



Testing New Products

Miles Bliss, *Meteorologist*



At forecast offices in the National Weather Service, the meteorologists who staff them are considered operational meteorologists. Within our agency there are other types of meteorologists, like research meteorologists. The research meteorologists' role is to lead investigations into emerging tools created either in the government or academic settings to see if they would be useful for operations and deserving of broader agency support. The settings for these demonstrations are known as testbeds and proving grounds.

Summer began on
June 20th at
1:51 pm PDT.

Back in May, I was able to participate in one of these testbeds, which focused on satellite tools to help with summertime thunderstorms. The tools in this experiment included model data nudged with polar orbiting satellite soundings (PHS), emulated radar from a satellite derived machine learning process (GREMLIN), derived satellite fields to support thunderstorm warning operations (OCTANE), and some new additions to the lightning cast product suite.

If you want to follow along the latest development of these satellite products, you can view the blogs written by forecasters as they test them, here - <https://goesrhwt.blogspot.com/>

One example of the operational utility of these products comes from the [lightning cast tool](#), which uses machine learning to monitor cloud top cooling and create a probability of lightning occurring in the next hour. One of the additional features we tested, and is available to you, are [the dashboards](#) (see example below). The dashboards track the chance of lightning at specific locations, like airports. These airport dashboards are available for the

four airports the Medford forecast office supports with TAFs - Medford, Roseburg, Klamath Falls, and North Bend - and partners can work with us to request additional dashboards in support of their operations!

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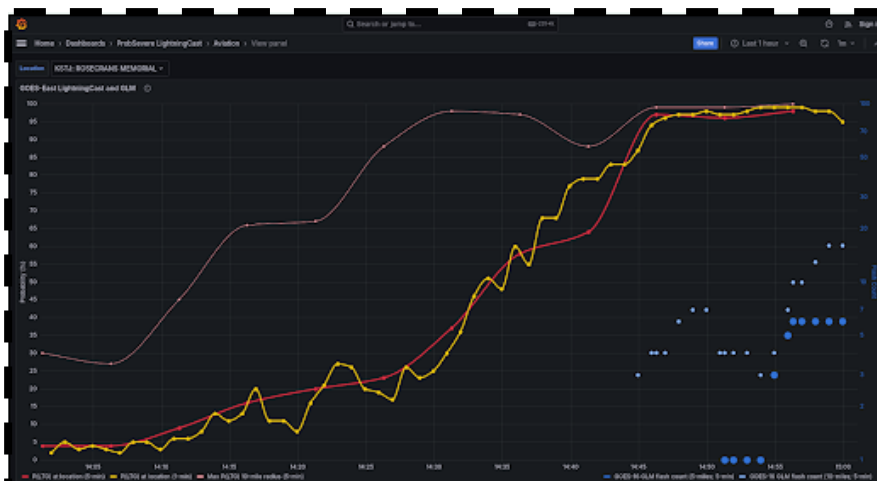


Image: A lightning cast dashboard. The pink line indicates the chance of lightning within a 10 mile radius in the next five minutes. The yellow is the chance at the centroid point in the next minute, and the red line is the chance at the centroid point in the five minutes. The blue dots represent observed lightning within five miles (big) and ten miles (small).

New for Fire Season 2024: Call to Action Statements (CTAs) for Fire Weather Products & Particularly Dangerous Situation (PDS) Red Flag Warnings

Brad Schaaf, *Lead Meteorologist*

After the Labor Day fires in 2020, the team at NWS Medford took an in-depth look at how we communicate conditions that aid in the rapid spread of fire. From our communications assessment, we identified several areas where we could improve our communications. The first was to work with our partners to highlight periods of extreme weather beyond the more typical conditions highlighted in our Red Flag Warning products. The second was to explore adding actionable information to our Red Flag call to action statements. Both of these recommendations are important pieces of the communication puzzle as we learned more about how the public and our partners made decisions based on our products.

Traditionally, our Red Flag Warnings were designed for the firefighting community to assist in staging resources. However, we noticed that our local media had been showcasing our Fire Weather Watches and Red Flag Warnings on their broadcasts. This noticeably increased after the 2020 Labor Day fires and we acknowledged that this partner-centric product was being used by the public as well. An idea from one of our partners was to come up with specific call to action (CTAs) that they can use when sending out alerts.

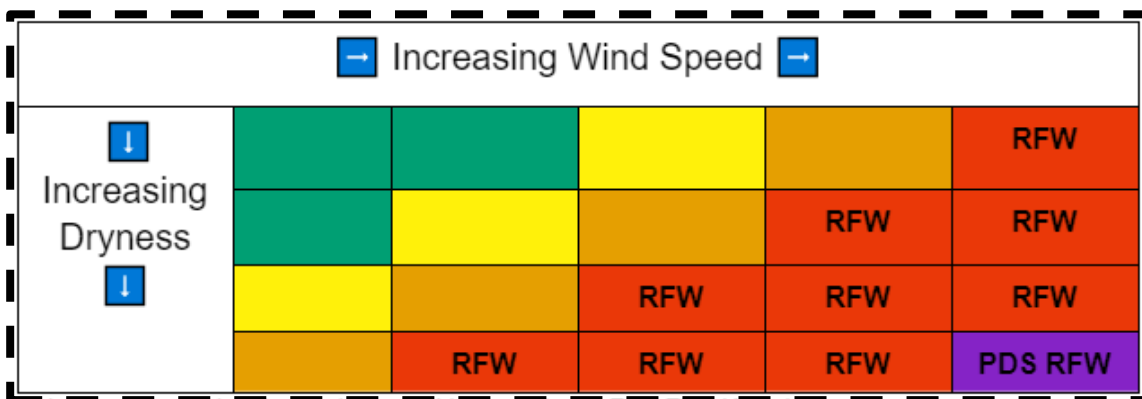
We took this feedback and came up with our first batch of CTAs, which debuted in 2021. While these statements did include actionable information for the public, we solicited feedback from our partners and learned that these statements could be improved upon by. In 2023, we began utilizing this feedback to improve the CTAs we already had. The feedback included the recommendation to not use the word “evacuate” because this is a buzz word that people may focus on and miss the rest of the message. We took this feedback to heart and drafted a new set of CTAs. We presented these new CTAs to our partners on June 11, 2024 in a meeting that included 90 partners and members of the NWS. During this workshop, we gained valuable feedback on the new CTAs and we learned more about crafting consistent messages across agencies. As a result, we were able to go live with our new CTAs this fire season.

In addition to the workshop on June 11, we also discussed and debuted our enhanced wording for Particularly Dangerous Situation (PDS) Red Flag Warnings. Particularly Dangerous Situation wording was first used with a tornado watch issued by the Storm Prediction Center in 1982. It was issued because the forecaster saw signals that indicated a good possibility for several thunderstorms to produce strong or violent tornadoes (EF3 to EF5). This continued after that, but it was slow to catch on -- until a tornado outbreak in 2011 in Alabama. The NWS has expanded the PDS messaging to include things like Flash Flooding, Tornadoes, and long-duration severe wind events like derechos. Then, on December 19th, 2017 and again on August 3rd, 2018, our colleagues at the NWS in Reno issued the first PDS wording for Red Flag Warnings. This was to highlight the threat for life-threatening fire danger due to unusually strong winds and low humidity. Still, change happens slowly and the PDS Red Flag Warnings were not used by other offices, including ours, until after the 2020 Labor Day fires.

As we began curating our data and working with our partners on this, there was some concern that adding PDS wording may “cheapen” regular red flag warnings -- in particular that dangerous situations can still happen during typical red flag warning conditions. This is a reasonable concern, but studies have shown that while people do take action for tornado watches, more people are likely to take action for PDS tornado watches ([Gutter, Morris, and Brown; 2018](#)). While studies have not been conducted with regards to Red Flag Warnings vs PDS Red Flag Warnings, it stands to reason that a similar outcome could be expected and that PDS Red Flag Warnings can be useful when used properly.

As the team explored climatological data, we decided that PDS Red Flag warnings should be rare. They will be based on events that have a 5 or more year return interval, meaning that a specific weather pattern leading to a PDS Red Flag Warning should occur once every 5 years. They also are designed with the wildland urban interface in mind and use forecaster discretion when issuing them. In short, we would issue a PDS Red Flag Warning for conditions like what led to the 2020 Labor Day Fires.

These efforts are just one of many that we are taking to better communicate hazards, risk, and weather threats to our partners and the public. We look forward to continuing to work with our partners to improve our services.



A Retirement Tribute:

Ken Sargeant's 31 Year Weather Service Career

Information Technology Officer Ken Sargeant earned his Bachelor of Science Degree in Meteorology at the University of Utah in 1993. He was immediately hired that summer as a Meteorologist Intern and assigned to a small Weather Service Office (WSO) in Santa Maria, California. Ken spent 2 years in Santa Maria taking weather observations, conducting pilot weather briefings, and issuing local forecasts for Santa Barbara and San Luis Obispo counties. Ken also honed his computer skills during this time. This came in handy when a company that was establishing a commercial distribution network for the new doppler radars was looking to install a distribution hub at little WSO Santa Maria. As a result of Ken's assistance, WSO Santa Maria obtained access to real time data from the Vandenberg Air Force Base doppler radar.

Ken began his weather service career during the Modernization And Restructuring (MAR) era of the National Weather Service. This is when doppler radars were being installed all across the country, including here in Medford, Oregon. In 1995, Ken was among the first 5 forecasters selected to operate the doppler radar being installed on Mount Ashland. "I remember arriving in Medford on Labor Day weekend. When I walked in the office, I saw the radar display was still in test mode!" The radar was commissioned for operational use just a few weeks later.



During the next 3 years here at Weather Forecast Office (WFO) Medford, Ken learned all about the local climate zones and forecasting challenges. Ken experienced the 1997 New Year's Day floods. "I was working the 3 PM to 11 PM shift on New Year's Eve. It was a busy shift alright! The next morning I woke up and turned on the TV and saw all this flood footage and decided to explore the valley a bit. I saw Bear Creek had inundated the Rogue Valley Mall parking lot, and the bridge at Railroad Park to the Bear Creek Greenway had washed out."

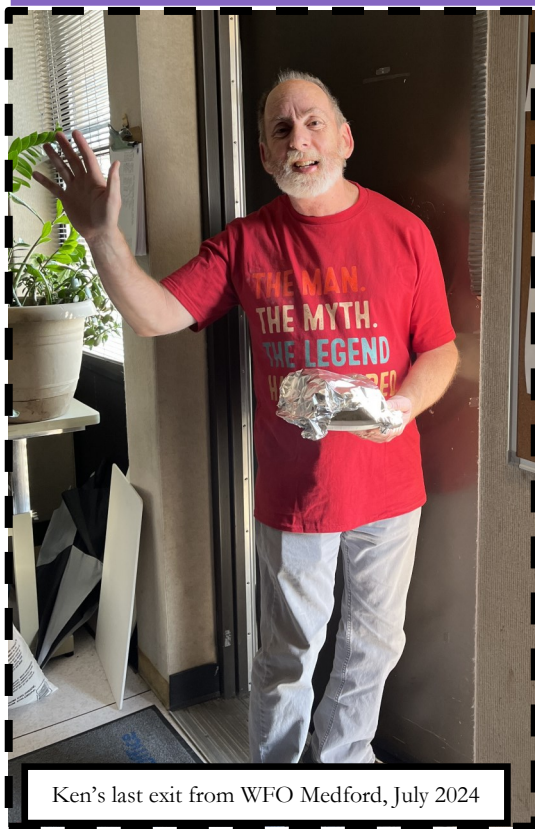
In the late 1990s, the Modernization and Restructuring Era was entering its 2nd phase which involved expanding the forecast staff to include the Senior Forecaster position. This was a leadership position and Ken felt with 3 years of experience under his belt, he would get selected for one of these positions. However, Ken was humbled when his application failed to make the selection panel. Hope was not lost because some offices across the country were not able to fill all of their Senior Forecaster positions. Ken reached out to the managers here at

WFO Medford and at Western Region Headquarters for advice on how to improve his application and was rewarded by being selected as a Senior Forecaster at WFO Elko, NV.

Ken left WFO Medford during Thanksgiving week in 1998. At WFO Elko, as a Senior Forecaster, he learned valuable leadership skills and became certified to take upper air observations (launching weather balloons). He also decided to expand his computer knowledge and skills by taking computer networking classes at Great Basin College. This would come in handy 3 years later when a new position titled Information Technology Officer was implemented for each of the 122 Weather Forecast Offices across the country.

In the Fall of 2001, WFO Medford announced their open position for Information Technology Officer. Ken immediately applied and, long story short, was selected for the job. Ken returned to Medford in January 2002. "I was so happy to return to the Rogue Valley after a 3 year 'sabbatical' in Elko!" *cont. on next pg.*





Ken's last exit from WFO Medford, July 2024

Ken's new role involved testing and implementing software that forecasters would use to create gridded forecasts as opposed to the then current procedure of forecasters manually typing their forecasts using word processing software. "WFO Medford was a test site for the National Digital Forecast Database (NDFD). I configured and programmed software that would create a graphical representation of the forecast. I also worked on software that interrogated the graphics and created a text version of the forecast. The goal was to refine the software so that it could produce a text forecast without any editing needed by the forecasters." It was a massive project and took several years of refinement, but the goal was met and the forecast process was switched from text focused to graphics focused.

Change is inevitable and just when everyone was comfortable with the Graphical Forecast Environment (GFE), along came the next big change in the National Weather Service mission which is to provide Impact-based Decision Support Services (IDSS). Our forecasters still use the GFE software but over the last few years, the emphasis has been on using software that helps the forecasters with providing better and better decision support for our partners. Ken has been instrumental in configuring and customizing software to meet these needs.

"I've done a lot and seen a lot during my 31 year National Weather Service career and I've enjoyed almost every minute of it. I've had the pleasure of working with good and kind co-workers who have been patient with me during the inevitable challenges over the years. Although I still love my job, I know it's time to close this major chapter in my life and move onto the next chapter called retirement!"

Meteorologist Miles Bliss takes an observation as the smoke plume begins to gain its most prominent vertical growth.



Our fire partners have been a huge help in getting our staff ready for the fire season! And we want to extend a big thank you to everyone who visited or invited us out for some spring readiness training.

The highlight of our readiness was when the training staff from the Rogue River-Siskiyou NF/ Medford District BLM allowed our Hydrologist, Spencer Higginson, to renew his fire qualifications for partici-

Partnership Working in Two Directions

Miles Bliss, *Meteorologist*



Service Hydrologist Spencer Higginson practices fire management with a water hose.

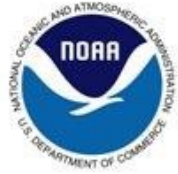
pation on BAER Teams and two additional meteorologists were allowed to join Spencer. They participated with those enrolled in the fire school to learn more about operations during a prescribed burn and wildland fire fighting in general. Brian Nieuwenhuis will take his lessons learned into his first year as an Incident Meteorologist this season, meanwhile Miles will use his takeaways to help inform the direction

Meteorologist Brian Nieuwenhuis listens to best practices for managing a fire's perimeter with hand tools.



of the office's Fire Weather program as a co-leader of it. Our newest meteorologists at the office are also beginning their first season of training for our fire weather operations and our participation or partnership in exercises like these allow the staff to instruct them through first hand experience, which helps to keep our partners safe.

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Our Vision

Professionals focusing on science, teamwork, and customer service to design and deliver the best decision-support information to our community.

Our Mission

Our team at the National Weather Service Office in Medford strives to deliver the best observational, forecast, and warning information through exceptional customer service, extensive training and education, maintaining quality electronic systems, and relying upon an outstanding team of weather spotters and cooperative observers. We do this within the overall mission of the NWS to build a Weather-Ready Nation:

To provide weather, hydrologic, and climate forecasts and warnings for the United States, its territories, adjacent waters and ocean areas, for the protection of life and property and the enhancement of the national economy. NWS data and products form a national information database and infrastructure which can be used by other governmental agencies, the private sector, the public, and the global community.

Our Values

Trust, Integrity, Professionalism, Service, Teamwork, Ingenuity, Expertise, and Enthusiasm.

About Us

The Weather Forecast Office in Medford, Oregon, is one of more than 120 field offices of the National Weather Service, an agency under the National Oceanic and Atmospheric Administration and the United States Department of Commerce. The Weather Forecast Office in Medford serves 7 counties in southwestern Oregon and 2 counties in northern California, providing weather and water information to more than a half-million citizens. We are also responsible for the coastal waters of the Pacific Ocean from Florence, Oregon, to Point St. George, California, extending 60 miles offshore. The office is staffed 24 hours a day, 7 days a week, and 365 days a year by a team of 26 meteorologists, hydrologists, electronic technicians, hydro-meteorological technicians, and administrative assistants.

