NATIONAL WEATHER SERVICE, ALBUQUERQUE

New Mexico

Skywatcher

VOLUME 6, ISSUE 2 OCTOBER 2010

COOPERATIVE OBSERVER SERVICE AWARDS:

- **Clara Johnson**
  60 Years of Service
- **Betty Jane Curry**
  35 Years of Service
- **Robert Deblassie**
  30 Years of Service
- **Patricia Garcia**
  15 Years of Service
- **Louis Mares**
  15 Years of Service
- **Jim and Betty Post**
  15 Years of Service
- **Della Dunlap**
  10 Years of Service
- **Gerald White**
  10 Years of Service
- **Dale Mark**
  10 Years of Service
- **Howard Shanks**
  10 Years of Service
- **Lewis Hisel**
  10 Years of Service
- **Bradley Schattuck**
  10 Years of Service

La Niña Strengthening

Brought to you by the National Weather Service in Albuquerque, this Fall edition of the New Mexico Skywatcher will feature a vast range of weather related information, keeping you informed and up to date with your local weather forecast office.

Winter is quickly approaching, and the latest buzz words floating among meteorologists and climatologists are "La Niña". La Niña may not seem applicable to New Mexicans since it deals with temperature analyses of the water surface in the Equatorial Pacific Ocean. However, La Niña can have drastic impacts to the developing weather patterns over North America and much of the Northern Hemisphere. Experts at the Climate Prediction Center have been analyzing cooler than normal sea surface temperatures (SSTs) in the eastern Equatorial Pacific Ocean since May of this year, and this trend is expected to continue into the winter.

So, what does a strengthening La Niña mean for New Mexico? In short, many large scale upper level storm systems that would bring moisture and precipitation to New Mexico are often deflected away from the state during La Niña winters. This usually equates to drier than normal winter seasons over the Land of Enchantment. For more detailed information on La Niña, visit the Climate Prediction Center website, and as the winter months unfold stay abreast to the latest weather forecasts and statements on the Albuquerque NWS website.

There is an extensive amount of additional weather related topics included within this edition of the Skywatcher. We hope you enjoy perusing our articles; it is our goal to recognize our volunteer Cooperative observers and their dedicated service, and we also hope to share other activities, projects, and analyses that our staff has been involved with over the last few months.

Author: Todd Shoemake

The Radio Room

The bands are dead! Long live the bands! Anyone who has spent fruitless hours calling "CQ" or tapping it out (like me) on an old straight key I have had since I was 8 years old, can be excused for thinking ham radio just isn't fun anymore. True, we are generally not working DX from the parking lot on a handheld 10-meter rig anymore as we were during the good old days, but there is so much more to this King of Hobbies that is interesting and absorbing. As sunspot cycles bottom out, let your interest peak in some explorations of new things and new modes of doing the old thing. This is a grand time to get to know your local VHF net, your Emergency Coordinator and ARES group, and put that ham radio talent to work in public service. Here at the Weather Service, WX5ABQ benefits every day from this, as SKYWARN spotters, drawn from ham radio hobbyists, continue to be our cornerstone. Take our SKYWARN training, and put some pizzazz back in your radio time. As sure as we can all say "propagation," we know the bands will come back someday, and we will return to them as better rounded and more appreciative radio amateurs! See you around the bands!

73 de Tim, KM4KS, Trustee of WX5ABQ

Earl's Place

Earl Breon
Observing Program Leader

A MESSAGE TO OUR COOPERATIVE OBSERVERS

It's that time of year again. The leaves are beginning to turn colors, and forecasted low temperatures seem to drop every day. Soon, snow will be falling, so it is a good time to review your snow measuring guidelines, and watch your temperatures to determine when to bring in the funnel and inner tubes from your rain gauges. If you need any help reviewing these procedures, feel free to contact me here at the office or ask when Raymond or I visit in the next month or so.

Here are a couple of standard reminders on completing your monthly forms. Please, remember to fill out your station data at the top as completely as possible. Doing so helps us track them locally and also helps the National Climatic Data Center archive them properly.

If you take precipitation measurements, please fill in all the columns appropriately. Rain and melted snow are to be recorded with 3 digits to the nearest one hundredth, (Example: 0.00) while snowfall, hail, and ice pellets are to be recorded with 2 digits to the nearest tenth (Example: 0.0). Snow depth is recorded to the nearest whole inch, so you will either report a Trace or a single digit. If you have any questions feel free to ask.

For those of you that use WxCoder and/or IVROCS you may have noticed an article posted on-line, indicating that 49 stations are being converted to "paperless stations". I would like to thank those stations for their efforts, and I encourage any other stations interested in becoming paperless to contact me. We have a couple of options to get you going in that direction, however that would require more room than I am allowed here to cover all of the details.

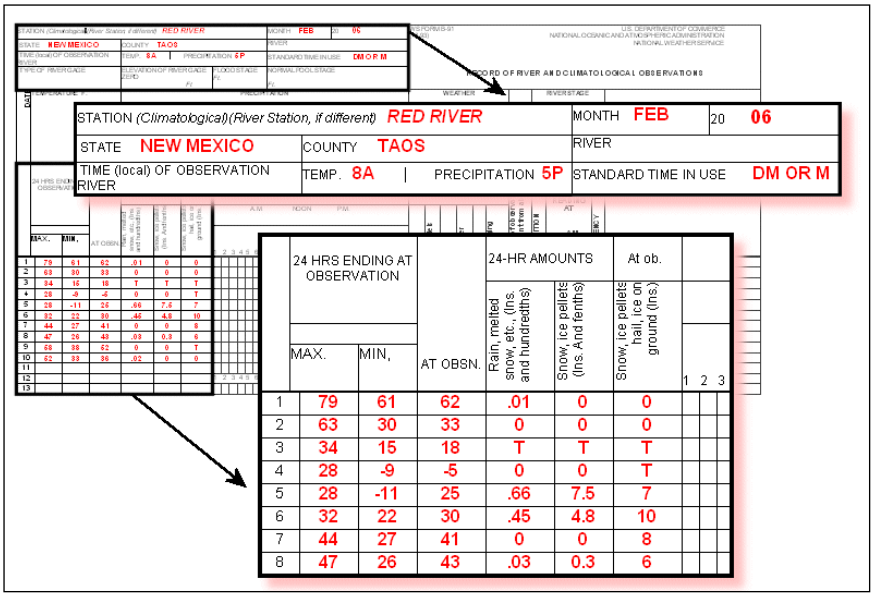
Most importantly, thank each and every one of you. The volunteer service you provide has immeasurable value to local, city, state, federal, and international partners. The information provided by Cooperative Observers for the past 120+ years is the foundation of the Nation's Climate Record.

Should you have any questions or concerns, you may reach me at the office at (505)243-0702 or by e-mail at Earl.Breon@NOAA.GOV.

Author: Earl Breon

Sun setting on the Upper Air Shelter at the NWS Albuquerque August 28, 2010 (Photo Courtesy of Jennifer Palucki)

Use the sample form to the right as a guide for filling out your monthly forms.



RECORD OF RIVER AND CLIMATOLOGICAL OBSERVATIONS

STATION (Climatological)(River Station, if different) RED RIVER | MONTH FEB | 20 06
STATE NEW MEXICO | COUNTY TAOS | RIVER
TIME (local) OF OBSERVATION RIVER | TEMP. 8A | PRECIPITATION 5P | STANDARD TIME IN USE DM OR M

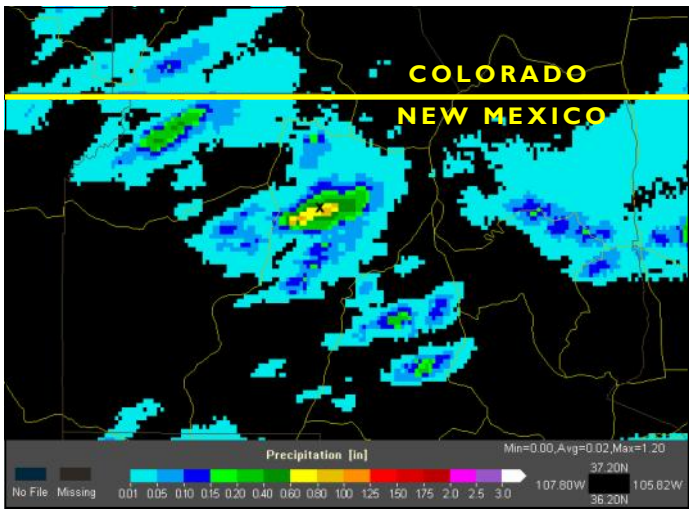
	24 HRS ENDING AT OBSERVATION MAX.	MIN.	AT OBSN.	24-HR AMOUNTS Rain, melted snow, etc., (Ins. and hundredths)	Snow, ice pellets (Ins. And tenths)	At ob. Snow, ice pellets hail, ice on ground (Ins.)	1	2	3
1	79	61	62	.01	0	0			
2	63	30	33	0	0	0			
3	34	15	18	T	T	T			
4	28	-9	-5	0	0	T			
5	28	-11	25	.66	7.5	7			
6	32	22	30	.45	4.8	10			
7	44	27	41	0	0	8			
8	47	26	43	.03	0.3	6			

Southwest Colorado Radar Project

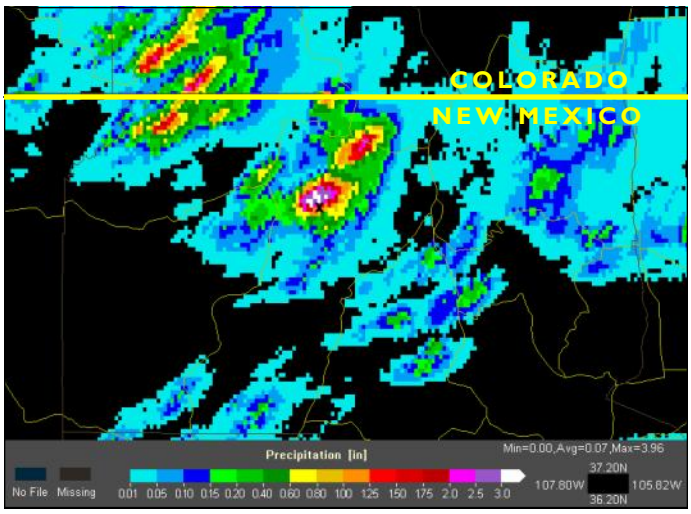
Holiday gifts came early to the National Weather Service offices in Albuquerque and Grand Junction. This summer, a mobile weather radar was positioned in Durango to give forecasters an opportunity to interrogate storms never before seen. The Four Corners region suffers from poor radar coverage by the National Weather Service radar network. Existing WSR-88D's (Weather Surveillance Radar-1988 Dopplers) can only observe upper portions of thunderstorms in the Four Corners region due to the far distances from radars. The radar gap leaves forecasters with much uncertainty concerning rainfall rates, surface circulations, and other near-ground phenomena.

Led by researchers from the National Severe Storms Laboratory, the 2010 Southwest Colorado Radar Project sought to improve radar coverage during the month of August – a typically active period in the heart of monsoon season. There were several goals of the project, including demonstrating how a local weather radar could improve rainfall estimation and increase the detection of potentially deadly flash floods. This data was provided in near real-time to the National Weather Service to aid in flash flood and severe thunderstorm warning decisions.

Though the mobile radar was not running continuously through the period, data were available during many heavy rainfall events across southwest Colorado and northwest New Mexico. The following images below were captured on August 4th. The images show one hour radar estimated precipitation across northwest New Mexico, ending at 430 pm local time. The "X" marks the approximate location of the Stone Lake RAWS site, an automated weather station, which recorded 1.49 inches of precipitation in the one hour shown. The precipitation estimates on the image on the right, which include the mobile radar data, are far superior than using only WSR-88D data (left image). Using the mobile radar data, precipitation estimates were near 1.5 inches, versus the ~0.8 inches estimated by the WSR-88D radars alone. The displacement of the rain estimates can be attributed to the distance from the Albuquerque radar and the mobile radar, as well as partial beam blocking due to terrain. Also, note the radar estimates farther north and northwest, which were barely seen by WSR-88D radars, if at all.



One Hour Quantitative Precipitation Estimate from the National Weather Service WSR-88D (Weather Surveillance Radar-1988 Doppler) network ending at 430 pm local time on August 4, 2010.



One Hour Quantitative Precipitation Estimate including the Shared Mobile Atmospheric Research and Training (SMART) radar data ending at approximately 430 pm local time on August 4, 2010. The radar was temporarily stationed near Bridge Timber Mountain, southwest of Durango, Colorado.

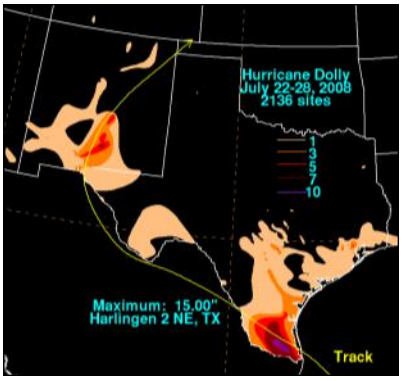
It is clear from these images alone, how greatly improved rainfall estimates would be in this area with the addition of a radar in southwest Colorado. Though no flash flooding occurred with these storms, the heavy rainfall likely resulted in ponding of water along roadways, and swiftly moving water in local arroyos. We hope to see the mobile radar again next year during monsoon season, or even better – a permanent radar someday very soon!

Author: Jennifer Palucki

Hurricanes in New Mexico?

The state of New Mexico is bordered by land on all four sides, so how can we be affected by hurricanes when we are not a coastal location? New Mexico cannot suffer from a direct landfall, however atmospheric winds can sometimes steer the remnants of these tropical phenomena into portions of our state. The most recent significant hurricane was Dolly in 2008.

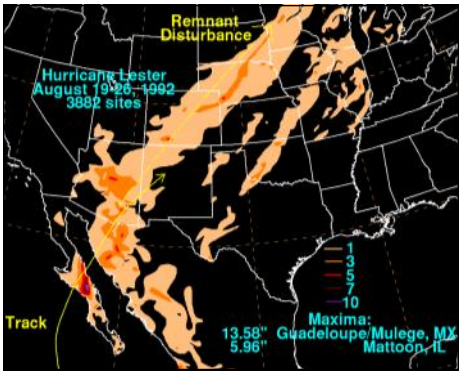
Hurricane Dolly: July 20-25, 2008



Hurricane Dolly formed in the Atlantic Ocean east of the Windward Islands on July 13, 2008. Dolly then made landfall on the very tip of the Yucatan peninsula. Once crossing back into the Gulf of Mexico, Dolly re-intensified and made landfall again on Texas' South Padre Islands as a category one hurricane. The remnants continued toward the west northwest into southern New Mexico on the 26th and 27th of July. During this time rain fell almost continuously in Ruidoso, resulting in storm totals of 3-7" across the area. This contributed to the Rio Ruidoso overflowing its banks, with flooding in portions of Hollywood, Ruidoso Downs, and the Ruidoso Downs Racetrack. Numerous bridges were also washed out and an estimated 350 homes were damaged.

Hurricane John August 28 –September 4, 2006

Hurricane John formed on August 28, 2006 from a tropical wave south of Mexico in the Pacific Ocean. The storm quickly intensified, and just two days later on August 30 was a category four hurricane with wind speeds topping out at 135mph. Hurricane John later made landfall on the southern tip of Baja California. An upper level trough with strong southwesterly winds ahead of it moved the moisture associated with hurricane John into the Southwest U.S. On September 3, rainfall amounts in New Mexico from the remnants of John peaked at 5.25" in Ruidoso. Tatum recorded 3.90", Las Cruces 3.09", Cloudcroft 2.97", Roswell 3.06", Deming 1.45", and Elk received 2.44", prompting numerous arroyo and small stream flood advisories from the National Weather Service.



Hurricane Lester August 20-24, 1992

Hurricane Lester formed from a tropical wave off the southwest coast of Mexico in the Pacific Ocean on August 20, 1992. Hurricane Lester was a category one storm when it made landfall on Baja California. The remnants of Hurricane Lester produced rainfall amounts of 1-3" in western and northwestern New Mexico. Interestingly, Lester continued northward into Colorado where remnant moisture merged with cooler temperatures, producing 2-4"of snow, and in Illinois a peak rainfall amount of 5.96" was reported.

Hurricane Raymond September 25-October 5, 1989

Hurricane Raymond took a westward track in the Pacific Ocean shortly after development. Raymond then made a hard right turn and headed towards Mexico and the U.S. It crossed the Baja Peninsula as a tropical storm, and then continued northeastward into the U.S. The remnants of Raymond produced rainfall amounts around 1-2" in western and north central New Mexico. Flash Flood Watches were also issued for mountainous and northern parts of the state.

Additional information regarding remnant hurricanes in New Mexico can be found among the list of websites on the left margin .

Author: Amanda Abeyta

Other Significant NM Hurricanes:

Hurricane Ismael 1995
Hurricane Javier 2004
Hurricane Irene-Olivia
Hurricane Claudette 2003
Hurricane Pauline 1997

Historical Hurricane Data On-line:

- www.nhc.noaa.gov
- http://csc-s-maps-q.csc.noaa.gov/hurricanes/
- www.hpc.ncep.noaa.gov

Gap Winds Within the ABQ Metro Area

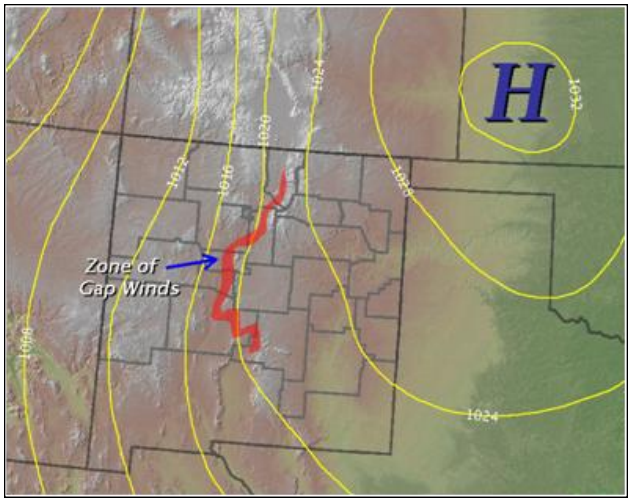


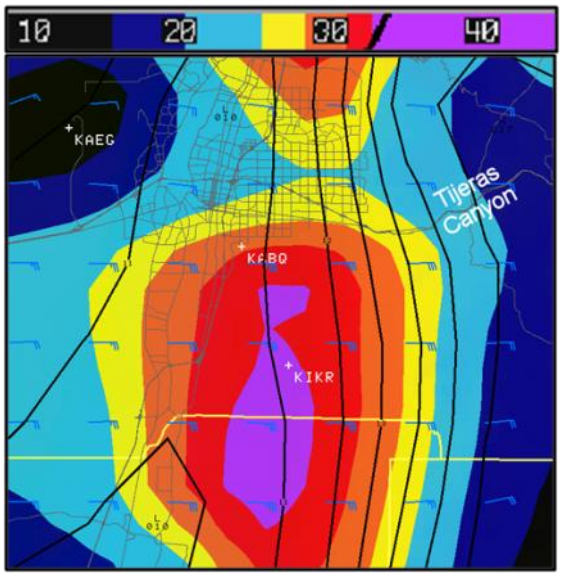
Figure 1. Common surface pressure pattern leading to gap winds at KABQ.

Widespread strong wind events are common across New Mexico, particularly during the spring months. They are typically associated with stronger winds aloft mixing to the surface as large scale weather systems push from west to east across the area. However, not all strong wind events occur in association with stronger winds aloft. Gap winds are strong low level winds that form as air is accelerated by surface pressure gradients across a mountain gap. In Albuquerque, the gap wind is formed when easterly winds are channeled westward through Tijeras Canyon. Areas west of the canyon receive the strongest winds, while winds in other sections of the city remain light.

Figure 1 illustrates a surface pressure pattern conducive for gap winds within the Rio Grande Valley. The yellow contours are lines of equal pressure, or isobars. The pressure gradient increases from east to west across the central mountain chain as high pressure builds over the southern high plains. Since air blows from high pressure toward low pressure it is channeled through the gaps or canyons within the central mountain chain. The red shaded area indicates the region prone to gap winds.

Local modeling projects have allowed the National Weather Service to understand the processes behind the development of a gap wind in much greater detail. The Albuquerque National Weather Service office runs a 7.5km resolution weather research and forecasting model four times a day for all of New Mexico. Figure 2 shows the distribution of wind speeds forecast by the model across the Albuquerque metro area valid at midnight May 16, 2009. The shaded areas are wind speed and the thick black lines represent surface pressure. Note the location of the Albuquerque Sunport (KABQ), Kirtland Air Force Base (KIKR), and Double Eagle Airport (KAEG). Areas in red and purple indicate where sustained wind speeds are forecast to exceed 35 knots and areas in dark blue and black are less than 10 knots. Folks traveling from west to east across Albuquerque may notice this dramatic gradient during gap wind events.

Figure 2. Local model forecast of wind speed.



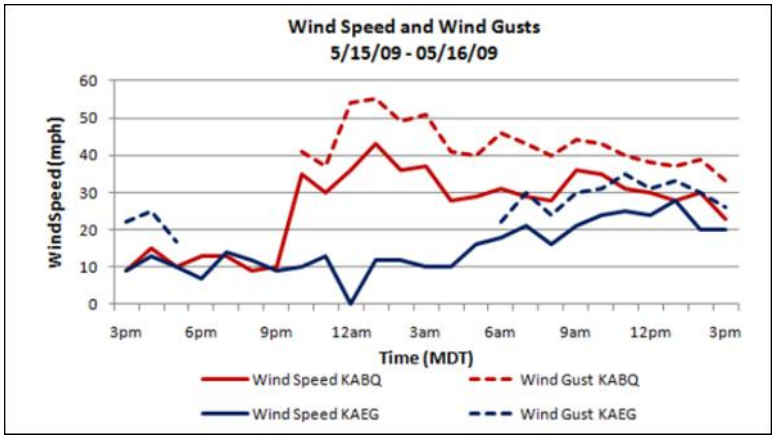


Figure 3. Wind speed and gusts KABQ versus KAEG.

Figure 3 to the left depicts the observed wind speed and gusts at KABQ and KAEG from 3pm May 15th to 3pm May 16th. Note the dramatic onset of strong winds shortly after 9pm at KABQ while just 12 miles west winds remain light at KAEG. If you live in an area prone to gap winds and would like to let us know, please send us an e-mail to sr-abq.webmaster@noaa.gov.

Author: Brian Guyer

Meet Your Observers

Within each issue of your New Mexico Skywatcher, the National Weather Service in Albuquerque will highlight cooperative observers from across our forecast area (which includes the northern two – thirds of New Mexico). We are proud of the service you provide our nation, and we want to acknowledge your hard work.

Fred Smith

The weather station at Thoreau 12SE, New Mexico was established in July 1994. For over 16 years Fred Smith, the cooperative weather observer in Thoreau, has earned a reputation for providing detailed, accurate, and timely weather information to the National Weather Service.

Fred Smith, observer 12SE of Thoreau, received a 15 year length of service award in 2009.

Fred Smith served on the USS Zuni during World War II. The USS Zuni was a Navajo Class Fleet Tug. It was a ship of the United States Navy, named for the Zuni Pueblo Indian tribe in western New Mexico. The USS Zuni was commissioned in 1943 and earned four battle stars for World War II service. In 1946 it was decommissioned and transferred to the U.S. Coast Guard, where it was then commissioned USCGC Tamaroa. As Tamaroa, she is best known for her rescue work during the "Perfect Storm" of 1991. Tamaroa was decommissioned by the Coast Guard in 1994, and since 2009 has been undergoing restoration work as a museum ship in Portsmouth, VA.

Fred Smith has many interesting memories of his time served aboard the USS Zuni. He also enjoys his woodworking hobby during his spare time, creating unique items made out of wood.

Fred's daily weather observations are critically important to the NWS Weather Forecast Office in Albuquerque, as well as to the communities throughout western New Mexico.

In 2009, the National Weather Service (NWS) presented Fred Smith, a Length of Service Award, recognizing 15 years of dedicated service. His many years of dedicated support of the National Weather Service and his community, makes Fred an outstanding representative of the cooperative observer network.

Elma Cain

Elma Cain has been the observer at the Amistad 5SSW weather station in northeast New Mexico since 1992, providing detailed and timely weather information to the National Weather Service.

Elma Cain was awarded in 2007 for 15 years of dedicated service as a Cooperative observer at Amistad 5SSW.

Weather is of great importance to Elma and her family. Elma, along with help from other family members, take daily observations that are critically important to the NWS Weather Forecast Office in Albuquerque, as well as to fellow farmers and ranchers throughout the area. Elma reports the daily high and low temperatures, along with measured snow and rain amounts throughout the year.

When severe weather occurs, the forecasters call Elma and her family to verify severe weather events in the area. The important data and information they provide, have continually supported National Weather Service weather advisories and warnings for severe weather in Union county.

In December 2007, the National Weather Service (NWS) presented a length of service award to Elma Cain, recognizing 15 years of dedicated service as a cooperative weather observer. Her many years of dedicated support of the National Weather Service and her community are very much appreciated.

Author: Maxine Pacheco

How Much Rain or Snow in Your Backyard?

When you hear the rainfall total from the official gauge, have you ever said, “That’s not what I got”? Let your voice be heard! You can now report rain, snow, and hail measured in your own backyard by joining the Community Collaborative Rain, Hail, and Snow Network (CoCoRaHS; pronounced Koh Koh Rawz).

A nationwide network, which began in the late 1990s in Colorado, CoCoRaHS allows volunteer precipitation observers to collect and enter rainfall, snowfall, and hail reports via a web-based system.

Each time a rain, hail or snow storm crosses your area; volunteers are needed to take measurements of precipitation from as many locations as possible since precipitation can vary significantly across short distances. These precipitation reports are recorded on the CoCoRaHS web site www.cocorahs.org.

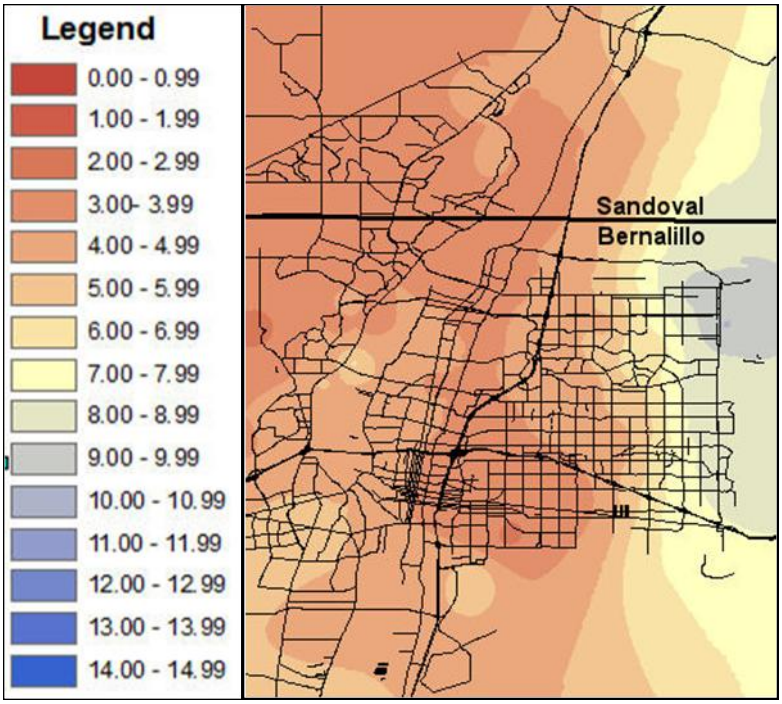
CoCoRaHS reports are also displayed and organized for many end users, including on NWS Albuquerque’s special event map [www.srh.noaa.gov/abq/?n=eventmap], to analyze and apply to daily situations ranging from water resource analysis and severe storm warnings to neighbors comparing how much rain fell in their backyards.

CoCoRaHS data supplement current observation networks (e.g. NWS Cooperative Observers) and are used quite extensively. Additionally, data from the CoCoRaHS network are used to show, for example, the spatial variability of summertime rainfall across the Albuquerque Metro Area as seen below. It is also a great educational tool.

The CoCoRaHS network recently expanded to include all 50 states. New Mexico officially joined the network in 2005.

How Do I Join?

We encourage anyone who has an interest in the weather, a desire to learn more about weather and climate, and enthusiasm to report daily rain, hail, and snow observations to join CoCoRaHS. First, visit the CoCoRaHS webpage and learn about the program. If you would like to become an observer, you can sign up online.



The network of CoCoRaHS observers was utilized to generate this map displaying precipitation variability across Albuquerque during the monsoon (June 15-September 30, 2010). Map drafted by Jennifer Palucki.

If you're interested in being a Volunteer Coordinator for your local area, or county, then contact your regional or state CoCoRaHS coordinators and let them know! A list of coordinators can be found here.

What Do I Need?

Each observer will need:

- Enthusiasm and desire to watch the weather.
- Willingness and dedication to take regular daily precipitation measurements, preferably between 6-9 AM.
- Participation in group or online training.
- A manual 4-inch rain gauge, available through a preferred online CoCoRaHS vendor.
- Computer with internet access.

Interested in Becoming a CoCoRaHS Observer?

Visit www.cocorahs.org and download an application. An on-line version is also available.

Author: Kerry Jones

By The Numbers

Mammatus Clouds near Gilman, NM June 6, 2010 (Photo Courtesy of John Bull)

The Spring of 2010 was relatively dry across New Mexico as abnormally dry conditions formed over northwest and west central areas of the state, and extended east across Sandoval, Santa Fe, and western San Miguel Counties. The summer monsoon season had trouble getting underway, with decent rains over the first few days of July, but it was not until July 21st before we saw a sustained impact that lasted through the middle of August. The latter half of August into September was generally drier, that is until September 22nd (rainfall from September is not included below).

The first table below lists the top four precipitation totals from April through August 2010. The race for top honors went to Cloudcroft, grabbing back the title they held in 2007 and 2008.

Location	Precipitation (April-Aug.)	Co-op Observer
Cloudcroft	24.02 inches	David Gilbreath
Gascon	16.47 inches	Editha Bartley
Carlsbad Caverns	13.81inches	National Park Service
Clovis 13N	13.03 inches	Plains Ag Extension Station

As usual, there were several periods of hot weather this summer. Sizzling temperatures arrived during the first half of June, with another hot spell in July, between the 14th and 22nd. The table below reveals the top five locations with the highest temperatures this summer.

Location	Highest Temperatures	Date	Co-op Observer
Bosque del Apache	109 degrees	June 6	Wildlife Refuge
Bitter Lake	108 degrees	June 6, 7, 8	Wildlife Refuge
Bernardo	106 degrees	June 6	Martha and Andrew Salas
Roswell	106 degrees	June 6	Robert and Nancy Corn
Sumner Lake	106 degrees	June 6	Carlsbad Irrigation District

Author: Chuck Jones

What is That?

Rainfoot over the Rio Grande valley of Albuquerque. A rainfoot is formed when rain and rain-cooled air rapidly descend from a thunderstorm. As it quickly hits the surface, the rain-cooled air is diverged outward. Photo by Earl Breon, August 23, 2010.

National Weather Service, Albuquerque

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Working Together to Save Lives.

Would you like to receive notice of future issues?

The New Mexico Skywatcher will be available on your NWS website at http://www.weather.gov/abq. If you would like to be notified of new issues via email, submit your request to **sr-abq.webmaster@noaa.gov** (make sure to state your name and email address).