

# 2015 Stakeholders' Report

## *A Message from Our Meteorologist-in-Charge*

*Welcome to the inaugural edition of the National Weather Service (NWS) Paducah, Kentucky Stakeholders' Report. As we all know, weather plays a part in everyone's daily lives.*

*In 2015, the NWS, who works under the federal government's executive branch of the Department of Commerce and the National Oceanic and Atmospheric Administration, operated under a budget of \$947.5 million. This amount would average out to an annual cost of \$2.96 for each American Citizen.*

*It is the hope of the NWS Office in Paducah that you sincerely feel like you get your money's worth from the staff of the 26 team members who stand your weather watch...24 hours a day...365 days a year.*



**National Weather Service**  
**8250 Kentucky Highway 3520**  
**West Paducah, Kentucky 42086**



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**<http://weather.gov/paducah>**

# 2015 Stakeholders' Report

## ***A Message from Our Meteorologist-in-Charge***

***NWS Paducah oversees 58 counties across southeast Missouri, southern Illinois, southwest Indiana, and western Kentucky for forecast and warning services.***

***Whether it be from severe thunderstorms, a tornado outbreak, major flooding, winter storms, or an ice storm of historical proportion – the NWS Paducah Team will have an ever present watch on weather that affects you, and for those you are responsible. Additionally, rest assured the core value of “Service above Self” will be at the forefront - protecting life and property.***

***So the question becomes, do you feel you are getting your tax-dollar money’s worth from the National Weather Service in Paducah? As Meteorologist-in-Charge of the office, I feel the accountability to assure you that you are.***

***At WFO Paducah, we are always striving for the best Customer Service and Decision Support Services we can provide. In fact, we want nothing more than to be your “Go To—911 Resource” for Weather. In order to do that, we remain in a mode of continual learning - as procedures and technologies advance. Inside this Stakeholder’s Report, you will find some of our main focuses of 2015.***

***Know that we are always welcome to your suggestions and comments as to how we can better serve you. And, as a direct Stakeholder of the services NWS Paducah provides, our hope is that your expectations are not only met, but exceeded.***

***- Beverly A. Poole, Meteorologist-in-Charge (MIC)***

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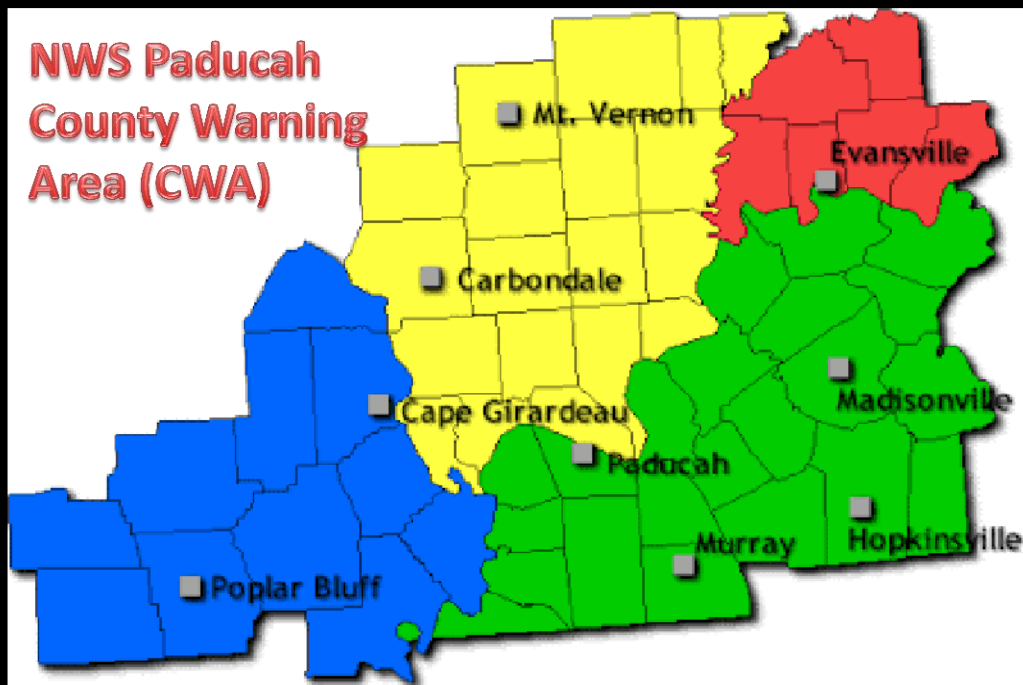
***E-mail: [w-pah.webmaster@noaa.gov](mailto:w-pah.webmaster@noaa.gov)***

***<http://weather.gov/paducah>***

# Who Is the National Weather Service?

The National Weather Service is a dedicated team of professional meteorologists, hydrologists, and technicians providing critical weather information to the public. Our primary goal is the protection of life and property from the effects of all types of weather. Our number one priority is to provide timely and accurate warnings of tornadoes, severe thunderstorms, and floods. In addition, we also issue routine forecasts for the general public, aviators, and fire weather specialists via NOAA Weather Radio, the Internet, and Weather Wire for enhancement of the national economy. The NWS is the sole United States official voice for issuing warnings during life-threatening situations. All NWS data are freely available to the public.

## NWS Paducah County Warning Area (CWA)



*NWS  
Paducah is  
responsible  
for 58  
counties  
across  
portions of  
four states.*

The NWS is a tax-funded organization in the Federal government:



Executive Branch



Department of  
Commerce



National Oceanic and  
Atmospheric  
Administration



National Weather  
Service

# What Services Do We Provide?

## Public Forecasts

While saving lives and property by issuance of timely, precise severe weather warnings is our highest priority, much of our everyday routine revolves around providing weather forecasts. We produce forecasts for the general public, aviators, and fire weather specialists out to 7 days. We provide the greatest emphasis and detail on the first 24-48 hours of the forecast.

## Finding Forecast Data

The easiest way to find out the forecast is via our website: [www.weather.gov/pah](http://www.weather.gov/pah)  
Our website is an indispensable resource for weather information. Every product we issue, from general information statements to forecasts to warnings, is available there.

Let's take a look at how to obtain the very latest information:

The screenshot shows the National Weather Service website for Paducah, KY. At the top, there is a navigation bar with links for HOME, FORECAST, PAST WEATHER, WEATHER SAFETY, INFORMATION CENTER, NEWS, SEARCH, and ABOUT. Below this is a search bar for local forecasts by city, state, or ZIP code, with a 'Go' button. The main content area features the 'NWS Forecast Office Paducah, KY' header, a 'Current Hazards' section, and a map of the Paducah area. A large red arrow points to the map, indicating that users can click on it to zoom in for a detailed forecast. The forecast shows a high of 83°F and a low of 68°F, with a 40% chance of thunderstorms. The map includes labels for various locations like Mount Vernon, Paducah, and Hopkinsville. At the bottom, there are three additional sections: 'Scattered showers and thunderstorms today, better chances Saturday', 'Local Radar', and 'Weather Map'.

By clicking on the map on our home page, you will obtain a detailed forecast for your exact location. The forecast is computer-generated from our database for the exact spot you clicked with your mouse. You can also find a forecast, for anywhere in the country, via zip code or by city-and-state.

# What Services Do We Provide?

## Finding Forecast Data

There are other ways of displaying our forecast data, all of which can be found on our website. With the User Defined Area Forecast link (found under the FORECASTS menu), you can choose a specific area that you are needing a forecast, instead of a specific town or city. Let's take a look at how this works:

NATIONAL WEATHER SERVICE  
FORECAST PAST WEATHER WEATHER SAFETY INFORMATION CENTER NEWS SEARCH ABOUT

Local forecast by "City, ST or ZIP code"  
Enter location  
Location Help

MY FORECAST  
2 Miles ENE Paducah KY

NWS Forecast Office Paducah, KY  
Weather Office

Current Hazards Current Conditions Radar Forecast Rivers Wet Lakes Climate and Past Weather Local Information

Click on the map below to zoom

- Forecast Discussion
- User Defined Area Forecast
- Hourly Forecasts
- Fire Weather
- Activity Planner

Last Map Update: Fri, May 15, 2015 at 10:13:29 am CDT

Experimental Product: [Description](#) | [Survey](#)

This page allows a user to get a forecast for an area they design. An area is created by clicking on the map and placing markers on the map to create a polygon. The forecast returned will be an average forecast for the entire area.

- Click on map to set each marker.
- There must be at least 3 markers to make an area.
- All markers are draggable and removable (click on a marker to remove it).
- Elevation limits (upper and lower) can be set using the drop down menus.
- Once an area is defined, click on "Get Area Forecast".
- To start over, click Clear Map.
- Note: Grids that fall within Marine areas will not be included in calculations.

User Defined Area Forecast

Get Area Forecast Clear Map

There are other ways you can display our forecast to better suit your needs. If you choose "Hourly Forecasts" from the FORECAST pull down menu, you can choose three different ways to display our forecast: 1) 7 Day Text Forecast 2) Hourly Weather Graph & 3) Digital/Tabular. Just choose which type you prefer and then click on the map to the left. You can also choose to input Lat/Lon coordinates.

Weather Activity Planner

Welcome to the Weather Activity Planner. Please enter the range of weather parameters relevant for your activity. Then, either click the appropriate location on the map below or enter the specific latitude and longitude and hit submit. This will query the forecast grids to find when your weather requirements will be met at the nearest grid point over the next 7 days. Public comments and suggestions are encouraged.

This application generates products from a digital forecast data base. It is intended to allow a user to define and produce a forecast for general planning purposes only. As any weather or hydrologic event evolves, updated forecasts and warnings are issued by the NWS. Customers are urged to obtain the latest official forecast information prior to engaging in any weather sensitive activity, and to monitor forecasts for updates during such activities.

The Weather Activity Planner is NOT meant to replace a spot forecast request. Weather Activity Planner surface winds are a gridded representation of projected, local surface winds at a 5m or 2.5m resolution. The surface winds returned do NOT account for hill slope, sheltering or slope aspect. Users can select either surface wind speeds or 20 foot winds if the 20 foot wind grids are available. If precise wind forecasts are needed, please submit a spot forecast request to your service's Weather Forecast Office.

English Units Click to Change

Element	Min	to	Max	Element	Min	to	Max
Temperature (F)		to		Surface Wind Direction		to	
Relative Humidity		to		Sky Cover		to	
Surface Wind Speed (mph)		to		Precipitation Potential		to	

Read weather warnings & advisories

Flood Warning Hazardous Weather Outlook

Latitude Longitude Entry decimal degrees (i.e. 42.134) or deg min sec (i.e. 42 23 34)

Latitude: Longitude:

Use " " (single) to input a longitude for locations in Western Hemisphere

Submit

Activity Planner

You can also access a tool called "Activity Planner" from the FORECAST pull down menu.

Read weather warnings & advisories

Flood Warning Hazardous Weather Outlook

Hourly Weather Graph

7-Day Text Forecast

Hourly Weather Graph

Digital/Tabular

decimal degrees (i.e. 42.134) or deg min sec (i.e. 42 23 34)

Latitude: Longitude:

Submit

Hourly Forecasts

# What Services Do We Provide?

## Aviation Forecasts

As part of aviation services for the National Airspace System, the aviation forecasting program at the National Weather Service (NWS) Paducah office is primarily focused on providing concise forecasts of meteorological conditions significant to aviation at certain airports in our area of responsibility. These 24-hour Terminal Aerodrome Forecasts (TAFs) are designed to inform a variety of aviation users of expected weather conditions within 5 statute miles of the center of an airport's runway complex, for pre-flight and in-flight planning purposes. Also, TAFs may include certain meteorological phenomena expected to occur in an airport's vicinity, defined as an area between 5 and 10 statute miles from the center of an airport's runway complex.

TAFs contain the following elements: wind speed and direction, visibility, weather, obscurations to visibility, height and coverage of clouds. TAFs are some of the most detailed forecasts issued by the NWS, and their accuracy can have a significant impact on aviation safety and cost of operation. Some examples of our aviation users are: commercial airlines, general aviation, civilian, and military operators.

Scheduled TAFs are generated and issued by the NWS Paducah office four times a day for four airports in the Paducah office's area of responsibility: Cape Girardeau, MO; Paducah, KY; Evansville, IN; Owensboro, KY. Amended forecasts are issued at any time in between, when necessary.

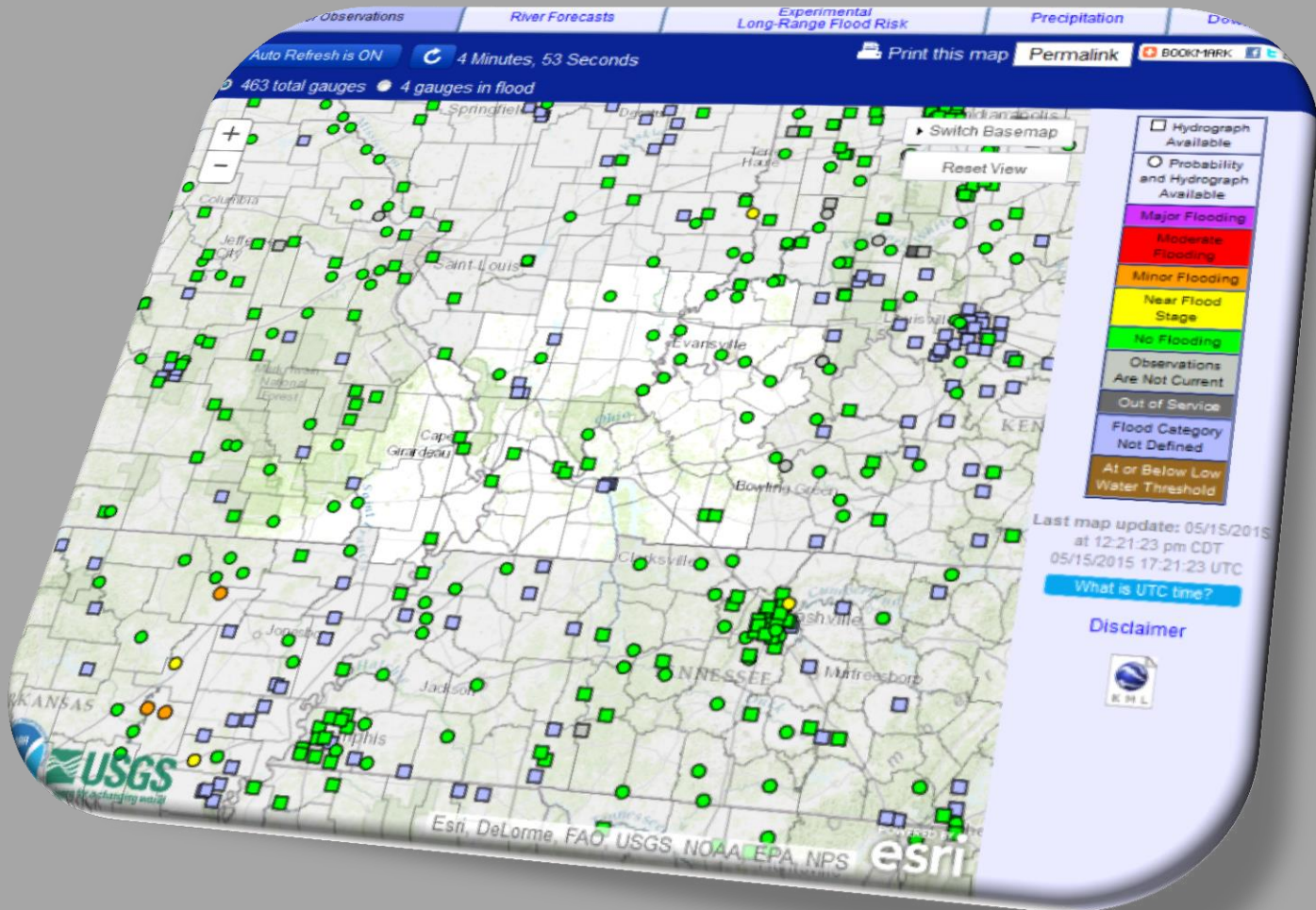
The screenshot shows the AvnFPS Monitor application window. It features a menu bar (File, Options, Help) and several tabs: TAF Editor, Climate, Plot, Backup, and Queue. Below the tabs is a table with columns for 'Current Observation', '2-h Persistence', 'ltg', 'rtg', 'ccfp', 'NDFD Grids', 'llws', and 'Editor Shortcuts'. The table lists TAFs for four airports: KCGI, KPAH, KEVV, and KOWB, each with a 'TAF' and 'MTR' time and a row of colored status indicators.

The screenshot shows the AvnFPS TAF Editor application window. It has a menu bar (File, Options, Edit, Help) and tabs for 'Viewer' and 'Editor'. The 'Editor' tab is active, showing a text area with a TAF for KCGI. The TAF text includes: 'KCGI 041720Z 0418/0518 08004KT P6SM SKC', 'FM050000 00000KT P6SM SKC', 'TEMPO 0509/0513 4SM BR', and 'FM051500 12003KT P6SM SKC='. Below the text area are 'Tools' and 'Apply' buttons. On the right side, there is a 'Metars' table with columns for 'GFS-MOS', 'TAF/LAMP', 'GFS/LAMP', 'NAM-MOS', 'NAM DMO', and 'NDFD Grids'. The table lists various weather conditions and their associated values.

# What Services Do We Provide?

## Hydrological Forecasting

Flooding is one of the leading causes of fatalities and property loss in the United States. To that end, we take flooding very seriously in the NWS. We issue Flash Flood Warnings when powerful thunderstorms drop copious amounts of rain on ground which simply cannot be absorbed. Flash Flood Warnings are also issued in the case of dam breaks. There are 30 river gage locations in our CWA where we closely monitor water levels and can issue warnings and statements when flooding is expected. Our “Advanced Hydrologic Prediction Service” webpage is loaded with river information that is easy to find, understand, and apply. You can locate this user-friendly page at <http://water.weather.gov/ahps2/index.php?wfo=PAH>



# What Services Do We Provide?




## Daily Weather Story & Short Term Graphical Forecasts

NWS Paducah creates a Weather Story every morning which is posted both to our website and social media. A Weather Story is a pictorial representation that depicts the most important weather feature that will impact the area that day or sometime within the next several days. Forecasters will include items such as frontal positions, temperatures, chances for precipitation or any other meteorological variable that is of particular significance on a given day. The idea is to show a snapshot of the most important aspects of the forecast. It could be the current day's weather or an upcoming storm system a few days away.

The Short Term Forecast is intended to enhance our public forecast products. This product is issued to discuss the evolution of any precipitation, winter weather, frontal timing, fog, winds and temperatures. Once the graphic is created, it will be posted to Facebook and Twitter as well as being posted to our website.

### *Weather Story*

**Scattered showers and thunderstorms today, better chances Saturday**

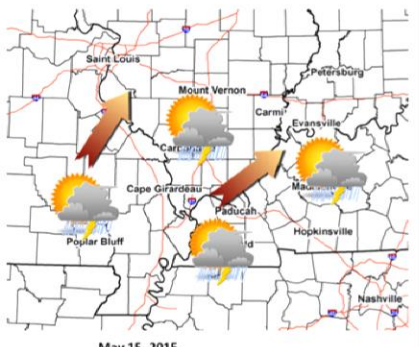
Today	Tonight	Saturday
 Good chance of showers and thunderstorms, especially in the afternoon Highs: 80 to 85	 Scattered showers and thunderstorms Lows: middle to upper 60s	 Numerous showers and thunderstorms Highs: around 80 degrees

<https://www.facebook.com/FUS.NationalWeatherService.Paducah.gov> @NWSPaducah or #mrsph or #pahspotter

### *Short Term Forecast*

**Scattered thunderstorms rest of today**

Warm and unstable conditions the rest of today, will continue to lead to scattered shower and thunderstorm activity. Locally heavy rain, lightning and gusty winds will all be possible. There may be some small hail. Movement NE around 25 mph.



May 15, 2015  
National Weather Service – Paducah, Kentucky

## Fire Weather Forecasts

Our office produces specialized fire weather forecasts year round that are utilized for planning purposes for planned or unplanned burns. We also create on demand forecasts called “spot forecasts” when a fire official needs a detailed forecast for a specific point at a set time for either an ongoing wildfire or a prescribed burn. In 2015, our office produced 151 spot forecasts for our partners and customers.



# What Services Do We Provide?

## *Reaching Out to Schools*

**By Christine Wielgos – Meteorologist**

NWS Paducah participates in many outreach activities across the area. One of these outreach efforts involves visiting schools to talk about meteorology. We visited several schools in 2015, including Cairo Elementary IL, Providence Elementary KY, St. Mary's Elementary in Paducah and Sharpe Elementary in Sharpe. KY.

These events allow us the opportunity to teach students about weather and careers in meteorology and bring that outside element to the classroom that teachers appreciate from time to time. We discuss everything from types of weather, to severe weather safety to subjects you need to study to become a meteorologist.

Students always seem to enjoy hearing about weather and they almost always have amazing stories to tell you about. It is always interesting to see all the budding meteorologists in the making!



Photo by: Sharpe Elementary

# WFO Paducah Navigator

***Latest Update Reflects Move to Digital Communication***

**By Ryan Presley – Meteorologist**



For many years, as author, I have maintained an extensive document on the product and service offerings of the National Weather Service in Paducah, Kentucky. This publication, entitled *The WFO Paducah Navigator*, is a summary of products and services provided by NWS Paducah for southeast Missouri, southern Illinois, western Kentucky, and southwest Indiana. The latest update to this guide was completed in July.

Included in this document is a description of the background and mission of the National Weather Service. The guide details multiple sources for weather information, including the recent addition of Facebook, Twitter, YouTube, and NWSChat to address the popularity of digital communication. The various ways we can provide Decision Support Services are also discussed. Thorough descriptions of weather products issued by WFO Paducah are provided, along with a glossary of commonly used weather terms and safety rules for a variety of hazardous weather elements.

Copies of *The WFO Paducah Navigator* are typically handed out to city and county emergency managers, local television and radio broadcast media outlets, and other key partners. The guide also assists Congressional staffers of state and national Senators and Representatives with understanding the important role the National Weather Service plays in the protection of life and property and support to the nation's economy.

The WFO Paducah Navigator is available in its entirety on the WFO Paducah web page at <http://www.weather.gov/pah/ServiceGuide>.

# Role of Social Media in NWS Operations

## The Use of Social Media at NWS Paducah

By Chris Noles – Senior Meteorologist

Our office's ability to communicate both critical weather and general office information has increased substantially since the inception of social media into our daily operations 4 years ago. We are able to reach a large audience and offer another communication option to our partners and the general public.

We have been lucky to obtain a large following even though we do not have a major metropolitan center in our region. At the end of 2015, we had nearly 50,000 followers on Facebook, and more than 10,000 followers on Twitter. We keep a constant watch on our social media accounts. During severe and winter weather events, we establish a dedicated communicator position. Hashtags we utilize include #nwspah, #pahspotter, and #tristatewx. The communicator monitors Twitter and Facebook closely. Additionally we have, at times, used the platforms to do Q&A's with our users. We also solicit weather reports for snowfall, rainfall, severe weather, etc. Pictures prove invaluable when included in storm reports via social media. We provide video weather briefings ahead of significant weather events. You can find our briefings on our YouTube channel.

Our account name is **NWSPaducah** for Facebook, Twitter, and YouTube.



# Flash Flood Impacts

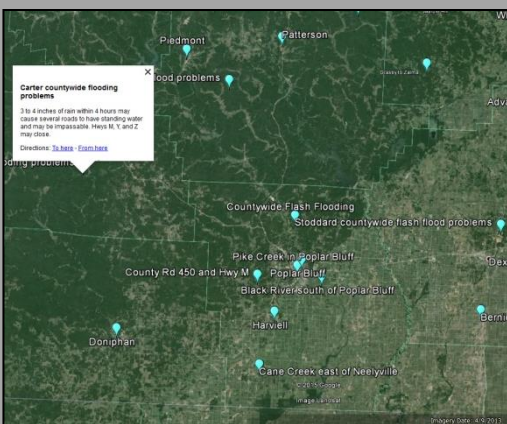
## Adding Value to Flash Flood Products

By Robin "Smitty" Smith- Hydrometeorological Technician

One of our duties at the NWS office in Paducah, KY is the issuance of Urban and Small Stream Advisories as well as Flash Flood Warnings. As part of the Hydrology Services, these two products cover minor urban or rural flooding with depths less than 6 inches, to potentially life threatening or costly events where water levels are greater than a half foot deep. Over a period of time, we realized that issuing an advisory or Flash Flood Warning would heighten the awareness of heavy rain or flooding, but the potential damage to local communities was lacking.



To better serve Emergency Managers, law enforcement, fire rescue departments and the general public, the office wanted to develop specific "impact statements" which would clarify the type of hazards or damage that could be expected with a heavy rainfall event across a community or area. After researching Local Storm Reports (dating back over 20 years) pertaining to heavy rainfall and flooding events and talking with local Emergency Managers, we were able to compile a large database of impacts for many communities, and more importantly, all 58 counties within our area of responsibility.



The office was then able to input the impact statements into Google Earth Pro™ in the form of "pop-up" windows. When issuing an advisory or warning, a forecaster will open the program, run the cursor over a specific location and impacts will be displayed. For instance, the window displayed over Elkton, KY states that 2 inches of heavy rainfall over 2 hours will produce citywide flooding. If the cursor is placed over Carter County, MO the impact window will inform the forecaster that 3 to 4 inches of rain within 4 hours will likely close portions of State Highways M, Y and Z.

Providing impact statements within an Urban and Small Stream Advisory or Flash Flood Warning will allow more in-depth information for the decision making process. Emergency Managers, law enforcement, and fire rescue teams will be able to focus their resources better. The general public will have a better idea of areas to avoid, or if in a flood-prone area, they can make emergency plans to better ensure safety.

# Using Powerful Computer Models for Decision Making

## Hysplit Model - Hazardous Material Mitigation

By Kevin Smith – Meteorologist

As part of the Weather Ready Nation (WRN) initiative, the National Weather Service in Paducah Kentucky provides Impact-based Decision Support Services (IDSS) for public safety to the Emergency Management partners within the NWS Paducah County Warning Area (CWA).

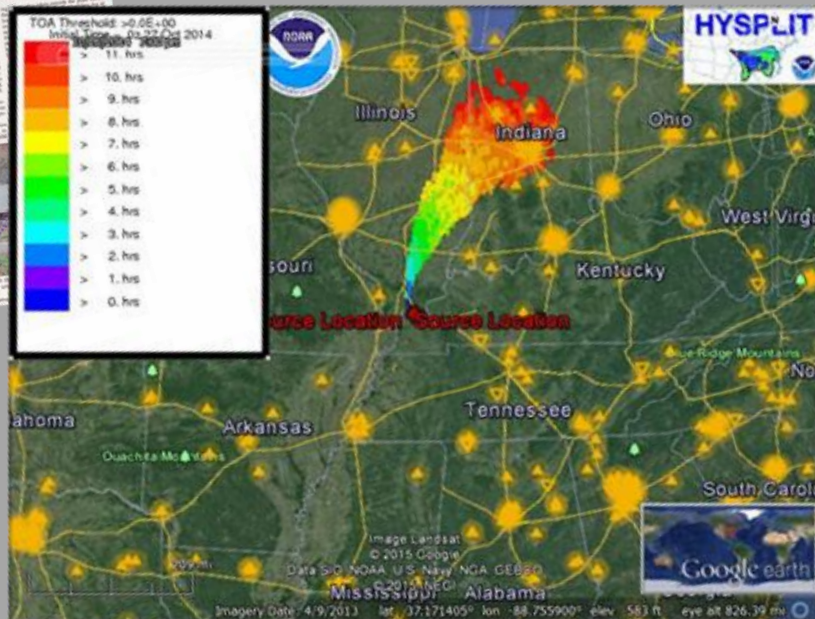
When there is a hazardous material release, the NWS works with various public officials to provide weather support in an effort to mitigate the impact of hazards to the public.

One of the tools used by the National Weather Service is HYSPLIT, a sophisticated computer model that takes information from emergency management at a hazardous incident and returns that information back in the form of expected location or concentration of hazardous material with time. This information is then used to help safety officials provide safe routes for evacuation or shelter-in-place instructions for the public.

The NWS in Paducah Kentucky is fortunate to also have a professional trained IMET (Incident METeorologist) that can provide on-site support for hazardous events. The IMET also uses HYSPLIT for local, regional, and national disaster events and for mitigation of forest fires across the nation.



**HYSPLIT:**  
**Hybrid**  
**Single**  
**Particle**  
**Lagrangian**  
**Integrated**  
**Trajectory**



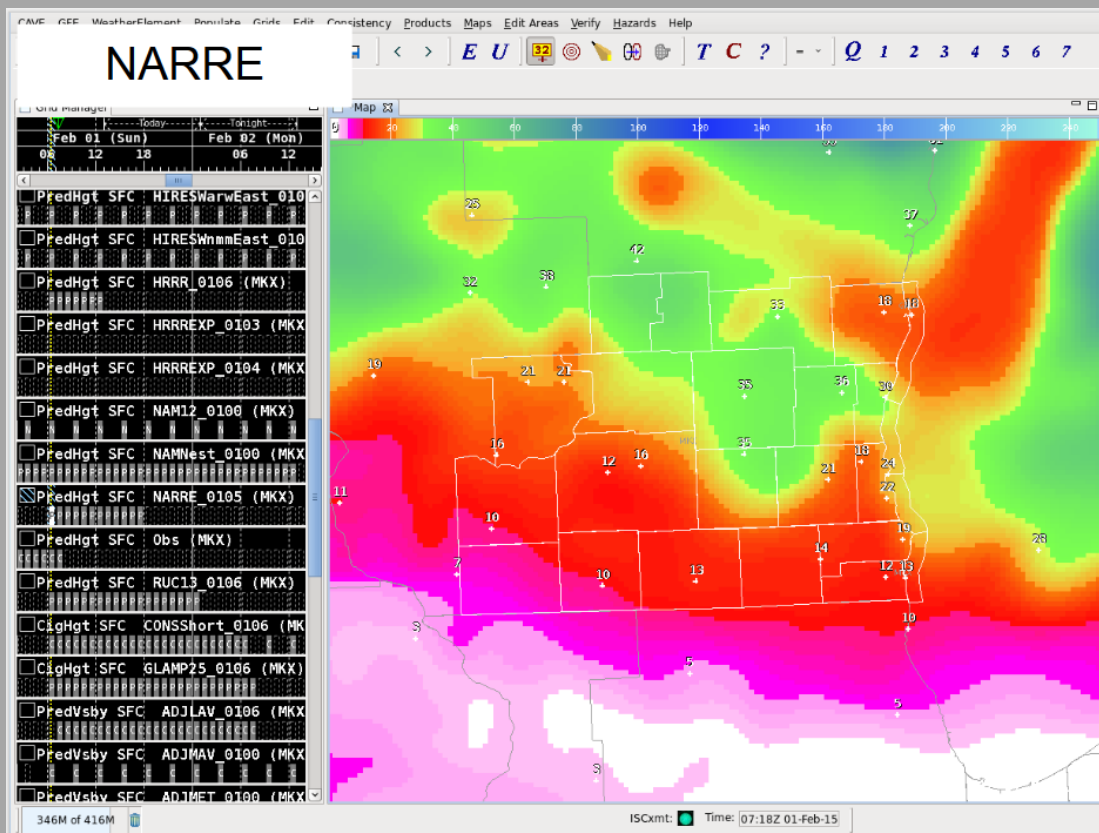
# Aviation Corner

## Enhancing Aviation Forecasting

By David Blanchard - Meteorologist

A new initiative is in the works for the NWS Paducah office. In the next year, as an addition to the already existing National Digital Forecast Database (NDFD), forecasters are going to start creating digital, gridded, graphical forecasts for the aviation community. Model data will be quality controlled and combined with existing NDFD data to create graphical forecasts of aviation elements such as cloud ceiling, visibility, and low level wind shear. After creation of these graphical forecasts, traditional Terminal Aerodrome Forecasts (TAFs) will be generated from them instead of being hand-written.

These graphical forecasts have the advantage of being used for flight planning anywhere in our region, not just selected points like the existing TAFs. In fact, new TAFs can be generated anytime in locations other than the traditional locations, if desired. The new process will increase efficiency of the forecast process, promote consistency between aviation products and other forecast products that come from the NWS, and has been proven to improve the accuracy of aviation weather forecasts.



# New NOAA Wx Radio Monitoring

## Remote SAME Monitors

By Shane Luecke – Electronics System Analyst (ESA)

Back in March 2015, I began a beta test of 3 “Remote SAME Monitors” (RSM). A RSM is a small NOAA weather radio interfaced with a “Raspberry pi” computer that is connected to the internet. The RSM will receive SAME codes from a NOAA weather radio (NWR) transmitter and send the SAME codes back to an email account.

That email account is directly tied to the web page that the forecasters can monitor to verify watches or warnings made it through the system.



Each RSM also sends a daily audio clip (MP3) of its broadcast along with a signal strength and status log every morning at 7:00am. This is very useful in tracking signal degradation patterns.

NWS Paducah now has 5 RSM's in our county warning area, including Marion IL, Evansville IN, Paducah KY, Cape Girardeau MO, and Hopkinsville KY, with plans to add 6 more in the future to cover all of our NOAA Weather Radio sites.

This couldn't be done without the help of volunteers who give us free use of their internet connection. The RSM is a great tool to truly verify if a warning has been received by the public.



# Research to Improve Warnings

## ***Study Focuses on Earlier Detection of QLCS Tornadoes***

**By Dan Spaeth — Senior Meteorologist**

Tornadoes in our region can occur at any time of the day in any season, and they can develop out of a wide variety of storm structures. The most well-known tornadic thunderstorms are supercells, which are most common over the Great Plains in the spring and summer seasons. These storms produce the strongest tornadoes and rightfully garner the most attention from the media and the research community. We can and have had tornadic supercells in our area over the years, but the most problematic tornadoes for us at the NWS Forecast Office in Paducah, Kentucky are those that form out of what are called Quasi-Linear Convective Systems (QLCS).

QLCSs can take many shapes (see examples at the bottom of the prior page - the black circles indicate the location of the tornado), but generally have a more linear appearance than the more isolated supercell storms. There are numerous characteristics of QLCSs that make it difficult to forecast and warn for them. The most troublesome tornadoes are those that are spawned by QLCSs that occur in the cool season, October through March. These tornadoes generally happen at night, sometimes well after Midnight. They can occur without lightning and thunder and in some cases without a tornado watch being in effect ahead of time. They can develop quickly and are generally short-lived. In some cases there may only be one tornado out of a line of showers and storms that moves through our entire 58 county warning area over a period of several hours.

In an attempt to provide better forecast and warning services for these events, several members of our staff have studied the atmospheric environments and radar characteristics associated with 46 different cool-season QLCS tornadoes that have occurred in our warning area over the last decade. We will be creating a playbook of our findings that will hopefully help forecasters recognize the conditions that are favorable for the development of tornadic QLCSs, and the radar characteristics that precede tornado development.

If we can recognize these events days ahead of time we should be able to better inform the public of the potential for late night tornadoes. We should also be able to lobby to have tornado watches issued ahead of time even if lightning and thunder are not expected. Hopefully, this will lead to greater public vigilance and a better response when tornado warnings are eventually issued. Of course, we are hopeful that this study will also lead to more accurate and timely warnings for these late night tornado events.



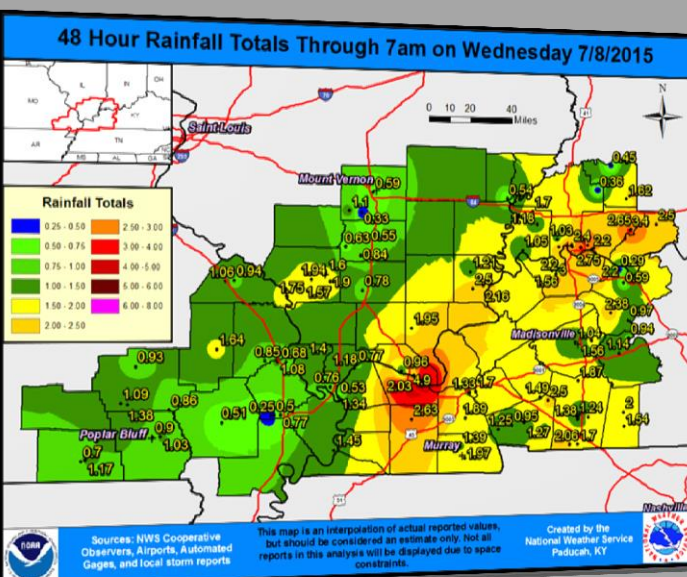
# Geographic Information Systems

## How the NWS Uses GIS to Communicate Information

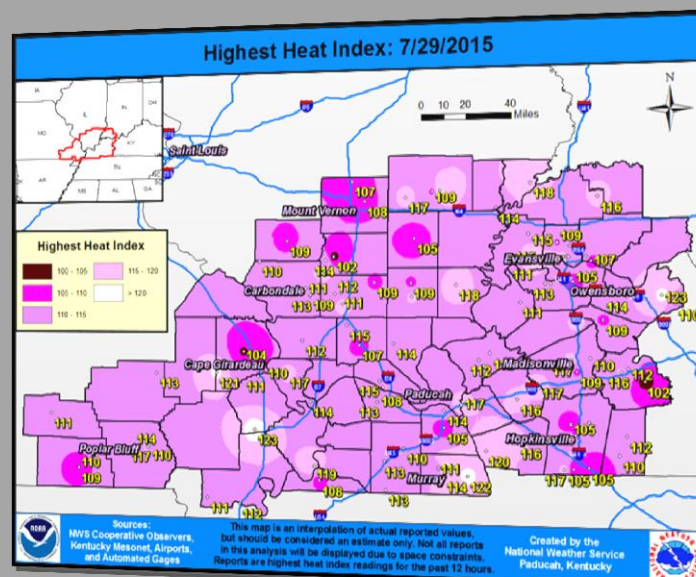
By Sean Poulos — Meteorologist Intern

A Geographic Information System (GIS) allows users to capture, store, manipulate, analyze, and display all types of spatial or geographic data. GIS helps the National Weather Service capture and display maps consisting of weather information. The data we obtain, such as temperatures or rainfall amounts, can be plotted on a map using latitude and longitude coordinates. The values can then be analyzed and contoured into a raster image (colored image). Background layers such as interstates, cities, counties, and states are added to provide reference to someone's location.

Here at the NWS Paducah office, we have local GIS maps that we create for event summaries and extreme weather. These are useful for showing observed temperatures when experiencing record cold or heat, as well as rainfall totals from a heavy rain event. Snow maps can also be produced to show the snow measurements from airports, CoOp observers, the general public, and media sources. Heat index, wind chill, and highest wind gust maps can also be produced from templates created locally. These maps are great for showing our customers and partners the outcome of an event. The colorful image catches people's attention and the analyzation process used within the GIS script produces smooth contours. We also use these products when doing research on past events to show which areas were hardest hit.



Map showing total precipitation accumulation during a heavy rain event on 7/7/15.



Highest heat indices recorded during one of our hottest periods of the summer on 7/29/15.

# From the Warning Coordination & Hazard Awareness Corner

## Weather Ready Nation



By Rick Shanklin – Warning Coordination Meteorologist

Weather-Ready Nation (WRN) is the initiative to further prepare our nation for hazardous weather. It is about building community resilience in the face of increasing vulnerability to extreme weather and water events. Through operational initiatives, the NWS is transforming its operations to support a more responsive public. These will also help emergency managers, first responders, government officials, businesses, and the public be more empowered to make fast, smart decisions to save lives and livelihoods.

In addition to the many activities going on within the NWS, there are several supporting components of the WRN initiative including StormReady, StormReady Supporter, and the newer WRN Ambassador program. StormReady helps arm America's communities with the communication and safety skills needed to save lives and property—before, during, and after the event. StormReady helps community leaders and emergency managers strengthen local safety programs. To achieve StormReady status, a community, such as a county or city, must attain a certain level of readiness through such capabilities as: having a 24 hour warning point, having numerous population-based means of receiving and disseminating warnings, and having a severe weather operating plan.

The StormReady Supporter program is for businesses, schools, and virtually any other entity. StormReady Supporter does not have the more stringent requirements of StormReady such as the requirements for a 24 hour warning point or multiple means of dissemination. While StormReady focuses on preparedness in terms of in-place capabilities, the WRN Ambassador program focus is more toward education and information sharing. To be officially recognized as a WRN Ambassador, an organization must commit to:

- Promoting Weather-Ready Nation messages and themes to their stakeholders;
- Engaging with NOAA personnel on potential collaboration opportunities;
- Sharing their success stories of preparedness and resiliency
- Serving as an example by educating employees on workplace preparedness

For more information, see the following:

Weather-Ready Nation: <http://www.nws.noaa.gov/com/weatherreadynation>

StormReady: <http://www.stormready.noaa.gov/>

WRN Ambassador Program: <http://www.nws.noaa.gov/com/weatherreadynation/ambassadors.html>

You may also contact me at [ricky.shanklin@noaa.gov](mailto:ricky.shanklin@noaa.gov) or via 270.744.6440 Ext. 726.



# From the Warning Coordination & Hazard Awareness Corner

## Storm Damage Surveys

By Rick Shanklin – Warning Coordination Meteorologist

The NWS conducts storm surveys for a number of reasons:

- First, the information gathered is important in comparing radar and other data with surveyed damage findings. This accumulated data set is vital toward ensuring future warnings are optimal given the observed conditions.



- Second, the damage identified is required for a national report generated by the NWS called Storm Data. This is used for a wide variety of applications from law enforcement to industry and insurance.

**\*\*\*ON-LINE Storm Data Reports\*\*\***

These reports, which are in PDF format, contain all of the severe and/or significant weather events known to have occurred within the Paducah area of responsibility. **These reports are unofficial.** Official reports may be obtained from the National Climatic Data Center (NCDC) in Asheville, North Carolina.

Storm Data Reports for 2015		
January, 2015	February, 2015	March, 2015
April, 2015	May, 2015	June, 2015
July, 2015	August, 2015	September, 2015
October, 2015	November, 2015	December, 2015

Storm Data Reports for 2014		
January, 2014	February, 2014	March, 2014
April, 2014	May, 2014	June, 2014
July, 2014	August, 2014	September, 2014
October, 2014	November, 2014	December, 2014

- Lastly, there is considerable public demand for details on the occurrence of an event including the cause, wind estimates, and other particulars. This demand is often fielded through the media, emergency management, and the NWS.

The job of conducting storm damage surveys has become more automated in recent years with the use of a new software program called “Storm DAT.” This program allows the identification and marking of damage data points. These points are used to generate the overall damage area and make determinations on the cause (e.g. downburst or tornado) and magnitude of an event.

The good news for you is that this information can be accessed directly for many events over the last few years at <http://54.243.139.84/StormDamage/DamageViewer/>. Please select “Paducah” from the drop down menu to see damage survey results in our region.

# From the Warning Coordination & Hazard Awareness Corner

## Spotter Training

By Rick Shanklin – Warning Coordination Meteorologist

Storm Spotters are the “eyes and ears” of the NWS. Each year we work toward ensuring storm spotters are equipped with the necessary training needed for safely identifying and reporting key hazardous weather. These reports are critical input to warning decisions made by the NWS and thus toward keeping safe those in harm’s way.

The primary season for spotter training each year runs from January through early April. The staple Spotter Concepts course offered by NWS Paducah covers the basics of storm spotting from key terms and definitions, to identifying and reporting severe weather phenomena such as tornadoes, large hail, flash flooding, and severe thunderstorm winds. This free two and a half hour course is offered on-site at regional training locations each year and also via webinar for anyone.



These exciting classes, as well as our most advanced “Elite Spotter” courses, are listed on our web site as soon as they are scheduled. See <http://www.weather.gov/pah/spottertraining> for our latest training schedule.



Photos: Stephen Rickerl

# Skywarn Spotters

## **How We Use Your Reports**

**By Greg Meffert – Senior Meteorologist**

Spotter reports are a very important parameter in our warning “equation”. These reports can help tip us off as to how our radar is performing and come in quite handy in areas where the radar may not sample storms as well.

On many occasions, these reports have tipped our hand in situations where radar suggests a marginally severe thunderstorm or even a tornado. Trained spotters, in essence, have become our “eyes in the sky!” WFO Paducah has a team of meteorologists that specialize in conducting Skywarn Spotter Training sessions designed to teach storm spotters what conditions to report, and how to identify storm features that can lead to severe thunderstorms and tornadoes. It is imperative that spotters can correctly identify storm features to reduce the chance of false reports which may lead to false alarms in our warning process.

A spotter report can be very helpful in the warning process. The report, however, may not be the sole reason for issuing a severe thunderstorm or tornado warning. Radar data and/or the atmospheric conditions are two other factors that need to be weighed into the equation. Most times, we like to see two of the three factors line up before warning on a storm. Whenever a trained spotter report initiates a warning or verifies an existing warning, we will try to incorporate the report within the warning product itself. We do this in order to add validity to the warning and hopefully get the public to react and seek shelter when otherwise they may not. On the other hand, especially when we receive isolated reports from the untrained public, we need to weigh the report against what we see via radar analysis. Thus, there are certain occasions when we may not incorporate the report in the warning decision process.

In summary, spotter reports can be very helpful to the warning process, especially when radar data suggests a marginally severe thunderstorm or is hinting at a rotating storm. These reports are also important to help verify our warnings, and can also help to verify the storm is non severe. We love to incorporate good reports right into our warning products. However, we also need to be mindful that some reports may be questionable, especially if called in by the untrained public.

# From the Warning Coordination & Hazard Awareness Corner

## ***NWS Paducah Impact-based Decision Support Services***

**By Rick Shanklin – Warning Coordination Meteorologist**

A major component of WRN is the provision of services that enable emergency managers and other core partners to make informed decisions regarding needed actions within their areas of concern.

“Core Partners” are defined as “Government and non-government entities which are directly involved in the preparation, dissemination and discussions involving hazardous weather or other emergency information put out by the National Weather Service.”

While traditional services provided by the NWS are important to these decisions, the NWS is increasingly focusing its efforts toward providing direct, relevant information to key decision makers. This information is typically for local outdoor events where vulnerability to hazardous weather is maximized.



In an effort to better meet these needs, the NWS in Paducah is actively evaluating and implementing steps to help provide the needed information. For example, our staff has been active in acquiring local outdoor event information. In addition, software applications and programs are being evaluated and implemented to help better provide detailed local data. Findings from a national prototype project conducted at NWS offices in Kansas and Missouri are also being utilized to further guide NWS Paducah in this process.

We are committed to more fully developing Impact-based Decision Support Services to our core partners in 2016 and beyond. Updates to the program will be provided to core partners at NWS Paducah workshops, meetings, and via email correspondence.

For more information on this subject see:

[http://www.nws.noaa.gov/com/weatherreadynation/news/140805\\_idss.html](http://www.nws.noaa.gov/com/weatherreadynation/news/140805_idss.html)

# Decision Support Services

## **Onsite DSS Work**

**By Kelly Hooper – Meteorologist/IMET**

NWS Paducah provides both on site and remote Decision Support Services (DSS) to local emergency managers throughout the 58 counties of the warning forecast responsibility area. In turn, the emergency manager works with the local directors of the events to assure weather safety for the participants. One example of onsite DSS was provided when I assisted onsite at the mobile Emergency Operations Center (EOC) on the riverfront in Evansville, Indiana at the Shriner's Festival June 26 through June 27, 2015. The Blue Angels, as well as the Canadian Snow Birds, flew in the Saturday air show of the festival, with practice flights on Friday. This event had one of the largest crowds to ever attend. Weather was of great importance as both days experienced storms, which halted activities, required water rescues, and made it necessary for people to take shelter, while tents were damaged, some even blown away, and an ATM machine was blown on it's side.

## **Remote DSS Work**

NWS Paducah provides a great deal of remote DSS work. This is done via computer requests, telephone and SKYPE. Decision supporting daily forecasts are provided and in some cases, broken down into hourly increments. Remote DSS in 2015 included numerous regional events such as the Illinois State Fair in Du Quoin, and the annual air show in Owensboro, Kentucky. This remote service allows NWS partners to have the latest forecast parameters to include in their daily Incident Action Plan (IAP) .

At times, both on site and remote DSS are provided. Such was the case for the 2015 Annual West Side Fall Festival in Evansville, Indiana when Ricky Shanklin, NWS WCM, was on-site while NWS Paducah staff supported the event remotely. This event attracted around two hundred thousand people.

DSS for The Fort Massac Civil War Reenactment Camp Mobile Command Center with EM Keith Davis [R] and Illinois Conservation Officer Chris Taylor. [L]



# On Site IMET Support

## Typical IMET Detail

By Kelly Hooper – Meteorologist/IMET

IMET support is very demanding. The normal work day looks like this...

- 4:00-5:00 am Begin work day revising forecast for the day
- 6:00 am Present oral briefing to fire fighting crews – graphics may be needed to highlight significant forecast issues
- 9:00 am Teleconference call is held with adjacent NWS forecast offices to discuss any upcoming concerns and possible impacts for the Incident.
- 10:00 am Conduct weather briefing highlighting possible impacts to local officials, i.e., Mayor, Sheriff, and/or Governor
- 11:00 am Teleconference Call with adjacent IMETs and the Geographical Area Coordination Center (GACC) to firm up forecast and any concerns such as staging areas for aircraft, etc.
- 1:00 pm Attend Planning Section Chief's Briefing on new business such as relocating camp due to encroaching fire line - among other things
- \*Early Afternoon: Arrange for trip to fire line or needed flyovers for recon to get a better picture of fire's behavior and possible hazards due to terrain and weather
- 4:00 pm Begin forecast for next operational period
- 5:00 pm Brief Operational Chief on Day 2 forecast for planning next day's strategy
- 7:00 pm IMET attends Community Briefing for the community at large, usually located in a high school or community center
- 9:00 pm Final edit must be completed on forecast to be included in next day's Incident Action Plan (IAP)

\*In addition, spot forecasts may be requested at any time.

As an IMET – expect 16 hour work days on the fire, seven days a week for a 2-3 week period – and in times of high fire demand – 4 weeks upon dispatch.

An IMET dispatch is very demanding not only for the IMET but also for the home office staff that must cover the home office workload. This is compounded by personal obligations that family and friends cover for an IMET while they are on an incident. It is a heavy workload but rewarding when one encounters the face to face gratitude and respect from the firefighters and landowners that have their property and lives literally on the line.



# On Site IMET Support

## **Summer 2015 IMET Detail**

**By Kelly Hooper – Meteorologist/IMET**

July 7<sup>th</sup> - July 29<sup>th</sup>, 2015, I served as an Incident Meteorologist, [IMET] for the Alaska Interagency Coordination Center in Fairbanks, Alaska. Operating out of the National Weather Service Forecast Office in Fairbanks, which is located within the International Arctic Research Center, I produced forecasts for more than twenty staffed fires across the state.

Then on August 16, 2015, I was dispatched to the “9 Mile” wildfire in Oroville, Washington, but due to a more critical situation, was reassigned August 17<sup>th</sup> to the “Okanogan Complex” near Omak, Washington during the largest wildfire in Alaska’s history.

I provided forecasts for four active wildfires in the Okanogan Complex September 8, 2015, and five for the Chelan Complex, covering 242,624 acres. All totaled, there were 362 structures lost and three fatalities in Twisp, Washington – where I had been providing daily briefings at the Spike Camp.

My IMET Dispatch was extended as I relocated to Pateros, Washington to support the Chelan Fire which became part of the Okanogan Complex – all while training an IMET trainee from Columbia SC. There, I worked with Type II and Type I teams, as well as, team members from Australia and New Zealand. There were over four thousand firefighters at the peak of the Okanogan Complex fires – the majority of which were from the lower 48 states. In addition, over 250 National Guardsmen were activated to assist in the wildfires’ containment.

# On Site IMET Support

## Summer 2015 IMET Detail

By Kelly Hooper – Meteorologist/IMET

Pictures from IMET detail:



Firefighter's Breakfast -  
before the morning  
briefing.



Alaska DNR- Division of Forestry (DOF)



Recon over the fires

# NWS Paducah KY Open House

## *Our Successful Open House*

**By Rachel Trevino – Meteorologist**

Even though this event actually took place in 2014, we felt the need to tell you about our recent Open House, which took place on Saturday, September 20, 2014. Close to 600 visitors toured the facility and were greeted by a live video feed from inside the radar dome so they could watch the dish spinning in real time. They were then treated to an 8 minute video covering the history of the Paducah NWS office and the National Weather Service as a whole, then descriptions were given of various duties and positions of the staff and products issued.



After the video, guests were taken into the operations area to see and hear about all of the equipment used to create forecasts and warnings. Visitors then went into the computer room, where they could see and hear about the incredible technology it takes to receive and transmit all of the data. After the tour, visitors then explored the NWS Paducah display tent, where numerous handouts were available. In the tent, on display was a tornado machine, a Van de Graaf generator, and numerous posters covering some of the more significant weather events experienced in our region. Guests were also able to see demonstrations with the Flood Plain Model. Every piece of equipment outside the office had signs describing what it was, and signs with various tidbits of office and weather information were scattered across the grounds.



# NWS Paducah KY Open House

## *Our Successful Open House*

**By Rachel Trevino – Meteorologist**

In the spirit of moving toward a Weather Ready Nation, there were numerous other displays dealing with safety and preparedness. Two safety trailers were provided by the Green River Firefighters Association. The Child Safety Trailer focused on fire safety and actions to take during severe weather. A television in the trailer had a mock warning come across the screen, and kids were asked what actions they needed to take at their home. The Travelling Safety Adventure trailer covered a wide array of safety issues, covering topics from weather preparedness, precautions to take with electrical cords, and other safety issues for the home.

Mobile communications trucks from Sikeston, MO and Du Quoin, IL allowed people to take tours and shared with them the vital roles they can cover in both natural and man-made disasters, and the technology they can transport to locations dealing with disasters. Mercy Regional ambulance service of Paducah had their Mass Casualty Bus on display, and shared with visitors how they could handle transporting more patients during larger accidents or disasters. PHI Air Medical of Kentucky landed a helicopter next to the office for people to check out and take pictures.



# NWS Paducah KY Open House

## *Our Successful Open House*

**By Rachel Trevino – Meteorologist**

A very popular stop was the Power Line demonstration. The 40 minute demonstration showed the power and dangers of power lines, which was emphasized by live examples of tree limbs catching fire, hot dogs cooking after touching the power line, snaps, pops, and stories about mistakes people have made when dealing with power lines, along with debunking myths.



A weather spotter group from Poplar Bluff, Missouri set up a tent and helped the NWS spread the word on how to become a weather spotter. HAM operators had a tent to share ideas and encourage people who had an interest in getting a HAM license. There was also a tent with volunteers available to help visitors program their weather radios.



Kids were given a “passport” when they arrived at the Open House. The passport had six different stations for kids to visit. When they visited the station, their passport was stamped. When the passports were completed, kids returned the passports to the NWS tent where they were given a prize bag containing an Owlle Skywarn bookmark, an NWS whistle, and some candy. These passports were a huge hit and encouraged both kids and adults to visit all of the displays and demonstrations.

Many visitors commented on how interesting all of the displays were and how much they had learned. The Open House was considered a huge success!

# The Great Tri-State Tornado

## Commemorating the 90<sup>th</sup> Anniversary

By Ryan Presley – Meteorologist

On March 18, NWS Paducah commemorated the 90th Anniversary of the Great 1925 Tri-State Tornado at John A. Logan College in Carterville, IL. Still the deadliest and longest track tornado in U.S. history, the Tri-State Tornado claimed 695 lives as it tore a path of more than 220 miles across parts of southeast Missouri, southern Illinois, and southwest Indiana on that fateful afternoon.

Approximately 100 people, including NWS key partners and the public, took part in the half day workshop. Following my overview of the Great Tri-State Tornado, the program focused on the theme of “What If It Happened Today?” This theme was addressed from many perspectives, including Storm Prediction Center (SPC) services, NWS Paducah’s role, and the vital parts played by emergency management and local TV meteorologists.

One highlight of the event was a panel of TV meteorologists who fielded questions during a Q&A session. Another popular session featured SPC Lead Forecaster John Hart, who shared SPC research findings, such as extensive community research conducted with local residents. NWS representatives appealed to all participants to become a Weather-Ready Nation Ambassador and help spread the word about severe weather preparedness.

Other speakers included NWS Paducah Science & Operations Officer Pat Spoden, NWS Paducah Forecaster Christine Wielgos, WSIL News 3 Chief Meteorologist Jim Rasor, and City of Murphysboro Emergency Management Director Brian Manwaring. WFO Paducah Warning Coordination Meteorologist Rick Shanklin served as emcee for the event.

Find more information on our web page at <http://www.weather.gov/pah/1925Tornado>.



Storm Prediction Center Lead Forecaster John Hart discusses the Great Tri-State Tornado.

# Being on the Cutting Edge

## **Early Warning Program**

**By Pat Spoden– Science & Operations Officer**

In May 2015, I was able to participate in the Hazardous Weather Testbed in Norman, OK . I spent one week working side-by-side other forecasters, researchers from around the world, and computer modelers. The focus this year for me was on the Early Warning Program (EWP). A group of forecasters, programmers, and researchers were pulled together to see if it was realistic to create different hazard forecasts for the country.

One part of the project was to forecast tornado, wind and hail every hour for parts of the current day and the next day. The second part of the project was to create individual tornado, wind and hail forecasts at 4 hour intervals for parts of the current day and the following day.

Beside the normal guidance available, we used several numerical models that have a high enough resolution to forecast thunderstorms. We call these CAMS, or Convection Allowing Models. In some cases, these models were run as ensembles, where the model is run several times with slightly different conditions. The idea is that if all of these models come up with the same solution (thunderstorms in a certain location and time), then the confidence that something will actually happen increases. This information is then brought into the experimental forecasts that we created.

I must say that these models are improving at a rapid pace. We had numerous models at our disposal during this test, some of which were only run during the test, and others which are actually available on the Internet year-round.

This experiment was part of the Warn-on-Forecast research program (<http://www.nssl.noaa.gov/projects/wof>) which is part of Weather Ready Nation (WRN) (<http://www.nws.noaa.gov/com/weatherreadynation>).

It was exciting to be part of the “cutting edge” and I have brought much of that information back to help the forecasters here at WFO Paducah.

# Improving Hydrologic Services

## Hydrologist Conference

By Mary Lamm– Service Hydrologist

In May 2015, I attended the National Weather Service's Hydrologic Program Managers Conference held in Tuscaloosa, Alabama. As part of our conference, we were invited to tour our agency's newest building, the National Water Center (NWC). The NWC is located on the University of Alabama's main campus. Architecturally, it blends into the rest of the university.

The NWC is the first national water resources facility in the country that will serve as the proving ground for Integrated Water Resources Science and Services (IWRSS). The main members of IWRSS include the National Oceanic and Atmospheric Administration, the U.S. Geological Survey, the U.S. Army Corps of Engineers, and the Federal Emergency Management Agency. Together they will partner to improve water resource monitoring and forecasting as well as support each agency's field offices during significant flood events. The NWC will serve as a place to advance GIS and Geo-Intelligence, develop and test software, and provide facilities for residence learning.

The facility is state-of-the-art with an open floor concept. Working areas are designed with collaboration at the forefront. Many of the facility's numerous conference rooms are also designed for long-distance collaboration. The conference was long overdue and extremely successful. There are many changes coming in the next 5 to 10 years – all with the goal of improved hydrologic services.





# IAAP

## **Benefits of My IAAP Membership**

**By Debbie Hooper – Administrative Assistant**

I have been a member of the International Association of Administrative Professionals (IAAP) for 28 years, which has assisted me in my position at the National Weather Service. This involvement has given me the educational opportunities to keep current on the latest technology, the newest office supplies available, and a great network of resources to make my job easier.

I continue to attend seminars, workshops, and boot camps in order to continue my mission of being a life-long learner. These opportunities provide motivation and new ideas to share with the office staff on how to better communicate with other personalities, learn why working in a diversified office benefits everyone, and how to address a difficult issue. I will continue to volunteer my skills to assist in coordinating and scheduling the many outreach events, Skywarn classes, and community projects for the National Weather Service as needed.

I was just recently awarded a Regional Cline Award for Support Services and for all the professional development I have done through IAAP.



# New Standardized Web Page

## Enhancing the Redesign by Adding Local Content

By Ryan Presley — Meteorologist

After many years with the same web page format, National Weather Service Central Region made the decision to convert all regional NWS web pages to a new nationally approved format last spring. The purpose of the transition was to streamline the location of information among all web pages to provide for improved accessibility. Unfortunately, the transition came with some unintended consequences as some information that users had become accustomed to was no longer available.

Over the next few months, a number of WFO Paducah staff members worked to bring back some of the information that was initially lost during the transition. One such example was the creation of a new Hazardous Weather Support Center. Several years ago, as a result of the customer service workshops, hazardous weather pages were developed that could be linked from a headline on the home page prior to and during a hazardous weather event. The transition to the new web page format meant these pages would no longer function with the new system. New hazardous weather pages were recreated to allow access to vital information around the clock. These pages range in scope from severe weather and flooding to extreme heat, drought, and winter weather. You can access the NWS Paducah Hazardous Weather Support Center at this link: [http://www.weather.gov/pah/hazardous\\_weather](http://www.weather.gov/pah/hazardous_weather).

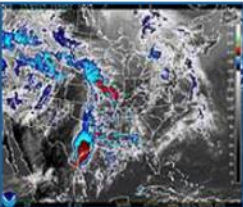
### NWS Paducah Hazardous Weather Support Center

[Weather.gov](http://www.weather.gov) > [Paducah, KY](http://www.weather.gov/paducah) > NWS Paducah Hazardous Weather Support Center

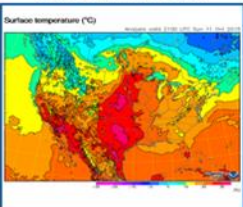
Paducah, KY  
Weather Forecast Office

**Severe Weather**   **Heavy Rain & Flooding**   **Drought**   **Extreme Heat**   **Winter: Snow**   **Ice**   **Cold**

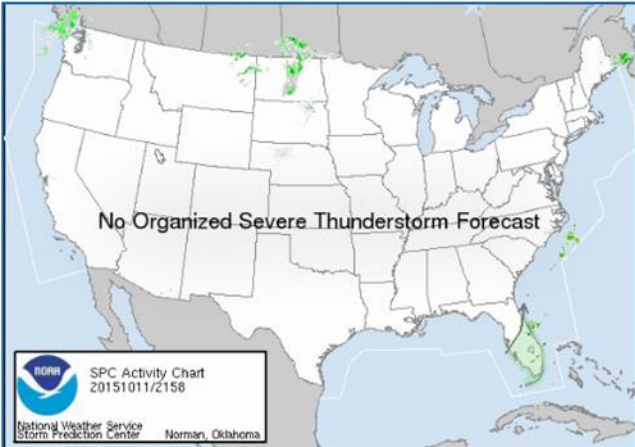
#### Satellite



#### Current Weather



#### SPC Day 1 Outlook - Convective Watches - National Radar




No Organized Severe Thunderstorm Forecast


SPC Activity Chart  
20151011/2156

National Weather Service  
Storm Prediction Center  
Norman, Oklahoma

#### Graphical Forecast



Forecast Maps

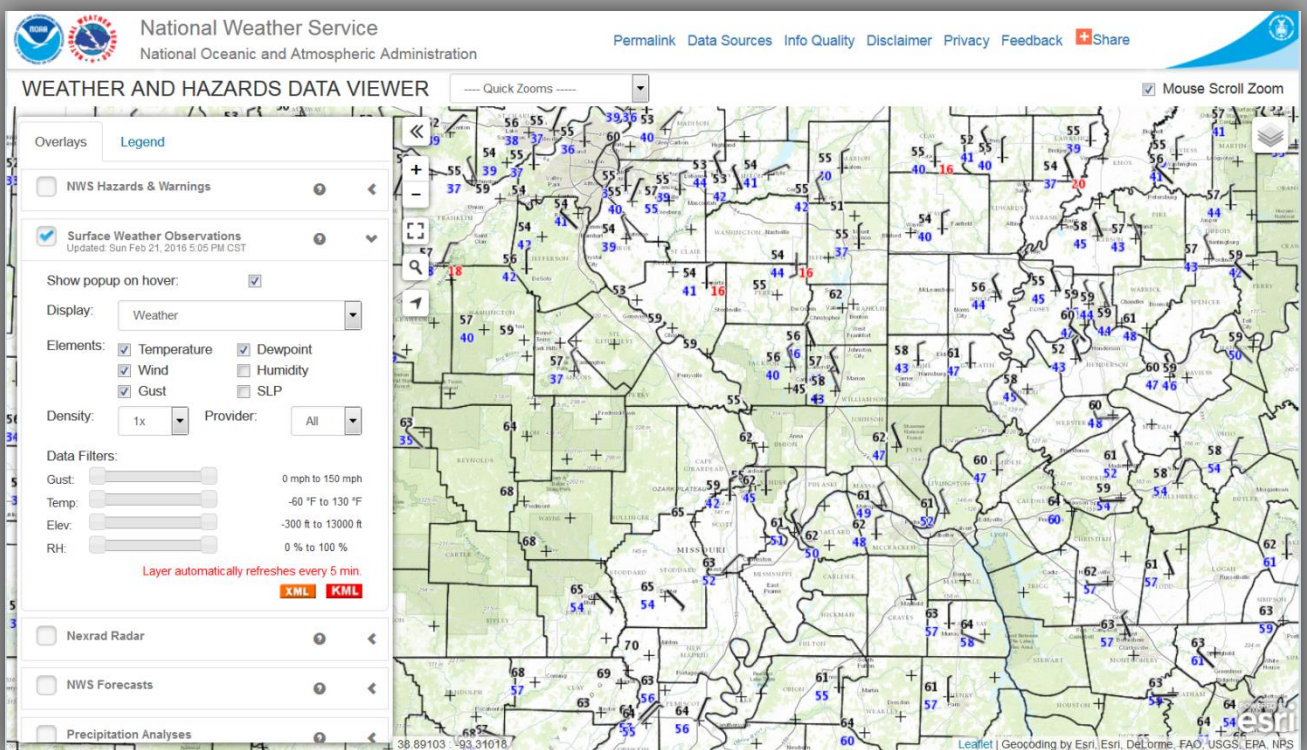


# New Standardized Web Page

## Enhancing the Redesign by Adding Local Content

By Ryan Presley — Meteorologist

Another page we brought back was the page that contained links to weather observations from across the forecast area. In recreating this page, we improved upon the original by providing links to observations for the past 3, 7, and 30 days. Also included on this page is a link to a dynamic weather observations map hosted by NWS Western Region.



Visitors to WFO Paducah's web page have no doubt become accustomed to the myriad of information available on past weather events to impact our region. Some of this information immediately transitioned to the new format, but much of it had to be reconstructed.

Recognizing the need to maintain the historical record of weather events, WFO Paducah staff members put together a new Past Weather Events page to provide better organization and structure for previous significant weather events. Included on the new page are the top 10 weather events from 1999 to present, in addition to Storm Data Reports from 1996 to present. All of this information is available by visiting the Past Weather Events page at <http://www.weather.gov/pah/PastWeatherEvents>.

# Weather History

## Taking a Look at Weather History across the Area

By Robin "Smitty" Smith- Hydrometeorological Technician

The National Weather Service office in Paducah, KY has developed a program entitled "This Day in Weather History" covering all 58 counties within our area of responsibility.

Anyone can access this information by going to our website at [www.weather.gov/paducah](http://www.weather.gov/paducah) and selecting Weather History under the Local information tab. The information is provided as "factoids" of local historical weather events.

The screenshot shows the NWS Forecast Office Paducah, KY website. The top navigation bar includes links for HOME, FORECAST, PAST WEATHER, SAFETY, INFORMATION, EDUCATION, NEWS, SEARCH, and ABOUT. Below the navigation bar, there is a "Local forecast by 'City, ST' or ZIP code" section with an input field and a "Go" button. A "News Headlines" section lists recent news items. The main content area is titled "NWS Forecast Office Paducah, KY" and includes a "Local Information" tab. A map of the Paducah area is displayed, with a red arrow pointing to the "Local Information" tab. Below the map, there is a "Weather History for the Quad State Region" section. The "Weather History" section includes a "Current Hazards" tab and a "Local Information" tab. A "Weather Story" section is also visible, featuring a "Turning Colder This Weekend..." banner and a "Weather Story" link.

The weather history information was compiled by researching severe weather information dating back nearly 150 years, and the available climate data information. Climate information dates back to the 1890s for the Evansville, IN area and back to 1939 for the Paducah, KY area. The office also has procedures to update the information as significant weather or events occur in the future.

# 45 Years of Dedicated Service

## Reminiscing on the Last 45 Years in the Weather Business

By Jim Packett– Senior Meteorologist

I began my career in meteorology in 1971 as a Weather Observer Technician in the U.S. Air Force. My primary job was to report current weather conditions in support of Army aircraft operations. The weather observations were recorded on a WBAN 10 form, then typed on a teletype machine that punched holes in a paper tape that was then mounted to a machine (reader) that transmitted the information when polled. We had a Rotating Beam Ceilometer to measure the base of clouds, but it had a limitation of 3800' AGL due to the length of its baseline. Above that we had to estimate cloud heights visually. Visibility measurements over the airfield were determined by a transmissometer, otherwise they were made manually using pre-determined landmarks. Precipitation was measured manually in an eight inch rain gauge. Pressure readings were taken from an aneroid barometer. Once a week we compared the aneroid barometer against a mercurial barometer (the standard) to ensure its accuracy. Weather maps came into the office via a facsimile machine that used a combination of electronic impulses and metal wiper blades to create the images on special paper. Upper air soundings were manually plotted on Skew T-Log p diagrams twice a day.



Facsimile machine that printed weather maps using wiper blades and electronic signals



Transmissometer Readout (visibility machine), temperature/dew point readout, Rotating Beam Ceilometer (ceiling height) readout



Aneroid Barometer

After attending Weather Forecaster Technician school in 1976, I began to write Terminal Aerodrome Forecasts by means of primitive computers for military airfields in the southwest and northwest U.S.. From there, I worked in the severe weather section of Global Weather Central, where we issued warnings for various types of severe weather via primitive computers for around 450 Dept. Of Defense facilities. To keep track of what warnings were in effect, the information was written in grease pencil on a large map of the lower 48 states. The surface and upper air maps were printed on a dot matrix printer but analyzed very carefully by hand. Radar observations were still hand plotted.

# 45 Years of Dedicated Service

## ***Reminiscing on the Last 45 Years in the Weather Business***

**By Jim Packett– Senior Meteorologist**

My NWS career started in 1987 at a Weather Service Meteorological Observatory (WSMO) near Volens, VA. We were a network radar site so our sole job was to take hourly (at a minimum) radar observations using a WSR-74S band radar. The observations were sent out via an RTA (remote terminal to AFOS) and weather maps were printed on a dot matrix printer.

My next assignment was in 1989 at the NWS office in Lynchburg, VA where we took surface weather observations and issued severe weather warnings for our seven county area. Lynchburg was a part time office, so precipitation and pressure measurements during the nighttime hours when the office was vacant were taken from weighing rain gauge charts and triple register charts, respectively. We had one NOAA Weather Radio (NWR) transmitter.

From there I transferred to NWS Concordia, KS in 1990. We were one of the first three NWS offices to obtain and certify a new automated system (ASOS) for the reporting of surface weather observations. We had a WSR-74C local radar to determine the intensity of storms for the purposes of issuing warnings for our 17 county area. We also had two NWR transmitters. All products were received and transmitted through the relatively new NWS computer system known as AFOS (Automation of Field Operations and Services).



In 1995, I transferred to NWS Charleston, WV where I wrote Terminal Aerodrome Forecasts for a number of nearby airports and prepared the complete suite of NWS products via the AFOS system. At Charleston, we had 10 NWR transmitters and the new WSR-88D Doppler radar. In 1998, I transferred to NWS Paducah, KY. Not long after arriving at Paducah, our AFOS system was replaced with the current NWS system known as AWIPS which is the means by which we receive, prepare, and transmit all of our products to this day. This new system not only provided us with color graphics but the ability to overlay multiple graphic products. At that time, we were still manually typing and issuing products; but by the year 2001, we began using a gridded system (Graphical Forecast Editor – GFE) to draw our forecast parameters. From the gridded database, products can be selected and automatically generated. At WFO Paducah, we also write TAFs for four airports and produce Fire Weather Forecasts twice a day. Even though my meteorological career has spanned four decades and counting, I can honestly say that I can't imagine any other career field that I could have enjoyed more. Millions of people across this country base their decisions on the weather daily, and I am proud that I have had a small part in helping them, and maybe even saving a few lives along the way. It is very fulfilling knowing that what you are a part of has such an impact on so many people.

# Preserving NWS History

## Saving NWS Paducah KY History

By Kevin Smith – Meteorologist

As stewards of weather data and events in the life of this office and that of our partners, the National Weather Service in Paducah Kentucky embarked on a media conversion process several years ago to ensure that audio-visual resources are available to the NWS and its customers in the future.

This is an ongoing project that leverages data and information for use in new and exciting ways. The illustration shows the various forms of media (videotapes, prints, slides, and e-mail images) that are converted and digitized into various formats, both physical and virtual.

The NWS in Paducah is able to save static and motion pictures that may otherwise be lost forever. This allows them to be utilized for the betterment of our customers and preserves the data for future generations.



# The NWS CoOp Program

## *A Program Vital to our Nation's Climate Record*

**By Deanna Lindstrom — Operations Program Leader**

The National Weather Service (NWS) Cooperative Observer Program (CoOp) is truly the Nation's weather and climate observing network of, by and for the people. As an all volunteer network, more than 8,700 volunteers take observations on farms, in urban and suburban areas, National Parks, seashores, and mountaintops. The data is truly representative of where people live, work and play.

The CoOp was formally created in 1890 under the Organic Act. Its mission is two-fold:

- To provide observational meteorological data, usually consisting of daily maximum and minimum temperatures, snowfall, and 24-hour precipitation totals, required to define the climate of the United States and to help measure long-term climate changes.
- To provide observational meteorological data in near real-time to support forecast, warning and other public service programs of the NWS.



*A Max/Min Temperature System (MMTS) used to measure temperature. It connects to a display box inside a residence or business so the observer can read the data from inside.*



*Here is a photograph of one of our Meteorologist Interns (Sean Poulos) measuring precipitation from a standard 8 inch rain gage behind the NWS Paducah office.*



# The NWS CoOp Program

## **A Program Vital to our Nation's Climate Record**

**By Deanna Lindstrom — Operations Program Leader**

Cooperative observers generally record temperature and precipitation daily and electronically send those reports daily to the NWS and the National Climatic Data Center (NCDC). Many cooperative observers provide additional hydrological or meteorological data, such as evaporation or soil temperatures. Equipment used at NWS cooperative stations may be owned by the NWS, the observer, or by a company or other government agency, as long as it meets NWS equipment standards.

The first network of cooperative stations was set up as a result of an act of Congress in 1890 that established the Weather Bureau, but many CoOp stations began operation long before that time. John Campanius Holm's weather records, taken without the benefit of instruments in 1644-45, were the earliest known observations in the United States. Subsequently many persons, including George Washington, Thomas Jefferson, and Benjamin Franklin, maintained weather records. Thomas Jefferson maintained an almost unbroken record of weather observations between 1776 and 1816, and George Washington took his last observation just a few days before he died.

The Paducah Kentucky NWS office oversees a network of 80 plus observers in 58 counties across West Kentucky, Southeast Missouri, Southern Illinois and Southwest Indiana. These individuals are very dedicated and we are very appreciative of their efforts.



*Official snowboard and snow measuring stick used to measure daily snowfall and snow depth.*



# ROB-E

## ***ROB-E Beta Site Installed at Cairo, IL***

**By Pilar Trevino— Electronics Technician**

For years, the Cooperative Observers (CoOp) Program has served as a vital link in securing temperature and precipitation reports which directly import into the National Climate Database. As equipment becomes antiquated and volunteers fewer, the need for a method of gathering the CoOp data in the field, without human intervention, becomes more of a reality and is critical to maintaining climate history, where in some locations, spans over a century.

Currently the Maximum-Minimum Temperature System (MMTS) generates temperature observations all day, but only 1 maximum temperature and 1 minimum temperature per 24hrs is manually uploaded to the National Climate Data Center (NCDC) by the CoOp observer. The Fischer-Porter (Electronic Rain Gage) precipitation data is sent to each National Weather Service via email or postal service on a monthly basis.

What if all of the MMTS and Fischer-Porter sites automatically transmitted temperatures and precipitation amounts to each NWS and ingested the data into AWIPS (computer system the NWS uses) as an observation? Once in AWIPS, observational data could be collected directly by NCDC (daily summaries and climate history) and RFCs (River Forecast Centers) for river forecast modeling. This data could have the potential to represent real-time ground truth data, available on AWIPS, for the forecaster to use for decision support services, forecasts, and warnings.

At NWS Paducah a specific need has arisen. Specifically, the need involves providing a means of securing a climate history of over 100 years. At Cairo, IL (CAOI2), there has been an NWS presence since June 1, 1871, first as a Signal Station (part of the War Dept. pre-dating The Weather Bureau) and now as a Fischer-Porter/MMTS site.

The importance of this site cannot be understated. Cairo, IL is located at the confluence of two of the largest rivers systems in the United States (Mississippi and Ohio rivers). Precipitation/temperature data at Cairo, IL is critical for river forecasting.



# ROB-E

## **ROB-E Beta Site Installed at Cairo, IL**

**By Pilar Trevino— Electronics Technician**

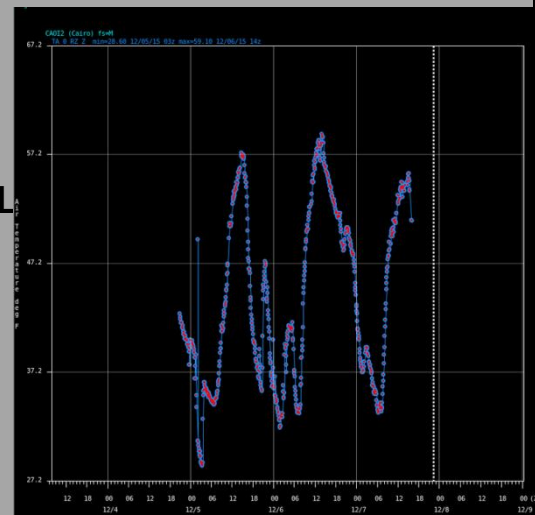
With this in mind, the Electronics team at NWS Paducah designed and created ROB-E. ROB-E (Remote OBservation Equipment) is an equipment add-on that can be interfaced with equipment already deployed in the field, i.e., Fischer-Porter and an MMTS. Powered by a solar panel, it's only requirement would be a cellular signal. With ROB-E, a Fischer-Porter could provide 15 minute precipitation amounts and an MMTS could provide 5 minute temp observations. Once in AWIPS, on a 5 minute observational interval, ROB-E observations could be utilized by NCDC and River Forecast Centers, as well as help current high resolution models.

The basis of ROB-E is accomplished using off-the-shelf electronics and software programming. ROB-E interrogates and collects the data from the MMTS and/or Fischer-Porter, then sends the observation to NWS Paducah to be processed. At the NWS, the data can be sampled for quality control and then distributed for ingest into AWIPS.

ROB-E has been successfully tested with a Fischer-Porter, a Fischer-Porter/MMTS combination, and a stand alone MMTS.

By employing the capabilities of ROB-E, we go from a present CoOp system that depends on volunteers to manually collect a maximum and minimum temperature each day and enter it into a computer or physically mail it to the WFO...to an automated CoOp System that can produce real-time data in 5 minutes intervals in addition to providing the max and min temperature each day. ROB-E taps into an underutilized resource that can actually further the forecast and warning programs in real time, resulting in better service to our customers and partners.

On July 15, 2015 Central Region Headquarters approved funding to build and deploy a ROB-E unit at Cairo, IL as a beta site. We received the first observation from the Cairo, IL ROB-E unit on September 29, 2015. Today, data from that site is now being sent to WFO Paducah automatically on a five minute interval and is ingested into the NWS Systems.



# 2015: A Look Back

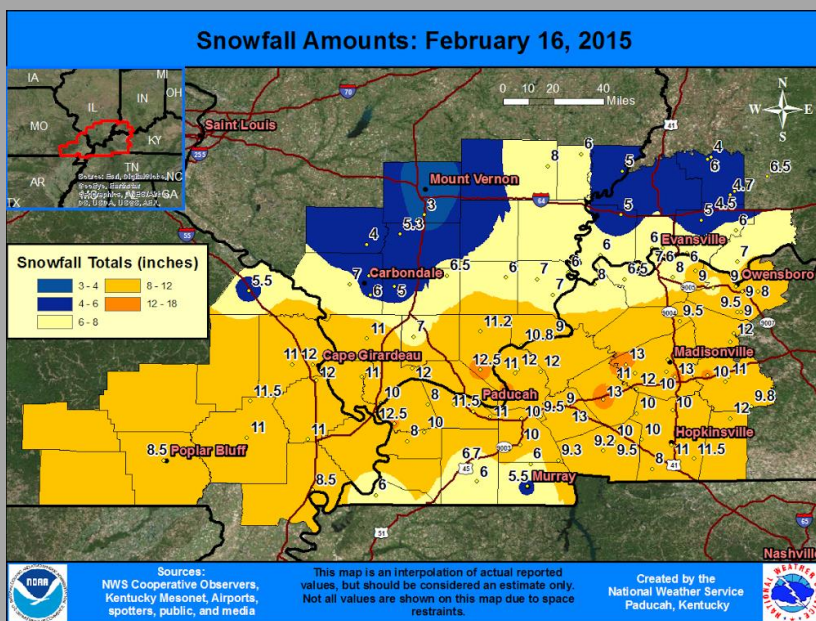
## Two Winter Storms Result in a Record Breaking Winter

By Brittany Peterson — Meteorologist Intern

Despite a lack of severe weather in 2015, it was a notable weather year with a record breaking winter. In fact, 2015 turned out to be the 3<sup>rd</sup> snowiest calendar year (25.6 inches) on record at Paducah! Toward the end of winter 2014-2015, the weather took a nose dive into a frigid February. Two impressive snowstorms hit Paducah, becoming its 4th greatest snow season on record (28.6 inches). The February storm made for the 9th snowiest winter (13.7 inches) at Paducah. A later March storm resulted in the 2nd snowiest spring at Paducah and the 5th snowiest spring at Evansville.

The February 16th snowstorm brought 10.8 inches of snow to Paducah, becoming its 4th worst snowstorm on record. This was the most snowfall for a single day in February at Paducah and became the 2nd snowiest February on record (13 inches). Evansville received 5.7 inches during this storm.

A cold snap followed the February 17th snowstorm, bringing a series of record breaking low temperatures to Paducah, Evansville, and Cape Girardeau (see Table). On February 19th, Cape Girardeau set a new record for its coldest temperature ever recorded in February at -14 °F and five daily records for the coldest high temperatures. Additional record low temperatures occurred at Evansville and Paducah, making February 2015 rank as the 2nd (Paducah and Cape Girardeau) and 6th (Evansville) coldest on record!



Above: Observed area snow totals from the February 2015 snowstorm.

Below: Record breaking low temperatures in February at Paducah, Evansville, and Cape Girardeau.

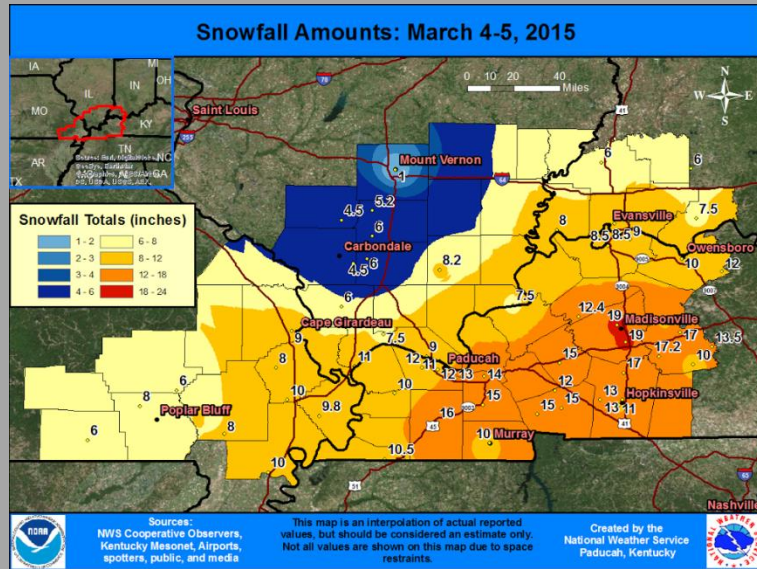
RECORD BREAKING LOW TEMPERATURES			
Date	Paducah	Evansville	Cape Girardeau
February 16	-	-	-2 °F
February 17	-5 °F	-	-11 °F
February 18	0 °F	-	-7 °F
February 19	-10 °F	-6 °F	-14 °F
February 20	9 °F	-7 °F	11 °F

# 2015: A Look Back

## ***Two Winter Storms Result in a Record Breaking Winter***

**By Brittany Peterson — Meteorologist Intern**

A few weeks later, a second snowstorm hit the Quad State area on March 4th. This was the 3rd worst snowstorm recorded at Paducah with 12.1 inches, and the 10th worst snowstorm recorded at Evansville with 8.5 inches. Over one foot of snow was common in western Kentucky, and some locations near Madisonville had nearly two feet! Following the March 4th snowstorm were some of the coldest temperatures ever recorded in March: -6 °F at Paducah and -8 °F at Cape Girardeau. In fact, Cape Girardeau had never recorded a sub-zero temperature in March, while it was the only the third time on record at Paducah.



*Observed area snow totals from the March 2015 snowstorm.*



*The scenes captured above were common along Interstate 24 and area roadways after the March 2015 snowstorm.*

# Winter Weather Highlights

## ***Looking at Our Area's Winter Weather Events***

**By Mike York – Meteorologist**

Over the past decade or so, the NWS office at Paducah has dealt with the most extreme winter storms on record for this area. The heaviest snowstorm and the most damaging ice storm in recorded history have both occurred in the past 11 years. In addition, the Paducah area experienced its third and fourth heaviest snowstorms on record this past winter.

The onslaught of extreme winter weather in recent years has been a challenge, and WFO Paducah has risen to the occasion. For the heaviest snowstorm on record in December of 2004, the Paducah office issued a Winter Storm Watch over 48 hours in advance of the storm. The forecast highlighted the potential for near blizzard conditions. The Ice Storm of 2009 was preceded by a Winter Storm Watch about 48 hours in advance. Press conferences and news releases were conducted by WCM Rick Shanklin before the precipitation started falling. Forecasts called for a winter storm of historic proportions.

Just this past winter, two back-to-back snowstorms dumped around a foot of snow each in much of western Kentucky. Each storm was among the five heaviest on record for this area. Both storms were preceded by a Winter Storm Watch 36 to 48 hours in advance. Forecasts started mentioning accumulations of about one foot 24 hours ahead of the storms.

WFO Paducah conducts annual Winter Weather Workshops for its external partners to share the latest advances in winter research and forecasting. These seminars are conducted at three to four locations around our four-state service area. Our office also conducts annual winter weather seminars for its forecasting staff members. Pat Spoden, our Science and Operation Officer (SOO), has overseen a number of winter weather research projects, including the creation of poster presentations which were displayed at national conferences.

The NWS Paducah office continues to stay ahead of the latest cutting-edge technology to ensure that its partners and all its customers receive the most timely and accurate forecasts and warnings.

# 2015: A Look Back

## *From a Cold Snowy Winter to an Abnormally Wet Summer*

By **Brittany Peterson** — Meteorologist Intern

After a cold, snowy winter, the Quad State area experienced an abnormally wet summer. Summer 2015 began as the remnants of Tropical Storm Bill passed through on June 19th. Widespread rainfall led to flooding in parts of Illinois and Indiana. Evansville received 3.65 inches of rainfall in one day, which is what they typically receive in the entire month of June.



*Flash flooding in the city of Anna, Illinois on 6/19/2015.*



*Flash flooding along a road in Carbondale on 6/19/2015.*

The remnants of Tropical Storm Bill greatly impacted areas north of the Ohio River in June, causing flash flooding in southern Illinois and southwest Indiana.

In July, several potent storm systems passed through, bringing around twice the typical July rainfall to many locations.

Much of this rain fell on July 7th and 8th.

In fact, Paducah and Cape Girardeau

received more than their typical July monthly rainfall totals in only three or four days, resulting in both locations having their second wettest July on record. On July 7th, 3.42 inches of rainfall fell at Paducah, and amounts ranging from 3 to 5 inches were reported throughout McCracken County, leading to localized flash flooding. Cape Girardeau recorded their 2nd wettest summer with 18.11 inches of rainfall.

DAILY RAINFALL TOTALS			
Dates	Paducah	Evansville	Cape Girardeau
July 7	3.42	1.47	0.99
July 8	0.13	0.16	1.64
July 9	1.96	0.23	1.88
July 10	0.06	0.66	1.07
Four-Day Total	5.57	2.52	5.58
Normal July Rainfall Total	4.44	3.92	3.36

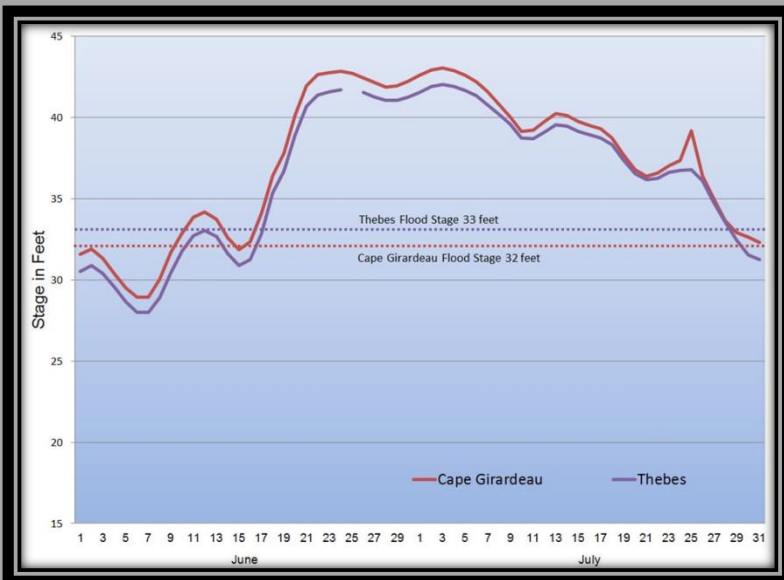
*Four-day rainfall totals from July 7-10 compared to July normals*

# Summer Flooding in 2015

## ***Heavy Rainfall Causes Record Flooding***

**By Mary Lamm– Service Hydrologist**

Heavy rainfall in the Upper Midwest caused a rise on the Mississippi River during a time of the year when the river is typically headed for lower flow. Record rainfall in the upper part of the basin sent a flood wave downriver sending gauges at both Cape Girardeau, MO and Thebes, IL above flood stage by mid-June. As rain continued to fall north of our area, the remnants of Tropical Storm Bill moved over the region adding a little more water to an already swelling river. The Mississippi River crested on July 3. Cape Girardeau crested at 43.08 feet and Thebes topped out at 42.02 feet.



Major flooding was the result. In Cape Girardeau County, over 18,000 acres were flooded. Approximately 11,000 of these acres were farmland, directly affecting crops. Several flood gates were closed along the waterfront in downtown Cape Girardeau. Numerous roads became impassable due to backwater flooding. Below are pictures of backwater flooding along the Diversion Channel in southern Cape Girardeau County and along Highway 177 just north of the City of Cape Girardeau.





# 2015: A Look Back

## ***A Dry Start and Wet Finish to an Unusually Warm Fall***

**By Brittany Peterson — Meteorologist Intern**

After a wet winter and summer, Fall 2015 started off warm and abnormally dry. The season became the 12th warmest on record at Evansville, 8th warmest at Cape Girardeau, and tied for the 4th warmest at Paducah.

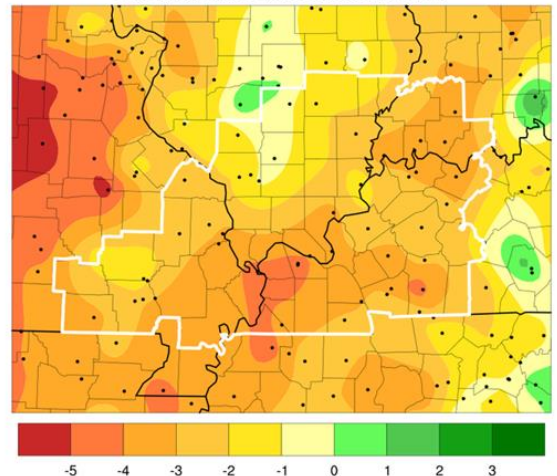
By mid October, most locations in the Quad State area were 2-4 inches drier than normal. Paducah had its 8th driest September on record and Evansville had its driest stretch in 11 years—receiving only 0.13 inches of rain in 40 days. On October 20th, fall precipitation totals were only 1.04 inches at Paducah, 1.25 inches at Evansville, and 1.67 inches at Cape Girardeau.

However, a couple of heavy rain events across the area erased any trace of drought by the end of fall, especially in southeast Missouri. In fact, Cape Girardeau had its 2nd wettest November on record, while Paducah had its 8th wettest.

The abnormally warm, wet weather continued into December. Not only did 2015 have the warmest December, its departure from normal was one of the greatest for any month on record. Only March 2012 experienced a greater departure at Evansville and Paducah.

December was also wet. Paducah had 7.42 inches of rain, making it the eighth wettest December. No measurable snow was recorded in December, making this winter the first since 2009-10 that no measurable snow fell in November or December.

Accumulated Precipitation (in): Departure from 1981-2010 Normals  
September 01, 2015 to October 15, 2015

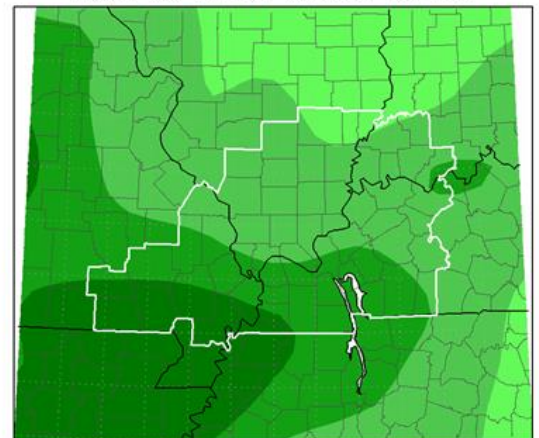


Stations from the following networks used: WBAN, COOP, FAA, GHCN, ThreadEx, CoCoRaHS, WMO, ICAO, NWSLI, Missouri FSA, Missouri Mesonet,

Midwestern Regional Climate Center  
cli-MATE: MRCC Application Tools Environment  
Generated at: 10/15/2015 11:37:29 AM CDT

***Precipitation departure from normal from September 1 through mid October (above) and mid October through November 30 (below). Note the dry start and wet end to the season.***

Accumulated Precipitation (in): Departure from Mean  
October 20, 2015 to November 30, 2015



Mean period is 1981-2010.  
-2 0 2 4 6 8 10

Midwestern Regional Climate Center  
cli-MATE: MRCC Application Tools Environment  
Generated at: 12/11/2015 9:01:20 AM CST

# Record Setting River Flooding

## Record Crests Late 2015/Early 2016

Widespread heavy rainfall across the Missouri and Mississippi River basins in late December resulted in record flooding along parts of the Mississippi River. Rivers across the forecast area crested at the end of December or early January 2016.

River Point	Flood Stage	Crest (in feet)	Date of Crest	Category
Cape Girardeau (Mississippi)	32 ft.	48.86	1-2-16	RECORD
Thebes (Mississippi)	33 ft.	47.74	1-2-16	RECORD
Grand Chain – upper (Ohio)	42 ft.	55.40	1-4-16	MAJOR
Cairo (Ohio)	40 ft.	56.14	1-4-16	MAJOR
Murphysboro (Big Muddy)	22 ft.	36.11	1-2-16	MAJOR
Carmi (Little Wabash)	27 ft.	35.74	1-4-16	MAJOR
Wayne City (Skillet Fork)	15 ft.	24.10	12-29-15	MAJOR
Doniphan (Current)	13 ft.	22.82	12-30-15	MAJOR
Shawneetown (Ohio)	33 ft.	43.55	1-4-16	MODERATE
Paducah (Ohio)	39 ft.	46.00	12.31-15	MODERATE
New Madrid (Mississippi)	34 ft.	43.05	1-4-16	MODERATE
Patterson (St. Francis)	16 ft.	26.59	12-29-15	MODERATE
Van Buren (Current)	20 ft.	23.12	12-29-15	MODERATE
Paradise (Green)	380 ft.	390.75	12-30-15	MODERATE
Calhoun (Green)	23 ft.	28.18	12-31-15	MODERATE
Poplar Bluff (Black)	16 ft.	19.57	12-30-15	MODERATE
New Harmony (Wabash)	15 ft.	20.69	1-7-15	MODERATE

# Our Severe Weather Stats

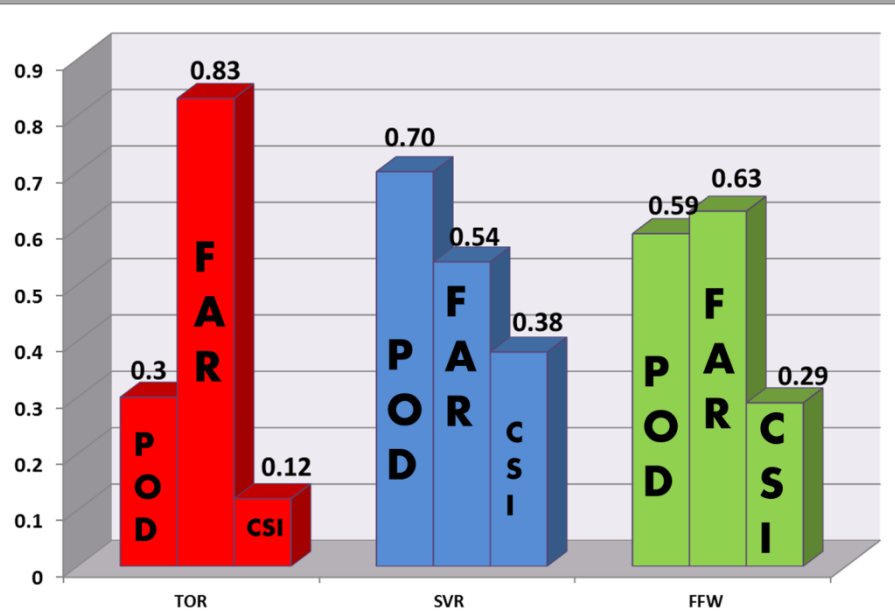
## Analyzing a Year's Worth of Events

By David Humphrey— Senior Meteorologist

The National Weather Service in Paducah KY issued 256 total warnings (tornado warnings, severe thunderstorm warnings and flash flood warnings) for the calendar year 2015.

We verified 104 of these warnings, or 41% of the total warnings issued verified.

We provided an average of 25 minutes lead time for all warnings combined.



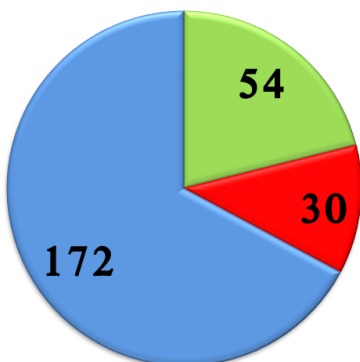
**POD: Probability of detection:**  
(The number of hits divided by the total number of events observed)

**FAR: False Alarm Ratio:**

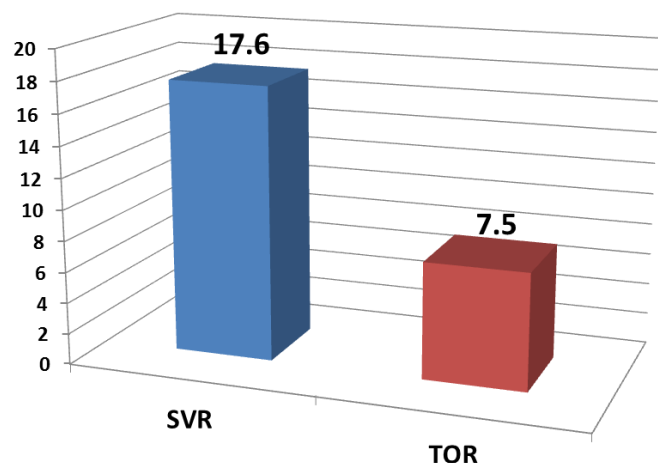
**CSI: Critical Success Index:**  
(A combination of the POD and FAR)

Number of Warnings=256

■ FFW ■ TOR ■ SVR



## AVG LEAD TIME (in minutes)



# Aviation Stats

## How Are Our Forecasts Holding Up?

**By David Blanchard - Meteorologist**

How has the NWS Paducah office done up to this point? Aviators depend on us to get the forecast as correct as possible, so they can plan accordingly. Here are some verification statistics of our TAFs over the last year:

### Instrument Flight Rules:

Probability of Detection.....62.5 % (100% is ideal)

False Alarm Ratio.....34.3% (0% is ideal)

### Alternate Fuel Requirements:

Probability of Detection.....74.6% (100% is ideal)

False Alarm Ratio.....27.2% (0% is ideal)

- **Probability of Detection:** The fraction of time that a weather event was forecasted correctly.
- **False Alarm Ratio:** The fraction of time a weather event was forecasted but did not happen.
- **Instrument Flight Rules:** When flying, required where a cloud ceiling\* is less than 1000 feet above ground level, and visibility is less than 3 statute miles (\*ceiling is the lowest cloud layer that covers more than half the sky). Flying under instrument flight rules is much more challenging than flying under visual flight rules, and requires extensive training.
- **Alternate Fuel Requirements:** For safety reasons, certain aircraft are required to carry extra fuel on board in case they have to divert to an alternate airport. This increases the cost of flying. The thresholds are: ceiling less than 2000 feet above ground level, and visibility less than 3 statute miles.



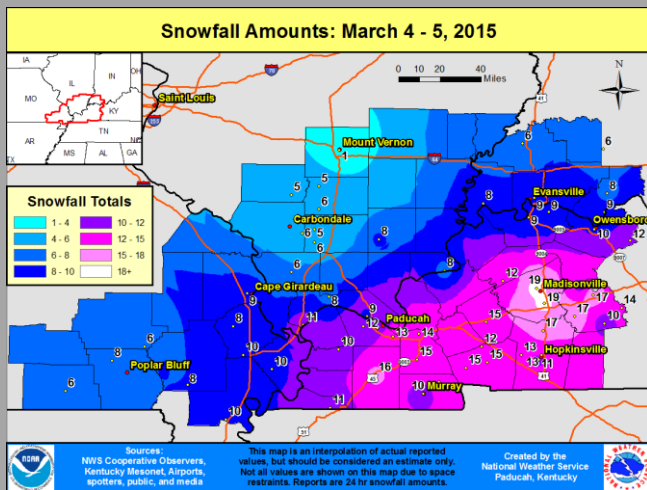
# Top 10 Events of 2015

## A Summary of Our Top Ten Weather Events in 2015

By Ryan Presley — Meteorologist

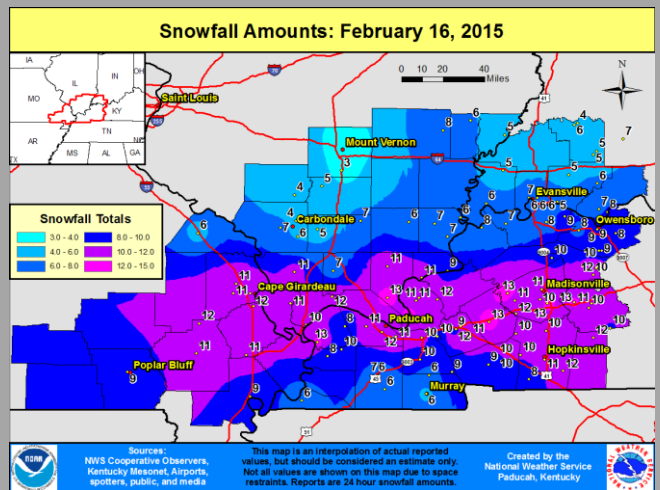
### (1.) March 4-5 Winter Storm:

A major winter storm dumped 6 to 18 inches of snow across our region. The Kentucky governor declared a state of emergency for the second time in less than a month.



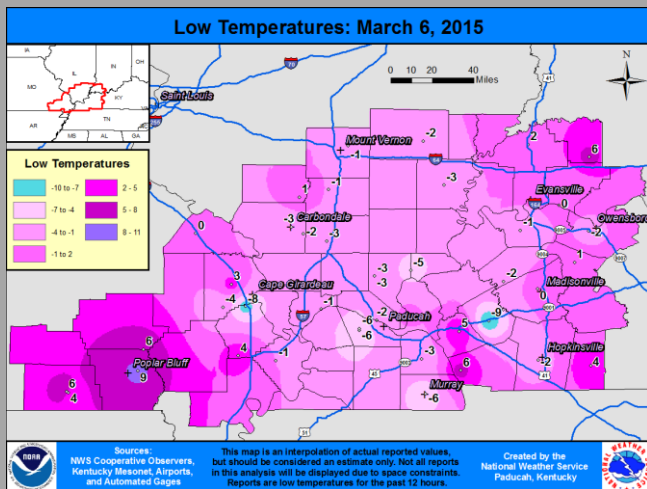
### (2.) February 16 Winter Storm:

A major winter storm dumped up to a foot of snow on western Kentucky, southeast Missouri, and extreme southern Illinois.



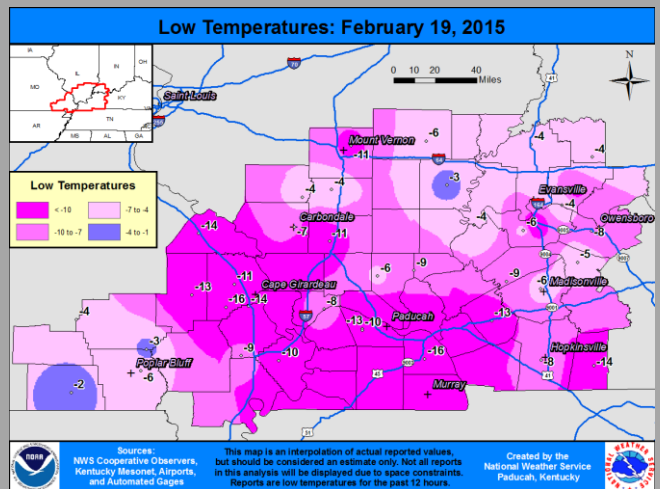
### (3.) March 6 Record Cold:

Some of the coldest air recorded in the month of March in our region arrived the day after the snowstorm, hampering snow removal efforts.



### (4.) February 17-19 Wind Chills:

Record-breaking cold and brisk winds combined to produce dangerously low wind chills. Bitterly cold wind chills from 10 to 24 below zero were observed.



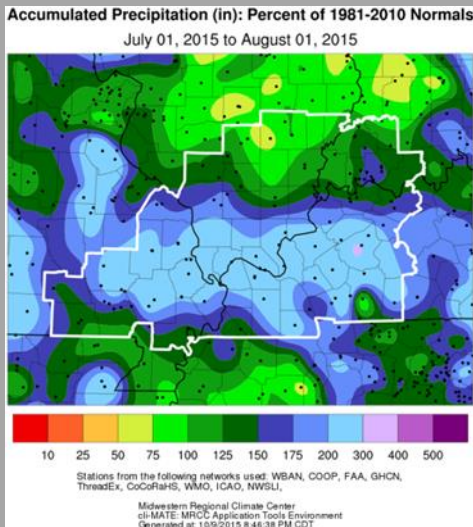
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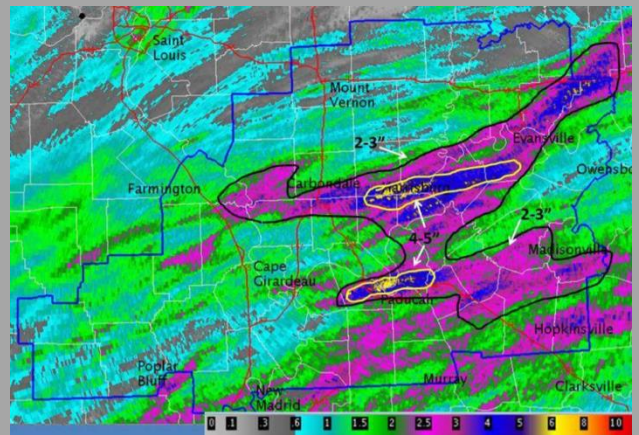
### (5.) July Mississippi River Flooding:

During the months of June and July, major flooding occurred on the Mississippi River upriver from the confluence of the Ohio River.



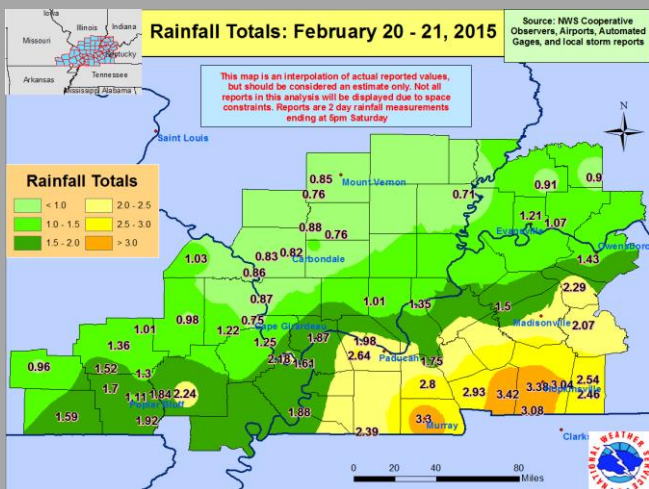
### (6.) July 3-9 Flash Floods:

Thunderstorms with very heavy rain caused flash flooding in Daviess County and major flash flooding in the Paducah area.



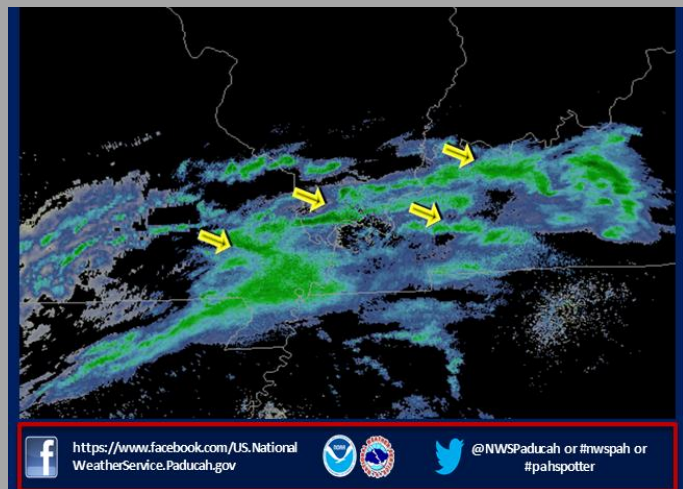
### (7.) February 20-21 Ice/Sleet & Flooding:

A winter storm brought hazardous conditions. Precipitation started as sleet, then changed to freezing rain in most areas before turning to liquid rain by the afternoon of the 21st.



### (8.) January 15 Banded Snow:

One to two inches of snow fell across much of southeast Missouri, western Kentucky, and far southern Illinois on the morning of Jan 15. Snow fell in bands oriented from west to east.



# Top 10 Events of 2015

## **A Summary of Our Top Ten Weather Events in 2015**

**By Ryan Presley – Meteorologist**

### **(9.) June 19 Tornadoes/Flooding:**

During the afternoon, remnants of Tropical Storm Bill moved over our region and spawned several tornadoes. Most of the tornadoes were fairly short lived. Flooding was also observed.

### **(10.) July 28 Caldwell County Flash Flood:**

Torrential rain caused flash flooding of Long Pond Branch Creek along the Caldwell/Trigg County border. Kentucky Highway 276 was washed out where the creek crosses under the highway through a culvert.



*On behalf of the NWS Paducah staff, we hope you have enjoyed reading through this document of our busy year at the office. We invite you to provide comments and suggestions so we can make our 2016 edition even better.*

**Christine Wielgos and Ryan Presley**

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**Co-Editors of NWS Paducah's 2015 Stakeholders Report**

