



**2018 Space Weather Workshop Agenda
 Westin Westminister Hotel**

Monday, April 16

- 8:30-9:30** **Satellite Anomaly Database** – Michael Bonadonna
- 9:30-11:30** **Air Force Meeting – by invitation** – Eric Sutton/Michael Starks
- 11:30-1:00** Lunch
- 1:00 - 3:00** **Space Weather Policy** – Seth Jonas
- 3:00 - 5:00** **O2R-R2O Current Activities and Future Plans** – Terry Onsager/Howard Singer
- 3:00 - 4:30** **Student Workshop – by invitation** – Alfredo Cruz
- 5:00 - 7:00** **Networking Session for Space Weather Workshop Participants**

Tuesday, April 17

- 8:30** **Conference Welcome**
 Bill Murtagh, NOAA/SWPC
- 8:45 - 10:00** **Space Weather 2018 – In the Spotlight**
 Chair: Bill Murtagh, NOAA/SWPC
- 8:45** **SWPC – Always Moving Forward**
 Brent Gordon, NOAA/SWPC
- 9:00** **The USAF Space Weather Operations Center**
 Lt. Col William Ryerson, US Air Force
- 9:15** **MOSWOC – 4 years old! What have we achieved and where are we going?**
 Mark Gibbs, United Kingdom Meteorological Office
- 9:30** **The Space Weather Enterprise (SWE) - The Time Is Now!**
 Conrad C.Lautenbacher, Jr., GeoOptics Inc.
- 9:45** **Building Resilience against Space Weather Effects: An update from the Office of Science and Technology Policy**
 Steven Clarke, Office of Science and Technology Policy
- 10:00 - 11:00** **Break and Poster Session (Solar and Interplanetary Research and Applications)**
- 11:00 - 12:15** **Panel Session: September 2017 Storm - Discussion on User Needs and Science Capabilities**
 Chair: Howard Singer, NOAA/SWPC

- 11:00** **Overview of September 2017 Space Weather Period**
Rob Redmon, NOAA/NCEI
Bob Rutledge, NOAA/SWPC
- 11:20** **The Effects of the 10 SEP 17 Solar Event on HF Voice Comms Over the Atlantic**
Anthony Abate, Rockwell Collins
- 11:30** **NOAA SWPC Operational Model Performance during the September 2017 Storms**
Michele Cash, NOAA/SWPC
- 11:40** **September 2017 Space Weather Impacts**
Capt John Ross, US Air Force
- 11:50-12:15** **Panel/Audience Discussion**
- 12:15 - 2:00** **SWPC Lunch Tour** (*Please Note: Tour participants must have signed up and will miss early afternoon session talks*) *Tour bus departs the Westin Lobby at 12:30 PM and returns at 3 PM*
- 2:00 - 3:30** **Space Weather Policy**
Chair: Tamara Dickinson, Science Matters Consulting
- 2:00** **EMP, Natural and Adversarial; A Policy Perspective**
Seth Jonas, Science and Technology Policy Institute
- 2:15** **Reducing GMD Risks to Reliability of the North American Electricity Grid**
Mark Olson, North American Electric Reliability Corporation
- 2:30** **Provision of the Space Weather Advisory for International Air Navigation**
William Bauman III, Federal Aviation Administration
- 2:45** **Space Weather Services for Australia's Critical Infrastructure**
Richard Marshall, Australia Bureau of Meteorology
- 3:00** **Asia Oceania Space Weather Alliance (AOSWA)**
Yuki Kubo, Japan's National Institute of Information and Communications Technology
- 3:15** **European Space Agency Space Situational Awareness Lagrange Mission to L5 Point**
Juha-Pekka Luntama, European Space Agency
- 3:30 - 4:30** **Break and Poster Session (Solar and Interplanetary Research and Applications)**
- 4:30 - 5:15** **Economic Impact Assessment**
Chair: Chris Cannizzaro, US State Department
- 4:30** **The Canadian Space Weather Socioeconomic Impact Study**
Pierre Langlois, Canadian Space Agency
- 4:45** **The Social and Economic Impacts of Space Weather (US Project)**
Susan Taylor, Abt Associates
- 5:00** **Testing Realistic Scenarios for Space Weather: The Economic Impacts of Electricity Transmission Infrastructure Failure in the UK**
Mark Gibbs, United Kingdom Meteorological Office

5:15 **Special Presentation: Parker Solar Probe: A NASA Mission to Touch the Sun**
Nicola Fox, Johns Hopkins University Applied Physics Laboratory

5:45 - 8:00 **12th Annual NOAA - Commercial Space Weather Interest Group (CSWIG)/American Commercial Space Weather Association (ACSWA) Summit Meeting – by invitation**

Wednesday, April 18

8:30 - 8:40 **Air Force Space Weather – The Way Ahead**
Col. Jeff Jarry and Dr. Mark Pesses, US Air Force

8:40 – 10:00 **Panel Session: Space Weather Action Plan Implementation – Challenges and Opportunities**
Chair: Steven Clarke, Office of Science and Technology Policy

8:40 **NASA’s Role and Current Efforts for SWAP**
Jim Spann, NASA

8:50 **NSF’s Contributions to SWAP Implementation**
Michael Wiltberger, National Science Foundation

9:00 **NOAA Progress on SWAP Activities**
Bill Lapenta, NOAA

9:10 **Space Weather Action Plan – Air Force Update**
Col. Jeff Jarry, US Air Force

9:20 **Goal 6: International Activities**
Chris Cannizzaro, US State Department

9:30 **USGS Role in SWAP Implementation**
Carol Finn, USGS

9:40-10:00 **Panel/Audience Discussion**

10:00 - 11:00 **Break and Poster Session (Ionosphere Research and Applications and General Space Weather Services and Education)**

11:00 - 12:15 **Research and Services Supporting Satellite Operations**
Chair: Rob Redmon, NOAA/NCEI

11:00 **Spacecraft Anomalies and Failures Workshop 2017 Summary**
Alec Engell, NextGen Federal Systems

11:15 **Summaries for the 2017 Applied Space Environments Conference (ASEC) and the Space Environment Engineering and Science Applications Workshop (SEESAW)**
Linda Neergaard Parker, Universities Space Research Association

11:30 **Tools for Understanding On-Orbit Satellite Anomalies**
Janet Green, Space Hazards Applications, LLC

11:45 **AE9/AP9/SPM (IRENE) Commercial Deployment and Use**
Richard Quinn, Atmospheric and Environmental Research

- 12:00** **GPS Energetic Particle Data and their Use for Space Weather, Climatology, and Anomaly Assessment**
Steven Morley, Los Alamos National Laboratory
- 12:15 - 1:30** **Lunch**
- 1:30 - 2:45** **Building Resilience to Geomagnetic Induced Currents on the Electric Power Grid**
Chair: Christopher Balch, NOAA/SWPC
- 1:30** **Impacts of Extreme Space Weather Events on Power Grid Infrastructure: Physics-Based Modelling of Geomagnetically-Induced Currents (GICs) During Carrington-Class Geomagnetic Storms**
Michael G. Henderson, Los Alamos National Laboratory
- 1:45** **CHARGED: An NSF-Funded Initiative to Understand the Physics of Extreme GICs**
Mike Liemohn, University of Michigan
- 2:00** **GMD Vulnerability Assessment**
Emanuel Bernabeu, PJM Interconnection
- 2:15** **DOE's Recommended Monitoring Approach for GMDs and DOE's Pilot Program to Test and Evaluate Devices that can Mitigate GMD Impacts on the Grid**
John Ostrich, Department of Energy
- 2:30** **Magnetic-Storm Geoelectric Hazard Maps and the Induction of Voltages on Power Grids**
Jeffrey Love, USGS
- 2:45 - 3:45** **Break and Poster Session (Ionosphere Research and Applications and General Space Weather Services and Education)**
- 3:45 - 5:15** **Panel Session: Space Weather and Aviation - Making the Connection between Operations and Research**
Chair: Robert Rutledge, NOAA/SWPC
- 3:45** **United Airlines Space Weather Procedures and Needs**
Mike Stills, United Airlines
- 3:57** **Real-time Radiation Weather for Commercial Aviation on the Horizon**
W. Kent Tobiska, Space Environment Technologies
- 4:09** **The Effects of the 10 SEP 17 Solar Event on HF Voice Comms Over the Atlantic**
Anthony Abate, Rockwell Collins
- 4:21** **SWPC Challenges and Opportunities for Supporting Aviation**
Robert Rutledge, NOAA/SWPC
Bill Murtagh, NOAA/SWPC
- 4:33** **AFRL Next-Gen Dose Rate Specification and Prediction**
Shawn Young, Air Force Research Laboratory
- 4:45-5:15** **Panel/Audience Discussion**
- 6:00 - 9:00** **Banquet Dinner at Westin Lake House**

Special Guest Speaker: Thomas Zurbuchen, NASA Associate Administrator
Science Mission Directorate

Thursday, April 19

8:30 - 10:00 **Space Weather Observations**

Rodney Viereck, NOAA/SWPC

8:30 **Status of the GOES-R Series Space Weather Observations**

Juan Rodriguez, NOAA/NCEI

8:45 **The GOLD Mission – Real-time Imaging of the Space Weather in Earth’s Ionosphere and Thermosphere from Geostationary Orbit**

Richard Eastes, University of Colorado, Laboratory for Atmospheric and Space Physics

9:00 **DSCOVR – Status Update and Comparing Data from L1**

Doug Biesecker, NOAA/SWPC

9:15 **Activities of Korean Space Weather Center**

Jinwook Han, Korean Space Weather Center

9:30 **The FORMOSAT-7/COSMIC-2 Satellite Mission: Expanding the Observational Capabilities for the Space Weather Community**

John Braun, University Corporation for Atmospheric Research

9:45 **Update from Spire Global, GeoOptics and PlanetIQ**

Timothy Duly, Spire Global, Inc.

Rob Kursinski, PlanetIQ

Conrad Lautenbacher Jr., GeoOptics, Inc.

10:00 - 11:00 **Break and Poster Session (Magnetosphere Research and Applications)**

11:00 - 12:00 **Space Weather Observation Cont’d**

Chair: Michael Bonadonna, Office of the Federal Coordinator for Meteorological Services and Supporting Research

11:00 **Implementation of Solar Irradiance Measurements on the International Space Station (ISS): The TSIS-1 Mission of Total and Spectral Solar Irradiance Observational Continuity**

Erik Richard, University of Colorado, Laboratory for Atmospheric and Space Physics

11:15 **Deployment of Magnetic and Electric Field Sensors for GIC Hazard Mitigation**

Jennifer Gannon, Computational Physics Inc.

11:30 **OWS The Industrialization and Democratization of Space**

Tony Gingiss, OneWeb

11:45 **Five and One-Half Years of Radiation Belt Measurements: Space Weather in Earth’s Neighborhood**

Daniel Baker, University of Colorado, Laboratory for Atmospheric and Space Physics

12:00 - 2:00 **SWPC Lunch Tour (*Please Note: Tour participants must have signed up and will miss early afternoon session talks*) *Tour bus departs the Westin Lobby at 12:30 PM and returns at 3 PM***

2:00 – 2:15 **Keynote: Alice Bunn - Director of Policy, UK Space Agency**

- 2:15 - 3:30** **Research to Operations**
Chair: Terry Onsager, NOAA/SWPC
- 2:15** **University of Colorado Space Weather Technology, Research, and Education Center**
Jeffrey Thayer, University of Colorado
- 2:30** **Space Weather Forecasting Advancements at the University of Michigan**
Daniel Welling, University of Michigan
- 2:45** **Extending Terrestrial Weather R2O/O2R to Space Weather at NASA's SPoRT Center**
Brad Zavodsky, NASA
- 3:00** **Community Coordinated Modeling Center as a Hub for R2O and O2R: Capabilities, Challenges and Opportunities**
Maria Kuznetsova, NASA GSFC, Community Coordinated Modeling Center
- 3:15** **Air Force Research Laboratory Space Weather Open Standards and Data Repository Initiatives**
Michael Starks, Air Force Research Laboratory
- 3:30 - 4:30** **Break and Poster Session (Magnetosphere Research and Applications)**
- 4:30 - 5:30** **Space Weather Services for Human Space Exploration**
Chair: Scott McIntosh, National Center for Atmospheric Research, High Altitude Observatory
- 4:30** **NASA's Near Term Human Exploration Plans**
John Guidi, NASA
- 4:50** **Space Radiation Protection for NASA Exploration Class Missions**
Kerry Lee, NASA
- 5:10** **Update on the Worsening Particle Radiation Environment Observed by CRaTER and Implications for Future Human Deep-Space Exploration**
Nathan Schwadron, University of New Hampshire

Friday, April 20

- 8:30 – 10:00** **Ionosphere and Thermosphere Modeling and Prediction**
Chair: Michael Wiltberger, NSF, Geospace Section
- 8:30** **Why the WAM in WAM-IPE?**
Tim Fuller-Rowell, University of Colorado, Cooperative Institute for Research in Environmental Sciences
- 8:45** **Whole Atmosphere Community Climate Model with Thermosphere and Ionosphere Extension (WACCM-X): Model Capabilities and Validation**
Han-Li Liu, National Center for Atmospheric Research, High Altitude Observatory
- 9:00** **Global Modeling of Metal Ions in the Ionosphere with SAMI3**
Joseph Huba, Naval Research Laboratory
- 9:15** **Private Sector Contributions to Ionospheric Monitoring**
Geoff Crowley, Atmospheric and Space Technology Research Associates

- 9:30** **USU GAIM Data Assimilation Models for Space Weather Specifications and Forecasts**
Robert Schunk, Utah State University
- 9:45** **OpenGGCM Modeling of SAPS and Related Ionosphere-Thermosphere Phenomena**
Jimmy Raeder, University of New Hampshire
- 10:00 - 10:30** **Break**
- 10:30 – 12:00** **Solar and Magnetosphere Modeling and Prediction**
Chair: Michele Cash, NOAA/SWPC
- 10:30** **Toward a New Space Weather Model Suite**
Slava Merkin, Johns Hopkins University Applied Physics Laboratory
- 10:45** **NASA GSFC Heliophysics Science Division and Space Weather**
Antti Pulkkinen, NASA GSFC, Heliophysics Science Division
- 11:00** **CIMI - Modeling the Inner Magnetosphere**
Mei-Ching Fok, NASA GSFC, Heliophysics Science Division
- 11:15** **Geoelectric Field Maps: Progress on NOAA's Operational Near Real-Time Geoelectric Field Estimation Capability**
Chris Balch, NOAA/SWPC
- 11:30** **Forecasting the Arrival Time of Coronal Mass Ejections: Current Capabilities and Uncertainties**
Peter Riley, Predictive Science Inc.
- 11:45** **Will There Even Be Sunspot Cycle 25?**
Scott McIntosh, National Center for Atmospheric Research, High Altitude Observatory
- 12:00** **Conference Closing Remarks**
Howard Singer, NOAA/SWPC

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