



The Four Peaks Post

Image credit Dave Dilli
Photography 2010

Quarterly Newsletter

National Weather Service
Phoenix, AZ

Winter 2014 - 2015 Edition Newsletter

By Charlotte Dewey, Meteorologist

Winter in Arizona and the Desert Southwest is usually a pretty quiet weather time, however it only takes one significant event to get people excited about the upcoming convective season. Before we get ahead of ourselves and into the extremely warm temperatures that we all know are coming, let us enjoy the cooler temperatures.

We look forward to many more newsletters coming out with great information that will hopefully be helpful and informative.



Inside this issue:

- Early Dust Detection System
- Skywarn Training Spring 2015
- Aviation Workshop
- DSS Support by WFO Phoenix
- WFO Phoenix Staff Spotlight

Office Leadership

Meteorologist in Charge: Vacant

Warning Coordination Meteorologist:
Ken Waters

Science and Operations Officer: Paul
Iñiguez

Questions: w-psr.webmaster@noaa.gov

Getting an Early Warning on Dust Storm Events

By Ken Waters, Warning Coordination Meteorologist

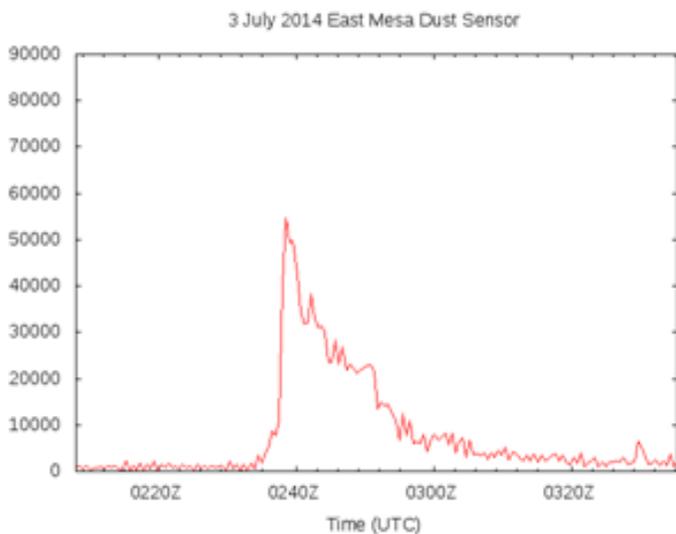
The National Weather Service office in Phoenix is working with federal, state, and local emergency management partners as well as local academia and tribal communities to come up with a low-cost initiative to detect dust storms and then send alerts. The project involves new technologies such as Arduino and Raspberry Pi, in conjunction with new low cost air quality particulate sensors to monitor the air quality. Upon receipt of an abnormal condition, an alert would be sent. An example would be a dramatic increase in particulate count such as the one that was measured in east Mesa on July 3, 2014. The sensor accurately detected the air quality change over a period of two minutes. The total cost of the sensor system is only about \$110 for each installation. The office currently plans on installing at least a few of these systems across areas in Arizona that are more prone to dust storms.



Warning Coordination Meteorologist Ken Waters working with the dust sensor system.



Dust storm photo from July 3, 2014 credit to Bryan Snider.



Actual observation of air quality particulate values on July 3, 2014 from East Mesa. Graph shows particulate values (vertical) over time (horizontal) in zulu time.

Skywarn Spotter Training

Learn About Severe Weather and Contribute to Public Safety

By Austin Jamison, Forecaster/Spotter Focal Point

Skywarn is a partnership between the National Weather Service and citizen volunteers. Spotters are volunteers that provide highly valuable information that is not available from any other source. Though we have sophisticated technology such as Doppler radar, satellites, and computer models, those have limitations. Using these tools, we can infer that hazardous weather is occurring but we don't know for sure what is happening on the ground. For instance, we can infer that a thunderstorm is producing wind damage but without a Spotter report we don't know what the extent of the damage is or even if the winds were strong enough to cause damage at all. A Spotter though can tell us exactly what happened and this information is called "ground truth". We use this information as part of the warning decision process to let us know if we were on the right track by issuing that warning or perhaps that the situation was worse than we thought. By issuing warnings, we alert the public to dangerous situations so they can take measures to protect life and property.

Prior meteorological training is not necessary in order to become a Spotter. The free two hour class will teach attendees everything they need to know in order to be successful. Spotters are typically adults but can be as young as high school age (parent/guardian should also be a Spotter). People who enjoy paying attention to the weather or who are outdoors a lot are encouraged to become volunteer Skywarn Storm Spotters.

The majority of classes will be Standard/Basic classes and are suitable both for new Spotters and as refresher training for those that have attended a class previously. Topics covered in the Spotter classes include how thunderstorms work, the Monsoon, properly identifying visual clues to hazardous weather, various safety topics, and procedures to report severe weather to the National Weather Service. Spotters need to attend a class once every two years to stay current.

If so, they are eligible to attend one of the Advanced classes which explores in more depth the underlying meteorological science of severe storms.

The majority of classes will be Standard/Basic classes and are suitable both for new Spotters and as refresher training for those that have attended a class previously. Topics covered in the Spotter classes include how thunderstorms work, the Monsoon, properly identifying visual clues to hazardous weather, various safety topics, and procedures to report severe weather to the National Weather Service. Spotters need to attend a class once every two years to stay current. If so, they are eligible to attend one of the Advanced classes which explores in more depth the underlying meteorological science of severe storms.

We have posted a schedule of the training classes in our forecast area. Most offerings have been finalized but we may add a few more. Keep checking periodically to see where we have added classes.

For more information, and a schedule of our upcoming classes please visit:

<http://www.wrh.noaa.gov/psr/general/skywarn/index.php>

For any questions about the program, send an email to austin.jamison@noaa.gov or ken.waters@noaa.gov or call 602-274-0073 (option 5).



SAWS Returns this Spring!

The latest installment of the successful SAWS (Southwest Aviation Weather Safety) series will be held at the Riviera Casino and Hotel in Las Vegas, Nevada on April 17th and 18th.

This inter-regional event will feature an Aviation Weather Forecasting Workshop on Friday the 17th, and an Aviator & Controller Weather Workshop on Saturday the 18th. Previous pilot feedback indicated they would like their workshop on a Saturday, and this is the first time we'll hold part of the workshop on a weekend, so we expect stronger pilot participation than ever. We are currently accepting registration for the sixth Southwest Aviation Weather Safety (SAWS VI) Workshop until **April 14, 2015**.

Hope to see you in fabulous Las Vegas this Spring!

More information on the website:

<http://www.wrh.noaa.gov/psr/aviation/SAWS6/>



SAWS VI | APRIL 17-18, 2015
LAS VEGAS, NEVADA
PROVIDE ↪ PREPARE ↪ PREVENT

Collaborating for a Safe & Productive National Aerospace System
Join the National Weather Service as we bring the Southwest U.S. aviation and weather forecasting communities together to promote aviation safety and productivity through improved weather awareness and forecasting services.

 **AVIATION WEATHER FORECASTING WORKSHOP**
Friday, April 17th, 2015

- Cost: FREE!
- Topics: decision support for general aviation, airline and air traffic control; aviation weather forecasting; strengthening communications, leveraging current and future technology; and more!

 **AVIATOR & CONTROLLER WEATHER WORKSHOP**
Saturday, April 18th, 2015

- Cost: FREE!
- Earn WINGS credit
- Topics: aviation weather hazard anticipation and avoidance, understanding NWS forecasts and tools, and more!

 **Join us Friday evening for a social networking dinner** 

To register or to find local resources and the latest workshop agenda please visit
www.weather.gov/psr/SAWS6



Meeting space & discounted accommodations provided by: **RIVIERA**
HOTEL-CASINO

Decision Support Services Provided by WFO Phoenix for National Scale Events in January 2015

By Charlotte Dewey, Meteorologist

The month of January was an event-filled month in the way of national happenings right here in Phoenix. Starting out with the Annual American Meteorological Society (AMS) meeting held from January 4 - 8. A few individuals from our office gave presentations, created posters, and participated in producing and giving daily weather briefings partnered with Arizona State University (ASU) students. Having the Annual AMS meeting in our hometown was a benefit to our office staff, allowing several of us to attend presentations and discussions, as well as being honored to have Dr. Louis Uccellini and Laura Furgione make an office visit to meet and interact with us. A meeting such as the AMS is a great gathering of scientists, researchers, colleagues, and fellow Weather Service people to come together and share ideas, brain-storm new strategies and collaborate on group projects.



The Barrett-Jackson Car show and the Waste Management Phoenix Open are regular annual large crowd-gathering events held during January each year in Scottsdale. To give a perspective of the influx of people, according to the Waste Management (WM) Phoenix Open, “at 189,722 the TPC Scottsdale was Arizona’s 8th most populated “city” on Saturday [January 31] and close to 28,000 people larger than the City of Tempe (161,719)”. With a normal influx of this many people during this time of year in January, not only were these two events present, but the Pro-Bowl NFL game was being held in between these two events and the Super Bowl football game was to follow the conclusion of the WM Open.

Barrett-Jackson

THE WORLD'S GREATEST COLLECTOR CAR AUCTIONS™



Now that the stage is set, let’s talk about NWS Phoenix’s role. In any other year when the Super Bowl is not held in Arizona, decision support services (DSS) are provided through daily phone coordination calls with organizers, city and county emergency managers and representatives, and graphical and/or video briefing materials.

Adding the Pro Bowl and Super Bowl into the mix of events, our office was going to need some extra staffing due to the extra daily coordination calls, daily and possibly more frequent graphical and text briefings. Support from NWS Las Vegas and NWS Tucson as well as Western Region Headquarters was welcomed at NWS Phoenix. Having our office set up in an Incident Command style as well as having organized action plans in place were some of the baseline items that put the whole staff in the right direction. Up to five meteorologists were deployed to various locations to provide on-site support and in-person briefing information which was a big help to our customers and partners. Our routine staffing within WFO Phoenix provided valuable support to the folks deployed across the Phoenix metro area and ensured our routine products and services went out timely and accurately.

After all was said and done, a very busy month of national events and attention went about as smooth as it could have gone. Many great thanks to everyone involved in all aspects of these events.



2014 Phoenix Climate Year-in-review

By Mark O'Malley, Forecaster/Climate Program Manager

The year 2014 ended up being the warmest year ever recorded in the history of central Arizona. In fact, the year will go down as the warmest for the state as a whole as well. Records for Phoenix began in 1896, first taken in downtown and since moved to Sky Harbor airport in the 1950s. The first 3 months of the year set the stage for this record setting warmth with each individual month in the top 10 warmest on record; and collectively the Jan-Mar time frame was the warmest ever recorded. This trend continued into the early summer with only the months of August and September not falling in the above normal category. 2014 ended as it began - unusually warm and dry culminating in this record setting year.

While the first 2 months of the year were unusually quiet across the area, one strong storm system finally did hit the area [producing thunderstorms and even a brief tornado in Mesa on March 1st](#). This storm system was more the exception than the rule, as much of the first 6 months were extremely dry. As a result, moderate to severe [drought conditions had expanded across much of the area by the end of June](#). The monsoon season started promptly in SE Arizona early in July, but thunderstorm activity only slowly progressed north through the beginning of August. As the moisture steadily built in, one thunderstorm complex caused [a massive dust storm that engulfed Phoenix on July 3rd](#), while another complex of storms led to [a microburst and localized flooding on July 8th and 9th](#).

By the end of July and early August, thunderstorms were becoming more widespread with [severe thunderstorm winds over North Phoenix on July 26th](#), and [heavy rainfall and localized severe weather over a larger area on August 3rd](#). This was just the beginning of a series of thunderstorm events which would produce excessive rain over parts of the area. Deep moisture continued to surge into the region through the remainder of August producing localized flooding in parts of [Phoenix on August 12th](#) and [August 19th](#), as well as [SE California on August 21st](#).

Record Daily Rainfall for 2014

Date	Record	Previous Record
Mar 1	0.94	0.64 in 1978 & 1941
Sep 8	3.30	1.33 in 1933
Sep 27	1.64	1.46 in 1903

In any other year, this amount of activity would have been sufficient for a monsoon season to remember, however the most significant record setting storm was yet to come on Sept 8th. Tropical moisture pushed north ahead of the remnants of ex-hurricane Norbert merging with a weather complex to the north producing the [all-time daily rainfall record for the city of Phoenix](#), and the most significant widespread flooding seen in years. And yet another strong weather system produced [a squall line and damaging winds on Sept 27th](#) to close out the monsoon season. When all was said and done, the 2014 North American Monsoon Season was the [7th wettest on record for Phoenix](#), and one of the wettest for the entire state of Arizona.

<u>2014</u>	<u>Value</u>	<u>Rank</u>
Avg High	88.9	2nd Warmest
Avg Low	65.4	Warmest Ever
Avg Temp	77.1	Warmest Ever
Rain	8.37	40th Wettest

Please note all climatic data are considered preliminary until validated by the National Climatic Data Center

Phoenix Annual Temperature Rankings

<i>Year</i>	<i>Avg Daily Temp</i>	<i>Year</i>	<i>Avg Max Temp</i>	<i>Year</i>	<i>Avg Min Temp</i>
2014	77.1	1989	89.8	2014	65.4
1989	76.9	2014	88.9	2003	64.9
2012	76.7	2012	88.7	2007	64.8
2007	76.4	1934	88.3	2012	64.7
2003	76.3	2002	88.0	2001	64.4
2009	76.0	1988	88.0	2005	64.3
2002	76.0	1981	88.0	2013	64.2
1981	76.0	2007	87.9	2009	64.2
2013	75.9	2009	87.8	1989	64.1
1988	75.9	2003	87.7	2002	64.0

Record Highs Set in 2014

<i>Date</i>	<i>Record</i>	<i>Previous Record</i>
Jan 21	81	80 in 2009
Feb 14	85 - tied record	85 in 1957 & 1947
Feb 15	86	83 in 1977
Feb 16	84 - tied record	84 in 1977 & 1930
Feb 17	88	87 in 1930
Feb 18	86 - tied record	86 in 1977
Jun 2	110 - tied record	110 in 2006 & 1977
Jul 23	114 - tied record	114 in 2006
Jul 24	116	114 in 2006, 2001 & 1931
Oct 24	96 - tied record	96 in 2007, 1990 & 1959
Oct 25	96 - tied record	96 in 1990
Oct 30	94 - tied record	94 in 2008 & 1990
Nov 27	87	86 in 1950 & 1903

2014 Phoenix Precipitation Statistics

	<i>Precip Total</i>	<i>Departure</i>	<i>Rank (1=Wettest, 119=Driest)</i>
<i>Jan</i>	0.00	-0.91	Tied 119th
<i>Feb</i>	0.00	-0.92	Tied 119th
<i>Mar</i>	0.99	0.00	34th
<i>Apr</i>	T	-0.28	Tied 119th
<i>May</i>	0.00	-0.11	Tied 119th
<i>Jun</i>	0.00	-0.02	Tied 119th
<i>Jul</i>	0.06	-0.99	114th
<i>Aug</i>	1.17	+0.17	41st
<i>Sep</i>	5.11	+4.47	2nd
<i>Oct</i>	0.13	-0.45	Tied 77th
<i>Nov</i>	0.00	-0.65	Tied 119th
<i>Dec</i>	0.91	+0.03	43rd

WFO Phoenix Staff Spotlight

By Charlotte Dewey, Meteorologist

Arriving in WFO Phoenix...

Starting in March, we'll have a new face here in the Phoenix Forecast Office to fill our vacant Science and Operations Officer (SOO) slot, Paul Iñiguez. Or slightly new face, as Paul is returning to the Phoenix WFO from the Hanford, CA forecast office where he held the SOO position for 3 years. Prior to Hanford, Paul held the Journey Forecaster position here in Phoenix for 6 years, was an Intern in Little Rock for 3 years, and started his NWS career at the La Crosse, WI and Twin Cities, MN office back in 2002. Paul will be looking to expand our interactions with education and research outlets like Arizona State University (ASU) and area high schools, as well as continuing to bring new science and technology into our operations all while promoting the Weather-Ready Nation strategy by building new partnerships.

The office is thankful to have our SOO position filled, after being vacant for several years and is looking forward to the upcoming ideas and strategies Paul brings to us!

Departing WFO Phoenix...

In May, we will be losing one of our staff members; our Senior Service Hydrologist (SSH) Mike McLane.

On May 30th Mike will be closing out the final chapter of his Federal Service career, which has spanned 36 plus years.

He began his Federal career in 1978 immediately after graduating from the University of Vermont, when Mike was commissioned a 2nd Lieutenant in the U.S. Air Force. Mike's first assignment was a super one for a military officer, as he got paid to attend the Air Force's Basic Meteorology Program at Penn State University. An added benefit was the opportunity to attend all of the Nittany Lions football games in a season that would see them go undefeated during the regular season and play in the Sugar Bowl for the National Championship against the Crimson Tide of Alabama.

Mike's first real active duty assignment was at Travis Air Force Base in California, where he served

as a Group Weather Officer and Numbered Air Force Operations Center Forecaster. Additional military assignments took him to Clark Air Base in the Philippines, Williams Air Force Base in Arizona, Randolph Air Force Base in Texas, and Holloman Air Force Base in New Mexico. All of Mike's assignments were in the weather career field, with the exception of the one at Williams Air Force Base, where he attended Undergraduate Pilot Training. He didn't quite make it through the pilot program, as Mike's instructors were not very impressed with the "carrier landings" he was attempting to do with their T-38 training aircraft. As Mike put it, "That's a whole other story!"

In July 1978, Mike separated from the U.S. Air Force with 10 years of active military service. Over the next 13 years he remained, however, in the U.S. Air Force Reserve, eventually retiring in December 2002 with the rank of Lieutenant Colonel.

After leaving the active Air Force in 1978, Mike had planned on trying to find employment in the computer career field. However, with all of his prior experience being in meteorology, Mike found himself accepting his first civil service Federal job as a meteorologist with the Atmospheric Sciences Laboratory at White Sands Missile Range in New Mexico. Following this first position, he was selected to be the Meteorological Team Chief at the Cold Regions Research and Engineering Laboratory in Hanover, NH.

In August 1998, Mike applied for and was selected for his first National Weather Service position in Jackson, KY. While there, he served as both Service Hydrologist and Science and Operations Officer. In April 2007, Mike transferred to the National Weather Service here in Phoenix, for what would become his final Federal Service position.

Mike's career has been an interesting and diverse one and has provided many opportunities. This will certainly be missed, as Mike mentioned, but he is looking forward to retirement and other

(continued..)

(continued from page 8)

opportunities ahead. One of his goals is spend more time with his family and friends. Mike also hopes to be able to spend more time enjoying some of the hobbies and activities he's pursued through the years, including golf, hunting, fishing, camping, hiking, and volunteer work with Habitat for Humanity. Initially Mike, his wife Emma, daughter Kayleigh will continue to live in Mesa, Arizona, but they plan on traveling and we will likely spend additional time with family in Vermont, Florida, and New Mexico.



The Four Peaks Post

Image credit Dave Dilli
Photography 2010

Quarterly Newsletter

National Weather Service
Phoenix, AZ

Stay connected with us!

Weather.gov/Phoenix



[Twitter.com/NWSPhoenix](https://twitter.com/NWSPhoenix)



[Facebook.com/NWSPhoenix](https://facebook.com/NWSPhoenix)



Youtube.com/nwsphoenix

