

# Meeting Notes 9-13-24

## 9th Space Weather Advisory Group (SWAG) Meeting

### Committee

#### ***Nongovernmental End User Representatives***

Dr. Tamara Dickinson, Committee Chair, Science Matters Consulting  
Mr. Mark Olson, North American Electric Reliability Corporation  
Mr. Michael Stills, United Airlines (retired)  
Mr. Craig Fugate, Bent Ear Solutions  
Dr. Rebecca Bishop, Aerospace Corp.

#### ***Commercial Sector Representatives***

Dr. Conrad Lautenbacher, GeoOptics, Inc. (not in attendance)  
Dr. Seth Jonas, Lockheed Martin  
Dr. W. Kent Tobiska, Space Environment Technologies  
Dr. Nicole Duncan, BAE Systems

#### ***Academic Community Representatives***

Dr. Tamas Gombosi, University of Michigan, Ann Arbor  
Dr. Delores Knipp, University of Colorado, Boulder  
Dr. Scott McIntosh, Lynker Technologies (not in attendance)  
Dr. Heather Elliott, Southwest Research Institute  
Dr. George Ho, Southwest Research Institute

#### ***Designated Federal Officer***

Ms. Amy Macpherson, National Weather Service

### **Welcome:**

Amy Macpherson introduced everyone to the Sept. 13, 2024 SWAG meeting and provided a brief summary of the PROSWIFT Act for the people listening at home. The SWAG members here today are appointed to provide input to the SWORM. This meeting today will go over the user-need survey and SWAG members will vote on finalizing the report. Amy thanked everyone on the SWAG for their dedication, and especially SWAG Chair Tammy Dickinson for her work.

### **Opening Remarks:**

Tammy Dickinson provided the remarks.

Tammy thanked everyone for their hard work, especially all the final things over the last few weeks to finish the report. During the last meeting in April, the SWAG approved most of the sector findings and recommendations of the report including electric power grid, aviation, emergency management, space traffic management and coordination, and human space flight. The meeting also had guest speaker, Dr. Jinni Meehan, and updates from the NASA Space Weather Council and the Space Weather Roundtable.

Today we will go over major changes and any recommendations for the report. We will not go over the entire report. We will also need to update everyone's affiliations. We'll have the required public comment period, and finally a discussion about the summit at the White House.

### **Status of the User Needs Survey:**

Tammy continued:

Required by the PROSWIFT Act - assess adequacy of the fed goals, identify approach and methods and coordination, identify opportunities for new research and collection, identify new technologies and more. Tammy then detailed what has been done and what will be done in the future (included in slides).

As a reminder we did virtual and in person focus groups. There is no attribution to specific people or groups in the report. Sessions were recorded but only for note taking purposes. The Science and Technology Policy Institute provided a high level summary for the SWAG. A summary of the topics surveyed was then provided (see slides).

A report cover was created by AI - Tammy asked if the AI cover was a problem. No one in the SWAG thought it was a problem. We will be approving the report in its entirety, not section by section.

A list of which sections had changes was provided, specifically intro, aviation, STM/C, research, GNSS, and overarching sections.

Report contains two types of recommendations: directly from the users (95% or more) and SWAG recommendations (~5%).

### **Review of the Report Changes:**

Tammy continued to provide these insights.

**Executive Summary:** Few changes, nothing new. No findings or recommendations in this section.

**Chapter 1 - Intro:** Added to the report to provide context of the Gannon Storm including impacts on sectors. This information tied the report together as to why the report is important and needed. This section also included some background info, previous work, process of the report, next steps and challenges for phase 2, and a description of the report. No findings and recommendations in chapter 1.

**Electric Power:** No major changes. Only minor edits.  
No problems raised for this section by SWAG members.

Kent Tobiska continued here:

**Aviation:**

Finding 3.2 - minor changes to recommendations 3.2.5 added to the report from the user survey. Rebecca asked for clarification that the survey participants provided the feedback here. Kent confirmed.

No other SWAG member concerns.

Finding 3.5 (user survey provided recommendations): New recommendations 3.5.3, 3.5.4, 3.5.5.  
No SWAG member concerns.

Finding SWAG 3.1: Recommendation 3.1.1 added to report, SWAG 3.2: Recommendation 3.2.1 added to report, SWAG 3.3: Recommendation 3.3.1 added to report.

No concerns from SWAG members on these three recommendations on these changes/additions.

Tammy continued here:

**Human Space Flight Sector**, only minor edits. No concerns from SWAG members.

Delores Knipp took over here:

**Space Traffic Management and Coordination**, mostly merged some SWAG recommendations and reworded a few.

Finding 5.9: Changes to 5.9.1 and 5.9.2 were minor wording changes.

Finding SWAG 5.1, Recommendation 5.1.1 slight wording changes.

Finding SWAG 5.2: 5.2.1 moved to 5.2; 5.2.2 moved to 5.8.3 and 5.2.3 moved to 5.6.3. These changes were to consolidate recommendations and place them in the proper place where the users provided this insight..

Finding SWAG 5.3, 5.3.1 moved to 5.5.3. These changes were to consolidate recommendations and place them in the proper place where the users provided this insight..

Finding SWAG 5.4, 5.4.1 moved to 5.6.3 These changes were to consolidate recommendations and place them in the proper place where the users provided this insight.

Tammy clarified that recommendations moved from SWAG recommendations to a user response only occurred when a user also provided the insight.

Rebecca said that supporting language was also provided to clarify what the users perception was of the field as a whole.

Tammy said this was the most difficult chapter of the report. There were a lot of thoughts and comments and a lot of recommendations in this chapter. Lots of thanks to the group.

Delores said there was a very wide net to obtain insight. Sometimes only one or two users expressed a concern but the perception was that these issues were actually across a wider range of users.

No SWAG concerns with these changes or the chapter.

Tammy continues:

**Emergency Management Sector:** No major changes, only minor edits.

Craig said the only changes were grammar changes. The chapter captured what the emergency managers told us.

SWAG members had no concerns with this chapter.

**Research Sector:** Several changes.

Seth Jonas takes over from here reading slides:

*Planning and Investment*

Finding 7.1, recommendations 7.1.1, 7.1.2 - minor changes.

Finding 7.2, recommendation 7.2.1 (needs a minor tweak, typo) - minor changes.

Finding 7.3, recommendation 7.3.1, 7.3.2 (needs a minor tweak, typo), 7.3.3, 7.3.4 -

Finding 7.4, recommendation 7.4.1 - NEW finding/recommendation

SWAG feedback: No concerns raised.

*Observational Capabilities*

Finding 7.5, recommendations 7.5.1, 7.5.2

*Education and Workforce Diversification*

Finding 7.6, recommendations 7.6.1, 7.6.2, 7.6.3, 7.6.4 - NEW finding/recommendations taken from the text but hadn't manifested into a full finding/recommendation in previous drafts of the report.

*SWAG Findings and Recommendations*

Finding SWAG 7.1, recommendations SWAG 7.1.1.

Rebecca: Requested to look at the education part of the recommendations. Rebecca wanted to emphasize the need to support professionals throughout their career. There is a leaky pipeline at mid-career and this needed to be emphasized in the report and this is why this section is included here.

No SWAG concerns with the entire section.

Tammy speaking:

**GNSS Sector:** Nothing to present because there are no findings and recommendations.

**Overarching Themes Chapter:**

This section provides a few overarching themes and summarizes recommendations into overarching recommendations. These are all new from the previous version of the report.

Seth presents again:

*Theme 1* - Regionalization and Impacts, recommendations 1.1 and 1.2 presented.

No SWAG concerns about these two recommendations.

*Theme 2* - Education and Testbeds, recommendations 2.1 and 2.2 presented.

Delores said she was impressed how well they summarized these recommendations.

Tammy said they decided that testbeds and education go together because of the educated/awareness aspects of testbeds.

Rebecca said that education is a two way activity.

No SWAG concerns about these two recommendations.

*Theme 3* - Data Archives, Access (Latency), and Automation, recommendations 3.1 and 3.2 presented.

Kent said this is a great theme to emphasize. The aviation sector might also need to be included with recommendation examples. Mike and Kent will review for any recommendations that should be included.

No other SWAG concerns about this section.

Tammy continued from here:

## **Report Approval?**

This is the chance to bring up any other concerns about the report. Otherwise we will be looking for someone to make a motion to approve the report.

Rebecca - Asked if we can add any sentences at this point?

Tammy said no, we are not adding content at this point.

Craig made a motion to approve as long as the content is not changed, except for minor editorial changes, this weekend with any edits. Delores seconded the motion.

Anyone not in favor of not approving the report? No. Everyone was in favor of approving the report. Passes unanimously. 3 people not in attendance, but one voted by email before the meeting

## **Public Comment:**

Previously submitted comments read by Amy:

- Alex Pospikhov - Do you have any plans to support commercial companies in providing data or even services of the space weather ?
  - Kent: Great comment. As you know, the SWAG does not enable these actions. We only report on the users surveyed. As a rep of the commercial sector, I feel and I can give my unqualified support that I think the commercial sector and

industry as a whole overall was really included in a lot of the recommendations, the overview of stuff, as was the academic sector along with the agencies.

- Lori Coombs - "ImplPlanofNatISpaceWeatherStrat&ActionPlan" have we effectively security and comm assets against eff of SpaceWeather?
  - Tammy - said this is mostly a question for a federal agency
  - Seth: The report covers impacts from the Gannon storm. There is always a possibility for improvement as described in the report.
  - Rebecca: Needs and susceptibility change over time so we can't say that this is a yes or no answer.
  - Delores: There are several recommendations that speak to this. We recommend more work be done and that it may never be fully complete.
  - Kent: A footnote to this, it is definitely a work in progress, but from an observer perspective, there is tremendous improvement on this. During the Gannon Storm a flight was diverted south out of the northern latitudes. This flight had a sensor checking for radiation exposure. It was proven by this flight that radiation exposure can be substantially reduced by flying farther south during a storm.

Additional questions:

- No hands raised.

End of public comment.

## **Update Affiliations:**

Discussion led by Tammy

Craig: Change to add Bent Ear Solutions and former FEMA Administrator.

Michael Stills: Say Director of Flight Dispatch (Retired), Remove "Network Operations Control Center, Add: United Airlines, Chicago, Illinois (this is all one job that Michael has retired from)

Seth Jonas: title is fine

Scott: will need to be updated (will occur offline)

Heather: No changes

## **Discussion of next SWAG Meeting in DC**

Summary provided by Tammy

### **September 25th:**

East Wing Tour at 9 am for those who signed up.

Afternoon meeting at 1 pm will be at the EEOB 212 room.

(It will take time to get through security.)

Will have welcome and voting on minutes

Update from the roundtable and council

Public comment

Adjourn to administrative session to discuss Sept 26 meeting

After our session, tour of EEOB and group dinner (Amy agreed to schedule the group dinner)

Public may register for the meeting to watch virtually at [weather.gov/swag](https://www.weather.gov/swag)

### **September 26th:**

Session starts at 9 am

Various welcomes

Gannon Storm session

Community naming of the May storm for Jenn Gannon

Overview of the report by Tammy

Panel 1 - Space Weather End-User Applications, 5 minutes to present for each sector, then a panel discussion (Power Grid, Aviation, HSF, EM, STM/C) (Moderators Seth and Rebecca) Prep next Wednesday

Panel 2 - Research and Education (Moderators: Scott and Nicole) Prep next Thursday  
Discussion with SWORM on next tasks for SWAG 2.0

Intent of this discussion isn't to define what the SWAG will do but to come up with ideas.

Question: How early should we be there for the EEOB security?

It depends. An hour possibly. Make sure to have your ID.

Question: Will anyone not in the panels have to answer any questions?

No, but other SWAG members can ask questions of the panelists.

Seth: Others may be able to emphasize something stated by the panelists.

Question: Formal business attire?

Yes. Particularly on day 2.

Recommend to stay in the complex the entire time we are there. Getting back into the EEOB is really tough. Plan to eat at the facility. No Wifi access. The site is VERY secure. If you have special accommodations, please let Amy know. Security is similar to airport security, except you can take in food and beverages.

### **September 27th:**

Hill Briefing at 10am-noon ET

Participants:

Tammy Opening Remarks

Mark - Power Grid

Kent - HSF and aviation

Seth - EM and overarching  
Rebecca - STM/C  
Scott - Research  
Amy - DFO/Parent

Need each of you to pick out the few things you want to highlight in your chapters and add them to the charts Tammy has created.

Question: What committee are we briefing for?

House/Senate Space and Science Committees and staff

There may be restrictions on what you can bring onto the Hill.

Kent: Will the Hill presentation be in the Capitol or at a congressional building?

Amy: We don't know yet.

Presented a new SWAG logo possibility. The goal is to create one. Seth created the shared version via AI. SWAG members liked the first draft but did not approve during the meeting.

Tammy continues:

### **Next Steps and Closing Remarks**

Timeline:

First - Kent and Mike shared missing aviation recommendations into the overarching section (an action item from earlier in this meeting!) These will be added into the report.

All SWAG access to the report will be removed on Saturday so Seth can complete the final edits in Word.

Mike: Will provide affiliation edit for Appendix 4.

Hope to see you all on the 25th and 26th!

26th will be a family photo.

Thanks to everyone for all of your hard work!

Recommendation to the next SWAG is for fewer sectors.

Amy continues:

### **Adjourning remarks**

Thanks to everyone for joining today.

Thanks to the SWAG and Tammy.

Next public meeting the 25th and 26th, register at [weather.gov/swag](https://www.weather.gov/swag)