

# Peak Performance



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

## Late Summer Edition



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## ***FEEDBACK NEEDED ON PERFORMANCE COMMUNITY EXCHANGE SESSIONS***

By Brent MacAloney, NWS Headquarters

For those of you who regularly keep up to date on what is going on in the Performance Management world, you probably have heard of a group called the National Performance Management Committee or, as many people commonly refer to it, the NPMC. The NPMC was established in 1995 as a way for the NWS to identify and validate verification and evaluation needs within the agency. This committee was chartered by Dennis McCarthy (Office of Climate, Water, and Weather Services Director at the time) and Greg Mandt (Office of Science and Technology Director at the time) and was overseen by co-chairs from OCWWS and OST. Membership on the NPMC included representatives from each NWS region, OST,

OCWWS, Office of Hydrologic Development (OHD), and the National Center for Environmental Prediction (NCEP) and monthly meetings were held to discuss hot topics in the Performance Management world.

The mission statement of the NPMC, as it is listed in the charter, states:

*The NPMC shall establish a focused process for: identifying verification/monitoring/evaluation needs, validating those needs as agency requirements, planning developmental projects to meet those requirements, managing related projects effectively (scope, time, cost), and implementing results in a proactive way to keep*

[Continued on next page...](#)

## Feedback Needed on Performance Community Exchange Sessions – Continued from Page 1

*performance management in step with growth and change in NWS products and services.*

As with most businesses and federal agencies, corporate focus and goals change over time. The Performance Branch, which develops the lion's share of official verification and evaluation tools for the NWS, is no different. Because of a reduction in the NWS funding allocated to new development, the branch's focus has recently changed from fielding requirements and developing new tools to maintaining the current suite of tools. With the shift in focus, the question must be asked, "Is the NPMC still able to meet its current mission?" From a pure "Yes/No" standpoint, the answer to the question appears to be "No." Although it is not clearly stated in the mission, the NPMC had become a vehicle to showcase the development of Performance Management tools and data analysis being conducted at the national, regional, or field office levels. Surely, there still needed to be a forum for this type of activity. This is where the Performance Community Exchange Sessions (PCES) could fill a void while allowing those involved in the NPMC to move onto other activities.

In a nutshell, the PCES would serve as a forum where information on performance management and data analysis being done within the NWS and by external partners could be shared with NOAA employees. These sessions would be conducted via the Citrix GoToWebinar software.

Some examples of PCES Webinars would be the following:

- Performance Branch conducts a Webinar to explain how actions are tracked after a service assessment is conducted

- A SOO conducts a Webinar explaining how his/her office improved their PoP forecast products based on verification data
- MDL conducts a Webinar showing new performance analysis tools being developed and solicits feedback on how to improve tools
- An internationally recognized research scientist conducts a Webinar outlining a new measure developed to improve temperature forecasts

PCES sessions would be open to anyone in NOAA or the NWS interested in the topic being discussed and who preregistered for the Webinar. Unless a presenter has a problem with the session being recorded, the Performance Branch would record all PCES Webinars and make the recording available on the Performance Management website for future reference or to accommodate those who were unable attend the live session. The Performance Branch would be responsible for facilitating, advertising, and executing all PCES Webinars. These PCES Webinars would be organized and scheduled several weeks or months in advance. They will be advertised on the Performance Management website, various listservs and distribution lists, as well as the Peak Performance Newsletter.

To get the PCES Webinars started, we ask that you please fill out a quick survey to identify the topics you would be interested in learning more about. See sample of survey on page 3 (Figure 1).

**Feedback Needed on Performance Community Exchange Sessions – Continued from Page 2**

The survey should take no more than 3–minutes to complete and can be found at the following link: <http://goo.gl/1SMCI>. We appreciate any feedback that you may have on these sessions.

## Performance Community Exchange Sessions (PCES) Survey

The Performance Branch is looking into ways to better share performance management (i.e., verification and evaluation) information within the National Weather Service. One of the ways that we are looking into is through Performance Community Exchange Sessions (PCES). These sessions will be conducted in the form of a Webinar using the Citrix GoToWebinar software. Webinars will cover performance management activities and data analysis being conducted both internally and externally to the NWS. In order to get a better understanding of what NWS employees would be interested in learning about, we have developed the following short survey which we hope you will complete. Any questions can be sent to [Brent.MacAloney@noaa.gov](mailto:Brent.MacAloney@noaa.gov). Thank you for your time.

### 1) Which verification programs would you like to learn more about?

Check all that apply

- Aviation - TAF Stats on Demand
- Fire Weather - NFDRS Verification
- Hydrology - Point-based Flood Warning (FLW)
- Hydrology - Storm-based Flash Flood Warning (FFW)
- Hydrology - RFC River Stage Forecasts
- Marine - Coastal Flood Warning Verification (CFW)
- Marine - Legacy Marine Verification (MVF)
- Marine - Storm-based Special Marine Warning (SMW)
- Public - High Wind and Winter Storm Warning (NPW/WSW)
- Public - Max/Min Temperature (PFM)
- Public - Probability of Precipitation (PFM)
- Public - Sky Cover (PFM)
- Severe - Tornado and Severe Thunderstorm Warning (TOR/SVR)
- Generic - Understanding Contingency Tables
- Generic - Understanding GPRA
- Other:

Figure 1: Sample of the survey for Performance Community Exchange Sessions (PCES) Webinars. ■■■

# Robert Jones Departs Performance Branch for Executive Office Position



By Doug Young and Ed French, NWS Headquarters

Robert Jones, of the Performance Branch accepted a new position with the U.S. Office of National Drug Control Policy, a component of the Executive Office of the President. Rob's new position began on July 2, 2012.

Robert had been a contractor in the Performance Branch for nearly 11 years (since November 2001). He specialized in software development and maintaining daily operations of the Verification Program—mainly

Public, River, and Fire Weather.

One of Robert's greatest accomplishments was the creation of a point-based river flood warning (RFW) verification system, which was implemented in the winter of 2010. The RFW verification system is similar to the rest of the "Stats on Demand" systems featured on the Performance Management Web site in that it allows users to "parse" the data in various ways. Output can be displayed in a tabular summary or detailed report output showing all warnings and events. The program gives forecasters a better understanding of how they performed during individual flooding events through its creatively designed graphical output (Figure 1).

Prior to working for the NWS, Robert served in the U.S. Navy aboard a nuclear submarine, worked in software development and systems engineering for the Texas Health and Human Services Commission and Exxon Mobil. He attended the State University of New York (Stony Brook) and the University of Texas at Austin. ■

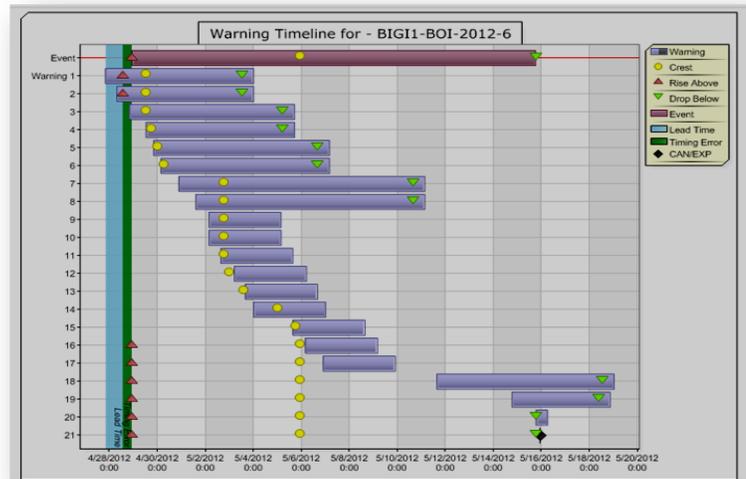


Figure 1: Graphical output from RFW verification program.

Robert, along with his vast knowledge of verification, NWS products, and his passion for the weather, will be sorely missed by field offices and by those of us in the Office of Climate, Water, and Weather Services.

# WFO Des Moines Releases August 2010 Central Iowa Floods Service Assessment



By Jeff Zogg, NWS Des Moines, IA

Earlier this year, WFO Des Moines, Iowa released its local office service assessment of the historic, multiple-day flash flood and river flood event that occurred in central Iowa in August 2010. The most significant flooding occurred during a 3-day period from August 9–11, 2010. For three consecutive nights beginning on August 9, thunderstorms with prolonged heavy rainfall affected central Iowa. Record flooding occurred along several streams, resulting in extensive damage in the Des Moines and Ames metropolitan areas (**Figure 1**). Some of the flooding exceeded the 0.2 percent annual chance (i.e., 500-year) event.

Because of the magnitude and impact of this event, WFO Des Moines formed an internal service assessment team to evaluate the effectiveness of National Weather Service (NWS) services provided during this event. The local office service assessment team attempted to emulate the format and structure of the NWS national service assessments, including pre-publication review by NWS Central Region Headquarters.

The service assessment team efforts consisted of the following activities:

- Review of the meteorological and hydrologic aspects of the event.
- Interviews of selected WFO Des Moines partners and users. Interviewees included

people from the media, emergency management and the private sector.

- Evaluation of NWS operations and activities including short- and long-fused products as well as coordination and verification.
- Evaluation of WFO Des Moines decision support services including feedback from its partners and users regarding its products and services.

The service assessment team identified 17 Facts and 16 Best Practices as well as 14 Findings and subsequent Recommendations. Here are highlights of the lessons learned from this service assessment:

- Real-time Q2 quantitative precipitation estimates (QPE) and Z-R data supplemented the traditional radar QPE data and allowed WFO Des Moines staff to better diagnose rainfall amounts especially underneath the most intense rainfall.
- Real-time river forecast collaboration between WFO Des Moines, NCRFC and the City of Ames Water Department resulted in more accurate flooding forecasts in the Ames area.
- Particularly Dangerous Situation (PDS) language was included in some of the river flood warning products. Local media used this language to highlight flood severity.

## WFO Des Moines Releases August 2010 Central Iowa Floods Service Assessment – Continued from Page 5

- It is important to properly highlight high-end flash flood events. One example of doing so is the “Flash Flood Emergency” per NWS Directives. The WFO must ensure that its local partners and users understand how such events will be highlighted.
- WFO Des Moines places river forecast and data points—including ALERT gages—on its AHPS Web pages. WFO Des Moines partners were easily able to find the information they needed.
- Flood impact statements are valuable to NWS partners and users. They must be updated and corrected as needed.
- Flood inundation mapping was a popular service improvement request.

- NWSChat was a valuable coordination and collaboration tool during this event.

Although some time has elapsed since the event, the assessment document still contains good “lessons learned” information. Our office has already implemented many of the recommendations. We want to share this assessment so that others in the NWS can learn about what works well and what may not work well during a high-impact hydrologic event. And as our assessment shows, in order for the NWS to provide effective decision support services during a high-impact hydrologic event, much work needs to be done months—if not years—before the event occurs.

You can access the service assessment at the following link: <http://www.crh.noaa.gov/dmx/?n=aug2010floodassessment> .



**Figure 1:** Aerial photograph from August 11, 2010 showing the flooding affecting Iowa State University and the city of Ames. Jack Trice Stadium, home to the Iowa State University football team is in the foreground. Hilton Coliseum, home to Iowa State University basketball, gymnastics, volleyball and wrestling teams is near the top center. Damage to the Iowa State University campus alone was between \$30 and \$40 million. Photo courtesy of The Des Moines Register, Des Moines, Iowa. ■■■



## Fly...with Ointment



By Beth McNulty, NWS Headquarters

This episode...The Importance of Customer Input

We continue our overview of Quality Management System (QMS) concepts with an explanation of the importance of customer input into the product creation process.

In any producer and consumer relationship there must exist some agreement on what the product is, and how it's used. For example, a consumer needs a hole, round in a piece of half-inch thick wood. Now a hole can be made two ways, one neat and efficient, the other not, using two different tools. If the producer (in this case the hole-maker) uses a hammer, the hole will definitely appear, as will splinters and other undesirable results. But if the hole-maker uses a drill, the hole is made quickly, neatly, with little or no splinters, and minimal damage to the wood.

What does it take to discern a customer's requirements? The answer is "a well-tuned ear." The customer may simply say what they want in a conversation, using direct or indirect words, email or voicemail, or more formal specifications. Here is an example of indirect requirements: Mom says, "Gee, it'd really be nice if Billy would wipe his feet before walking across the kitchen." This translates to Mom's requirement that Billy (the producer in this case) avoid leaving muddy footprints on the kitchen floor. If Billy fails to wipe his feet and makes muddy

footprints anyway, then his product (the footprints) fails to meet his mother's (the end user or client in this case) requirements or needs. The result of failing to heed the consumer's needs is a product that is "non-conforming" to the specified requirements. Billy should have wiped his feet before crossing the kitchen to conform his product (footprints) to his mother's requirement. The next thing Billy will hear is feedback from his mother (the client) on the quality of his footprint product.

Customer feedback is a key element in learning how well a product fits the needs and requirements of the user. A product that fits well is called "conforming," and one that fails to meet the specifications is called "non-conforming." It doesn't matter if the product is the best quality widget, weather forecast, or muddy footprint, in the world; if it fails to meet the customer's expectations and requirements, it has less value to the customer than something that conformed to their needs.

Bottom line: to make a product that conforms to what a customer, client, or end user, need and expect, it is first necessary to know what they want. That information is only available through customer input in the beginning and feedback after delivery.

Shameless promotion of a training module available through the NWS Learning Center and COMET/MetEd:

[Continued on next page...](#)

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Fly...with Ointment – Continued from Page 7

**Quality Management Systems:  
Implementation in Meteorological Services**

*This 1-hour online learning module provides an overview of the key concepts, benefits and principles of an effective quality management system (QMS) based on the ISO 9001:2008 quality management standard. It also introduces guidelines for the successful implementation of a QMS in aviation weather service agencies. Although primarily aimed at management personnel responsible for implementing, monitoring, and updating QMS*

*processes, it also provides a basic introduction to QMS suitable for all agency staff.*

This module complements our discussion and overview of QMS concepts. I highly recommend it. ■

**Next episode:**

**Different subject... What does**

**lead time mean in**

**verification?**

*verification*

## TEMPO Thunderstorm Tips

By Chuck Kluepfel, NWS Headquarters

I recently received a question about temporary (TEMPO) thunderstorm (TS) verification from an aviation focal point at a field office. I told her that if you want TEMPO TS forecasts considered in verification, you must set the forecast type to either TEMPO or the operational impact forecast (OIF) because the prevailing forecast, by definition, ignores all TEMPO groups. I also encouraged her to request scheduled and amended TAFs. This way you see how all your TAFs are performing, not just the four scheduled TAFs each day.

This article focuses primarily upon TEMPO forecast verification of TS. Another related article about TS verification in FM groups will follow in an upcoming issue of Peak Performance. The main column to watch in the TEMPO significant weather type reports is the one labeled “Justified TEMPO (%)” (JT). It doesn’t try to match every 5 minutes of a TEMPO TS forecast with an actual TS. It allows more

more “wiggle room” on the timing, but an intermittent event is still required within 90 minutes of the predicted TEMPO event. More specifically, every 5 minutes within a TEMPO group, the algorithm looks backward and forward 90 minutes. During that 3-hour variability window, a simple question is asked, “Did at least two changes occur?” A change is defined as the beginning or the ending of a TS. If the answer is “yes,” that 5-minute interval is counted as justified. Vicinity TS (VCTS) forecasts and events are ignored.

The total percentage of time that TEMPO groups are justified (ideal is 100%) tells a lot about the appropriateness of those TEMPOs. A high JT value corresponds to a high level of service to pilots, flight crews, and the people who regulate air traffic flow patterns because any mention of a TS in the TAF can play havoc with operations at the terminal and with overall traffic flow. We want to limit our

Continued on next page...

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TEMPO Thunderstorm Tips – Continued from Page 8

use of TS in FM and TEMPO groups to times when they are absolutely necessary. Also, when looking at one of these JT percentages, it is important to note how many hours TEMPO TS were forecasted because any value expressed as a percentage can be quite volatile if the denominator of the fraction used to create that percentage is small. The first column of data in **Table 1** provides the “top performing” field offices, with JT values at or above 25 percent during the 18-month period from January 2011 to June 2012. Twenty-one WFOs met this distinction and are identified at the bottom of the table. For comparison, the “top five” WFOs (JT values at or above 30%) are given in the next column, and national data (all 122 offices) are given in the right column. **Figure 1** contains a histogram of these values for all WFOs.

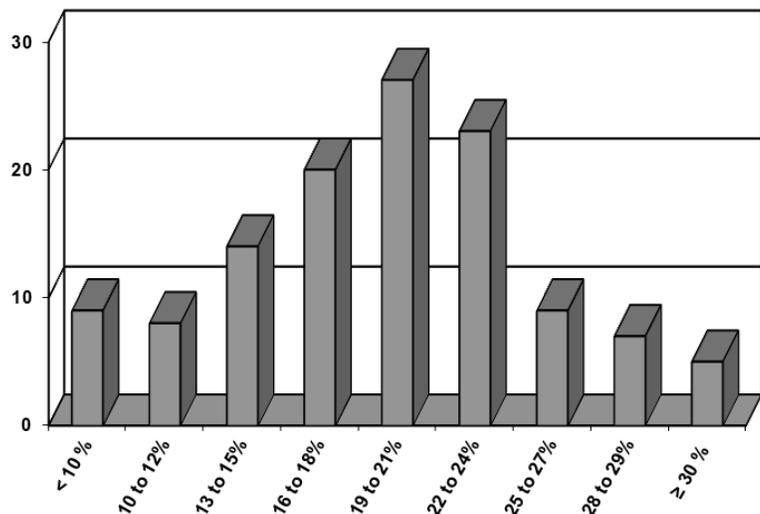
**Table 1.** Verification statistics for TEMPO TS forecasts are provided. The “Top 21” are defined as the WFOs with 25% or greater justified TEMPOs (JT) for TS during the 18-month period January 2011 to June 2012. The “Top 5” WFOs had JT values equal to at least 30%.

| Statistics                                     | January 2011 to June 2012 |              |            |
|--|---------------------------|--------------|------------|
|  | “Top 21” WFOs             | “Top 5” WFOs | Entire NWS |
| a. Justified TEMPO                             | 27%                       | 32%          | 18%        |
| b. Number hours TEMPO TS predicted             | 18,888                    | 2692         | 157,702    |
| c. Number hours TS observed                    | 25,548                    | 3999         | 122,717    |
| d. Adjusted bias of line b (2*line b / line c) | 1.5                       | 1.3          | 2.6        |

Top 21 WFOs: BMX, MRX, ALY\*, BOX, LWX, ILN, MHX, RAH, GSP, CAE\*, CHS\*, APX, LSX, MQT, ARX, DDC, ABR\*, BOU, SLC, AFC, AJK\*. An asterisk (\*) denotes one of the top five WFOs.

*Do the data point to any best practices of the top-performing offices?* To answer this question, it is helpful to look at the bias trends in the data. Row (b) in the table provides the total number of hours TS were forecasted in TEMPO groups, and the next row gives the total number of hours TS were observed (irrespective of what was forecast). Since TEMPO groups don’t account for all forecasts of TS (FM groups are also used), a straight bias calculation (i.e., forecast total divided by observed total) would under-cut reality and “low ball” the bias statistic. Therefore, these “biases” were doubled to split the observation count used in the bias calculation between TEMPO and FM forecasts.

**Figure 1:** WFO frequencies of justified TEMPO percentages for TS.



## TEMPO Thunderstorm Tips – Continued from Page 9

The top performing WFOs had an adjusted bias of 1.3 to 1.5, while most other WFOs had adjusted biases much higher (the national bias was 2.6). In other words, most TAFs over-forecasted TS in TEMPO groups. In many cases the adjusted biases of individual offices exceeded 3.0, and sometimes they topped 5.0. However, the top performing WFOs use TS in TEMPO groups quite sparingly, and this is exactly what the aviation community expects from us. If we're not yet sure about the threat, it is premature to shut down operations by "crying wolf" with TS in the TAF (in either a TEMPO or FM group). The correlation coefficient between each WFO's adjusted bias and each WFO'S justified TEMPO statistic for the same 18-month period is -0.695. This objectively confirms the strong

inverse relationship between the two parameters; one explains almost half the variance of the other, i.e.,  $(-0.695)^2 = 0.483$ .

Also, prior to using a TEMPO group, we need to ask a second question. Do we expect these conditions to be temporary? Recall the requirements in NWS Instruction 10-813 for using a TEMPO group: the meteorological conditions are expected to last less than 1 hour in each instance and, in the aggregate, to cover less than half the indicated period. TEMPO should not be used to express forecaster uncertainty. If you're uncertain, hold off and amend the TAF when you become more certain.

There's no shame in amending the TAF frequently! ☐

### Change

*"In a chronically leaking boat,  
energy devoted to changing vessels  
is more productive than  
energy devoted to patching leaks."*

*-Warren Buffett*

# On the Road Again...



***Seriously,  
they let me  
go back on  
travel!***

By Brent MacAloney, NWS Headquarters

Believe it or not, it has been well over a year since I was sent on travel for work. Hence, the reason you have not seen my “On the Road Again” articles in the pages of this newsletter since the Summer 2011 issue. I used this downtime to prepare for the birth of my first child, Avery Claire MacAloney, in January 2012 and get to know her better once she was here. I knew deep down the time would come where I was eventually called to get back on the road once again. That call came in May 2012 and the destination was Asheville, NC.

Whenever I am asked to go to Asheville, I make no hesitations. Home to the National Climatic Data Center (NCDC), Asheville is a beautiful city nestled in the mountains just to the east of the Great Smoky Mountains National Park in Western North Carolina. It is home to some of the best food and beverage establishments and hiking trails that you will ever come across in your travels. The purpose of my trip to Asheville was to provide my storm data program expertise at the U.S. Disaster Reanalysis Workshop being held at the NCDC on May 3–4, 2012.

For those of you who are not aware, finding better economic impact estimates for hazardous weather events has taken a lot of time and effort. This information has become a hot topic for the scientific community ever since the *NOAA: Extreme Weather 2011* website

([www.noaa.gov/extreme2011/](http://www.noaa.gov/extreme2011/)) began tracking “billion dollar weather disasters.” Since the date on this website differed from that which was being collected in storm data, it brought the topics of data collection and damage cost estimates to the forefront. The U.S. Disaster Reanalysis Workshop brought together members from various economic cost communities to discuss ways in which data can be shared and how we can obtain one estimate as we move into the future.

The objectives of the U.S. Disaster Reanalysis Workshop were as follows:

- Review historical development and current state of the U.S. Billion Dollar Disasters Report
- Identify any additional data sources and/or new methods should be considered to enhance the robustness of the Billion Dollar Disasters dataset
- Examine uncertainties related to the economic impact of each of the major types of weather and climate disasters in the data set
- Identify guidance on improving the methods used for the billion-dollar disaster dataset and the input sources used for it, including recommendations for known time-dependent biases and minimizing future errors and biases

On the Road Again (Seriously, they let me go back on travel!) – Continued from Page 11

- Identify how NOAA might leverage the expertise of the public, private, and academic partners in the development, maintenance and the timely review/revision of the U.S. Billion Dollar Dataset in the long-term

Thomas Karl, director of the NCDC, kicked off the workshop. After a nice welcome, he and Linwood Pendleton, NOAA’s acting Chief Economist, explained the importance of NOAA using one set of hazardous weather damage cost estimates, unlike the multiple datasets that exist now. This discussion laid the foundation for the next presentation by Adam Smith of NCDC who explained the methods used to complete estimates of economic impacts of disasters and whether there was any need for reanalysis.

Truth be told, I have been working with storm data for over 13 years and I will be the first to

admit that the job of estimating the cost of property and crop damage because hazardous weather is one of the most frustrating and time consuming aspects of entering storm data information. For those of you who are storm data focal points or WCMs, I do not have to tell you that it takes a lot of legwork, thought, and bugging people for data just to get a very rough estimate of the actual economic impact of a hazardous weather event. Adam Smith faced several of those same challenges in developing his estimates. He did a wonderful job explaining his data source, how he manipulates the data and then formulates estimates. He would be the first to tell you that this is not an exact science and more research is necessary to get damage cost estimates with higher confidence in the accuracy. The graphic below (**Figure 1**), extracted from his presentation, will give you an idea of the various sources he used to calculate his economic impacts estimates.

| Disaster Types                   |  | Hurricanes / Tropical Storms | Severe Local Storms | Winter Storms | Crop Freeze | Wildfire | Drought / Heat Wave | Flooding |
|----------------------------------|--|------------------------------|---------------------|---------------|-------------|----------|---------------------|----------|
| Primary data used in assessments | ISO/PCS                                | X                            | X                   | X             |             | X        |                     |          |
|                                  | FEMA (state/local disaster assistance) | X                            | X                   | X             | X           | X        |                     | X        |
|                                  | FEMA (NFIP)                            |                              |                     |               |             |          |                     | X        |
|                                  | USDA                                   | X                            | X                   | X             | X           | X        | X                   | X        |
| Supplemental data                | NIFC                                   |                              |                     |               |             | X        |                     |          |
|                                  | Army Corps                             |                              |                     |               |             |          |                     | X        |
|                                  | State Agencies                         | X                            | X                   | X             | X           | X        | X                   | X        |

Available economic damage/loss information by disaster type across the primary and supplemental data sources

**Figure 1:** Graphic from presentation given by Adam Smith of the National Climatic Data Center, depicting various sources used to calculate his economic impacts estimates.

**On the Road Again (Seriously, they let me go back on travel!) – Continued from Page 12**

After the group took a break and had some time to digest the information contained in Adam Smith's presentation, a couple of private industry groups including Munich Re–Insurance America and ISO Property Claims Services spoke on how they assess overall losses. Losses from hazardous weather events were both direct (e.g., tree falls on house—what is the cost to fix the damage?) and indirect (e.g., ice storm knocks out power forcing businesses to close—how much was lost in revenue?). This gave those at the workshop a good idea of the challenges the private sector faces in gathering estimates. The only difference is that private sector groups have the resources and means to gather data that is more accurate, mainly because the long-term success of their business depends on it.

The group was also treated to several presentations from other government agencies such as the U.S. Army Corps of Engineers, U.S. Department of Agriculture, and the U.S. Department of Energy where each talked about how they quantify their economic loss values. We wrapped up the day by getting into breakout groups to brainstorm on various ways we could improve the robustness of the U.S. Billion Dollar Disasters dataset.

The second day was a half-day session that began with a discussion from the breakout groups on new ideas to improve the database. This was followed by a presentation on disaster impacts on power grids. A panel discussion on the roles the government/research community, academia, and private industries play in addressing disaster analytics and communication to the public wrapped up the meeting.

Several great ideas were passed around in the room and I was pleased to see that the majority of those in attendance were in agreement that more could be done to improve the economic impact database, not just for NOAA, but across all agencies and private industries. The big question that lingers is how to do this effectively. As everyone stated, this is not a trivial task—especially when we all would like to take into account both direct and indirect impacts.

Why am I mentioning all of this here? Well, I would think this could have some impact on storm data entry. If I had my way (and this vision was shared by many there), forecast offices would be required to enter into storm data only the facts associated with the meteorology of the events. That database of weather events would then be piped over to a larger database where companies who deal with insurance claims and economic loss would append direct, and hopefully indirect, cost information to the event. I envision a partnership in which we would share our weather data and companies would share their economic loss data to create a robust database we could all access and use to better understand the true economic impact from hazardous weather events.

That is all I have to report from my trip to Asheville. Hopefully, I don't have to wait another year before I travel again, but if I do, I'll be sure to return here and report to you the things I learned while "on the road."

I've included a few pictures that were taken during my downtime while on travel (**Figure 2 through Figure 4**).

On the Road Again (Seriously, they let me go back on travel!) – Continued from Page 13



Figure 2: The Great Smoky Mountains, National Park in Western North Carolina.



Figure 3: Avery's first hike through the Great Smoky Mountains.

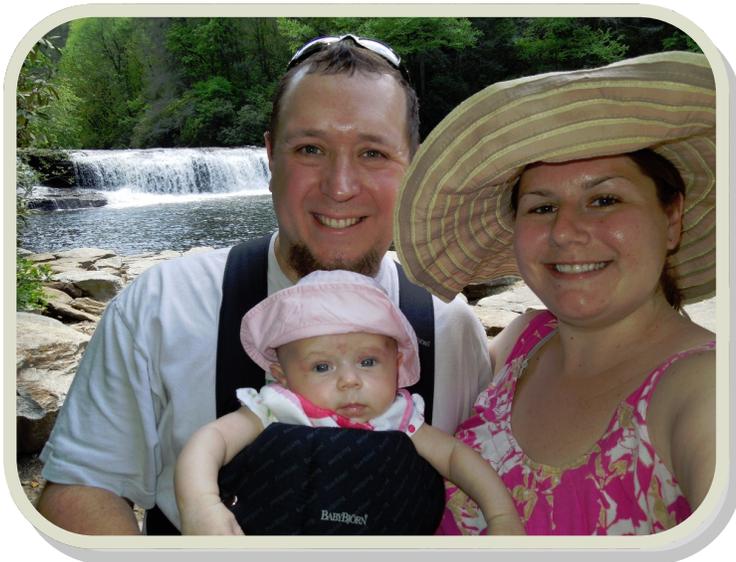


Figure 4: MacAloney Family Hike (Brent, Manina, and Baby Avery) 

whether your summer  
travel is for business or  
personal reasons, I wish  
you all safe travels.

Brent Cheers!

whether your summer  
travel is for business or  
personal reasons, I wish  
you all safe travels.



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### 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  
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**Please consider contributing  
to our next edition:**



**Articles Due: October 1, 2012**

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Questions and comments on this