

Millennium Hotel – Boulder, Colorado

April 13 – 17, 2015

Key components of our global infrastructure and economy are at risk from space weather. Modern society depends on reliable access to advanced technologies such as GPS, satellite communications, and a stable energy distribution network. No other natural occurring phenomenon has the potential to be so far reaching in its impact to mankind. Consequently, space weather mitigation strategies are being addressed by many nations. Meeting the space weather needs is beyond the capability of any single agency or country, and we recognize that society is best served by the ability of all nations and all sectors - public, private, and academic to work together as partners to meet our common goals to plan, prepare and respond to space weather storms.

The 2015 Space Weather Workshop will bring together the diverse elements of the space weather community. Representatives from research centers, the commercial space weather services sector, international organizations, and several federal government agencies will participate in a variety of sessions relevant to space weather. Topics include:

- Space Weather National Strategy, an interagency Space Weather Operations, Research, and Mitigation (SWORM) Task Force involved in the development of strategic goals for enhancing our Nation's preparedness for a severe space weather event. Task Force members will share details of the National Strategy and provide an opportunity for input from workshop attendees during the panel discussion.
- The economic effects of geomagnetic storms on electric utilities, commercial aviation services and satellite navigation systems such as GPS.
- The international coordination of space weather activities from space weather service organizations around the globe.
- Advances in space weather modeling, and the emerging needs of the operational and forecasting community.
- The development and implementation of spacecraft and instruments of value for both research and operations.
- Recent research regarding solar cycles past and present and long term trends in space weather.

In addition to the plenary sessions, there will be poster sessions and a roundtable discussion focused on the growing the space weather enterprise. The roundtable consists of a panel represented by distinguished members of the public and private sectors. The Wednesday evening banquet will be held at the UCAR Center Green 1 Auditorium and feature Dr. Sandy MacDonald, Director, NOAA's Earth Science Research Laboratory, presenting "Science on a Sphere."

This year also marks the 50th Anniversary of routine daily space weather forecasting when the Space Disturbance Laboratory (SDL) was formed in 1965, including a Space Disturbance Forecast Center. At this year's Space Weather Workshop, we commemorate 50 years of accomplishment and progress in support of a growing constituency affected by space weather conditions.

Space Weather Workshop 2015 is co-sponsored by the NOAA Space Weather Prediction Center, the NSF Division of Atmospheric and Geospace Sciences, and the NASA Heliophysics Division.

<http://www.swpc.noaa.gov/content/annual-meeting>

2015 Space Weather Workshop Agenda

Millennium Hotel Ballroom

Monday, April 13

9:00 - 4:50 GOES-VW (NEXT) Requirements Session

5:00 - 7:00 Welcome Networking Session (NCAR Mesa Lab – 1850 Table Mesa Drive)
Buses depart the Millennium Hotel at 4:45 p.m. and 5:00 p.m.

Tuesday, April 14

8:30 Conference Welcome
Brent Gordon, NOAA/SWPC

8:35 State of the Space Weather Prediction Center
Tom Berger, NOAA/SWPC

8:45 Space Weather in Boulder: A Brief History
Ernest Hilder, Former Director, Space Environment Center

9:10 Solar Maximum...We Hardly Knew Ye
Doug Biesecker, NOAA/SWPC

9:25 - 9:45 Break

9:45 - 11:15 Space Weather National Strategy
Chair: William Murtagh, Office of Science and Technology Policy

9:45 Task Force Overview
Co-leads: Tamara Dickinson, OSTP/Louis Uccellini, NWS

10:00 - 11:15 Panel: Goal Team Leads
Seth Jonas, STPI; Sarah Ellis Peed, DHS; Tom Berger, SWPC; Chris Cannizzaro, DOS

11:15 - 12:15 DSCOVR
Chair: Alysha Reinard, CIRES

11:15 DSCOVR – Halfway to L1
Doug Biesecker, NOAA/SWPC

11:35 Instrumentation - Capabilities and Calibration Test Plans
Adam Szabo, NASA/GSFC

11:55 Space Weather Follow-on
Pat Mulligan, NOAA/NESDIS

12:15 - 3:00 Lunch

1:00 - 3:00 Poster Session - General Space Weather Activities and Operational Services & Solar and Interplanetary Research and Applications (Two Groupings)

3:00 - 4:40 Space and Ground Based Observations and Advances

Chair: Howard Singer, NOAA/SWPC

3:00 GOES-VW Workshop Summary

Rodney Viereck, NOAA/SWPC

3:20 Solar Data for Space Weather Forecasts from GONG

Frank Hill, National Solar Observatory

3:40 The Ionospheric Connection Explorer: ICON

Elsayed Talaat, NASA/Heliophysics

4:00 Imaging the Boundary Between Earth and Space - A Preview of Space Weather Data from the Global-scale Observations of the Limb and Disk (GOLD) Mission

Richard Eastes, University of Central Florida

4:20 Impact of FORMOSAT-7/COSMIC-2 on Ionospheric Space Weather Monitoring

I-Te Lee, Central Weather Bureau - Taiwan

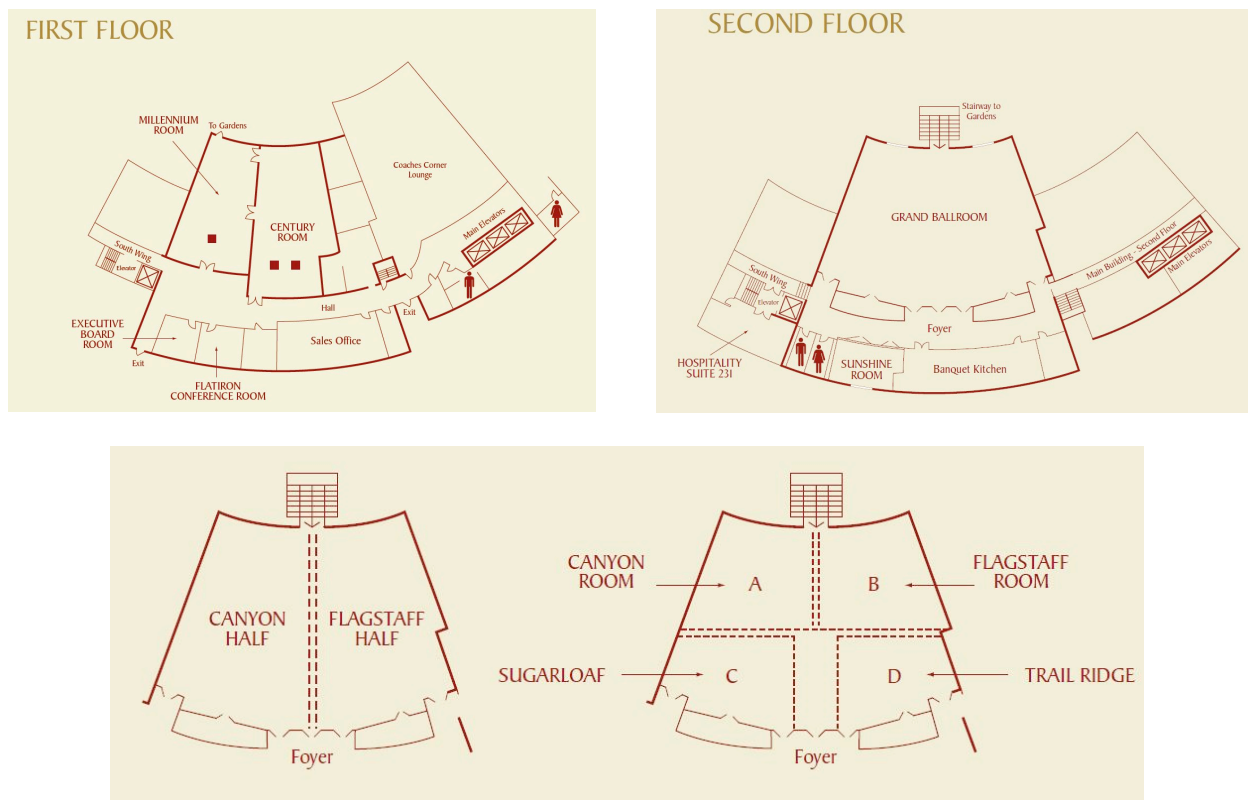
4:40 Space Weather Ballooning

Tony Phillips, SpaceWeather.com

5:00 End of Session

5:30 - 7:30 9th Annual SWPC - Commercial Space Weather Interest Group (CSWIG) / American Commercial Space Weather Association (ACSWA) Summit Meeting - by invitation

Millennium Hotel Meeting Rooms



Wednesday, April 15

8:30 - 8:40 Space Weather Morning Forecast Brief
Dave Marshall, SWPC Space Weather Forecasting Office

**8:40 - 10:10 Commercial Space Weather Interest Group (CSWIG)/
American Commercial Space Weather Association (ACSWA)
Roundtable Session: “Growing the Space Weather Enterprise”**

Featured Speakers:

Major General Steve Denker, Director, Integrated Air, Space, Cyberspace and ISR Operations, Air Force Space Command
Space Weather - Key Element to Space Domain Awareness

Dr. David Chenette, President and CEO, Celdex Space, LLC
Success and Challenges in Government-Industry Partnering

Dr. Conrad C. Lautenbacher, Jr., Chief Executive Officer, GeoOptics, Inc.
Growing the Space Weather Enterprise: Building a Committed Partnership

Panel: Featured Speakers

Moderator and Organizer:

Dr. Devrie Intriligator, Director, Space Plasma Laboratory, Carmel Research Center, Inc.

10:10 - 10:30 Break

10:30 - 12:00 Panel: Agency Activities
Chair: Tom Berger, NOAA/SWPC

10:30 NASA Heliophysics Division
Lika Guhathakurta, NASA/Heliophysics

10:45 Space Weather Research at the National Science Foundation
Vladimir Papitashvili, NSF

11:00 United States Air Force Weather
Ralph Stoffler, AFW

11:15 National Weather Service
Bill Lapenta, NOAA/NWS

11:30 NESDIS
Greg Mandt, NOAA/NESDIS

11:45 Question and Answer Session

12:00 - 3:00 Lunch

1:00 - 3:00 Poster Session - Ionosphere Research and Applications

- 3:00 - 3:20 Superflares on Solar Type Stars and Their Implications on the Possibility of Superflares on the Sun**
Kazunari Shibata, Kyoto University
- 3:20 - 4:40 Space Weather Impacts: Emerging Issues in Aviation**
Chair: Robert Rutledge, NOAA/SWPC
- 3:20 NIOSH Aircrew Studies**
CAPT Barbara Grajewski, U.S. Public Health Service
- 3:40 Rockwell Collins GLOBALink Voice Services / Impact of Solar Event on HF Communications**
Hugh Pat Guido and Anthony Abate, Aeronautical Radio, Incorporated (ARINC)
- 4:00 EURADOS Activities on Space Weather Effects: Comparison of Codes Assessing Radiation Exposure of Aircraft Crew during Solar Energetic Particle Events**
Peter Beck, Seibersdorf Laboratories
- 4:20 Establishment of Requirements for Space Weather Information Service by the International Civil Aviation Organization (ICAO)**
Terry Onsager, NOAA/SWPC
- 4:40 Economic Impact and Effectiveness of Radiation Exposure Mitigation Measures during a Ground Level Enhancement**
Daniel Matthiä, German Aerospace Center (DLR)
- 5:00 End of Session**
- 6:00 - 8:30 Banquet Dinner at UCAR Center Green Auditorium**
Bus transportation available

Special Guest Speaker:

Dr. Sandy MacDonald

Director, NOAA's Earth System Research Laboratory
"Science on a Sphere"



Available Shuttle Bus to the Banquet:

There will be one 50 person bus departing the Millennium Hotel at 5:45 pm for anyone who wishes to ride to UCAR Center Green. The bus will depart the UCAR Center Green for the Millennium Hotel at 8:50 pm.

Parking:

Free parking is available at the UCAR Center Green Campus for those who wish to drive personal vehicles.

UCAR Center Green Campus
Building 1
3080 Center Green Drive
Boulder, CO 80301

Thursday, April 16

- 8:30 - 8:40 Space Weather Morning Forecast Brief**
Meghan Stockman, SWPC Space Weather Forecasting Office
- 8:40 - 10:20 Space Weather Impacts: Power Grid (Continued)**
Chair: Chris Balch, NOAA/SWPC
- 8:40 Solar Shield: Update and Path Forward**
Antti Pulkkinen, NASA/GSFC
- 9:00 NERC Reliability Standards for Geomagnetic Disturbances**
Frank Koza, Pennsylvania-New Jersey-Maryland Interconnection (PJM)
- 9:20 System Impact Modeling**
Tom Overbye, University of Illinois
- 9:40 Assessing the Impact of Space Weather on the Electric Power Grid Based on Insurance Claims for Industrial Electrical Equipment**
Karel Schrijver, Lockheed Martin
- 10:00 Information Needed from GMD Forecasters**
Trevor Gaunt, University of Cape Town
- 10:20 - 10:40 Break**
- 10:40 - 12:00 Research to Operations (R2O) and Modeling**
Chair: Michele Cash, CIRES
- 10:40 Space Weather Prediction Testbed: Status and Update**
Rodney Viereck, NOAA/SWPC
- 11:00 Developmental Testbed Center: Facilitating R2O for Numerical Weather Prediction**
Louisa Nance, Developmental Testbed Center - NCAR
- 11:20 Advancements in Empirical Geomagnetic Field Modeling During the THEMIS and Van Allen Probes Era**
Grant Stephens, Johns Hopkins University Applied Physics Laboratory
- 11:40 Ensemble Assimilation Using First-Principles Models as a Tool for Three-Day Space Weather Forecasts**
Geoff Crowley, Atmospheric and Space Technology Research Associates (ASTRA)
- 12:00 - 3:00 Lunch**
- 1:00 - 3:00 Poster Session - Magnetosphere Research and Applications**
- 3:00 - 3:20 Space Weather Journal Overview and Prospectus**
Delores Knipp, Space Weather Journal
- 3:20 - 5:00 International Coordination of Space Weather Activities**
Chair: Terry Onsager, NOAA/SWPC
- 3:20 Predicting Space Weather: Impact on Fugro Offshore Precise Positioning Services**
Yahya Memarzedeh, Fugro Worldwide

- 3:40** **International Committee on Global Navigation Satellite Systems (ICG)**
Shafa Gadimova, Office for Outers Space Affairs (UN)
- 4:00** **State of GNSS in Africa: Applications, Observational Infrastructures, Research Implications and Prospects**
Babatunde Rabi, Nigerian National Space Research and Development Agency
- 4:20** **ESA SSA Space Weather Service System**
Juha-Pekka Luntama, European Space Agency (ESA)
- 4:40** **UK Met Office Update**
Mark Gibbs, UK Met Office
- 5:00** **End of Session**

Friday, April 17

- 8:30 - 8:40 Space Weather Morning Forecast Brief**
Meghan Stockman, SWPC Space Weather Forecasting Office
- 8:40 - 10:00 Research to Operations (R2O) and Modeling (Continued)**
Chair: Howard Singer, NOAA/SWPC
- 8:40 Community Coordinated Modeling Center: Pioneering the Path from Research to Operations**
Masha Kuznetsova, NASA/CCMC
- 9:00 Transitioning the SWMF Geospace Model into Operations at the National Weather Service**
George Millward, CIRES
- 9:20 Integrated Dynamics in Earth's Atmosphere - IDEA**
Rodney Viereck, NOAA/SWPC
- 9:40 WSA/ADAPT (Air Force Data Assimilative Photospheric Flux Transport)**
Nick Arge, Air Force Research Laboratory
- 10:00 - 10:20 Break**
- 10:20 - 11:40 Space Weather: The Future**
Chair: Rodney Viereck, NOAA/SWPC
- 10:20 Carrington L5 Mission**
Markos Trichas, Airbus Defense and Space
- 10:40 Opportunities in the First Solar Maximum with Social Media**
Elizabeth MacDonald, NASA
- 11:00 USGS Induction Hazard Science**
Jeff Love, USGS
- 11:20 Four-Year Plan for World Meteorological Organization Space Weather Activities**
Terry Onsager, NOAA/SWPC
- 11:40 Closing Remarks**
Tom Berger, NOAA/SWPC
- 12:00 End of Conference**