Southwest Weather Bulletin

National Weather Service El Paso/Santa Teresa

Spring-Summer 2009 Edition

Winter and Spring Bring Dry Warm and Windy Weather to Southern New Mexico and Western Texas

After a few strong autumn thunderstorms, southern New Mexico and western Texas experienced very dry, warm and occasionally windy weather through the winter and early spring of 2008-09. A series of intense low pressure systems moved across the southwestern United States in December bringing strong and at times damaging winds to the Borderland. However the weather pattern was dominated by high pressure and westerly winds from January through early March resulting in continued dry and at times unusually warm conditions. By early spring another series of low pressure systems and weak cold fronts raced across the southern Rocky Mountains causing periods of stronger winds. The lack of rain and snow during the winter and early spring produced serious drought conditions along with a very high wild fire danger.

High winds on December 8 damage a building in El Paso. (Ruben Ramirez El Paso Times)

Seasonal Weather Highlights

Oct 5: Scattered showers and thunderstorms produce small hail, heavy rains and strong winds over portions of El Paso, disrupting the Amigo Air Show.

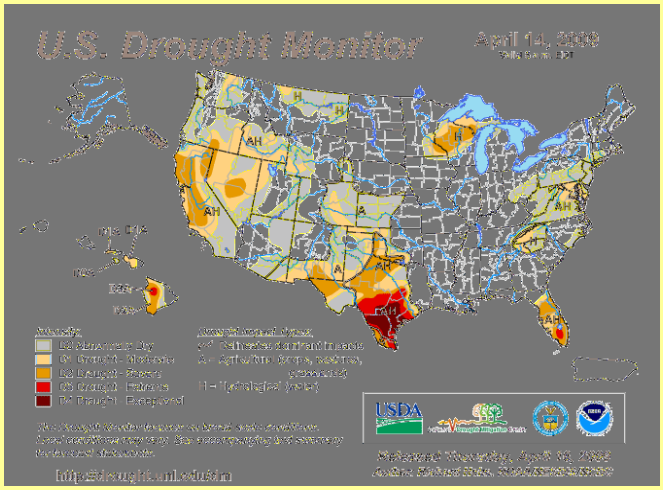
Oct 7: Two people are killed near Santa Teresa Airport when a thunderstorm microburst causes their small airplane to crash.

Oct 9: Strong thunderstorms produce wind gusts near 50 mph around the El Paso, Las Cruces and Deming areas.

Oct 14: Thunderstorms dump heavy rains across much of Otero County with 1 to 2 inches falling in the Alamogordo and Cloudcroft vicinities. An inch of rain also falls over La Tuna in southern Dona Ana County.

(continued on page 2)

National Weather Service El Paso/Santa Teresa
Meteorologist-In-Charge - Bill Alexander
Warning Coordination Meteorologist – John Fausett
Science Officer – Val Macblain
Newsletter Editor-Writer/Senior Forecaster – Joe Rogash



Dry weather during the winter and early spring bring drought conditions to southern New Mexico and western Texas.

High winds damage the roof of this house in El Paso on December 13. (Rudy Gutierrez El Paso Times)

Dec 8: Early winter storm drops 6 to 8 inches of snow around Cloudcroft with 3 to 5 inches in the Silver City vicinity. Almost an inch of snow falls over portions of the El Paso metropolitan area. High winds gusting to near 60 mph also damage a building in El Paso.

Dec.13-14: A strong low pressure system moves through the southern Rocky Mountains causing high winds across southern New Mexico and western Texas. Wind gusts are measured at 86 mph over Organ NM with wind gusts around 60 to 70 mph across the El Paso metro. In northeast El Paso, winds tear a roof off of a house and blow down power lines resulting in electrical outages.

Dec 23: Another major wind storm strikes. Winds gust to almost 100 mph over St. Augustine Pass in Dona Ana County with wind gusts to 75 mph across portions of El Paso. Almost 2 inches of snow also fall at Pinos Altos NM.

Dec. 25-27: An unusually prolonged period of strong winds with gusts around 40 to 50 mph each day.

January-March 2009: Very dry through the 3-month period with less than .10 inch of rain falling over most of the lower elevations.

Feb. 6-8: Warm weather occurs over the Borderland including El Paso, which sets or ties a record with respective high temperatures of 77, 79 and 79.

Feb 10: Storm drops 4 to 6 inches of snow around Cloudcroft while 4 inches fall at Lake Roberts and Pinos Altos. Strong winds also blow across the deserts with gusts to 60 mph in the El Paso vicinity.

Feb 23-28. Unusually prolonged period of warm weather with high temperatures from the mid 70's to lower 80s across the deserts. El Paso sets or ties a record from the 24th to the 26th by reaching 83 each day.

Mar 3-4: More warm temperatures with highs in the low to mid 80s across many desert locations. El Paso sets a record on the 3rd with a high of 85.

Mar 6-7: Windy each day with gusts near 50 mph.

Mar 26: Early spring storm brings high winds with gusts from 50 to 60 mph across much of the area. Blowing dust lowers visibilities to under a quarter mile around Hurley NM. 3 inches of snow also fall at Cloudcroft.

Mar 30: Early morning winds gust to 60 mph at El Paso.

April 8: Windy during the afternoon and overnight hours with gusts from 50 to 60 mph over much of the area.

April 10-11: Winds gust to near 50 mph as a few showers and isolated thunderstorms move across southern New Mexico and western Texas.

Floods Across the Borderland

During the summer of 2006 floods were especially destructive and widespread across western Texas and southern New Mexico as torrential rainfalls inundated much of the Borderland. Damage estimates were near 450 million dollars over the region with around 300 million in damage for the El Paso metropolitan area alone. Up to 30 inches of rain fell over portions of west El Paso in the summer of 2006 with extensive flooding and damage to homes and buildings. Major flooding also significantly damaged portions of Canutillo, Alamogordo, Hatch, Clint, the Silver City vicinity, and Sunland Park.

While southern New Mexico and western Texas have a dry or semi-arid climate with abundant sunshine most of the year, changes in the circulation pattern occur during the warm season which favors heavy rains and flooding. Typically in June or early July, the hot temperatures over southern California, Arizona and Nevada create an area of low pressure. This desert heat low pulls moisture northward from the Gulf of Mexico or Gulf of California. As a result the combination of moisture and warm temperatures creates an unstable air mass with the potential for showers and thunderstorms along with heavy rains over the southwestern United States.

Hatch NM suffered from severe flooding in August 2006.

Flooding in El Paso on August 1 2006.

Flooding at San Vicente NM summer 2006. (Jim Marshall)

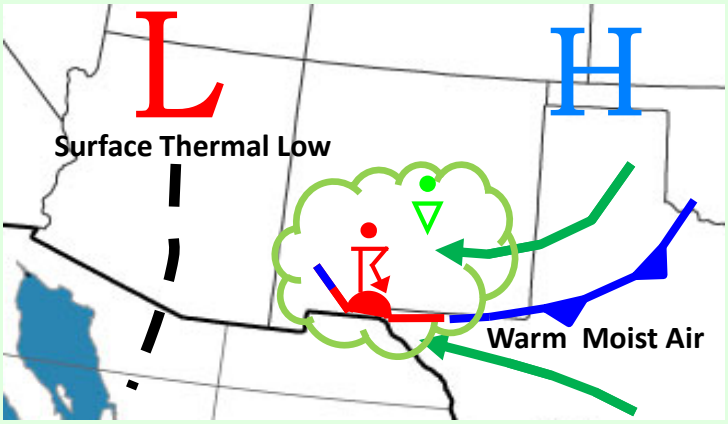
Ash Canyon experienced serious flooding near Truth or Consequences during July 2008.

In addition to a moist unstable air mass, flash flood weather patterns usually include a mechanism to lift the air such as slow moving or stationary fronts and/or surface or upper level troughs of low pressure. Slow moving showers and thunderstorms can also develop when moist air flows upward along mountain slopes, especially over the Sacramentos and the Gilas. Much of the heavy rains which flooded the El Paso area in 2006 were generated by a combination of low pressure in the upper atmosphere and moist air flowing over the Franklin Mountains. On August 19, 1978 up to 10 inches of rain fell over White Sands Missile Range, drowning 5 people, when a slow moving cold front, an upper level trough and the Organ Mountains all combined to lift moist unstable air within a very localized area.

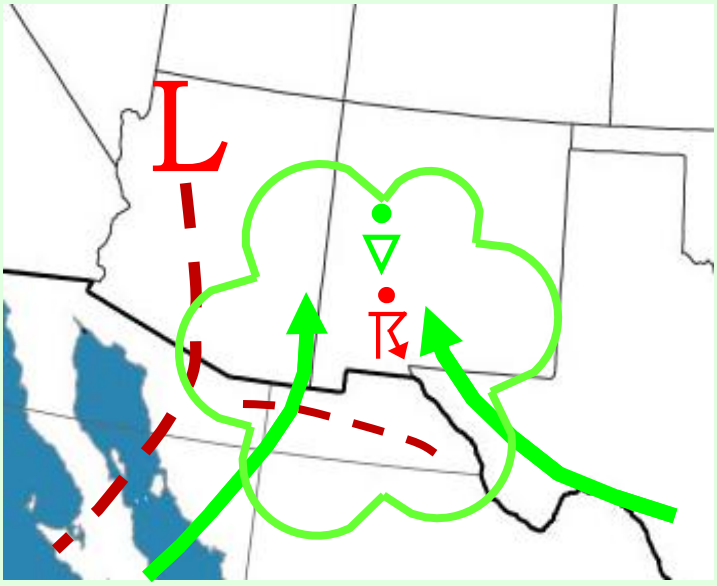
Another factor to remember is a given location can suffer from flooding even if it experiences no rain. The destructive floods which hit Alamogordo in July 2006 resulted from heavy rains falling on the mountains over 5 miles east of the city. In this case, storm runoff flowed down Marble Canyon and into the city, damaging numerous homes and businesses. Water also inundated much of Hatch NM in 2006 when waters breached the Las Placitas Arroyo and flooded the town. In 2006 high waters also broke a levee and caused mudslides at Clint TX.

Heavy rains associated from the remnants of hurricanes have flooded portions of the Borderland in recent years. In September 2006, Hurricane John brought up to 7 inches of rain to the El Paso vicinity. In July 2008, Hurricane Dolly's circulation center moved northward across El Paso into the Sacramento Mountains; Four to six inches of rain fell across a broad area flooding Ruidoso and surrounding areas, and portions of El Paso.

Flash floods are especially dangerous since they usually consist of torrential rainfalls forcing a rapid rise in water levels within a six-hour period. Most flash floods are caused by slow moving or stationary showers and thunderstorms, or multiple storms moving repeatedly over the same location. Canyons and mountains foothills are especially susceptible to flash flooding since the terrain can channel water runoff into localized areas causing arroyos and small streams to become raging torrents. The threat of flooding across western Texas and southern New Mexico will increase in the future as the population expands into flood prone areas, such as the base of mountain slopes, along arroyos and streams, and over low-lying regions.



A favorable weather pattern for flash floods over the Borderland includes warm moist unstable air from the east flowing along a slow moving surface front or over the mountains.



Floods often occur over southern New Mexico, western Texas and eastern Arizona when a deep low pressure system to the west pulls moist unstable air from the Gulf of Mexico and Gulf of California into the region. An upper-level wave or trough may also be moving into the region from the south or west.

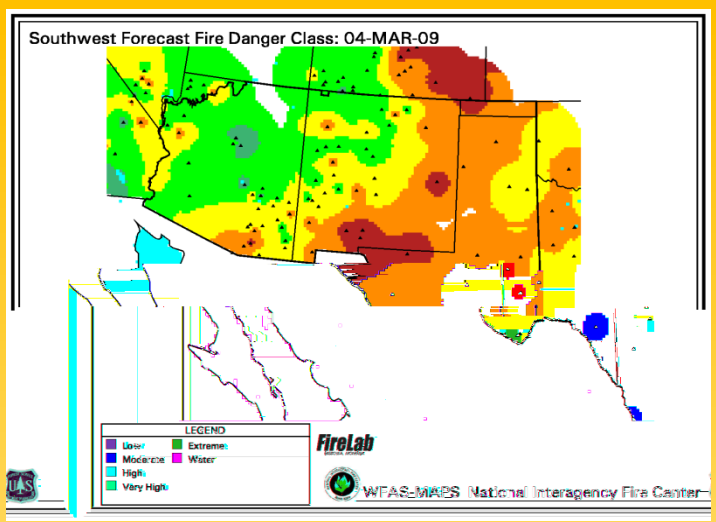
El Paso Fire Weather

From late winter and through the spring and early summer dry weather prevails across much of the southwestern United States, including southern New Mexico and western Texas. Temperatures also rapidly warm during this period with abundant sunshine and low humidity, typically from early March through the middle of June. For example, in the late winter and spring of 2002, El Paso TX went 109 consecutive days without measurable rainfall.

Weather plays a major role determining the severity of wild fires, especially across the southwest. During periods of warm dry weather with low relative humidity, the vegetation and other fuels become very dry and thus can easily ignite. The resultant fires may rapidly spread or increase into raging infernos. While careless human behavior causes many wild fires, often in the latter portions of spring dry thunderstorms produce little rainfall but occasional cloud-to-ground lightning strikes which also ignite fires. The high winds which frequently occur in spring also contribute to wild fire intensification and rapid spread. The fire weather danger often becomes especially elevated in late spring, as it was on May 21, 2008 when temperatures approached 100 degrees and the humidity fell to near 10 percent while winds gusted to 60 mph.

Because of the wild fire threat, the National Weather Service, in cooperation with other agencies such as the Forest Service, has an established Fire Weather Program which closely monitors the fire danger and issues fire weather forecasts across the country. The morning and early afternoon fire planning forecast provides critical information related to the wild fire potential including wind, humidity, cloud cover and precipitation. Such parameters as the Haines Index and mixing height measure the fire growth potential. Ventilation category determines the dispersal of smoke in a given area. Spot Weather Forecasts are special

A large wild fire buns over the Organ Mountains east of Las Cruces . (Chris Carney NOAA/NWS)



By early March 2009 very dry conditions bring extreme wild fire danger to the Borderland.

forecasts produced for specific locations at the request of agencies fighting an ongoing wild fire or conducting controlled burns to eradicate excess growth. Red Flag Warnings are issued when the fire danger is high and the relative humidity is expected to be below 15 percent with a wind speed of at least 20 mph.

Specially trained Incident Meteorologists are assigned to go on site to more serious or dangerous fires so to provide direct and possibly life-saving weather forecasts for fire fighting teams.

…the Voice of the

NATIONAL WEATHER SERVICE

NOAA Weather Radio All Hazards provides a source of weather information and hazardous weather details 24 hours a day across the United States. Broadcasts originate from individual National Weather Service Forecast Offices and are transmitted from antennas from specially selected locations.

NOAA Weather Radio's primary function is to alert the public about dangerous weather phenomena such as tornadoes, floods, severe thunderstorms and winter storms. Weather information will include the location and movement of hazardous weather in your vicinity along with protective actions people should take to avoid death or injury. Most weather radios are therefore equipped with alarm features such as audio tone alerts which are activated when the National Weather Service issues Weather Warnings .

In addition to broadcasting critical weather information, radio programming may also include other alerts concerning events such as Amber Alerts, toxic chemical incidents, wild fires which threaten the listening area, and local or national alerts deemed appropriate by emergency authorities.

It is strongly advised residents across New Mexico and western Texas obtain NOAA Weather Radios for their homes and places of employment. Radio receivers should also be located where large numbers of people are gathered such as schools, churches, hospitals, shopping malls, train stations, airports and sports facilities.

NOAA Weather radios are available at many retail stores, electronic outlets, department stores and even drug stores. For persons hiking, camping, travelling, or involved with other outdoor activities, pocket-sized battery-powered portable radios with alarm features can also be purchased.

NOAA Weather Radio Stations and Transmitters Across the Borderland

Transmitter Location	National Weather Service Office	Frequency (MHz)	Call Sign
El Paso TX	El Paso TX	162.475	WXK-25
El Paso TX Spanish	El Paso TX	162.550	WNG-652
Las Cruces NM	El Paso TX	162.400	WXL-91
Silver City NM	El Paso TX	162.450	WZ-251
Ruidoso NM	Albuquerque NM	162.550	WXJ-38
Roswell NM	Albuquerque NM	162.450	WWG-36
Albuquerque NM	Albuquerque NM	162.400	WXJ-34
Guadalupe Mountain TX	Midland TX	162.525	WZ-2503
Carlsbad NM	Midland TX	162.475	WWF-37
Artesia NM	Midland TX	162.425	WXN-24
Greer AZ	Tucson AZ	162.525	KXI-23
Safford AZ	Tucson AZ	162.550	KXI-24

CoCoRaHS Wants YOU !

During heavy rain situations, especially across the western United States, storms often dump torrential rainfalls on locations which do not have an official National Weather Service or related rain gage. For example, when the historic floods inundated much of the El Paso Texas area on August 1, 2006 the "official" rain amount for the day, as measured at the El Paso Airport, was 2.84 inches. However radar and volunteer observers indicated up to 10 inches of rain may have fallen over a localized section of west El Paso. Earlier, in the summer of 1997, 12 inches of rain fell over Ft Collins Colorado causing devastating floods. Later investigations revealed for this event as well, heaviest rains did not fall into the official gages where precipitation amounts can be more closely monitored.

Since heavy rains and floods are the deadliest form of stormy weather and cause much destruction, it is essential that more accurate rainfall measurements be obtained. In addition, detailed snowfall measurements are critical since information related to snow depth can determine river levels and the flood potential during periods of rapid melting. As a result of the Ft Collins floods, in 1998 Colorado state climatologist Nolan Doeskin in conjunction with Colorado State University developed a new volunteer observing network called CoCoRaHS. CoCoRaHS is an acronym for the Community Collaborative Rain, Hail and Snow Network. It is a unique non-profit community-based network of volunteers who, using rain gages set up in their back yards or places of employment, measure precipitation in their area and send the data to a national network through the internet.

Residents across the borderland are encouraged to join this worthwhile operation. In southern New Mexico the CoCoRaHS network is coordinated by New Mexico State University in Las Cruces while the College of Liberal Arts at the University of Texas in Austin directs the project for all of Texas including the El Paso area. To volunteer for, or to get more information about CoCoRaHS please go to the website http://www.cocorahs.org/.

The CoCoRaHS project was initiated after the devastating Ft Collins Colorado floods which occurred in 1997. (Office of Emergency Management)

Winter sunset over west El Paso. (Diane Green NOAA/NWS)

Cactus flower in bloom. (Diane Green NOAA/NWS)

Spotters…Please call the National Weather Service If You Observe:

Tornado or Funnel Cloud…Report Time, Location and Movement

Hail…1/2 Inch or Larger

Damaging Winds…Damage To Buildings, Motor Vehicles, Trees, Power Lines And Other Structures

Flash Flooding…Flooding Of Streets and Buildings , Or If Rivers, Streams And Arroyos Flood Or Overflow

Heavy Rains…1/2 Inch of Rain In Less Than 30 Minutes Or At Least 1 Inch Of Rain In Less Than 2 Hours

Blowing Dust…Whenever Blowing Dust Reduces The Visibility To Less Than 2 Miles.

Snow Amounts Greater Than An Inch