



# **Southwest Weather Bulletin**

**Autumn/Winter 2007-2008 Edition**

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

## **Tornadoes Floods and Hail Strike the Borderland**

Stormy weather conditions develop early this season as a series of low pressure systems move into the southwestern United States during the normally dry spring. The weather pattern generates strong and even severe thunderstorms in the late spring with a large and long-lived tornado rotating through White Sands Missile Range.

Very moist air continues to flow into southern New Mexico and western Texas through the summer monsoon and early autumn period causing heavy rains, flooding, large hail and damaging winds.

### **Seasonal Weather Highlights**

May 2: Severe weather erupts during the afternoon as a tornado develops over southeastern Dona Ana County and continues moving to the northeast across White Sands Missile Range. The vortex is on the ground at least 45 minutes and reaches a maximum width of at least 300 yards. Fortunately the tornado stays in the open desert and causes no damage or injuries.



During the afternoon of May 2 2007 this large tornado is on the ground at least 45 minutes as it moves across White Sands Missile Range. (Photographed by Miriam Rodriguez)

Widespread hail up to the size of golf balls falls across the El Paso metropolitan area smashing windshields over portions of the city. Over 2 inches of rain also cause localized flooding around the area.

**(continued on page 2)**



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## Weather Highlights Continued

May 7-8: Late evening and early morning thunderstorms drop golf ball-size hail at Horizon City, Texas and hail the size of half dollars falls over east El Paso breaking windshields. Heavy rains also flood portions of downtown El Paso with a roof on a house collapsing due to the torrential downpours.

May 8: Late afternoon and early evening thunderstorms with heavy rains move across Dona Ana County and flood an apartment complex in Hatch. Heavy rains also fall over the Las Cruces vicinity.

May 14: Thunderstorms drop heavy rain and small hail around the El Paso and Las Cruces areas.

May 15: A cluster of thunderstorms moves across southern New Mexico including the Silver City, Truth or Consequences and Las Cruces areas dropping heavy rains and causing minor flooding. A severe thunderstorm with wind gusts near 60 mph and heavy rains causes minor damage in Deming.

May 16: Evening thunderstorms hit extreme southwestern New Mexico with downburst winds near 80 mph and quarter-size hail damaging buildings near Cloverdale in Hidalgo County. Hail the size of golf balls also falls near Rodeo.

May 17: In New Mexico hail 1.5 inches in diameter falls around Mimbres in Grant County accumulating up to a foot deep. Heavy rains also fall over Columbus.



**Tornado moving across White Sands Missile Range on May 2 2007. (Jeff Passner)**



**Heavy rains on May 2 cause flooding over a few areas of El Paso. (Rudy Gutierrez El Paso Times)**

May 18: Thunderstorms drop quarter-size hail along with an inch of rain near Silver City and flood a garage.

May 19: Nickel-size hail and heavy rains fall over Highway 70 in Otero County.

May 25: Late afternoon thunderstorms produce 1.25 inch diameter hail and an inch of rain in the Silver City area. **(continued on page 3)**



This thunderstorm produces heavy rains and hail over the Las Cruces area on June 28. (Jeff Passner)



July 10 thunderstorm winds damage this carport in Las Cruces. ( Anna Bishop)

## **Spring-Summer 2007 Weather Highlights Continued**

**May 25 (continued):** During the early evening hail the size of golf balls falls on Interstate 10 near Deming with nickel-size hail over Hurley. Penny-size hail is reported at Las Cruces while heavy rains occur over much of Dona Ana County.

**June 3:** Golf ball-size hail falls near Weed in the Sacramento Mountains of Otero County.

**June 5:** Hot, dry and windy conditions across the deserts with afternoon temperatures in the 90's, wind gusts approaching 50 mph and the humidity around 10 percent.

**June 9:** Severe thunderstorms bring half dollar-size hail and 60 mph wind gusts near Deming causing damage to a few homes.

**June 20:** Severe thunderstorms strike the region during the afternoon. Western Texas is hit hardest as golf ball-size hail falls over El Paso while high winds blow a porch off of a house. In Hudspeth County a small tornado is reported near Sierra Blanca and microburst winds damage a home in Dell City. In New Mexico nickel-size hail occurs near Radium Springs and heavy rains fall across the area.

**June 24:** Hail the size of ping pong balls along with heavy rains fall near Cloudcroft.

**June 25:** Small tornado develops near Cloudcroft with the vortex on the ground 8 minutes. Thunderstorms also produce wind gusts of 60 mph near Dell City. (continued on page 4)



**On July 29 heavy rains flood portions of El Paso.  
(Rudy Gutierrez El Paso Times)**

## **Floods and Severe Thunderstorms Strike the Borderland**

June 28: Widespread afternoon and early evening thunderstorms produce hail and heavy rains over southern New Mexico including the Las Cruces area. Golf ball-size hail is observed at Poverty Creek in Sierra County.

July 9: Nickel-size hail and heavy rains are reported around Cloudcroft.

July 10: Thunderstorms with high winds and heavy rains move across the region. Winds damage a carport in Las Cruces while 60 mph wind gusts are measured at Deming Airport.

July 11: Heavy rains fall over much of the area. Almost 2 inches of rain fall in an hour over Silver City causing street flooding. To the east in Otero County, roads are flooded around Alamogordo, Dog Canyon and Boles Acres.



**Heavy rains again flood areas of El Paso on August 2. (Rudy Gutierrez El Paso Times)**

July 12: Afternoon and early evening thunderstorms soak the Borderland. The Silver City area is again deluged with almost 2 inches of rain falling for the second consecutive day. In Dona Ana County torrential rains fall over Anthony with 30 homes flooded. (Continued on page 5)



**This tornado touches down near Tyrone, New Mexico on September 6.  
(Steve Loeffler)**

## **Severe Thunderstorms and Heavy Rains Continue Into Early Autumn**

July 13-14: Evening and early morning thunderstorms with torrential downpours flood portions of El Paso. Streets and some homes are flooded after a canal overflows with several water rescues required. Wind gusts to 62 mph are also measured.

July 20: Severe thunderstorms bring wind gusts to 60 mph over El Paso with signs blown down. Heavy rains also fall over much of the Borderland with minor flooding occurring in Hidalgo County.

July 27: Very heavy downpours fall across New Mexico and western Texas with 4 inches of rain measured near Hachita in Hidalgo County.

July 28: Late afternoon thunderstorms cause street flooding across portions of El Paso while in southwestern New Mexico heavy rains again fall in the Hachita vicinity causing flooding over Highways 9 and 81.

July 29: Severe thunderstorms drop quarter-size hail over Fabens, Texas with streets flooded and vehicles stranded around the University of Texas in El Paso. In southern New Mexico, 2.5 inches of rain fall at Bayard resulting in floods which damage businesses and close roads.

July 30: Heavy rains fall in southern Luna County forcing the closure of Highway 9 near Columbus.

July 31-August 1: More widespread heavy rains fall across southern New Mexico and western Texas causing street flooding in El Paso and Alamogordo.

August 2: Late morning and early afternoon thunderstorms deluge portions of the El Paso metropolitan area with 2 inches of rain falling in 30 minutes at Socorro. (Continued on page 6)



**A small tornado touches down outside of Las Cruces with this thunderstorm on September 9. (Jeff Passner)**



**This thunderstorm brings major damage to El Paso when it produces tennis ball-size hail, high winds and heavy rains across portions of the city on September 28. (Lance Tripoli/ NWS)**

## **Weather Highlights Continued**

**August 2 (continued):** Major flooding occurs with a number of water rescues. Water is up to 3 feet deep with several buildings flooded. The rains also cause rockslides along the Franklin Mountains blocking roads.

Further west 1-2 inches of rain cause minor flooding around Silver City.

**August 6:** Severe thunderstorms strike El Paso County with high winds blowing off a roof and pushing a tree onto a truck in Fabens.

In southwestern New Mexico, Grant County is hardest hit with almost 2 inches of rain falling at Buckhorn and street flooding around Hurley. In addition the high school in Cliff is flooded while over an inch of rain falls in 30 minutes near Silver City.

**August 22:** Evening thunderstorms with heavy rains move across the region. Flooding closes roads over Grant County with streets flooded around Deming.

**August 23:** Almost 2 inches of rain fall within an hour over Cloudcroft .

**August 24:** Afternoon torrential rains flood portions of downtown El Paso while in Hudspeth County heavy rains close Interstate 10 near Ft Hancock. To the north in Otero County, severe thunderstorms drop quarter-size hail at Weed.

**September 9:** In Sierra Blanca, Texas, 2.5 inches of rain fall washing out roads and forcing arroyos to overflow. In southwestern New Mexico, 2 inches of rain fall in 30 minutes at Animas. In Luna County, quarter-size hail damages lights near Akela Flats and heavy rains flood portions of Interstate 10. Near Hillsboro, Highway 27 floods with vehicles stranded while roads flood and culverts wash out around Mimbres.

**September 10:** Thunderstorms produce locally torrential downpours resulting in over 2 inches of rain falling in an hour across portions of Santa Teresa and northwestern El Paso.

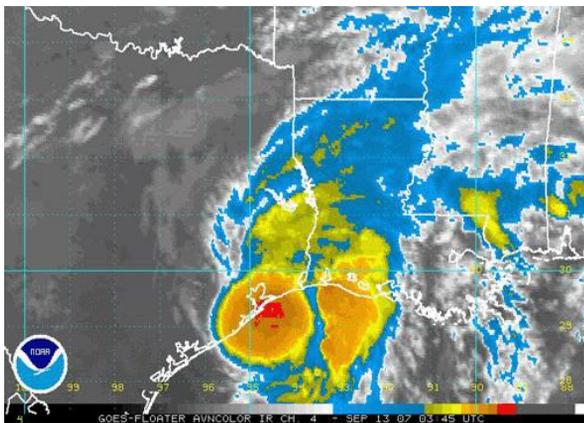
**September 28:** Major hail storm strikes El Paso with hail almost the size of tennis balls smashing windows and shattering windshields on numerous motor vehicles. Widespread damage to roofs is also reported. In addition winds gust to 65 mph and blow a roof off a house. The storms also produce heavy rains with street flooding and road closures.



On May 4, 2007 a destructive F5 tornado with a width of over 1.5 miles strikes Greensburg Kansas killing 12 people and virtually destroying the town. Photographs by Marty Logan (left) and Greg Henshall/FEMA (right).



From August 16-20, 2007 the remnants of Hurricane Erin move northward from the Gulf of Mexico across Texas and into Oklahoma killing 12 people and causing massive flooding.

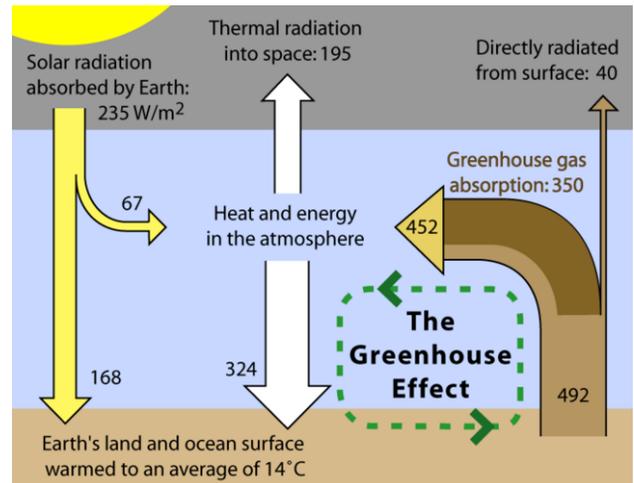


On September 13 Hurricane Humberto (left) rapidly develops and moves into the Beaumont-Port Arthur Texas area producing almost 10 inches of rain and flooding. (photograph by Jerry Jordan)

# Global Warming and Climate Change

David J. Novlan Climate Focal Point National Weather Service El Paso

Global warming is the term referencing the increase in the Earth's average air and ocean temperatures since temperature records were begun around 1850. The global average air temperature near the surface rose almost .7 degrees C during the last decade due partly to the increase in man-made gas concentrations which enhance the greenhouse effect. Natural phenomena such as variations in solar radiation also contributed to the warming effect. These conclusions have been endorsed by many scientific societies and academies of sciences.

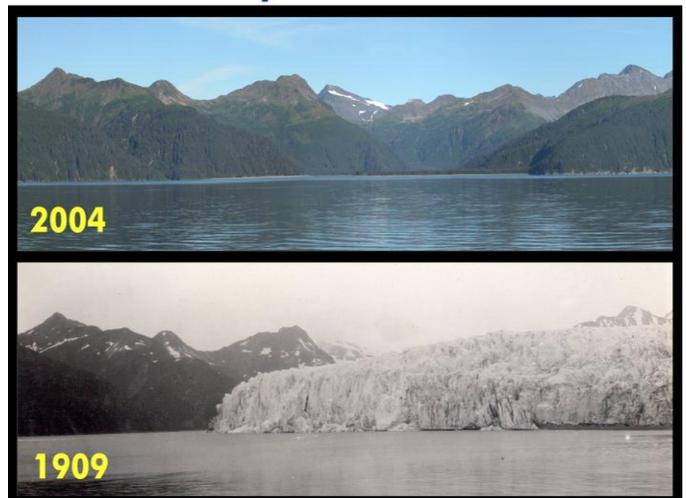


Schematic diagram of the Greenhouse Effect.  
(Created by Robert A. Rohde for Global Warming Art)

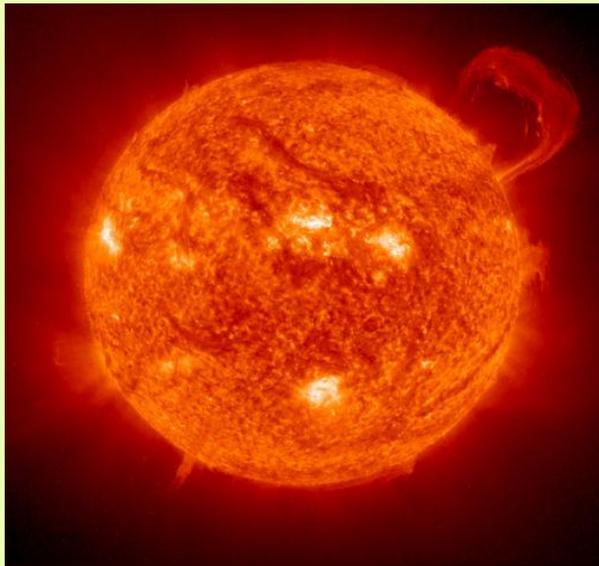
It should be noted that it is water vapor and not carbon dioxide that is the most copious and important greenhouse gas. Complex interactions which occur between water vapor and other gases such as carbon dioxide, methane, and ozone may also have an effect on temperature changes and climate modification.

The increase in global temperatures is expected to cause many changes including sea level rises, increased variability and intensity of weather events and changes in the amount and pattern of precipitation including increased drought in some areas with rainfall much heavier than normal in other locations. (continued on page 9)

## McCarty Glacier - Alaska



Comparison photographs showing the melting of McCarty Glacier in Alaska. (Top photograph by Bruce F. Molnia USGS, bottom by Ulysses Sherman Grant, USGS)



**Variations in solar radiation may also influence global warming and climate changes (NASA).**

Other effects of global warming include changes in agricultural yields, glacier melting and retreats, species extinctions, and increases in the range of disease vectors. Destructive and deadly weather phenomena such as hurricanes, severe thunderstorms, tornadoes and floods may initially develop through normal processes but then tap into the extra thermal and latent heat energy now available from global warming to become more intense. Latest data also show Arctic ice has shrunk to the lowest levels on record possibly opening a Northwest Passage shipping route.

NOAA's official position on climate change notes that the last decade of the 20<sup>th</sup> century and the beginning of the 21<sup>st</sup> have been the warmest in the instrumental temperature record. The 10 warmest years in the 20<sup>th</sup> century occurred in the last 15 years of the century. Human activity is adding more carbon dioxide to the atmosphere and the current level of CO<sub>2</sub> is the highest in the past 400,000 years. Thus the current warming trend may very well continue through the 21<sup>st</sup> century.



**The Golden Toad is believed to have become extinct due to climate changes associated with global warming. (U.S. Fish and Wildlife)**

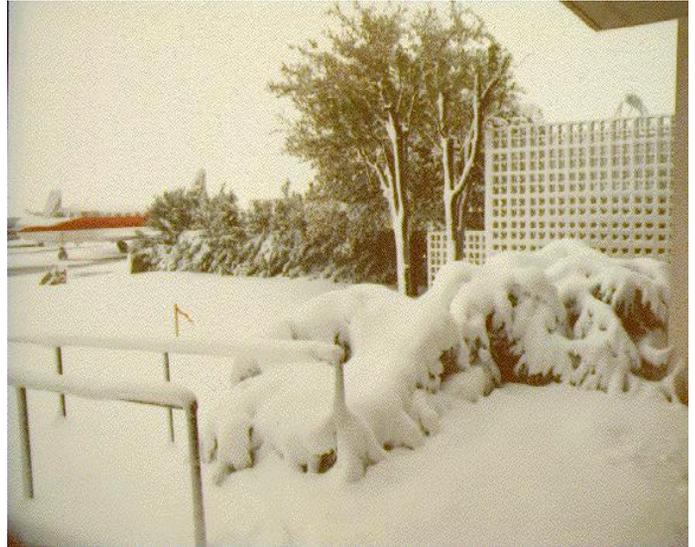
There remains a lot of uncertainty however about how much of the current warming is due to anthropogenic activities and how much and how fast the warming will take place in the coming years. Since heating is likely the result of both natural forces and the activities of mankind, the process is very complex with many meteorological and climactic surprises possible in the foreseeable future.

# Winter Weather Hazards Across the Borderland

## Heavy Snow

Major snowstorms can strike southern New Mexico and far western Texas any time from late autumn through early spring. El Paso Texas was paralyzed when almost two feet of snow fell on the city on December 13-14, 1987. A surprise spring snowstorm also dumped 17 inches of snow on El Paso from April 5-7, 1983.

The greatest threat of snow is across the mountains, especially the Sacramento and the Gilas. Cloudcroft, New Mexico, which is almost 9000 feet above sea level, averages 84 inches of snow each year. This is more than the annual snow amounts for such far northern locations as Burlington Vermont, Duluth Minnesota and Nome Alaska !



**During December 13-14, 1987 two feet of snow fell on El Paso virtually paralyzing the city.**

## Ice Storms

During certain types of weather patterns, warm moist air from the Gulf of Mexico or the Pacific will be lifted by a shallow but very cold air mass covering the surface. When this happens, rain initially falls but freezes as it approaches or makes contact with the ground and other surfaces such as trees, wires and buildings. This causes a rapid accumulation of ice which creates extremely dangerous driving conditions and forces trees, power lines and even roofs to collapse. Although ice storms are more common in the central and eastern United States, they occasionally occur over southern New Mexico and western Texas, especially east of the Rockies. (Continued on page 11)



## Dense Fog

Fog is simply clouds that are covering the ground. During the late autumn, winter and early spring easterly winds may push moist air from the Gulf of Mexico into New Mexico and western Texas where it is further lifted over the slopes of regional mountains. As the air is lifted it cools and the water vapor condenses to form dense fog. Thus fog is most common along the eastern slopes of regional mountains.

Under certain conditions dense fog develops over the lowlands and valleys. When rain or melting snow wets the ground, it moistens the air at low levels. If winds are light and skies are clear at night, the moist air cools more rapidly resulting in fog formation before sunrise.



**Dense fog over the Santa Teresa, New Mexico. (Joe Rogash NOAA/NWS)**

## Blowing Dust

During the late autumn and winter but especially in the spring strong low pressure systems develop north of the Borderland and bring high winds and blowing sand and dust to southern New Mexico and western Texas. Hazardous driving conditions often result from the low visibilities which may be reduced to less than a hundred yards, especially along Interstate 10 between El Paso and Las Cruces and further west around Deming and Lordsburg. Over the past 10 years the dust storms have caused a number of collisions with loss of life.



**Dust storm over Santa Teresa and western El Paso. (Joe Rogash NOAA/NWS)**

### Winter Weather Safety

1. Before traveling or beginning other outdoor activities **ALWAYS** obtain the latest weather forecasts from NOAA Weather Radio or local television and radio stations.
2. Avoid driving or hiking in areas of heavier snow or ice and sleet.
3. When traveling or hiking **ALWAYS** bring along warm clothing including heavy jackets, gloves and boots. During the cold season, winter storms can strike suddenly and temperatures can fall rapidly, especially over the mountains.
4. When heavy snow or ice storms are forecasted, have available such items as extra food and water, first aid and medical supplies, flashlights and extra batteries, and a battery powered radio for emergency information.

# Vanishing Deserts

After near record rainfalls in 2006 much of southern New Mexico and far western Texas again experiences unusually wet weather during the winter and spring of 2007. This was followed by heavy rainfalls through the summer monsoon and into early autumn. Many desert areas therefore experience further abundant plant growth. Dense vegetation now covers widespread areas which consisted of mostly sand and a few shrubs or cactus only 5 years ago.



Charlotte Rogash



Frank Kielnecker NOAA/NWS



Joe Rogash 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**