Solar Wind Predictions with Ensemble MHD Simulations Combined with Data Assimilation**
Zhenguang Huang, University of Michigan
- 8:55 AM - 9:05 AM** **Automated Radiation Measurements for Aerospace Safety Aeronautical Regional Geospatial Observer System (ARMAS ARGOS)**
Kent Tobiska, Space Environment Technologies (SET)
- 9:05 AM - 9:15 AM** **Measuring and Modelling Solar and Galactic Cosmic Radiation in the Atmosphere for Space Weather Applications**
Eric Benton, Oklahoma State University
- 9:15 AM - 9:25 AM** **Modeling Interplanetary Evolution of CMEs with Internal Magnetic Structure with GAMERA**
Elena Provornikova, JHU/APL
- 9:25 AM - 9:35 AM** **National Solar Observatory and Next Generation GONG**
Carrie Black, NSF Astronomical Sciences Division
- 9:35 AM - 10:00 AM** **Q&A**
- 10:00 AM - 10:30 AM** **Break**
- 10:30 AM - 11:20 AM** **Advances in Space Weather Modeling, Observations and Services - 3**
Co-Chairs: Howard Singer, NOAA SWPC
Mark Miesch, CU CIRES/SWPC
- 10:35 AM - 10:45 AM** **Connecting Space Weather and Power Flow Modeling to Assess Hazards**
Steve Morley, Los Alamos National Laboratory
- 10:45 AM - 10:55 AM** **Center for Geospace Storms (CGS): Importance of Mesoscale Processes in Space Weather Models**
Mike Wiltberger, NCAR/HAO/CGS
- 10:55 AM - 11:05 AM** **Space Weather Modeling from Global to Kinetic Scales**
Tuija Pulkkinen, University of Michigan
- 11:05 AM - 11:15 AM** **Q&A**
- 11:15 AM - 11:50 AM** **Solar Cycle 25**
- 11:20 AM - 11:30 AM** **Solar Cycle Prediction**
Scott McIntosh, NCAR
- 11:30 AM - 11:50 AM** **Q&A and Solar Cycle Discussion**
- Meeting Conclusion**

11:50 AM - 12:00 PM **Closing Remarks**
Howard Singer, NOAA SWPC

(See next page for Friday Side Meetings)

Friday Side Meetings:

1:00 PM - 3:00 PM **Coordination Group for Meteorological Satellites (CGMS) Data Access Meeting**
Location: "Foothills" Meeting Room

3:00 PM - 5:00 PM **International Space Environment Services (ISES) Meeting Part 2 (by invitation only)**
Location: "Foothills" Meeting Room