



# **SOUTHWEST WEATHER BULLETIN**

**Spring-Summer 2005 Edition**

**National Weather Service El Paso/Santa Teresa**

## **THUNDERSTORMS, HEAVY RAINS AND MOUNTAIN SNOWS BRING WILD AUTUMN AND WINTER WEATHER TO THE THE BORDERLAND**

After having a very wet summer, southern New Mexico and far western Texas continued to experience unusual amounts of rain and mountain snows through the autumn and winter months. This was caused by a persistent “split flow” circulation pattern over the western United States which included two jet streams across the northern and southern rocky mountains. As a result a series of low pressure systems moved across Baja and Arizona, pulling moisture northward into the borderland and producing one of the wettest winters on record. Another unusual aspect of the winter was the large number of thunderstorms which developed over the region, many of which produced hail.



On December 22-23, 2004, 12 inches of snow fell over Cloudcroft. (Photographed by Don Vanlandingham Cloudcroft.com),

### **Seasonal Weather Highlights**

October 3: Evening thunderstorms produce nickel-sized hail and heavy rains over south central Hudspeth County.

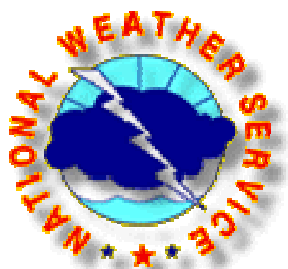
October 5: Severe thunderstorms again strike Hudspeth County during the evening with golf ball-sized hail at Dell City and quarter-sized

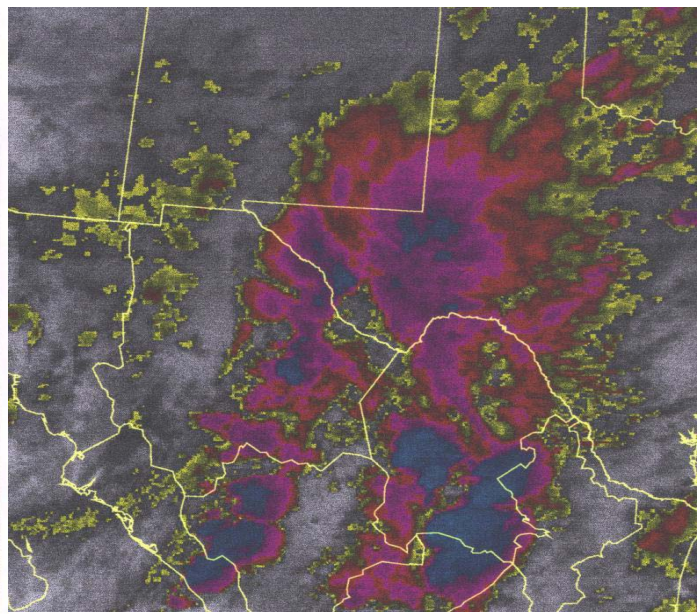
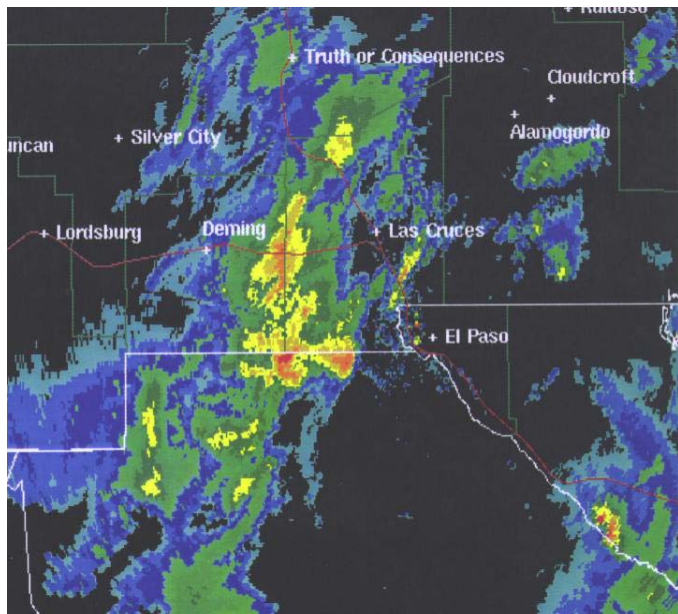
hail and 50 mph winds at Sierra Blanca. The large hail breaks windshields and damages roofs around the Dell City area. Radar also indicates up to 3 inches of rain falling over isolated areas between Ft. Hancock and Sierra Blanca.

October 6: Another round of severe thunderstorms moves across Hudspeth County with nickel-sized hail and heavy rains reported near the Salt Flats along Highway 62 during the late evening. ( continued on page 2)



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Radar (left) and infrared satellite images (right) for the late afternoon of November 14, 2005 show showers and isolated thunderstorms moving across southern New Mexico and western Texas.

### Weather Highlights Continued

**October 10:** Late evening thunderstorms produce minor flooding along Interstate 25 and Highway 70 in the Las Cruces area.

**October 13:** Strong cold front moves across the region with 4 inches of snow falling at Cloudcroft.

**November 1:** Winter storm brings mix of rain, sleet and snow to the El Paso area with 3 inches of snow at Cloudcroft.

**November 12-15:** A strong complex low pressure system moves slowly across northern Mexico and western Texas bringing widespread rains, isolated thunderstorms with hail and mountain snows across the Borderland. One to two inches of rain fall across much of El Paso and Hudspeth Counties in western Texas and also over portions of Dona Ana and Sierra Counties in New Mexico. In addition just over 2 inches of rain are reported in Luna

County at Columbus. Heavy snows also fall over the southern Sacramento Mountains with 12 inches of snow at Cloudcroft.

**November 22-23:** Heavy snows fall over southern Sacramento Mountains with 8 to 12 inches of snow falling around Cloudcroft.

**November 30:** The month ends as one of the wettest Novembers on record. 2.01 inches of rain fall at El Paso for the month making it the third wettest November for the city.

**December 5-6:** Winter storm brings 8-12 inches of snow to Cloudcroft with 6 inches falling over the Gilas at Pinos Altos. One to three inches of snow also fall around Silver City.

**December 22-23:** One to three inches of snow fall across the El Paso metropolitan area while another 12 inches of snow fall around Cloudcroft.

(Continued on Page 3)

# Weather Highlights Continued

January 2-4: One to two inches of rain fall over much of the region, especially across the Gilas where 2.5 inches of rain are reported at San Lorenzo. The rainfall and attendant snow melt causes the Gila River to overflow with flooding around Gila Hot Springs.

January 3: Unusually dense morning fog reduces visibilities to under a quarter mile from El Paso to Las Cruces and around Deming.

January 11: High temperature reaches 74 at El Paso to set a new record for this date.

February 4-5: Storm system brings 8 to 12 inch snowfalls around Cloudcroft with one-half to one inch rainfalls in the El Paso area.

February 10-12: Another storm brings 1.5 to 2.5 inch rainfalls to Grant County including the Gilas. The combination of rain and melting snows causes flooding along the Gila River, especially around Red Rock. Flooding also causes road closures from Pinos Altos to the Cliff Dwellings along Highway 15.

February 21-24: A slow moving low pressure system off the Baja coast produces unusually moist and unstable conditions for the winter season. As a result scattered showers and thunderstorms with hail move across the region each day with El Paso and Dona Ana Counties seeing most of the activity. The worst of the storms drops hail almost an inch in diameter over Las Cruces during the early afternoon of February 23 with hail up to an inch deep in a few areas.

February 24-25: Six to eight inches of snow fall around Cloudcroft.

February 28: February ends as one of the wettest on record for the area. El Paso's rainfall totals 1.92 inches setting a new record for the month. Other areas receiving heavy rain include Buckhorn with 5.43 inches, Caballo Dam with 4.59 inches, Ft. Bayard with 4.07 inches and Alamogordo with 3.03 inches.



**On January 27, 2005 dense morning fog covered the El Paso-Santa Teresa area. (Photographed by Joe Rogash)**



**During the late afternoon of March 6, 2005 this strong thunderstorm dropped a swath of hail across northern Dona Ana County. (Photographed by Joe Rogash)**

**March 6:** Scattered strong thunderstorms move across area with one storm producing dime-sized hail around Truth or Consequences. Hail accumulations of up to 4 inches along Interstate 25 result in several serious motor-vehicle accidents between Truth or Consequences and Las Cruces.

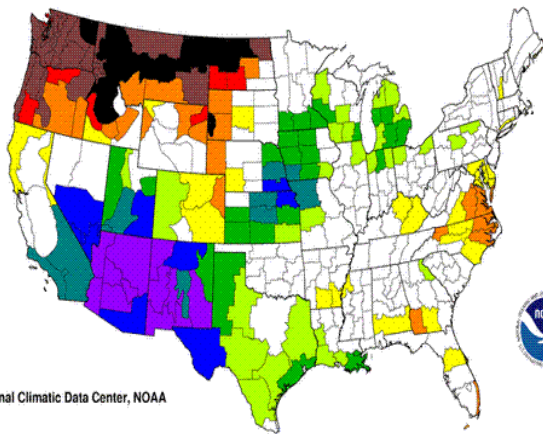
April 9-10: Windy across the borderland with gusts near 50 mph causing isolated areas of low visibilities from blowing dust.

# Record Winter Showers Bring Early Spring Flowers

For much of the southwestern United States the winter of 2004-2005 was one of heavy rainfalls. This was especially true for the state of New Mexico which experienced its wettest winter on record. The return of warmer drier weather in March and early April brought an abundance of plants and blooming flowers. The poppies growing over the Franklin Mountains (right) in west Texas were especially beautiful this season.  
( Photographed by Joe Rogash)



Standardized Precipitation Index  
One Month  
February 2005



National Climatic Data Center, NOAA



By April 2005 the Rio Grande was flowing at high levels due to the unusually heavy autumn and winter rains and mountain snows. ( Photographed by Charlotte Rogash)

February 2005 was one of the wettest on record for the southwestern United States

exceptionally dry	extremely dry	severely dry	moderately dry	abnormally dry	near normal	abnormally moist	moderately moist	very moist	extremely moist	exceptionally moist
-2.00 and below	-1.99 to -1.60	-1.59 to -1.30	-1.29 to -0.80	-0.79 to -0.51	-0.50 to +0.50	+0.51 to +0.79	+0.80 to +1.29	+1.30 to +1.59	+1.60 to +1.99	+2.00 and above

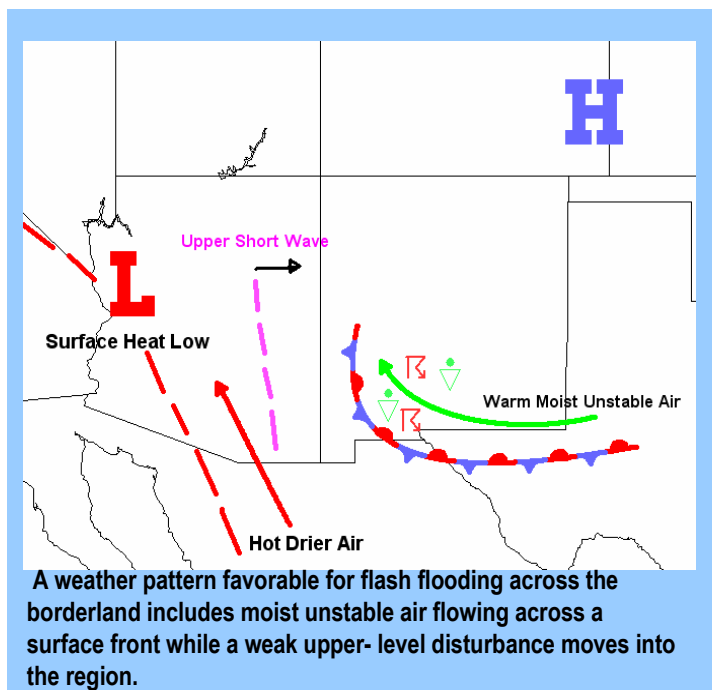
# FLOODS...THE MOST DANGEROUS WEATHER

While tornadoes are considered the most spectacular and therefore the most threatening weather phenomena, floods and flash floods are the number 1 cause of deaths associated with thunderstorms. Each year an average of 140 people die from floods which is more than twice the fatality rate from tornadoes. This is related in part to people's failure to realize and respect the great power of moving water.

Flash floods are particularly dangerous because they are caused by a rapid or extreme rise in water within a 6 hour period. They usually develop in an environment with warm moist air in the lower levels with relatively cooler air aloft. In addition slow moving fronts and surface or upper- level troughs can further enhance the potential for heavy rains. In most instances flash floods are caused by either slow moving thunderstorms or by clusters of showers and thunderstorms moving repeatedly over the same area.

While southern New Mexico and far western Texas have a semi-arid or dry climate, during the late spring and especially during the summer the region can experience thunderstorms with torrential rains and flooding. Usually during the month of June the hot temperatures over the southwestern United States produce a large area of low pressure covering western Arizona, southern California and western Mexico. This "heat low" generates southerly and southeasterly winds which transport moist unstable air from the Gulf of Mexico or Gulf of California into the borderland.

The heaviest rainfalls over southern New Mexico and far western Texas often occur near a slow moving cold front from the east which becomes almost stationary near the Mexico border to the south and along the Gilas to the west. Slow moving short wave



troughs aloft can further enhance the potential for heavy rains, especially over mountain areas where the air is lifted by the elevated terrain. Most flash floods over the borderland occur from the middle of June to late August between 3 PM and midnight. Nighttime floods are especially dangerous since drivers or hikers may be unable to see the rising waters or flooded roadways.

# Flash Flood Safety...Protecting Yourself From the Danger

## Before the Floods

Find out what areas are subject to flooding in your area. This can include nearby streams and arroyos, low lying streets and underpasses and drainage ditches.

Develop an emergency escape plan so you have a safe route of travel during a flood situation.

Listen to NOAA Weather Radio or local television and radio stations for the latest weather reports and forecasts. Remember a **FLOOD WATCH** means weather conditions are favorable for flooding within the watch area.



Remember to keep an eye on the sky for threatening weather during potential flood situations. Stay alert for developing thunderstorms. If thunderstorms persist in your area for a prolonged period of time, flooding may be imminent.

## Once Heavy Rains Begin...

Continue to monitor NOAA Weather Radio or local television and radio stations for weather updates. A **FLOOD WARNING** means flooding is imminent or is already occurring in the area.

Stay alert for rising waters and evacuate to safe or higher ground if flooding threatens. Remember floods can destroy homes and buildings so do not stay in your house when flooding is likely in your immediate vicinity.

When traveling **NEVER DRIVE THROUGH FLOODED ROADS OR HIGHWAYS.** Most flood deaths occur when motor vehicles are swept away by water. If the road ahead is flooded turn around immediately.



If hiking or camping near rising streams or arroyos walk to higher ground immediately. Even small streams or dried out riverbeds can become raging torrents of water, especially near mountain slopes.

Never attempt to walk through flowing floodwaters since swiftly moving water even a foot deep can sweep you away.

# Tornadoes

Although most tornado outbreaks and most strong and violent tornadoes occur over the central and southeastern United States, isolated tornadoes occasionally develop over south central and southwestern New Mexico and far western Texas. Tornadoes over the borderland are most likely from May through October during the afternoon and early evening hours, usually in advance of an upper level disturbance and along a surface front or dry line.

A large majority of the region's tornadoes are considered weak with winds less 100 mph and widths less than 100 yards. Nevertheless atmospheric conditions occasionally develop which are favorable for larger and more destructive tornadoes. Thus persons should monitor NOAA Weather Radio or the local broadcast media for weather information whenever strong thunderstorms are in the area.

Persons traveling should also remember that during the spring and early summer, the potential for more destructive and deadly tornadoes increases greatly as one travels east of the southern Rocky Mountains.



In May, 1970 a tornado killed 26 people as it destroyed portions of Lubbock Texas. Another violent tornado struck the west Texas town of Saragosa in May, 1987, causing 30 fatalities and severe property damage. In May 1991, and again in June 1992, strong tornadoes caused serious damage and injuries around Carlsbad, N.M. Finally, in April 2004 a strong tornado damaged buildings near Roswell, N.M.

## ***LIGHTNING...*** ***Natures Fireworks***

Rising and descending air currents in thunderstorms combined with the presence of both ice and water particles results in the buildup and discharge of electrical energy and the generation of lightning.

Cloud-to-ground lightning is rather frequent across New Mexico and western Texas from late spring through the summer although it can occur anytime of the year. In addition to causing deaths and injuries lightning strikes have started numerous forest and wildfires across the southwest, including rather large burns over the Gilas and the Sacramento Mountains. Lightning has also caused widespread power outages over El Paso, Las Cruces and other area cities and towns.



Lightning strikes the city of El Paso during a June 2004 thunderstorm. (Photographed by Mike Hardiman)

# Thunderstorm Downbursts



**A wet microburst destroyed this mobile home in Montana Vista Texas in August 1995.**

Thunderstorm downbursts are actually straight-line winds produced by rapidly sinking air which can spread out violently after it strikes the ground. Within downbursts there may be even more concentrated swaths of high winds called microbursts which may blow in excess of 100 mph. Thus downbursts and especially microbursts can be as potentially destructive as a strong tornado..

Downbursts are almost always produced when the atmosphere is unstable with a layer of moist air above or beneath a mass of much drier air. When showers or thunderstorms develop within such an environment, rain falling through the dry air evaporates, causing the air to become much cooler. Since cooler air is heavier than relatively warm air, it will sink rapidly to the ground where it can produce damaging wind gusts.

A wet downburst or microburst occurs when the moist air is in the lower atmospheric levels and the strong winds blow in conjunction with moderate to sometimes heavy rains along with occasional to frequent lightning. In contrast, dry downbursts will develop when the dry air covers the lowest levels and the moist air is above. Consequently the strong winds will occur with little or no rainfall and even possibly no lightning and thunder.

Downbursts are somewhat frequent across New Mexico and western Texas, primarily from late spring through the summer. In addition to producing damage to buildings and other property, downbursts are especially dangerous to aviation and have caused major aircraft accidents with loss of life.



# Hail

Thunderstorms occasionally produce large hail over an inch in diameter across southern New Mexico and western Texas, especially in the spring and early autumn. On May 21, 1991 hail the size of golf balls heavily damaged cars and buildings across El Paso and destroyed crops over surrounding areas, resulting in almost 7 million dollars worth of damage. And on April 3, 2004 thunderstorms dropped tennis ball- sized hail over Cornudas, Texas and golf ball-sized hail over Chaparral, New Mexico causing extensive damage to buildings and motor vehicles.



On April 3, 2004 a major hailstorm moved across Hudspeth County Texas near Cornudas , damaging motor vehicles. (Photographed by Mike Hardiman)

## ***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**