

NATIONAL
WEATHER SERVICE

ALBUQUERQUE,
NEW MEXICO

UPCOMING
COOPERATIVE
OBSERVER
AWARDS:

- **April 2007**
Raton Filter Plant
Raton, NM
15 Years of Service
- **April 2007**
Ghost Ranch
Abiquiu, NM
50 Years of Service
- **April 2007**
Processing Plant
Lybrook, NM
50 Years of Service
- **June 2007**
Abiquiu Dam
Abiquiu, NM
50 Years of Service
- **July 2007**
Brahaim Hindi, Jr.
Duran, NM
15 Years of Service
- **August 2007**
Mariann Patterson
Bingham, NM
25 Years of Service

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New Mexico

Skywatcher

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Weather Data Awareness Week

Welcome to the Spring 2007 Edition of the New Mexico Skywatcher. During the week of April 16th through 20th, 2007, we will be commemorating Weather Data Awareness Week. Throughout the week, the National Weather Service in Albuquerque will be promoting how your observations are used across the nation and around the world. Did you know that our parent agency (NOAA) will be celebrating 200 years of science, service, and stewardship? To help celebrate these events, our office will be hosting an Open House for our cooperative observers throughout New Mexico on Friday, April 20th. Please stop by our office for a tour to see how your valuable data is used in our operations.

We also want to take this time to thank our observers

for their timely and accurate weather reports during the fall and winter months. Your data was extremely useful in determining the status of the New Mexico drought. In addition, your real time snow reports helped save lives and valuable property.

Congratulations to those receiving awards this spring and summer (shown in the left column). Your long history of weather observations are vital in developing climatological databases, supporting weather forecasting as well as research.

In this issue of the New Mexico Skywatcher, we will provide examples on how your observational data is used around the world, provide summer safety rules, and indicate the effects of the recent El Niño on the past winter

season and what to expect for the upcoming summer. We have included a Q & A section to fulfill your curious minds. If you would like your questions answered, feel free to contact us. In addition, you will find interesting snow and temperature statistics.

We appreciate the hard work our observers provide for the National Weather Service. We wish you the best during the spring and summer seasons and we hope to see each and every one of you at the Open House!

Author: Daniel Porter



Cooperative Observations



Have you ever wondered what happens to the temperature and precipitation data you carefully collect? Across New Mexico, over 100 cooperative observers take observations, most of them on a daily basis. Some record on paper forms, others use the telephone-based Interactive Voice Remote Observation Collection System (IV-ROCS), while those with internet access use WxCoder (Web Xmitted Cooperative Observer Data). No matter what method you use to send in your observations, they arrive at our office where our data acquisitions staff members complete the first round of quality control. (Cont. on Page 7)

Joe's Place



Joe Alfieri
Observing Program
Leader

As you know, spring can bring cold weather and snow, but warmer weather is in sight and the chance for rain and thunderstorms is increasing. You can be of great service to the National Weather Service in Albuquerque by reporting severe weather conditions in your area. Please call in any sightings of funnel clouds, wall clouds, tornadoes, strong winds, wind damage, or hail to our office at 1-888-386-7637. Your information can help forecasters make vital and quick decisions, and verify issued warnings. Don't forget to enter this information on your B91, B92, or B83a. In addition, report the snowfall, snow depth, and liquid equivalent on your form. You can find instructions printed on these forms.

Thanks to everyone who sends in their forms on time. I can not stress how helpful this is for our staff to meet the mailing deadline to the National Climatic Data Center, which is the 15th of every month. The data you report is recorded and made available to the public. Your accurate and timely reports are the backbone of our nation's climatological history. If you are interested in switching from paper observations to an electronic format (WxCoder or IV-ROCS), contact our office and we will gladly assist you. One of the great benefits of electronic observations is that we receive your data on a daily basis versus monthly. This data can be used immediately in the forecast process and for research.

For those of you with a standard 8-inch rain gauge, it is time to place the inner measuring tube and funnel inside the gauge. This will make observing easier and keep moisture from evaporating.

If you should need supplies, such as a replacement of a worn out rain gauge stick or additional envelopes or forms, please contact our office at 1-888-386-7637.

I hope to see everyone at the Open House on April 20th. If not, don't hesitate to give me a holler. Thank you for making Weather Data Awareness Week a huge success in the Land of Enchantment. Enjoy your summer!

Summer Safety Rules

As recent tornadoes in eastern New Mexico and last summer's flooding illustrated, being prepared for adverse weather is critical to your safety. Here are a few safety rules to keep in mind.

The safest place to be during a tornado is below ground. If an underground shelter is not available, go to an interior room on the lowest floor. Stay away from windows. Mobile homes and vehicles should be abandoned as they are often picked up and tossed into the air by tornadoes. If you are caught outside, find a low spot or ditch. Once you find shelter, get beneath a sturdy object and cover your head to protect yourself from flying debris.

Many tornado safety rules also apply to severe thunderstorms in which large hail and strong winds are the main threats. Indoor areas away from windows offer the best protection. However, in this case, a vehicle may be a better shelter than remaining outside. In addition, a vehicle protects you from being struck by lightning. If you are caught outside during a lightning storm, avoid high or metal objects such as trees, power poles and towers which all attract lightning. Instead, find a low spot or ditch and crouch down to make yourself as small of a target as possible.

In order to protect yourself from flooding, remember the phrase, "Turn around don't drown." Most flash flood deaths occur in automobiles. Driving through flowing water or water of unknown depth can be deadly. It takes less than a foot of water to cause you to lose control of your vehicle and only one or two feet to float most vehicles. Once the vehicle is swept away, it is usually carried into much deeper water where the threat of drowning is much higher. Children should stay away from flooded areas and care should be taken not to play or camp in arroyos, low spots or normally dry stream beds. If you are in an area where flooding is occurring, move to higher ground immediately.

Author: Ken Drozd



Hail in Socorro, NM
Photo Courtesy of
Jane Love

A Change at NWS Albuquerque

Charlie Liles, the Meteorologist in Charge of the Albuquerque Weather Forecast Office for the past 17 years, retired on April 3, 2007, after 30 years in Federal Service with the National Weather Service.

Soon after his arrival, Charlie noted that the weather conditions across the Albuquerque metro area varied dramatically, yet a lack of observations made it difficult to forecast the variability. Charlie became an official cooperative observer in 1991, and initiated a new station in the Albuquerque Foothills. The Albuquerque Valley station opened in the same year and in 1994, a cooperative station opened at the Petroglyphs National Monument. These three cooperative stations, when combined with the official observation site at the Albuquerque Sunport, resulted in observations from each of the four quadrants of the Albuquerque metro area. The additional data allowed for an improved set of forecast products.



Mr. Liles 55th Surprise Birthday at the National Weather Service Office



Mr. Liles (center) with his son Jonathon (left) and wife Judy (right)

During Charlie's 19-year tenure at the Albuquerque National Weather Service, he oversaw a number of changes and technological advances, including a new building and the installation of the Doppler radar in 1994. A suite of new workstations known as AWIPS (Advanced Weather Information Processing System) followed in 1999. In recent years, Charlie became very active in the governor's drought monitoring committee.

While Charlie has retired from his official duties at the Albuquerque National Weather Service, he plans on continuing as the cooperative observer of the Albuquerque Foothills station. He also hopes to have more time for family and his hobbies including genealogy, bicycling, camping, writing and music.

Author: Deirdre Kann

December Winter Storm Photos



**December 20, 2006
Bridge over the Red River
Photo Courtesy of Rebecca Hastings**



**December 21, 2006
Los Alamos, NM
Photo Courtesy of Neal Pederson**



**December 30, 2006
Near Tucumcari, NM
Photo Courtesy of Brittini Brockman**

Questions? We Have Answers!

Question:

An email respondent asks: "I received hail at my house, but it was not severe, should I report it to the National Weather Service?"

Answer:

We are always anxious to hear about any unusual or significant weather occurrences. If you receive significant hail, even if it is smaller than the 0.75 inch diameter threshold which constitutes a severe thunderstorm, please don't hesitate to give us a call. Our toll free number is 1-888-386-7637. It is easiest to reference your hail size in relation to a coin (for example; a penny, quarter, or half dollar). Other significant weather events might include unusually strong or damaging winds, heavy rain resulting in ponding of water or flooding, funnel clouds, tornadoes, as well as light or heavy snow.

Question:

Clint James of Socorro asks: "What is glaze? Sounds like something you put on baked ham!"

Answer:

I was actually thinking of glazed donuts, but in fact this refers to a coating of ice formed on exposed objects deposited by freezing rain, freezing drizzle, or freezing fog. Glaze typically forms during an ice storm.

Question:

Clint also requested an explanation of the precipitation codes on the electronic WxCoder form.

Answer:

The difference between **rain** and **drizzle** relates to the size of the droplets. Drizzle is much smaller in size, averaging only 0.5 millimeters in diameter. In addition, drizzle, which is synonymous with mist, is usually produced by low clouds and is associated with fog.

Freezing rain and **freezing drizzle** generally occur when liquid droplets freeze on contact with a surface that is below 32 degrees Fahrenheit.

Ice pellets consist of liquid that freezes into a solid clear piece of ice before reaching the ground. While ice pellets are similar in composition to hail, they are formed through different processes. **Hail** stones are formed inside a thunderstorm above the freezing level, and may consist of numerous layers of ice, each forming around the last. Each layer of ice represents a vertical trip through the updraft and downdraft circulation present within a thunderstorm.

Ice prisms, also known as ice crystals or diamond dust, forms in clear air, similar to fog. However, unlike fog, ice prisms form directly as a solid, and fall to the earth as very light frozen precipitation.

Snow most commonly falls in the form of snowflakes, which come in a variety of shapes and sizes, depending on the atmospheric temperature of the layer in which they develop. Besides flakes, snow can also fall in the form of pellets or grains, which can be identified distinctly by observers.

Snow pellets look similar to ice pellets except they are white. Snow pellets form when liquid water freezes onto a snowflake. Snow pellets are rare, usually only falling for a brief time when precipitation transforms from ice pellets to snow. Unlike snowflakes, snow pellets usually bounce upon reaching the ground.

Snow grains are white opaque particles that resemble snow pellets in appearance, but are much smaller and neither bounce nor shatter when they reach the ground. Snow grains are essentially the solid equivalent of drizzle, but are observed much less frequently.

Author: Ken Drozd

'It is easiest to reference your hail size in relation to a coin...'



Snowflakes

Photos Courtesy of
Becky Ramotowski



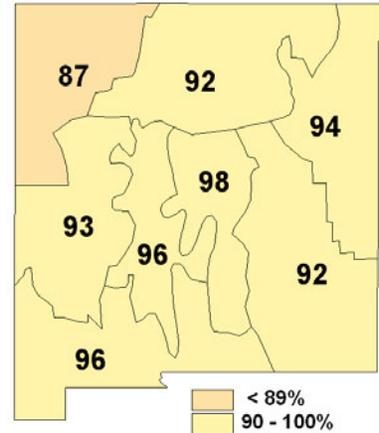
El Niño Suffers a Quick Death

The El Niño that developed in the Pacific Ocean in 2006 gave New Mexico hopes for a wet winter and spring. For the most part, New Mexico experienced a wet winter. The El Niño was partly responsible for the wet winter, mainly during the second half of January through February. However, El Niño peaked in December, and was essentially gone by early March. The rapid cooling in the Pacific since December diminished the probability of wet weather in the spring, and it now appears that a La Niña could actually develop in the coming months. La Niña represents the opposite end of the spectrum of the El Niño-Southern Oscillation (ENSO) cycle. La Niña is usually associated with drier than normal conditions in New Mexico, especially during the cooler half of the year. Consequently, while drought conditions improved substantially during 2006, it's possible we'll see drought conditions worsen in New Mexico in 2007, especially over the western half of the state.

The figures at the bottom show the New Mexico drought status at the beginning of summer in 2006 (before the heavy summer rainfall), and in March, 2007. Your cooperative observer data greatly assist in the generation of these maps. These maps are also the result of the New Mexico Drought Monitoring Group, of which the National Weather Service in Albuquerque plays an integral part.

The figure to the right shows the percentages of normal precipitation based on historical averages during La Niña events for the summer (June through August) season. Although there isn't a very strong relationship between summer precipitation and La Niña events, there is a tendency for precipitation to average slightly below normal during "La Niña summers." Whether or not La Niña will actually develop in 2007 will probably not become apparent until around the middle of the year. Stay tuned!

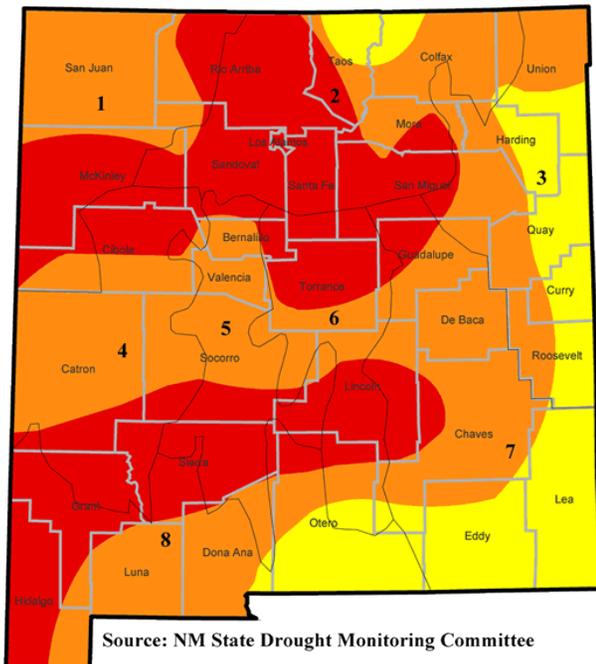
Summer (June - August) Precipitation During La Niña Events (% Normal)



Average June through August Precipitation (as a percent of normal) for the eight climate divisions in New Mexico for La Niña events.

Author: Charlie Liles

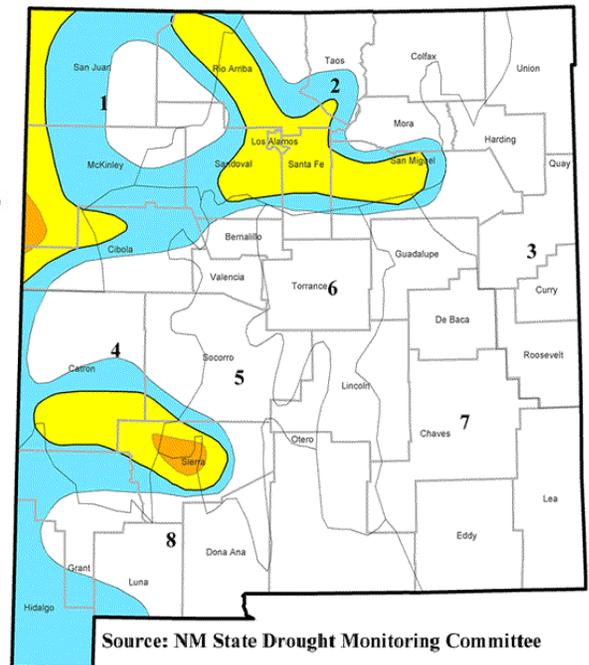
Meteorological Drought Status Map June 2006



Source: NM State Drought Monitoring Committee

Meteorological Drought Status Map March 2007

- Drought Status**
- No Drought
 - Advisory
 - Alert - Mild
 - Warning - Moderate
 - Emergency - Severe
- Climate Divisions**
- 1 Northwestern Plateau
 - 2 Northern Mountains
 - 3 Northeastern Plains
 - 4 Southwest Mountains
 - 5 Central Valley
 - 6 Central Highlands
 - 7 Southeastern Plains
 - 8 Southern Desert



Source: NM State Drought Monitoring Committee



A tour by Joe Alfieri of the NWS observing equipment.



Example of a Fisher Porter Rain Gage

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). This section was designed to allow observers across the state meet fellow hard-working volunteers in the region. We are proud of the service you provide our nation, and we want to acknowledge your hard work.

Authors: Joe Alfieri/Maxine Pacheco

Eastern New Mexico

Observing weather has been a hobby of Nancy McPherson, Clovis, for several years. In May of 1988, she answered an ad in the paper from the National Weather Service requesting a volunteer to take weather observations in the area. Shortly afterwards, a station was installed at her house, including a temperature system, 8-inch standard rain gage, Fischer & Porter rain gage, and a soil thermometer. There have been times when Nancy had to dig her way to the equipment after a big snow storm. One day in 1992, she was worried about her house and equipment when larger than baseball size hail fell and damaged her roof. In 1994, she reported strong winds that reached 68 mph. Numerous snow and rain storms made it difficult to take observations at times due to deep snow and flash flooding. Heavy rain, along with city construction in 1998, caused more flooding, but through it all, Nancy kept reporting her observations. Nancy is an excellent observer, submitting her data in a timely fashion, even though her declining health has made it increasingly difficult. Nancy always calls in weather reports to the NWS. We are indeed lucky to have a cooperative weather observer like Nancy McPherson.

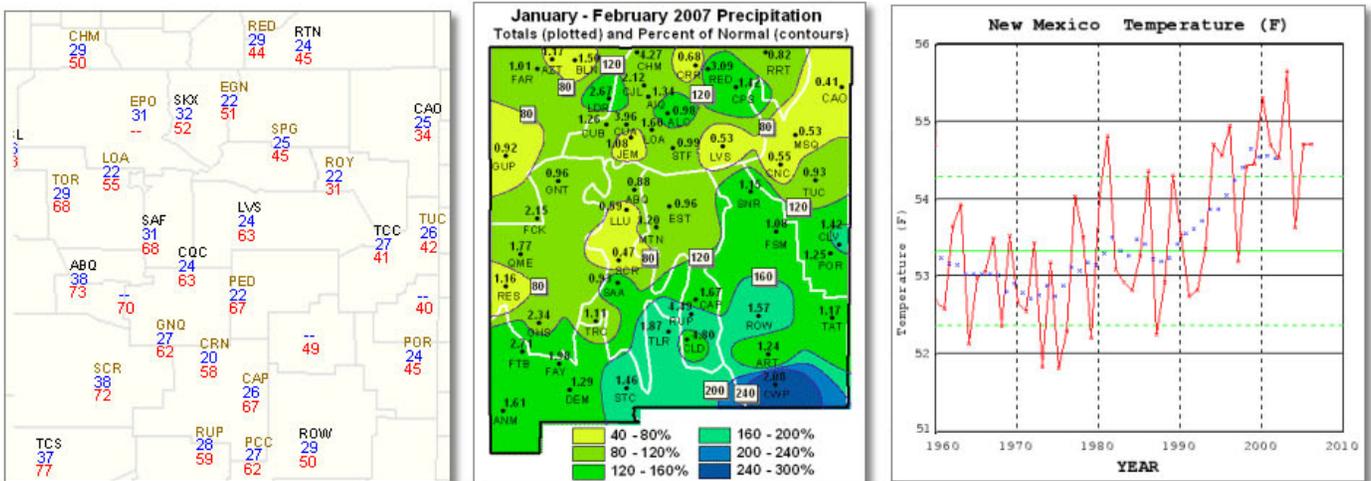
Nancy was born in Perry, Iowa. Around the age of 21, she moved to Des Moines, Iowa, where she lived with her husband until 1975, then sold their house and moved to Clovis, NM. They took an earlier trip to Clovis to visit their daughter, who was stationed at Cannon Air Force Base. They liked Clovis very much, and wanted to get away from the Iowa weather because they both suffered from arthritis and sinus problems.

Western New Mexico

Nancy Coonridge, Pie Town 19NE, has been a cooperative observer since 1988, providing invaluable weather observations from a remote site in west central New Mexico. In addition to her duties as an observer, Nancy has been making a living from her goats since the early 1980s. Nancy grew up in the San Francisco urban area. As a teenager, she suddenly realized she needed a goat. This grew into a small backyard goat dairy and an interest in raw milk cheeses. She was mostly a self-taught cheese maker, helped along by occasional sessions with Mediterranean-trained cheese makers who moved to California. In 1977, she started free ranging her goats in the brush-covered California foothills. Before moving to New Mexico, Nancy produced milk for an evaporated milk co-op, and two goat cheese co-ops. In 1982, she decided her goats would really like brush-covered, western New Mexico and bought 40 extremely remote acres. Since then, she has expanded it to 300 acres and milks 70 goats. The goats are milked early in the morning and then allowed to range free for the rest of the day. The goats wear radio collars and are accompanied by Italian Maremma guardian dogs. Nancy's Coon Ridge Organic Goat Cheese Dairy is located in the dry, rim rock country of western New Mexico at an elevation of 8000 feet. Her Alpine, Nubian, and La Mancha goats graze the dry high desert range daily. Nancy's Grade A Dairy, Coonridge Organic Goat Cheese has been certified organic by the New Mexico Organic Commodities Commission since 1998. Nancy's dairy is one of the only commercial goat cheese dairies in the USA where browse is the primary feed. While free range has many conflicting definitions in artisanal food production, for Nancy it literally means "no fences." There are no fences or neighbors for miles. Her mailbox is two hours away by jeep. She also uses solar energy for power. Nancy's advertising slogan claims her cheese is "From the Wilds of New Mexico."

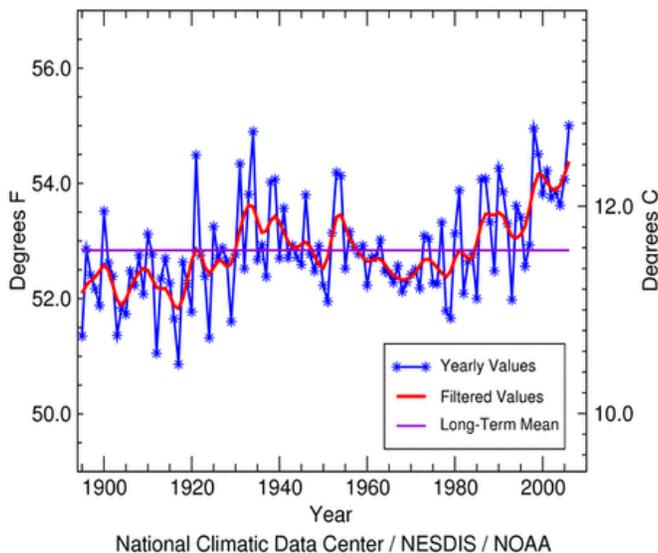
Cooperative Observations (Cont.)

Once cooperative observations are received at our Albuquerque office, they are put into immediate use and are used to support products covering a wide range of time scales, as shown in the graphic below. Observations received on a daily basis are automatically plotted and used as guidance in our day-to-day forecast operations (left panel). Daily observations are tracked and combined with those received on paper forms at the end of each month. Monthly averages of temperature and precipitation are used to determine variations from normal and have an important role in monitoring drought conditions (middle panel). On even longer time scales, we use multi-month or annual averages to look for long term trends and variations in the climate and to relate those variations to climate controls such as El Niño and La Niña (right panel).



From our office, the observations and forms are forwarded to the National Climate Data Center (NCDC) in Asheville, NC, where data are digitized, checked, published and archived. Our office, and other NOAA agencies and scientists, rely on coop data to support our forecast operations. However, a diverse group of agencies and businesses use cooperative observations for a wide range of applications. Energy companies use cooperative data to determine heating and cooling degree days and their trends. Those with agricultural interests may want to query cooperative data to determine the number of days below freezing, as well as average dates of the last spring and first fall freezes. The complete list of end users of cooperative data is long and includes engineers, environmental scientists, planners, litigators, transportation and insurance experts.

National (Contiguous U.S.) Temperature 1895 - 2006



Because the Cooperative Observer Network was established in 1890, there are many sites across the country, including several in New Mexico, that have been taking continuous observations for over 100 years. Since the implementation of the Automated Surface Observing System (ASOS), most first order sites no longer record snow, making the coop observations of snowfall and snow depth even more valuable. Coop observations, like a fine wine, improve with age. The longer and more complete the record, the more valuable the data become. While global warming has recently become a topic of great interest, climate researchers are using cooperative data to examine many facets of climate trends including precipitation frequency and intensity as well as changes in temperature. Your observation makes a long and important trip once it leaves your station!

Author: Deirdre Kann

By The Numbers

While the 2004-2005 winter was active and the 2005-2006 winter season was quiet, the recent 2006-2007 winter season ended up closer to normal in terms of snowfall. The first half of the winter tended to be more active, with monthly snowfall totals peaking in December, with a steady decline at most locations from January through March. The table below shows the top three 2006-2007 winter season snowfall totals among our cooperative observers. Even the Albuquerque International Sunport joined in the snowfall action this winter. The Sunport recorded a record breaking 20.8 inches of snow in the month of December, which was 18.1 inches above normal. The record daily snowfall for any day was set on December 29th, where 11.3 inches of snow fell. Average snowfall for a calendar year is 13.8 inches. The 27.9 inches of snow for the 2006-2007 winter season was the second snowiest on record at the Sunport since 1931.



Post-Christmas Snow along the Pecos River South of Santa Rosa December 26, 2006 (Photo Courtesy of Steve Silva)

Location	Snowfall (Oct-Mar)	Co-op Observer
Red River	159.0 inches	Robert Prunty
Angel Fire	137.0 inches	Lisa Sanchez
Lake Maloya	108.6 inches	Bob McIvor

As is typical during the winter months, a few cold outbreaks sent temperatures plummeting to well below zero over the higher elevations. The most notable cold spells were in late November and early December, as well as mid-January. The table below indicates the coldest readings this past winter.

Author: Chuck Jones

Location	Coldest Temperatures	Date	Co-op Observer
Eagle Nest	-33 degrees	Jan 17	Ernest Sutliff
Eagle Nest	-32 degrees	Jan 16	Ernest Sutliff
Angel Fire	-29 degrees	Jan 16	Lisa Sanchez
Thoreau	-22 degrees	Nov 30	Fred Smith

Note: Eagle Nest was also -22F on Dec 3rd, 23rd, and 24th while Angel Fire was -22F on Nov 30th.

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Working Together to Save Lives.

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