

2023 Space Weather Prediction Testbed Satellite Exercise

3090 Center Green Dr, Boulder, CO 80301

October 25-27, 2023

Agenda

Tuesday 10/24:

Space Weather Prediction Center Forecast Operations Center Visit
Opportunity

4:00 pm – 5:00 pm

**Space Weather Prediction Center Visit, David Skaggs
Research Center, Boulder, CO 80305 (RSVP Required)**

Wednesday 10/25:

Space Weather Overview and Tabletop Exercise

8:30 am – 9:00 am

Welcome and Introductions: SWPC Mission and Testbed Experiment Motivation and Overview - Discuss overall goals of this engagement.

Speakers: *Clinton Wallace and William Murtagh*

9:00 am – 9:45 am

Space Weather Overview Part I: SWPC Forecasters will provide an overview of space weather alerts and warnings, updated solar cycle predictions, and impacts on satellite operations. The current capabilities, limitations, and gaps in forecasting will also be discussed.

Speakers: *Shawn Dahl and Robert Steenburgh*

9:45 am – 10:00 am

Break

10:00 am – 10:45 am

Space Weather Overview Part II: Deep dive into phenomena leading to impacts on thermosphere neutral density and radiation environment. NOAA products that are currently available or planned in the future will be discussed.

Speakers: *Tim Fuller-Rowell and Juan Rodriguez*

10:45 am – 11:30 am

Office of Space Commerce (OSC): An update on the current status of OSC efforts towards an operational capability with the progress of the Traffic Coordination System for Space (TraCSS), the Commerce Department's space situational awareness (SSA) and space traffic coordination (STC) capability.

Speaker: *Brian Walling, OSC (Virtual)*

11:30 am – 11:45 am

Introduction to Space Weather Advisory Group Survey

- 11:45 am – 1:00 pm **Lunch Break**
- 1:00 pm – 3:00 pm **Tabletop Exercise** - Discussion-based session on a space weather storm scenario - will include forecast processes, alerts, and warnings that are relevant to satellite operators and tracking and maneuver services. Applications and value of SWPC products, including NOAA Space Weather Scales will be discussed. Open discussion on how the nowcast and forecast information could be used by the satellite industry and impact their operations.
Facilitator: William Murtagh and Shawn Dahl
- 3:00 pm – 3:20 pm **Break**
- 3:20 pm – 4:30 pm **Advances in Neutral Density Research** - Short presentations on research activities related to better neutral density specification, models and tool development, and products that can benefit the community in the near future.
Speakers: Eric Sutton (CU Boulder - SWx TREC), Piyush Mehta (West Virginia University), Sean Elvidge (University of Birmingham, UK), Geoff Crowley (Orion Space), Kent Tobiska (Space Environment Technologies)
Chair: Erin Lynch
- 4:30 pm – 5:00 pm **Daily Wrap-up**
Facilitator: William Murtagh
- 6:00 pm – 8:00 pm **Social Event (Location TBD)**

Thursday 10/26: *Requirements and Communication*

- 8:20 am – 8:30 am **Welcome and Quick Recap** - A quick recap of previous day's topics and key discussion points.
Speakers: Clinton Wallace and William Murtagh
- 8:30 am – 9:15 am **Tabletop Exercise Recap and Discussion** - A full review of the previous day's exercise and discussion to highlight key points and action items. This will parlay into the remainder of the day's talks to better comprehend operator experiences and requirements.
Facilitator: William Murtagh
- 9:15 am – 9:45 am **NESDIS Office of Space Weather Observations and Commercial Data Program** - An overview of the NOAA National Environmental Satellite, Data, and Information Service (NESDIS) strategic objective to advance space weather observations in all applicable orbits.

Topics will include the Space Weather Next Program formulated by NESDIS's Office of Space Weather Observations (SWO) and NOAA's Commercial Data Program (CDP).

Speakers: Erin Lynch and Marc Gasbarro

9:45 am – 10:00 am

Break

10:00 am – 11:40 am

Satellite Community Experiences, Requirements and Future Needs

- A panel discussion focusing on satellite owner/operators experiences on neutral density environment impacts to operations at LEO. An open discussion following the panel will allow more discussion on these topics.

Speakers: Stephanie LeBlanc (Planet Labs), Elizabeth West (Spire), Javier Roa Vicens (SpaceX), Marco Concha (Amazon Kuiper)

11:40 am – 1:00 pm

Lunch Break

1:00 pm – 2:40 pm

Panel Discussion: Commercial Service Providers Vision of Future Needs for Neutral Density Products and Services

- A panel discussion focusing on satellite service providers to share their perspectives on neutral density environment services. An open discussion following the panel will allow more discussion on these topics and tools that need to be developed.

Speakers: Rachit Bhatia (Leo Labs), David Vallado (COMSPOC), Siamak Hesar (Kayhan Space - Virtual), Pol Mesalles Ripoll (SpaceNav), Dolan Highsmith (NASA CARA)
Chair: Tzu-Wei Fang

2:40 pm – 3:00 pm

Break

3:00 pm – 4:30 pm

Current Radiation Products; LEO Radiation Overview and Effects

- This session will familiarize the LEO satellite-industry participants with the kinds of radiation hazards they may encounter and the data/models/products available to them. Additionally, an overview of services available from commercial providers will be presented. Finally, we will summarize the results of previous user-engagement workshops in conjunction with these discussions to define a good path forward.

Speakers: Juan Rodriguez (NCEI), Justin Likar (Johns Hopkins University - Applied Physics Laboratory), Alex Boyd (Aerospace Corporation), Janet Green (Space Hazards Applications), Christopher Mertens (NASA)
Chairs: Juan Rodriguez and Yaireska Collado-Vega

4:30 pm – 5:00 pm

Daily Wrap-up

Friday 10/27:

Future Capabilities and Direction

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| 8:30 am – 9:30 am | Space Weather Prediction Center Visit, David Skaggs Research Center, Boulder, CO 80305 (RSVP Required) |
| 8:30 am – 9:00 am | Day 2 Recap and Goals for the Final Morning
<i>Facilitator: William Murtagh</i> |
| 9:00 am – 10:15 am | Parallel Sessions on the Way Forward for Neutral Density and Radiation Support to the Satellite Community - Summarize the discussion during the Testbed engagement; discuss the current status of research on the neutral density and radiation environment; and establish a roadmap for future development in the key areas affecting satellite operations.
<i>Facilitators: Tzu-Wei Fang and Juan Rodriguez</i> |
| 10:15 am – 10:45 am | Break |
| 10:45 am – 12:00 pm | Final Discussion and Summary of Event Outcomes |
| 12:00 pm – 12:15 pm | Concluding Remarks |