



Performance & Evaluation Branch
Operations Division
NWS Office of Chief Operating Officer
Silver Spring, Maryland

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Performance and Evaluation Branch Staff Attend UCAR's Weather Day on the Hill

By Doug Young, Brent MacAloney, and Sal Romano
NWS Headquarters

Doug Young, Brent MacAloney, and Sal Romano attended the first annual University Corporation for Atmospheric Research's (UCAR) "Weather Day on the Hill" on Thursday, May 14, 2015. The event, sponsored by the University Corporation for Atmospheric Research (UCAR), took place at the Reserve Officers Association across the street from the U.S. Senate Buildings, Washington, D.C. The agenda involved three panel sessions, Dr. Kathryn Sullivan as the keynote speaker, and exhibits from seven U.S. universities. The topics for the three panels were *Seasonal to Yearly Weather Forecasts*, *The Role of the Private Sector in the Weather Enterprise*, and *Weather-Related Legislative Issues*. Each panel discussion was comprised of four panelists, one of who also took the moderator's role.

Panel 1, *Season to Yearly Weather Forecasts*, covered discussions on the need for more accurate, longer-term weather forecasts. Dr. Cecillia Bitz, a professor in the Department of Atmospheric Sciences at the University of Washington, discussed the need to initialize the sea ice forecast models with additional sea ice thickness observations and ocean temperatures observations, including in the water under the sea ice.

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Dr. F. Martin Ralph, Director of the Center for Western Weather and Water Extremes from Scripps Institution of Oceanography, University of California, San Diego, discussed how the 30–90 day Madden–Julian Oscillation (MJO) affects precipitation in the western United States. He explained how Atmospheric Rivers (AR) are the main source of precipitation in that part of the country. ARs, which are relatively narrow regions in the atmosphere responsible for most of the horizontal transport of water vapor outside of the tropics (Figure 1) can quickly end long-term drought conditions by generating large to extreme amounts of rainfall. On average, about 30–50 percent of annual precipitation in the west coast states occurs in just a few AR events, thus contributing to water supply. A well-known example of a type of strong AR that can hit the U.S. west coast is the "Pineapple Express," due to their apparent ability to bring moisture from the tropics near Hawaii to the U.S. west coast.

Another member of this first panel was Dr. David Titley, Director, Center for Solutions to Weather and Climate Risk, Pennsylvania State University. Dr. Titley spoke about prospering and succeeding in today's and tomorrow's weather and climate environment. The session was moderated by Dr. James Hurrell, the NCAR director.

Panel 2, *The Role of the Private Sector in the Weather Enterprise*, consisted of Dr. Neil Jacobs, Chief Atmospheric Scientist from the Panasonic Avionics Corporation; Mr. Dennis Burke, Vice President of State Relations of the Reinsurance Association of America; Mrs. Romy Olaisen, Vice President of Global Weather Solutions Business Area, Government Communications Systems, Harris Corporation; and Mr. Scott Sternberg, President of Vaisala Inc.

This panel discussed ways in which private sec-

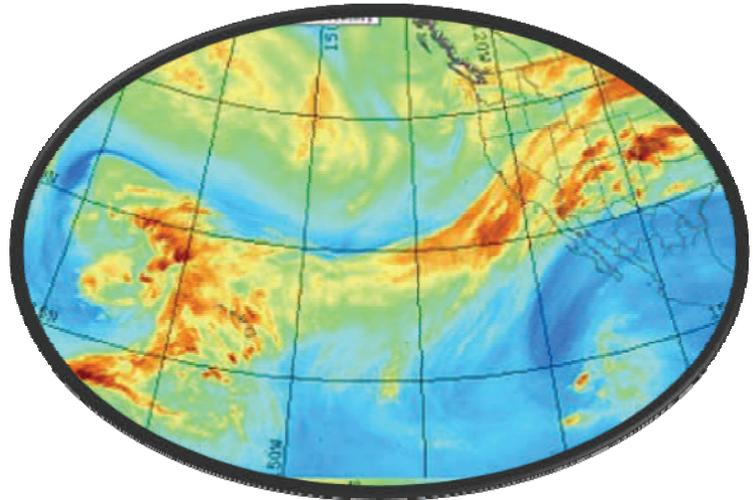


Figure 1. Water Vapor image showing an Atmospheric River (warm colors) affecting central and southern California

tor corporations contribute to, as well as use data and services from other entities in the weather enterprise. Of the topics discussed, the one area that directly involves the work done within the Performance and Evaluation Branch is the business conducted by the Reinsurance Association of America. Corporations involved in reinsurance are responsible for selling insurance to insurance companies. The premiums insurance companies pay to the reinsurance companies are based on risk management modeling. The frequency, strength, and likelihood of severe or hazardous weather occurrences in an area is related to the premium that insurance companies pay to the reinsurers. The majority of the storm reports used in these models come directly from the events logged in the storm events database.

Brent was able to have an offline discussion with Dennis Burke from the Reinsurance Association of America to discuss ways in which Storm Data could be improved to better help the reinsurance industry. Although the discussion was brief, a key contact was made within the reinsurance industry, allowing the Performance and Evaluation Branch to better understand how an additional member of the weather enterprise is using the storm events database.

Performance and Evaluation Branch Staff Attend UCAR’s Weather Day on the Hill – Continued from Page 2

The luncheon keynote speaker, Dr. Kathryn Sullivan, NOAA Administrator (**Figure 2**), gave an inspiring speech on NOAA’s role in the weather enterprise and the NWS’s Weather-Ready Nation initiative. Dr. Sullivan conveyed that NOAA is a science-based agency, but not solely science. She thinks of NOAA as sitting in the center of a bow tie, where the knot would be located (**Figure 3**).

The remainder of the bow tie represents all of NOAA’s employees, stakeholders and “clients.” As such, NOAA’s role in the federal family is to be aware of, and engaged with the entire earth systems science enterprise, which must include the human dimensions.



Figure 2. Dr. Kathryn Sullivan, NOAA Administrator, provides the keynote speech at Weather Day on the Hill.



Figure 3. Depiction of NOAA as the knot in the bow tie as described by Dr. Kathryn Sullivan.

Panel 3, *Weather-Related Legislative Issues*, included Majority and Minority congressional staffers for subcommittees dealing with weather, water, space, transportation, and technology topics (**Figure 4**). Specifically, the panel consisted of Dr. Marcy Gallo, Minority Staff Director from the House Committee on Science, Space, and Technology, Subcommittee on the Environment; Dr. Fern Gibbons, Majority Professional Staff from the Senate Committee on Commerce, Science and Transportation, Subcommittee on Oceans, Atmosphere, Fisheries, and Coast Guard; Ms. Sara Gonzalez-Rothi, Minority Counsel from the Senate Committee on Commerce, Science and Transportation, Subcommittee on Oceans, Atmosphere, Fisheries, and Coast Guard; and Mr. Mark Marin, Majority Staff Director from the House Committee on Science, Space, and Technology, Subcommittee on the Environment and Subcommittee on Energy.



Figure 4. Dr. Fern Gibbons, *Senate Committee on Commerce, Science, and Transportation*, responds to a question from the audience.

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This informative panel provided insight on their legislative efforts. Most notably was new information on legislation that invests in boosting the accuracy and usefulness of seasonal forecasts. On Wednesday, May 13, the U.S. Senate Commerce Committee introduced [S.1331, the Seasonal Forecasting Improvement Act](#). The bipartisan bill would appropriate \$26.5 million annually to the National Oceanic and Atmospheric Administration (NOAA) through 2020 to enhance predictions covering periods two weeks to two years into the future. The bill places an emphasis on the communication of the seasonal predictions, instructing NOAA to both develop an Internet clearinghouse for the forecasts and convey results directly to government and private sector decision makers as well as the public. Dr. Titley welcomes this legislation. He said

previously, "It will help NOAA, the Department of Defense, and the entire government bring the goal of improved seasonal forecasts forward." In addition to the emphasis on seasonal forecasting, the bill includes several other measures, such as having NOAA's research arm work more closely with the NWS to strengthen the process of transferring research activities into operations that will improve forecasts. This Senate bill was the second major piece of weather-related legislation introduced by Congress this spring. The House Science Committee also passed the [Weather Research and Forecasting Innovation Act of 2015](#). On May 19, 2015, this Bill then passed the House and was referred to the Senate Committee. On May 20, the Bill was received in the Senate and read twice, and referred to the Committee on Commerce, Science, and Transportation. ⚙

National Weather Service 2015 Customer Satisfaction Survey is "Live"

By Sal Romano, NWS Headquarters

The NWS contracted with the Claes Fornell International (CFI) Group to assist in the development and implementation of this year's survey, as we have done for the previous five annual surveys. The CFI Group staff are experts in the science of customer satisfaction and use the American Customer Satisfaction Index (ACSI) methodology. The ACSI was created by CFI Group's founder, Claes Fornell, under the auspices of the University of Michigan. It is the only uniform measure of customer satisfaction in the U.S. economy and is used by more than 200 companies and government agencies.

The 2015 Customer Satisfaction Survey is undertaken by the Performance and Evaluation Branch in the Operations Division of the Office of Chief

Operating Officer. The Survey has been implemented by CFI and went "live," as of Saturday, May 9, 2015. This is a short, continuous, web-based, pop-up survey on NWS websites (e.g., weather.gov, forecast.gov, WFOs' web pages). The goal is to obtain 2,000 responses monthly (~67 nationwide each day) for a total of 24,000 responses annually. The new collection technique provides data collection and reporting, via a web portal, throughout the year. So far, this goal is on track. In the May 9, 2015 to June 8, 2015 period (i.e., a 30-day period), there were an average of 119 responses per day, for a sum of 3589 responses. They had an overall satisfaction score of 80, as is shown on page 5 (**Figure 1**) from a screen capture from a graphic in the results portal.

Continued on next page...

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National Weather Service 2015 Customer Satisfaction Survey is “Live” – Continued from Page 4



Figure 1. Screen capture from a graphic in the results portal showing an overall satisfaction score of 80.

The other three measures shown in the above graphics are measures resulting from these questions:

1. **Take Action:** Using a 10–point scale on which 1 means “Not at all Likely” and 10 means “Very Likely,” how likely would you be to take action based on the information you receive from the NWS?
2. **Future Use:** Using a 10–point scale, on which 1 means “Not at all Likely” and 10 means “Very Likely,” how likely are you to use the NWS as a source of weather information in the future?
3. **Recommend:** Using a 10–point scale on which 1 means “Not at all Likely” and 10 means “Very Likely,” how likely are you to recommend the NWS to a colleague or

Each of these quarterly surveys contains no more than 25 questions. The usual customer satisfaction index questions to determine the satisfaction score, desired outcomes, demographics questions, and the usage of NWS forecast information make up about 15 questions. In addition, there are 5–10 seasonal/topical questions. For example, the “live” survey includes questions on winter weather, Weather-Ready Nation, and outreach. The seasonal questions are scheduled to be swapped out in July and replaced with flooding and hazardous weather-related questions.

For your information, there is another continuous pop-up survey being administered for the NWS by the Office of the CFO. That survey is mainly concerned with the NWS’s weather.gov site and the pop-ups only occur on that website

and not on the WFOs’ web pages. A different survey company, ForeSee, is administering the survey.

In addition to these pop-up surveys, CFI selects a panel consisting of approximately 250 individuals each quarter and compensate them to take a very similar survey on the Internet. These Internet panelists/respondents more closely represent the demographics of the United States according to the 2010 U.S. Census. The first group of Internet panelists, consisting of 293 respondents, took the winter weather-related survey in May 2015. They had an overall satisfaction score of 75, as shown on page 6 (**Figure 2**) from a screen capture from a graphic in the results portal.

The pop-up and Internet panel survey results are available through a Web portal provided by CFI.

National Weather Service 2015 Customer Satisfaction Survey is "Live" – Continued from Page 5

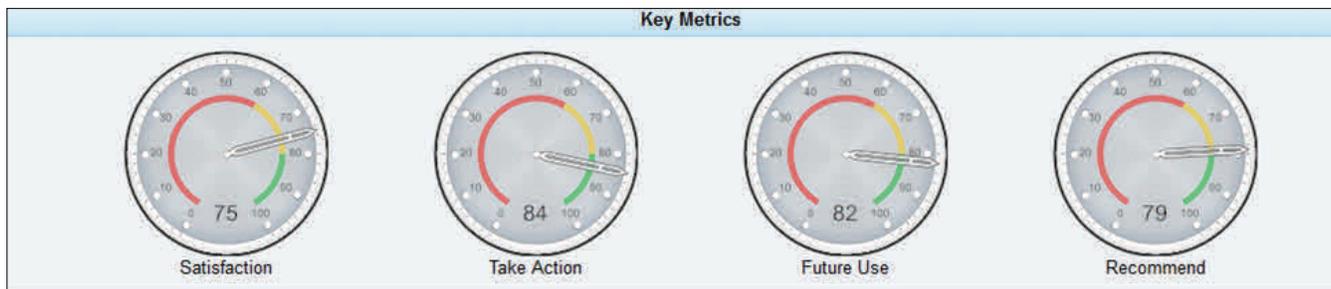


Figure 2. Screen capture from a graphic in the results portal showing an overall satisfaction score of 75 from the first group of Internet panelists.

You may access the survey results' Web portal at: <https://portal.cfigroup.com/Portal>

The generic username and password are:

Username: NWSwm@noaa.gov

Password: NWS2015!!

Once you have gained access to the portal, please go to the upper right-hand corner and click on "Exit to Portal List," in order to view the survey results.

Please take a few moments to complete the survey if you receive our CFI Customer Satisfaction Survey pop-up.

Quotes From the 2015 First Quarter Survey

"Thoughts on Improvements to the NWS"

- ⇒ "I really don't know of any way they could improve. They help us enough by keeping us updated on weather and then it's up to us to take it from there and be responsible."
- ⇒ "The NWS and its radio broadcasts are responsible for both my interest in weather and radio. Where I am from we rely on it daily."
- ⇒ "They can just continue to do what they are doing...they are great !!!"
- ⇒ "You could better advertise that there is a weather.gov website that belongs to the NWS. I had no idea such a website existed. I am also now wondering if there is a NWS app for quickly finding out about weather emergencies, such as a tornado." ⚙️

Did You KNOW



By Doug Young, Performance and Evaluation Branch,
NWS Headquarters

Did You Know we have a new contractor to help support our efforts
in the Performance and Evaluation Branch?

Please welcome our new Software Engineer, Jagseer Dhillon.



Figure 1. Jagseer Dhillon

Jagseer's first day at NWS Headquarters in Silver Spring began on Wednesday, June 10. Jagseer currently resides in the town of Leesburg in northern Virginia; however, he was born in Punjab, India. He grew up in the small village of Majhuke, India, and became interested in computer science. Jagseer pursued his studies in computer science, earning a Bachelor of Computer Applications in 2009 from Punjabi University Patiala, Punjab, India. Jagseer furthered his education and obtained a Master of Computer Applications in 2012 from Punjab Technical University.

Jagseer's hobbies include playing Cricket, farming, and surfing the Web for programming-related information. Believe it or not, Cricket clubs are growing in popularity in parts of northern Virginia, so, who knows, maybe he can join a local team and show them how the game is really played!

Jagseer replaces Guy Pittman, who developed our new Marine Verification Program. Guy endured a long commute to the NWS since 2013 and we wish him the best of success in a position with a company very close to his home.

We look forward to working with Jagseer and challenging him with new projects in support of the NWS. On behalf of the Performance and Evaluation Branch, welcome aboard Jagseer! ⚙️



Fly...with Ointment

By Beth McNulty, Performance and Evaluation Branch, NWS Headquarters

Data Needed to Create or Compute a Metric

Welcome to part three of our three part series on developing a performance metric. Part of creating the metric is deciding what to measure, and part is deciding how to measure it. This article will assume you have determined the formula you will use to calculate the metric. Next you will need to collect data to plug into the formula. Examples of data that can apply to each type of metric discussed in this article series are discussed below.

Meteorological metric:

We typically think of meteorological data as relationships of temperature, dew point temperature, pressure, and wind speed. Those are elements of a forecast, but a performance metric will depend on variables defined in terms of meteorological accuracy, timeliness, and errors, and constructed from the act of developing, issuing, and verifying a forecast. For this metric the tools needed are: data—actual, observed, and measured data, to compare to the forecast. One other tool is needed as well. That is a count of the number of times an event was forecast before it occurred, and whether the timing was reasonable (forecast vs. “after cast”). With this information the metric formula can provide an estimate of meteorological accuracy, and a corresponding ratio between accuracy and false alarms in the forecasts. The metric quantifies meteorological verification.

In the NWS, meteorological metrics are used for the routine verification of our forecasts, and use the hit/miss or probability of detection/false alarm ratio to describe the verification results.

Operational Metric:

An operational metric depends on variables describing how a forecast affected the user. Tools needed: forecast accuracy, timeliness, and the customer response to the forecast. For an operational metric the forecast verifies only if the meteorological elements helped the user accomplish their goal, and fails otherwise. Timing is likely to be the most important metric variable, having precedence over accuracy and errors.

The metric will require data such as forecast (timing, event), actual observed or measurable data, user response or impact. Why? Examples of a response are: prepositioned snow removal equipment, added fuel to aircraft, and alerted responders to prepare for storm onset. The chief difference between an operational metric and a meteorological metric is the addition of consideration of the user response and impacts that the meteorological metric does not consider. How a user reacts to a forecast, and how that forecast impacts the user, either positively or negatively, are key elements to the operational metric.

In the NWS, an operational metric is referred to

Fly...with Ointment – Continued from page 8

as the societal impact of a forecast. This measure uses subjective social, or societal, response to the forecast in addition to routine verification to determine the impact/response to a forecast.

Process Metric:

Unlike the previous two, a process metric can be measured directly or indirectly. Here the measurement can be more subjective, and lack hard data unless a formal checklist is part of the metric. Essentially a process metric measures the implementation of internal processes and procedures.

Tools needed: data derived from objective and subjective sources such as type of process, actions taken, and actions expected. For example, did the forecaster select the correct checklist for predicting xxx, based on the forecast, and the outcome?

The process metric may be quantified as a ratio of yes/no answers in relationship with the total number of forecasts requiring a specific process or procedure. A process was either followed or not followed, and it was done in a timely manner or not, and finally the procedure was applied correctly or not. Correct application means that the forecaster chose the proper checklist, or procedure to accomplish a task. This is different than simply using a checklist, regardless of its appropriateness for the situation.

Conclusion

Throughout this series on metrics we have described, defined, and discussed three types of metric. The most familiar metric to NWS personnel is the meteorological metric that measures our capability to provide accurate forecasts, while having as few false alarms as possible.

The operational metric builds on the concept of the meteorological metric, and extends measures of accuracy and timeliness into the decision support arena, and looks at social impacts. This new way of thinking about metrics, as in measuring the user response to the forecast, draws in a third metric concept: the process metric.

The process metric arises from the need to provide an accurate forecast that receives the appropriate response at the right time; which is best done by creating a procedure, or sequence of steps to use for each forecast.

We need to measure our successes and failures in each category to know whether we have achieved our goals. Three types of goals lead to three types of metrics.

Next Issue of Peak Performance:

“Introduction to Forensics NWS Style”⚙

Summer 2015 Peak Performance Quote

The best angle from which to approach any problem is the try-angle.

~Author Unknown



Quick Response Surveys Renewed Until May 2018

By Brent MacAloney, NWS Headquarters

About five years ago, I was tasked with leading a team to develop Office of Management and Budget (OMB) approved questions that allowed the NWS to gather feedback immediately following high impact weather events. The intent was for the NWS to better understand how their products, information and services are received, understood and utilized.

Thanks to a team of very hardworking representatives from the field, regions, and other NOAA line offices, the NWS received OMB approval for our survey questions on September 12, 2013 with an expiration date of April 30, 2015. The questions that were approved cover various high-impact weather events that include: Air Stagnation, Coastal Flood, Dense Fog, Dust Storm, Flash Flood, Flood, Freeze and Frost, Heat and Excessive Heat, High Surf, Hurricane, Marine - Convective, Marine - Non-Convective, Severe Thunderstorm, Tornado, Tropical Storm, Wind and High Wind, Wind Chill and Extreme Cold, and Winter Storm and Winter Weather.

Although many of the questions for each weather type were similar, they focus around several key areas that are of interest to the forecast offices. They are:

Source of weather information leading up to and before the event. For the specific event, those being surveyed are asked how various weather information sources influence their decision making, what precautions are taken based on that information, how much lead time the surveyor felt they received, and what the perceived threat was.

Actions taken once the warning was issued. For the specific event, those being surveyed are asked what actions they took when the warning product was issued and why they did or did not alter their behavior or routine based on this warning.

Source of weather information and actions taken once the event was ongoing. For the specific event, those being surveyed are asked how various weather information sources influence their decision making once the event was ongoing.

Satisfaction with NWS products. For the specific event, those being surveyed are asked to give a level of satisfaction with regard to the quality, timeliness, accuracy, threat explanation, and format of the products. Those being surveyed are also asked the degree in which the NWS product helped in decision making, as well as the overall satisfaction with NWS products during the event.

Understanding of advisories, watches, and warnings. Stepping away from the specific weather event the NWS is trying to get feedback on, those being surveyed are asked to explain in their own words their understanding of an advisory, watch, and warning. They are also asked how likely they are to take action

Quick Response Surveys Renewed Until May 2018 – Continued from Page 10

based on their understanding of these products.

Demographics. There are standard, optional demographic questions at the end of the survey such as gender, age, race, education level, and household income.

The NWS was slow to start using these surveys in the beginning. This was likely due to a mix of the users not having a vehicle to conduct the surveys, as well as many NWS employees not being fully aware of the existence of the surveys. Although they have not been used much, there was a need to get the surveys renewed in Spring of 2015. Fortunately for the NWS, we have a friend in Chris Ellis of the NOAA Coastal Services Center who once again stepped up to the plate and help shepherd the surveys through the OMB renewal process.

We are pleased to announce that as of early June 2015, OMB has renewed the NWS’s Quick Response Surveys out through the end of May 2018. Offices may continue to use these surveys to collect information in a face to face or web survey format as long as the OMB Control Number: 0648–0342 is displayed (**Figure 1**).

As we move into the next Fiscal Year (2016), the Performance and Evaluation Branch is actively working to secure funding to purchase survey administration software. The goal here is to have these Quick Response Survey questions in an easily accessible and administrable web format, ready for the offices to distribute soon after the

event. The feedback would then be collected in a centralized database from which the NWS could begin monitoring and tracking performance.

To review the approved questions, please visit the Evaluation >> Quick Response Survey section of the Performance Management website located at: <https://verification.nws.noaa.gov/content/pm/evaluation/QRsurveys.aspx>

If you have any questions, please feel free to contact me at Brent.MacAloney@noaa.gov and I’ll do my best to help you make the most out of this surveying tool.

OMB Approval No. 0648-0342 / Expires: 05/31/2018

Paperwork Reduction Act Statement

Public reporting burden for this collection of information is estimated to average 7 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other suggestions for reducing this burden to Chris Ellis, NOAA National Ocean Service, at Chris.Ellis@noaa.gov, or contact him at 843-740-1195.

Respondents are not identified on their questionnaires, and any reports will present data in aggregate form only. Notwithstanding any other provisions of the law, no person is required to respond to, nor shall any person be subjected to a penalty for failure to comply with, a collection of information subject to the requirements of the Paperwork Reduction Act, unless that collection of information displays a currently valid OMB Control Number.

Severe Thunderstorm Survey Questions

There was a severe thunderstorm event that occurred in your area on the (morning, afternoon, evening) of (month) (date), (year). The National Weather Service is looking to receive feedback on the weather information you may have received during this event. We would appreciate it if you answered the following questions regarding that specific severe thunderstorm event. Feedback collected from this survey will help the NWS improve products and services with future events in your area.

The following questions have to deal with the information you may have received *before the severe thunderstorm event* and the actions you may have taken.

1. People rely on various sources of information when making a decision to prepare for hazardous weather events. Please indicate how the following sources influenced your decisions on how to prepare *before this severe thunderstorm event occurred*.

| Source Type | No Influence At All | Very Little Influence | Some Influence | A Lot of Influence | I Have No Access |
|--|---------------------|-----------------------|----------------|--------------------|------------------|
| Local Television Broadcast (e.g., ABC, NBC, CBS, FOX, etc.) | o | o | o | o | o |
| National Television Broadcast (e.g., Weather Channel, CNN, FoxNews, MSNBC, etc.) | o | o | o | o | o |
| NOAA Weather Radio Broadcast | o | o | o | o | o |
| Commercial Radio Broadcast (e.g., AM, FM, HD, Satellite Radio, etc.) | o | o | o | o | o |
| Print Media (e.g., local newspapers) | o | o | o | o | o |
| National Weather Service Website | o | o | o | o | o |

Figure 1. Sample of Severe Thunderstorm Survey Questions approved by OMB. ⚡

Status of Service Assessment Action Items

Summary

- ◆ Currently, there are 444 total actions from open events.
- ◆ 397 actions are closed; 47 remain open.
- ◆ 44 actions/ 3 service assessments were closed since last report (April 2015).
- ◆ Recent Service Assessments: A regional service assessment team was activated to evaluate products and services related to the flood event across Texas and Oklahoma from 04 May through 31 May 2015.

Open Service Assessments

⇒ **Colorado Flooding of September 11-17, 2013**
Released June 24, 2014
26 Total Actions, 17 (65%) Closed Actions
9 (35%) Open Actions

⇒ **May 2013 Oklahoma Tornadoes and Flash Flooding**
Released March 21, 2014
29 Total Actions, 21 (72%) Closed Actions
8 (28%) Open Actions

⇒ **Hurricane and Post-Tropical Cyclone Sandy**
Released May 05, 2013
25 Total Actions, 21 (84%) Closed Actions
4 (16%) Open Actions

⇒ **Historic Derecho of June 29, 2012**
Released February 05, 2013
14 Total Actions, 6 (43%) Closed Actions
8 (57%) Open Actions

⇒ **Hurricane Irene in August 2011**
Released October 05, 2012
94 Total Actions, 84 (89%) Closed Actions
10 (11%) Open Actions

⇒ **The Missouri/Souris River Floods of May – August 2011 (Regional Service Assessment)**
Released June 05, 2012
29 Total Actions, 26 (90%) Closed Actions
3 (10%) Open Actions

⇒ **May 22, 2011 Joplin Tornado (Regional Service Assessment)**
Released September 20, 2011
16 Total Actions, 14 (88%) Closed Actions
2 (12%) Open Actions

⇒ **Spring 2011 Mississippi River Floods**
Released April 11, 2012
31 Total Actions, 28 (90%) Closed Actions
3 (10%) Open Actions

Closed Events (all actions completed)

- **Remnants of Tropical Storm Lee and the Susquehanna River Basin Flooding of September 6-10, 2011 (Regional Service Assessment)**
Released July 26, 2012
11 Total Actions - Closed

- **The Historic Tornado Outbreaks of April 2011**
Released December 19, 2011
32 Total Actions - Closed

- **Washington, D.C. High-Impact, Convective Winter Weather Event of January 26, 2011**
Released April 01, 2011
6 Total Actions - Closed

- **Record Floods of Greater Nashville: Including Flooding in Middle Tennessee and Western Kentucky, May 1-4, 2010**
Released January 12, 2011
17 Total Actions - Closed

- **Southeast US Flooding of September 18-23, 2009**
Released May 28, 2010
29 Total Actions - Closed

- **South Pacific Basin Tsunami of September 29-30, 2009**
Released June 04, 2010
131 Total Actions - Closed

- **Mount Redoubt Eruptions of March - April 2009**
Released March 23, 2010
17 Total Actions - Closed

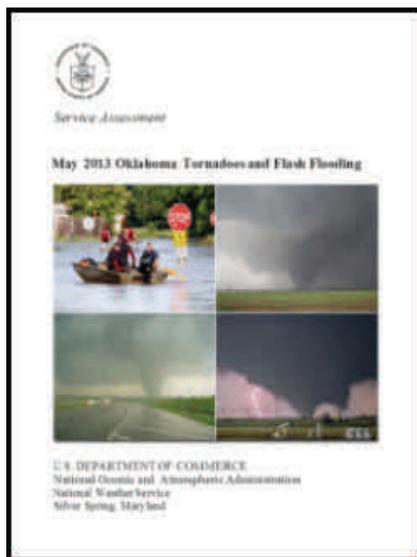
- **Central US Flooding of June 2008**
Released February 03, 2010
34 Total Actions - Closed

- **Mother's Day Weekend Tornadoes of May 10, 2008**
Released November 06, 2009
17 Total Actions - Closed

- **Super Tuesday Tornado Outbreak of February 5-6, 2008**
Released March 02, 2009
17 Total Actions - Closed

Service Assessment "Best Practices"

May 2013 Oklahoma Tornadoes and Flash Flooding



- WFO Norman offers weekly calls to its core partners, which leads to greater understanding and awareness of severe weather days.
- Emergency managers (EM) cited as important to their preparation for severe weather those messages from administrators that encouraged them to remain calm and enact their emergency plans. These reminders helped them focus on tasks they had practiced before the event and allowed them to stay composed and effective during the event itself.

You may access the full service assessment report [here](#) on the Performance Management Website.

Hurricane/Post – Tropical Cyclone Sandy October 22–29, 2012



- Development and delivery of concise DSS briefings and briefing packages, including one-pagers and presentations that synthesized complex information, delivered in commonly available formats (e.g., PowerPoint or Portable Document Format [PDF]), reduced or eliminated the need for local EMs to search for the same information among multiple NWS forecast products and web pages. The briefings contained graphic and text-based information, focused on impacts, and contained confidence and worst-case scenario information that aided decision making.

You may access the full service assessment report [here](#) on the Performance Management Website. ⚙️

For any service assessment-related questions, information, or report copies, please email either Sal Romano (Salvatore.romano@noaa.gov) or Freda Walters (Alfreda.walters@noaa.gov).



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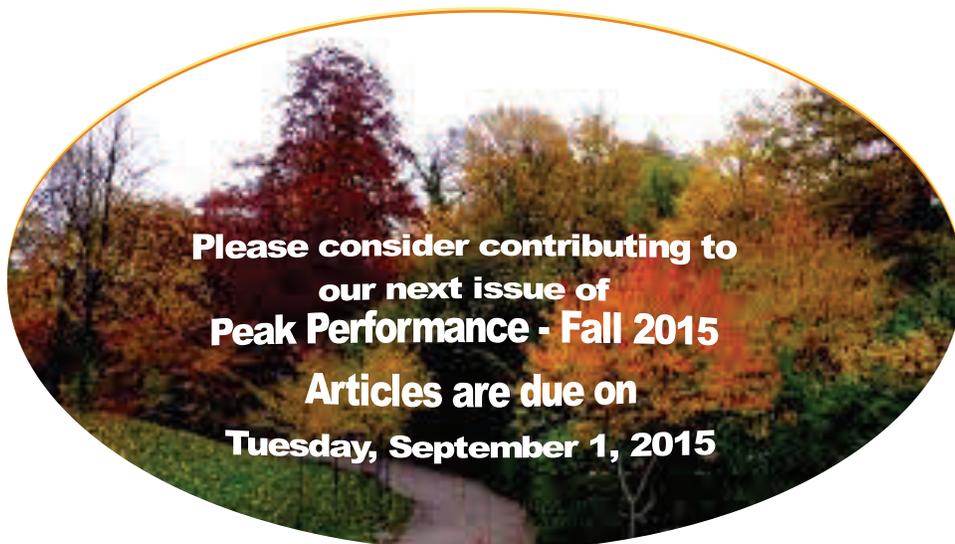
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<https://verification.nws.noaa.gov>



**Please consider contributing to
our next issue of
Peak Performance - Fall 2015
Articles are due on
Tuesday, September 1, 2015**