

# Peak Performance



Performance Branch, NWS Office of Climate, Water, and Weather Services, Silver Spring, Maryland

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## *Status of the Performance Branch*

By Brent MacAloney and Doug Young,  
NWS Headquarters

Within the last 13 years at the NWS, the verification program has grown from employing a couple of contracted programmers to a peak of eight contractors maintaining the system and developing new software. Originally, the National Weather Service hired two contractors to create warning verification data and run the storm data program, which was housed on a homemade server. In more recent years, eight contractors including software engineers, a systems administrator, a database specialist, and a web developer were managing around 25 web applications hosted on 10 servers. The number of years depending on the organization's need for the creation of

web-based applications to monitor the NWS's performance. Staffing also fluctuated depending on the amount of funding NWS management decided and/or had the capacity to put toward these development activities.

As you are all aware, over the last few years the federal government as a whole has begun a reduction in operating expenses. For the Performance Branch, that meant that when a contracted employee departed, there was limited or no money available to backfill positions. Decisions were made to determine if the remaining staff could absorb the programs maintained by the former contract employee or if the program needed to be discontinued or indefinitely delayed. It may

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**Status of the Performance Branch – Continued from Page 1**

not be obvious up front, but the cost of taking on the maintenance of a program by the remaining staff often resulted in less time for new development. By turning off “lesser used programs,” it allowed the remaining staff available to continue development on high priority enhancements to existing programs or new performance monitoring tools.

Unfortunately, Fiscal Year 2012 was a particularly rough year for the Performance Branch. With Robert Jones, Momchil Georgiev, Tish Soulliard, and Ed French, all moving on to new jobs in recent months, the Performance Branch lost approximately 35 years of verification programming experience in the blink of an eye. The Performance Branch was brought to the point where it no longer had the capacity to effectively maintain existing programs —some of which are now dormant pending new resources.

Currently, the most impacted programs are those that are not involved in the GPRA monitoring. That means maintenance on the following verification programs have been put on hold until additional staff can be brought on board: Quantitative Precipitation Forecast (QPF), max/min temperature, sky cover and probability of precipitation (PoP) from the Point Forecast Matrices (PFM), National Fire Danger Rating System (NFDRS), gridded marine forecast from the National Digital Forecast Database (NDFD), and the river forecast verification from the River Forecast Centers (RFC). Programs such as the warning verification (long and short-duration), Terminal Aerodrome Forecast (TAF) verification, and storm data should remain unimpacted, as they all directly support the NWS GPRA reports.

Some users may have noticed that the legacy marine wind/wave verification program has not been updated for some time as well. Although this program has been directly impacted by the departure of several programmers, the underlying issue preventing the Performance Branch from updating the statistics has to do with complications in consistently retrieving forecast and observation data. Since the legacy marine wind/wave verification program provides data for the GPRA reports, backfilling data through the end of the fiscal year (through September 2012) is one of the Branch’s highest priorities.

Not everything is bad news though. The contract vehicle through which the Performance Branch obtains its contracted programmers has been implemented. Prior to the end of the calendar year, we will have a full contract staff of three Software Engineers and an IT/Computer Specialist in place. By obtaining these additional contractors the Performance Branch should be able to begin updating the higher priority verification programs as soon as February 2013. The highest priority programs to be updated at that point would be the legacy marine wind/wave, max/min temperature, PoP, and QPF verification programs.

The Performance Branch appreciates your patience during this transition. It is our hope that we can restore all of our programs to the original level of quality that our users have grown accustomed to over the years.

If you have any questions or concerns, please feel free to contact Performance Branch Chief, Doug Young at:

[Douglas.Young@noaa.gov](mailto:Douglas.Young@noaa.gov). ■

# Constructing a Modern Severe Weather Operations Plan

By Donal Harrigan, Jeffry Evans, Todd Lericos, Mark Wool, Donald Van Dyke, Alex Lamers  
NWS Tallahassee, FL

Over the past several years, decision support services (DSS) and social media have become an increasingly important part of high impact weather operations at National Weather Service (NWS) Weather Forecast Offices (WFO). The addition of these services has markedly increased the workload for forecasters prior to, during, and following significant weather events. With the increase in workload, it can be easy for forecasters to lose situational awareness (SA) and neglect even the most important aspects of severe weather operations. It was necessary for the Tallahassee WFO to re-evaluate and modernize our severe weather operations plan (SWOP) to provide more efficient and comprehensive services to our customers, while continuing to support the mission of the NWS. Furthermore, a thorough review of NWS service assessments, as well as

office performance statistics was conducted to find deficiencies that needed to be addressed in the development of a new SWOP.

A local team was formed, consisting of the authors of this paper, to evaluate and modernize the SWOP. Each service assessment available on the NWS Office of Climate, Water, and Weather Services website (<http://www.nws.noaa.gov/om/assessments/index.shtml>) was reviewed and compared to our local plan. A document was created that identified where we did, or did not meet the best practices and recommendations from the assessments (**Figure 1**). Additionally, office performance statistics were analyzed to determine existing staffing and workload deficiencies. These statistics were identified for both warm and cool season severe weather events (**Figure 2**). It was determined that most missed events occurred during the few hours following a shift change, and during marginal events. In other words, when staffing was low and workload was high.

**Service Assessment Best Practices and Recommendations**  
*Relationship to WFO Tallahassee Severe Weather Operations*

**Staff Roles and Responsibilities**

**Define realistic staffing levels. Roles should be defined, including that of a warning coordinator, when numerous warnings are anticipated.**  
*Recommendation 6A, Veterans Day Weekend Tornado Outbreak November 9-11, 2002 Service Assessment, Pg. 24*  
**[Specific roles are not defined in current plan]**

- In the Parkersburg, Iowa Tornado Assessment, a lack of a designated Event Coordinator was found to have led to some confusion. Quote: "The lack of a designated Event Coordinator (EC) meant that warning teams were changing warning sectors on their own, often in a rapid manner. This led to some confusion among the people in operations."
- In the Historic Tornadoes of April 2011 Service Assessment, it was found that event coordinators kept the operations focused, reviewed staffing levels, evaluated fatigue among warning forecasters, and periodically rotated staff members to different positions in the office.

**Mapped out positions and assignments for severe weather operations on WFO layout map; assigned "flash cards" with list of duties during the event.**  
*Best Practice, Record Tornado Outbreaks of May 4-10, 2003 Service Assessment, Pg. 41*  
**[Not in use at WFO Tallahassee]**

**Figure 1:** A snippet from the multipage document comparing the Tallahassee WFOs current SWOP with NWS service assessment best practices and recommendations.

Constructing a Modern Severe Weather Operations Plan – Continued from Page 3

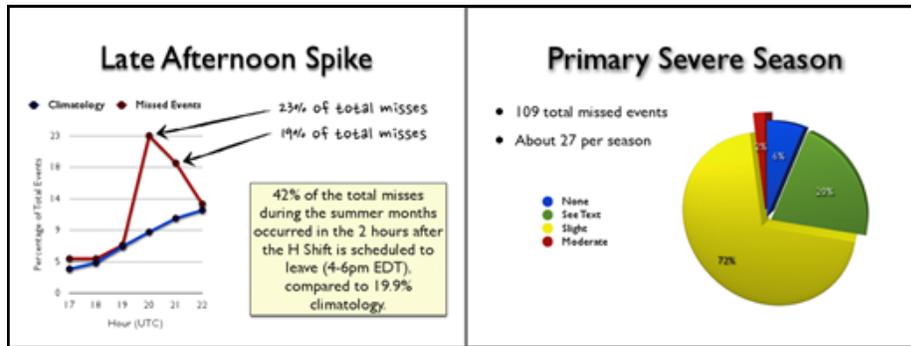


Figure 2: Warm season missed events vs. time of day (left). Cool season missed events vs. SPC outlook category (right).

In our research, it was determined that the existing SWOP also lacked a clear definition of duties and responsibilities, further contributing to the potential for a loss of SA.

It was desired to have a plan that is easy to access, interact with, understand, and one that remedied the aforementioned deficiencies. The matrix (Figure 3) is duty-centric and defines all of the positions and duties necessary for successful severe weather operations, while distributing the workload in a manner that promotes the most efficient working environment. It is housed on a local intranet site accessible from network PCs and AWIPS machines. The matrix is interactive, with hyperlinks to internal and external resources. Operations levels are loosely defined by the Storm Prediction Center (SPC) outlooks for severe weather events. However, the levels are designed to be elevated (or reduced) should the shift supervisor anticipate the workload to increase (or decrease) from suggested levels. Seating charts are linked to promote effective communication and enhanced shift organization, while duties and local resources are linked to each position charted on the matrix. These links are meant to provide real time support to staff.

Two new positions were added to the SWOP: Mesoscale Forecaster and Public Information Officer (PIO). Under the new plan, all mesoscale forecasters should perform a

mesoanalysis, providing support to the existing radar operators and fulfilling other “near term” duties. Social media and DSS operations have become too labor intensive in severe weather events to be distributed among baseline staffing to obtain the greatest value from those services. Thus, the PIO position was created to handle these duties prior to, and during an event.

Level	Operations		Duties					DSS		
	Staff	Seating	Radar	Near & Mesoscale	Routine	Coordinator	PIO	Observation	Email or Packet	Webinar or Video Briefing
1	3								None	None
2	4-5								Lead Discretion	None
3	6-7								Mid AM & Mid PM	Lead Discretion
4	8+								Mid AM & Mid PM	Mid AM & Mid PM

\* During Ops. Level 4, the duties of the Near Term/Short Term desk can be dispersed among other desks (excluding radar operators).

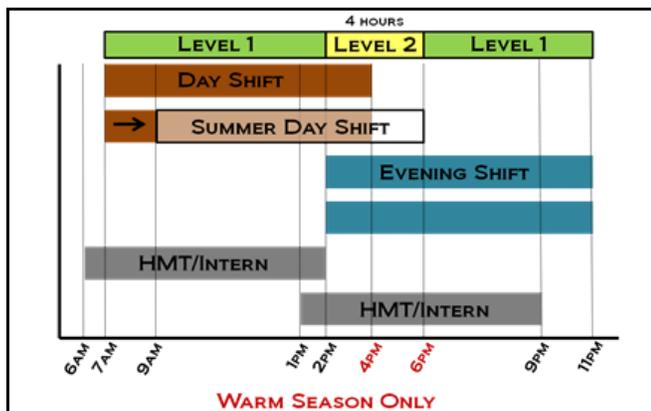
SPC Level Guidelines

See Text/Slight (15%)   Slight (30%)   Moderate +

Figure 3: SWOP Matrix. The backbone of the plan, where forecasters can access all the information necessary to successfully execute the SWOP.

To address the issue of missed events at shift change during peak convective times in the summer, we implemented a slight schedule change (Figure 4). One day shift would come in two hours later to provide built-in enhanced staffing (Level 2) during the diurnal peak of summer severe weather. Additionally, this person would begin the day as mesoscale forecaster and then transition to warning responsibilities.

## Constructing a Modern Severe Weather Operations Plan – Continued from Page 4



**Figure 4:** Schematic of a traditional daytime shift rotations at WFO TAE. Overlaid is the adjustment made for the warm (seabreeze) season. The legend at the top of the image displays which operations level is supported by staffing levels.

**Tallahassee's modernized SWOP now:**

- ⇒ Is up to date with NWS best practices and recommendations.
- ⇒ Addresses deficiencies that evolved from an outdated SWOP.
- ⇒ Assesses workload, and determines subsequent staffing levels.
- ⇒ Clearly defines positions and responsibilities.
- ⇒ Efficiently utilizes shift rotations to promote continuity shift-to-shift, and continuing SA.
- ⇒ Addresses workload associated with social media and DSS.
- ⇒ Is easy to access, update, and use as a real time shift aid. ■

## Performance Branch Leads Effort to Conduct National Weather Service 2012 Customer Satisfaction Survey

By Sal Romano, NWS Headquarters

The 2012 Customer Satisfaction Survey undertaken by National Weather Service (NWS) Office of Climate, Water, and Weather Services (OCWWS) had 24,360 respondents. This NWS Customer Satisfaction Survey was conducted, via a link from the NWS web sites, from September 21, 2012 to October 22, 2012. The survey covered the following core areas: Hazardous Services, Routine Climate, Water and Weather Services; Decision Support Services and Weather-Ready Nation; Dissemination Services; and Outreach and Weather Education. There were three optional parts of this survey containing questions for specific NWS service areas: National Hazardous Weather Services, National Marine Weather Services, and National Aviation Weather Services. The NWS undertakes similar customer satisfaction surveys every year. The questions for the core areas are similar so as to measure the amount

of change in our customer satisfaction annually. However, the optional parts of next year's survey will change to include questions for some of the same NWS service areas that were included in the 2011 survey: Climate Services, Fire Weather Services, Hydrologic Services, and Tsunami Services. Questions contained in the optional parts of the survey will rotate annually between these two groups of NWS service areas. The NWS Performance Branch would be happy to receive your comments concerning the results of this 2012 survey and/or to receive suggested questions for next year's survey.

The NWS contracted with the Claes Fornell International (CFI) Group, as we did for the 2010 and 2011 surveys, to assist in the development and implementation of the survey. The CFI Group staff are experts in the science of customer satisfaction and use the

## Performance Branch Leads Effort to Conduct National Weather Service 2012 Customer Satisfaction Survey – Continued from Page 5

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 includes

more than 200 companies and government agencies. The overall NWS ACSI score resulting from this survey was 84—the same as the 2011 NWS ACSI score. CFI will present the detailed results of this 2012 survey at National Weather Service Headquarters. ■

# French and Georgiev Depart Performance Branch

By Brent MacAloney, NWS Headquarters

Long time Performance Branch contracted employees, Ed French and Momchil Georgiev, have both accepted positions and departed the team in recent months.

Momchil's new position is with a subsidiary of Microsoft and he began on September 10, 2012.

Momchil (**Figure 1**) was a contracted programmer in the Performance Branch for over 10 years (since April 2002). He specialized in the development of web applications, import of warning products and the infrastructure running the Performance Management website. These programs included Marine Wind/Wave verification, the GPRA report generator, COOP Station Visitation Tracker, Interactive Products Generator, Situational Awareness Module, Hazard Product Visualizer, Storm Data, and the Winter Storm, High Wind, Tornado, Severe Thunderstorm, Special Marine, Flash Flood, and Coastal Flood Warning verification programs.



**Figure 1:**  
Momchil Georgiev

One of Momchil's greatest accomplishments was the modernization of the storm data collection program, known as *StormDat*. Prior to Momchil's arrival the *StormDat* program was a stand-alone program installed at each of the 123 forecast offices collecting and logging storm data within the NWS. The burden to maintain this program at each location was very high and took 50 percent of a full-time employee's hours to support. By turning the *StormDat* program into a web-based program, located on Performance Branch servers, upgrade or program repairs could easily be made in one location as opposed to 123 locations. As part of this modernization, Momchil was able to add a Google Map event plotting feature to the program to assist Storm Data Focal Points in the entry of events into the system.

Ed has not left the NWS, but now works for CyberData Technologies as Program Manager for a contract at NCEP/NCO in College Park, MD. Part of the contract is devoted to providing support for the IBM supercomputers and the transition of N-AWIPS to AWIPS II. He began his new position on October 16, 2012.

Ed (**Figure 2**) was a contracted employee in the Performance Branch for almost 10 years. He specialized in the maintenance and security of

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French and Georgiev Depart Performance Branch – Continued from Page 6

the Performance Branch’s web, data, and application servers. He also served as the project manager for all contractors within the Performance Branch. Ed was a vital part of ensuring projects and tasks within the Branch were completed on time and within budget. He also contributed to the collection and import of Local Storm Reports (LSR) and Terminal Aerodrome Forecast (TAF) products into our verification systems.



Figure 2: Ed French

One of Ed’s greatest accomplishments was his effort working with programmer Lhou Mechat to improve the response time for reports in the TAF verification Stats on Demand program. In the early years of the TAF

verification program, a single report could take anywhere from 1–5 minutes to be returned to the user because of the massive amount of data stored in the database. In many cases, this would cause the user’s browser to timeout and return an error message instead of the report. By leading a server hardware modernization and working with Lhou to drastically modify the database structure and query methods, users began receiving reports in a matter of seconds as opposed to minutes.

Both Momchil and Ed were loyal and hardworking employees who played major roles in building the Performance Management website and tools that you all have grown accustomed to using over the years. Their leadership, responsiveness to the field, and dedication to the Performance Branch and the NWS will be greatly missed. We wish them the best of luck in their future ventures. ■

The best way to inspire people to superior performance is to convince them by everything you do and by your everyday attitude that you are wholeheartedly supporting them.

Harold S. Geneen

Web Links

Stats on Demand

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

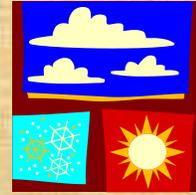
Real-Time Forecast System:

<http://rtvs.noaa.gov/>

Questions and comments on this publication should be directed to Freda Walters.



## Fly...with Ointment



By Beth McNulty, NWS Headquarters

This episode...Lead-time Verification for Aviation

Today we're changing gears and taking up the idea of lead-time based verification for aviation. Since the application of lead time concepts is new to aviation, let's start our discussion with a short review of where we've seen lead time used before.

The most familiar use of lead-time based verification is the public warning system (winter storms, thunderstorms, tornadoes, floods—flash or otherwise). For each of these storms the public is given an estimate of when the storm or event will occur. The time between the forecast and the event is defined as “lead time.”

Up to now aviation verification has been based on the traditional meteorological “hit” or “miss” concept of verification. In traditional verification, a forecast is considered “good” if it mentions an event and that event occurs during the time frame forecast. The experimental lead time verification for aviation considers a forecast based on how well event start or end times are predicted.

Verification based on forecast start or end time of an event, such as wind shift, is a new way of thinking about aviation verification. While the forecast process is unchanged overall, it becomes important to carefully consider the exact, to the minute, timing of changes. These changes should be forecast as precisely as possible because lead time verification checks

how good that precision really is. Lead time verification will eventually be applied to wind shift, weather such as thunderstorms, and ceiling and visibility restrictions.

In contrast to the traditional meteorological verification method, the lead time method considers a forecast accurate only if the onset or end of a change occurs within a defined timing window (e.g., 15 minutes for 2-hour lead time or 30 minutes for a 4-hour window) of the forecast occurrence time. As forecasters get accustomed to considering lead time in aviation forecasts the window for a “hit” verification will become smaller. Why do we want to verify aviation forecasts based on lead time to events? Aviation flight planners, air traffic flow management, and other aviation weather users make decisions based on forecast timing and the more precise the timing the better. The only way to confirm aviation forecasts meet the timing precision required is to verify them based on lead time to onset and end of events.

To summarize, aviation weather forecasts affect aviation-related planning and decisions. The way we verify our forecasts lets us know how well those forecasts meet the thresholds required by the user. Even as we add verification to support decision making, we will still need traditional verification to ensure forecasters maintain their essential analytical skills. ■

*Next episode:*

*Examples of non-TAF verification*

# The NOEES Program Beefs Up

By Brent MacAloney, NWS Headquarters

Back in the [Winter 2011 issue](#) of the *Peak Performance Newsletter*, I provided users with an overview of the NWS's Outreach and Education Event System (NOEES) and its many features. In this issue, the Performance Branch has some exciting news about enhancements we made to the system this past summer.

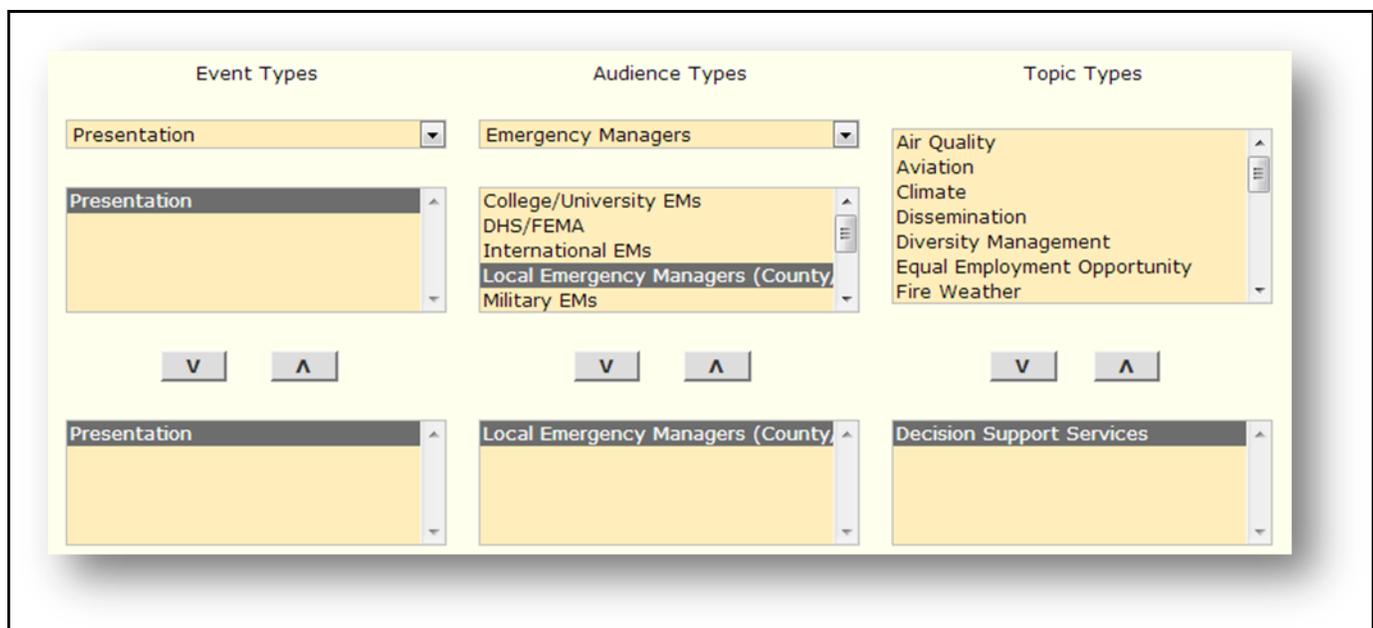
## Enhanced Report Running Feature

The NOEES database includes well over 37,000 events (as of October 1, 2012) and there has been an overwhelming need for some enhanced report running capabilities. Users were asking for the ability to run complex reports that really dug deep into the data. For example, say you were interested in finding out how many presentations were given to local emergency managers on decision support services. In the

NOEES report generator, there was no easy way to retrieve data in that level of detail. It would take a call to the Performance Branch for a custom-run report.

To run these types of reports, a set of filters was added to the NOEES report generation interface. The filters allow users to drill down into the data by Event Type/Sub-Type, Audience Type/Sub-Type, and Topic Types as seen in **Figure 1**.

This enhancement in the report generation interface expands the usefulness of the NOEES program and the power of the underlying data. By adding an additional filter for your office/location, you will be able to quickly respond to data requests for this type of information. This is a very powerful tool when it comes to managing an office or assisting management in retrieving data from the system.



**Figure 1:** Screen capture of the NOEES report generation interface showing the new filter options.

## The NOEES Program Beefs Up – Continued from Page 9

### Missing Data Reminders

We realize many of the folks involved with outreach and education within the NWS are very busy, and sometimes forget to go back into the NOEES program to enter the Number of Attendees and Person Hours. To assist in ensuring the database is complete with these two fields, we have added a couple new features.

The first feature will be noticeable to all users the next time you log into the program and you have past events in the database missing the Number of Attendees and Person Hours. At the top of the NOEES interface, general users will be shown a list of all events the user entered into the database that are missing these fields. NOEES power users will see a list of all events in the office/location missing these fields, regardless of if they personally entered them into the database or if the event was entered by someone else at the office as shown in **Figure 2**.

Another reminder feature that you may have already received was an email in your inbox at the beginning of each month with links to all

of the events the user entered that are missing the Number of Attendees and Person Hours. Power users will receive an email with links to all the events entered by users at their office/location missing these fields.

### Create Duplicate Event Feature

In the first few months of the NOEES program, users contacted us asking if we could give them a feature that created an event similar to one that is already in the database. This feature was already available on the Event Confirmation Page that is shown immediately after the event is entered and saved into the database. Users were looking for something more, where they could go into the “View/Modify/Delete My Events” page and have the similar ability.

We ended up creating this ability and it can be found on the “View/Modify/Delete My Events” page in the “Action” column as shown in **Figure 3**. This feature is labeled as “Duplicate” and will create an event of the same type as what is

The following events were entered into the NOEES program for your location and are missing the number of attendees and/or person hours spent on the event. Please ensure these fields are populated at your earliest convenience.

- [Presentation - 10/03/2011](#) - Entered by: Brent MacAloney
- [Recognition/Award Ceremony - 10/06/2011](#) - Entered by: Brent MacAloney
- [Other - 10/11/2011](#) - Entered by: Brent MacAloney
- [SKYWARN Spotter Training - 10/12/2011](#) - Entered by: Brent MacAloney
- [SKYWARN Spotter Training - 10/13/2011](#) - Entered by: Brent MacAloney
- [Presentation - 03/23/2012](#) - Entered by: Brent MacAloney
- [SKYWARN Spotter Training - 04/24/2012](#) - Entered by: Brent MacAloney

**Events**

- [Add New Event \(Short Form\)](#) - used for interview, Office Tour, Presentation, School Visit, and SKYWARN Spotter Training.
- [Add New Event \(Long Form\)](#)
- [View Events](#)
- [View/Modify/Delete My Event](#)

**Figure 2:** Example of alert in NOEES listing the events missing Number of Attendees and Person Hours.

The NOEES Program Beefs Up – Continued from Page 10

Delete	Event Name	Event Type	Event Date/Time	Location	Entered By	Internal POC	Action
<input type="checkbox"/>	Manor View 4th Grade Visit / STEM Discussion	School Visit	2012-03-23 08:00 EDT	Fort Meade, MD	brent.macaloney	N/A	<a href="#">View/Edit   Duplicate</a>
<input type="checkbox"/>	Bear Creek Elementary School Visit	School Visit	2012-03-16 10:15 EDT	Dundalk, MD	brent.macaloney	N/A	<a href="#">View/Edit   Duplicate</a>

Figure 3: Duplicate event button on "View/Modify/Delete My Events" page.

currently in the database with many of the same fields being duplicated. The only caveat is that in order for the user to save this duplicate event in the database, the user must change some of the fields (e.g., date/time, location) so that this new event is unique and may be saved in the database.

**Other Features**

In addition to the features I just reviewed, a number of other enhancements were made to the program including:

- ⇒ Adding a "Topic Type" filter to the "View Events" page.
- ⇒ Adding a checkbox next to the "Venue Information" fields that allows users to save venues being used into the "My Locations" quick access list.

- ⇒ Adding quick range links to "View/Modify/Delete My Events" page allowing users to quickly view events in the last day, week, month, fiscal year to date, past and future.
- ⇒ Modifying the quality control links rules for Interview events entered into the short form to remove the time requirement. Now users are only required to enter the date, not the date and time.

As always, the Performance Branch and NOEES administrators are curious to hear what you have to say about the program. It is the feedback from the users that allowed us to significantly enhance the functionality and effectiveness of the program. Please feel free to use the "Contact NOEES Administrators" link on the NOEES page to make suggestions, ask questions, or provide general feedback. ■



*HAPPY Holidays  
from the  
Performance Branch*



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Late Fall 2012  
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**Please consider contributing  
to our next edition:**



**Winter 2012-2013**

**Articles Due: January 14, 2013**