

Weather Hazards and Hazard Climatology

Extreme Events in New Mexico

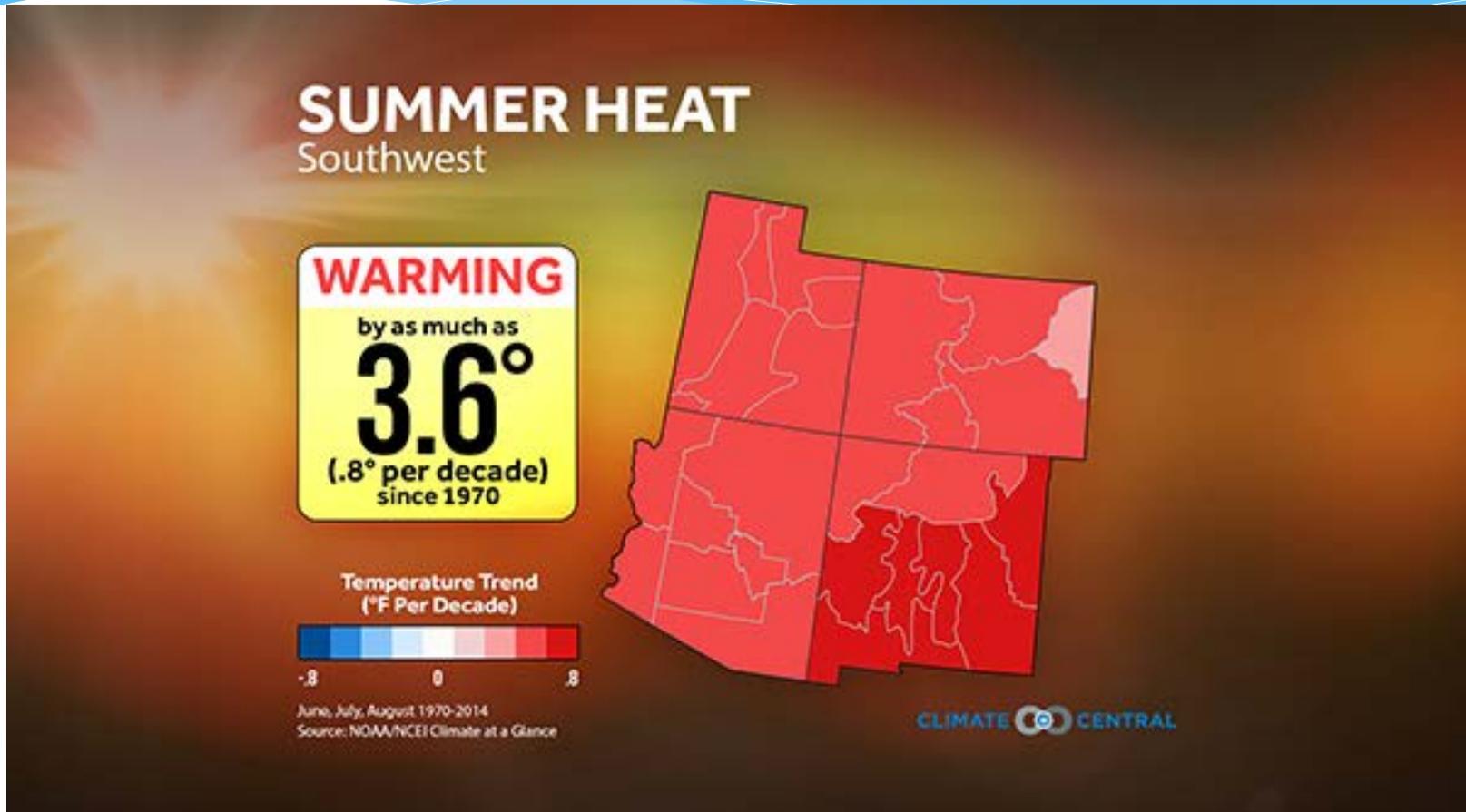
What extreme weather events have you experienced?
What can you tell us about them?

What do we mean “Extreme Events?”

- Extreme Heat
- El Niño events
- Winter Weather
- Large Fires
- Monsoon Rains and Flooding
- Drought

- The Last Drop

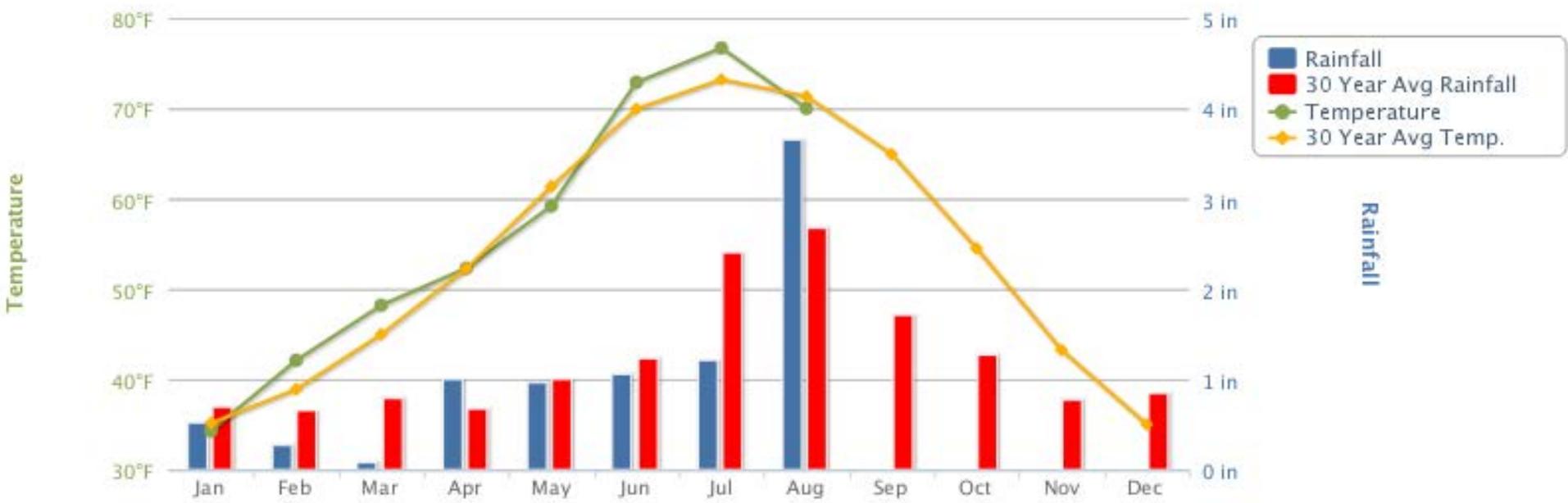
Extreme Heat



http://statesatrisk.org/uploads/general/2015SummerTempTrends_Southwest_sm.jpg

Average Monthly Temperature and Rainfall

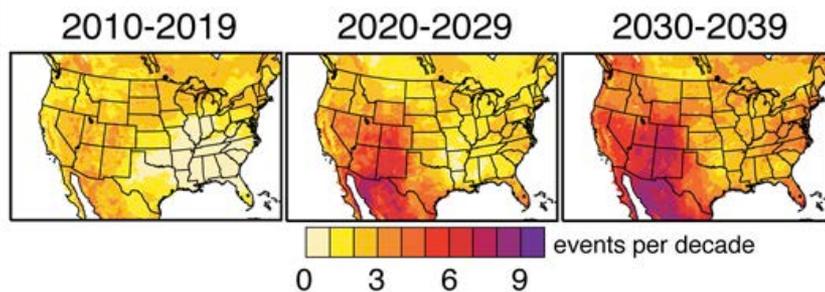
Year = 2016 State = NM



SCIPP (www.southernclimate.org)

Those most at risk include people without access to air conditioning, the chronically ill, elderly, very young, socially isolated and disabled. The number of extreme heat events is only going to increase with climate change.

Number of Extremely Hot Seasons Per Decade



By 2039, most of the U.S. could experience at least four seasons equally as intense as the hottest season ever recorded from 1951-1999, according to Stanford University climate scientists. In most of Utah, Colorado, Arizona and New Mexico, the number of extremely hot seasons could be as high as seven.

NOAA's National Weather Service

Heat Index

Temperature (°F)

	80	82	84	86	88	90	92	94	96	98	100	102	104	106	108	110
40	80	81	83	85	88	91	94	97	101	105	109	114	119	124	130	136
45	80	82	84	87	89	93	96	100	104	109	114	119	124	130	137	
50	81	83	85	88	91	95	99	103	108	113	118	124	131	137		
55	81	84	86	89	93	97	101	106	112	117	124	130	137			
60	82	84	88	91	95	100	105	110	116	123	129	137				
65	82	85	89	93	98	103	108	114	121	128	136					
70	83	86	90	95	100	105	112	119	126	134						
75	84	88	92	97	103	109	116	124	132							
80	84	89	94	100	106	113	121	129								
85	85	90	96	102	110	117	126	135								
90	86	91	98	105	113	122	131									
95	86	93	100	108	117	127										
100	87	95	103	112	121	132										

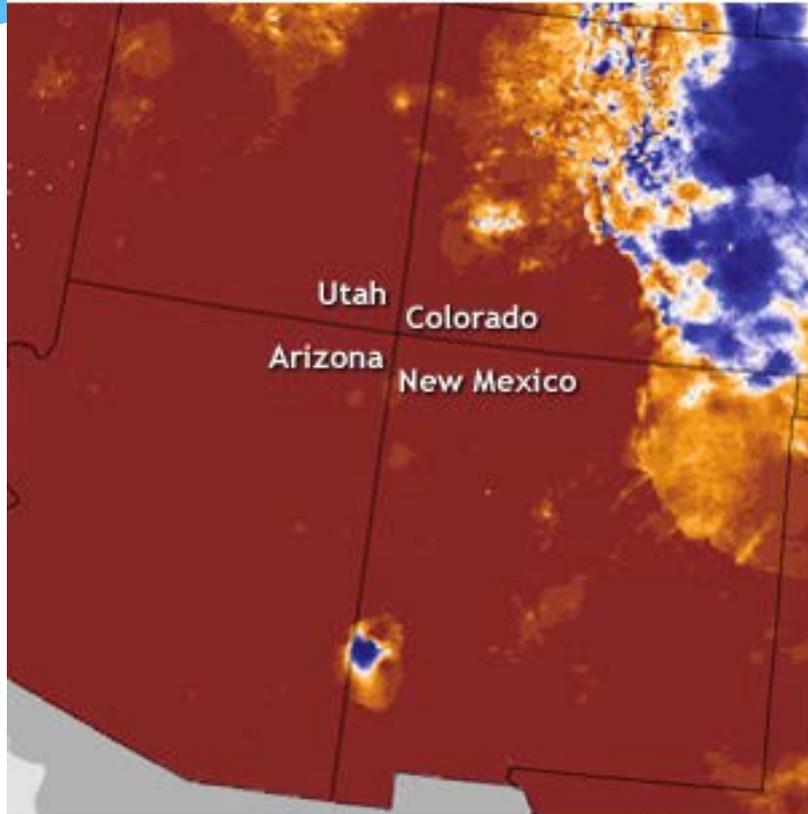
Likelihood of Heat Disorders with Prolonged Exposure or Strenuous Activity

- Caution
- Extreme Caution
- Danger
- Extreme Danger

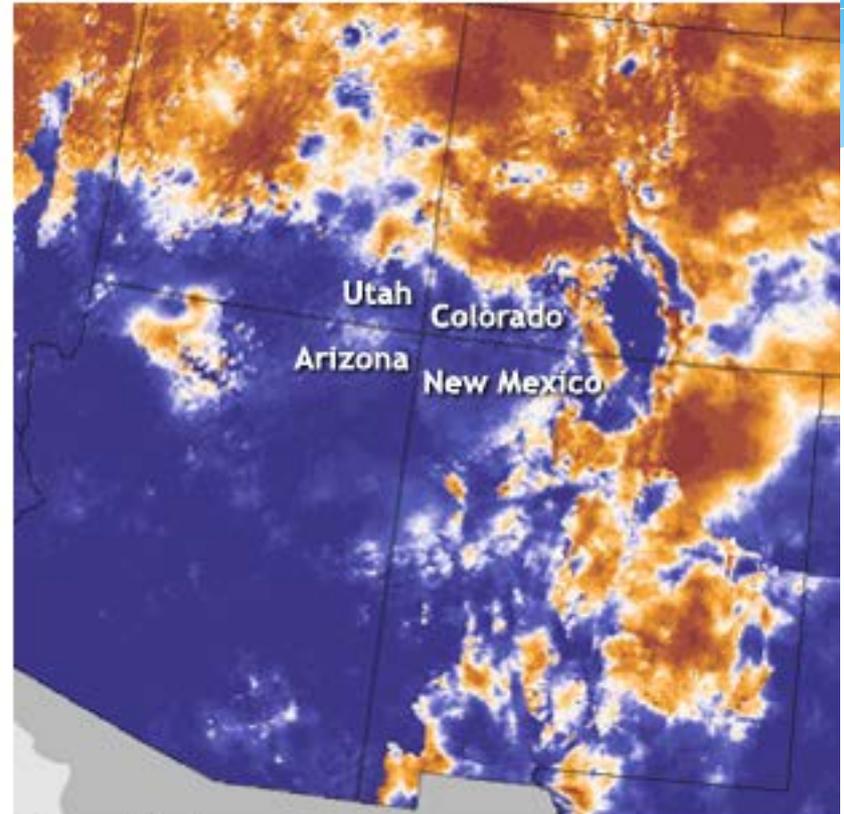
Heat index- A measure of the apparent temperature the human body experiences due to high humidity and lack of cooling by evaporation.

El Niño (and La Niña) Events

January 2011 (La Niña winter)



January 2010 (El Niño winter)



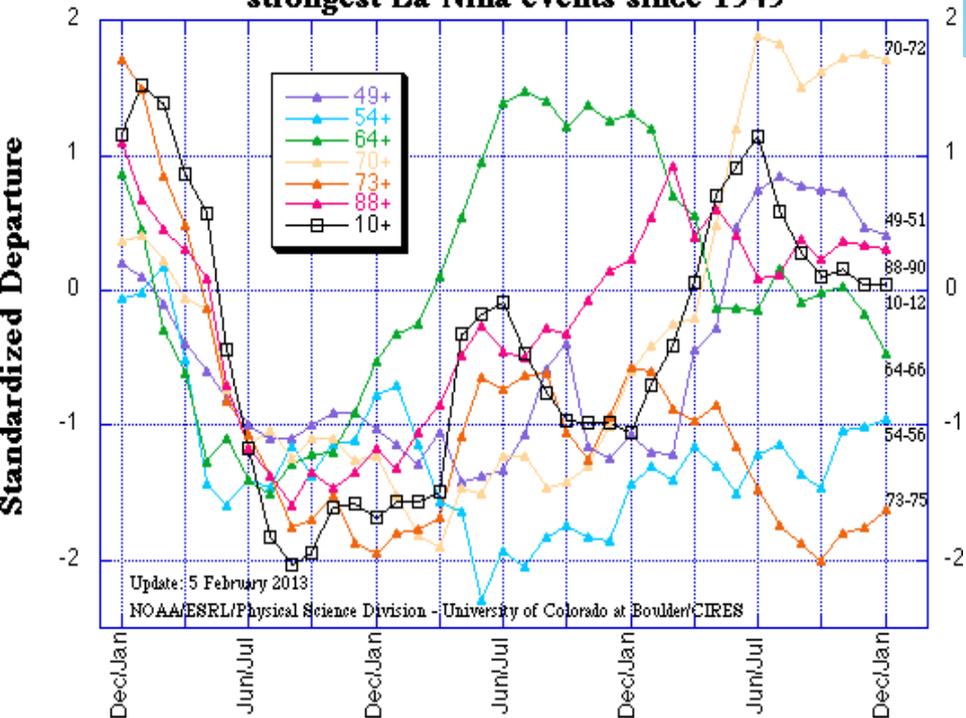
Percent normal precipitation



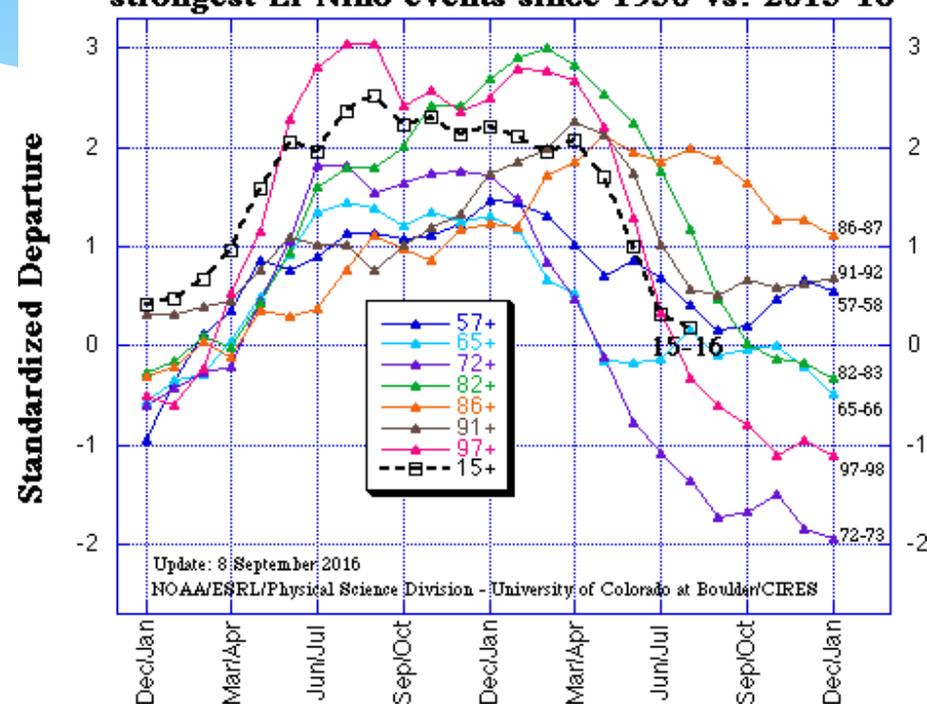
<https://www.climate.gov/news-features/event-tracker/influence-el-niño-and-la-niña-southwest-rainfall>

Recent Events

Multivariate ENSO Index (MEI) for the seven strongest La Niña events since 1949



Multivariate ENSO Index (MEI) for the seven strongest El Niño events since 1950 vs. 2015-16

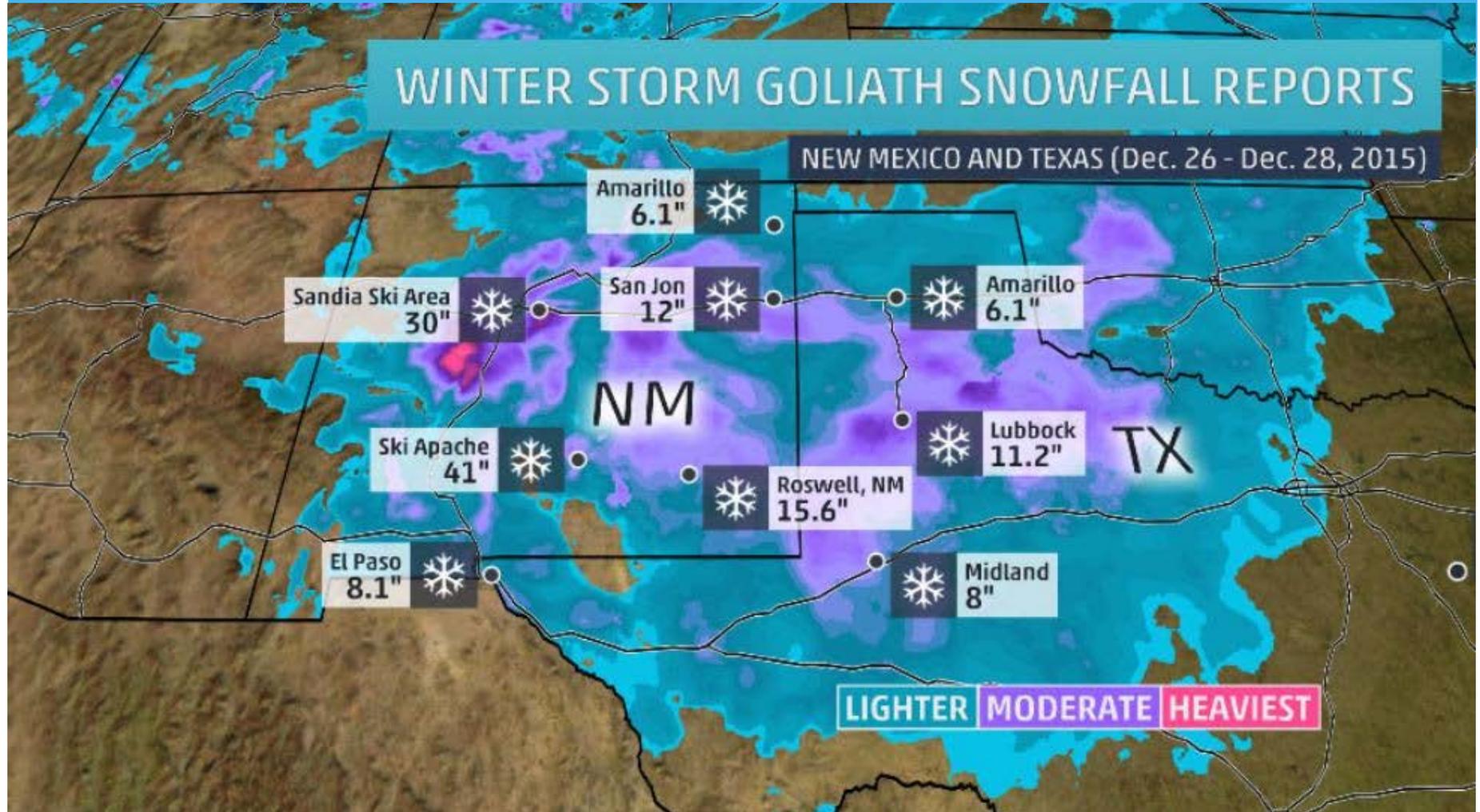


<http://www.esrl.noaa.gov/psd/enso/mei/>

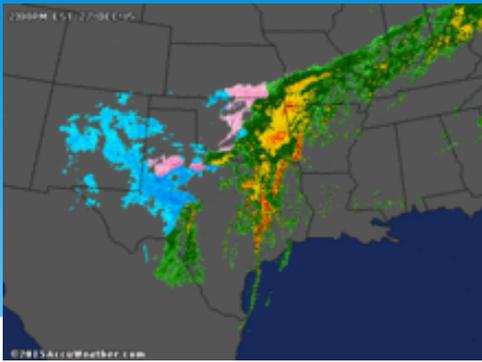
Winter Weather

WINTER STORM GOLIATH SNOWFALL REPORTS

NEW MEXICO AND TEXAS (Dec. 26 - Dec. 28, 2015)



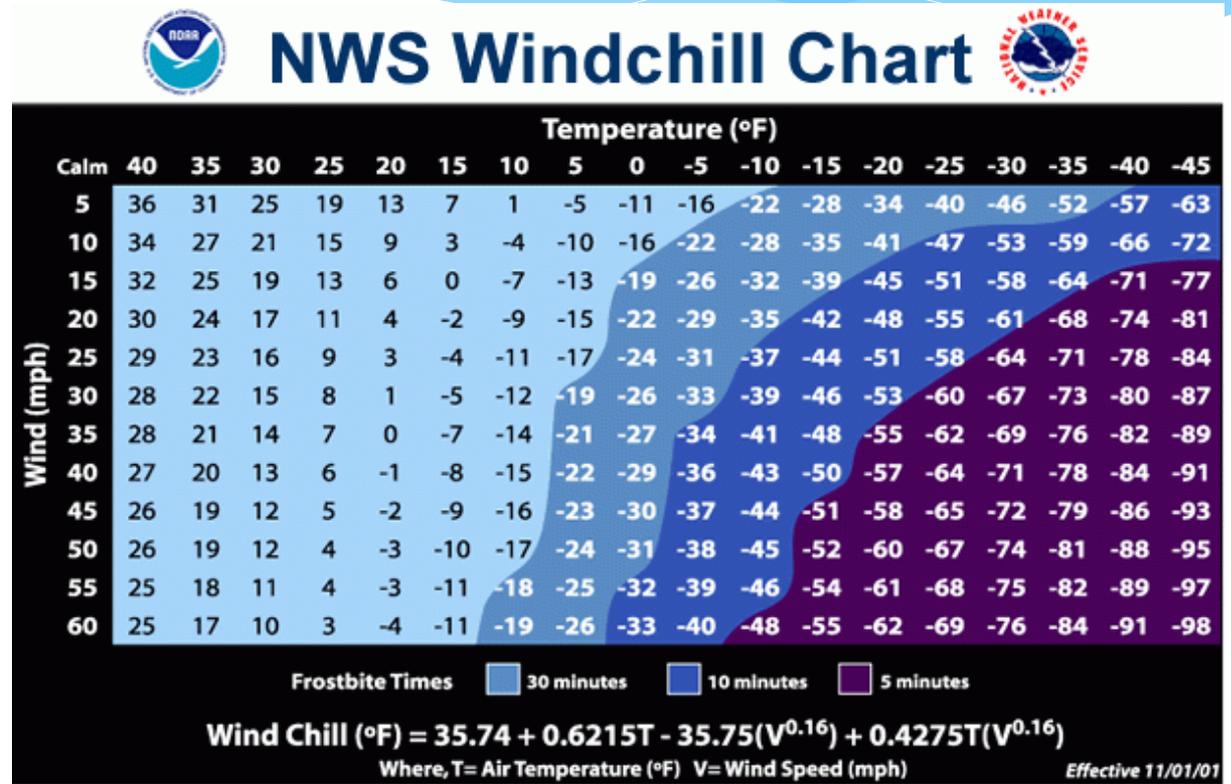
<https://weather.com/forecast/national/news/winter-storm-goliath-forecast-snow-blizzard>



Winter weather can cause disruption to travel and damage to infrastructure due to snow or ice and wind. Changing precipitation patterns will bring new challenges (more rain, less snow). Winds also cause a tremendous decrease in perceived temperature, called wind chill, that speeds up frostbite.

As mentioned earlier, changes in precipitation are predicted with increased air temperatures.

Less snow means less snow pack, resulting in reduced river and stream flow in the spring. More winter precipitation will be sleet and rain, rather than snow. However, those snowstorms that do form could become more intense.



Large Fires

Wildfires can lead to devastating loss of life and property, but are part of the natural ecosystem of large parts of the southwest.



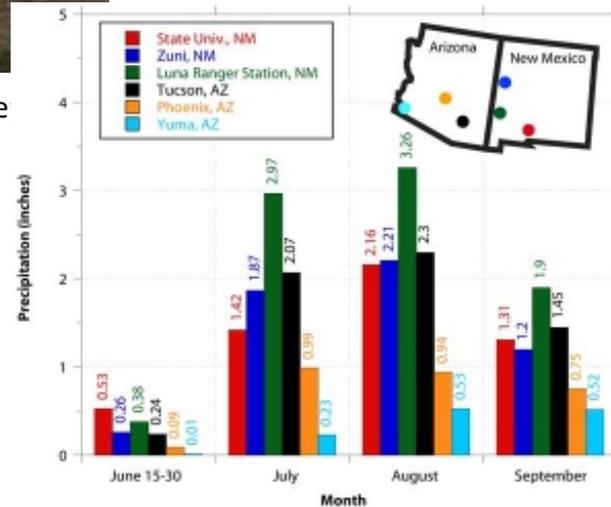
<https://www.env.nm.gov/swqib/Wildfire/images/Photo1-LittleBear2012.jpg>

Improper forest management combined with increasing air temperatures and prolonged drought have made large fires a more frequent occurrence.

Monsoon Rains



<http://www.weather.gov/abq/?n=premonsoondust>

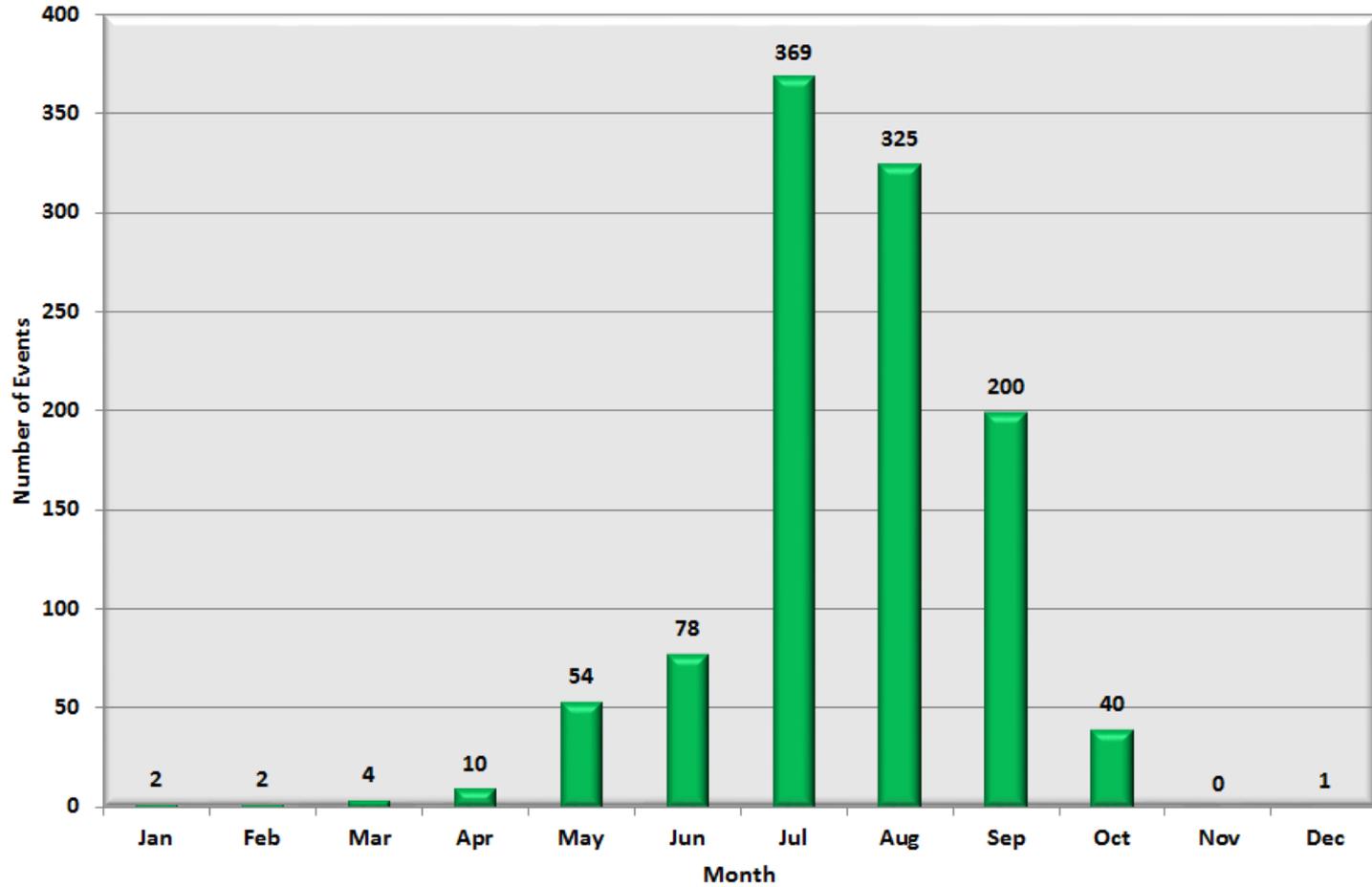


Zack Guido, CLIMAS, The University of Arizona

Monsoon flooding is related to seasonal rainfall and soil conditions. Summer heat over the land creates a low pressure front that pulls in atmospheric moisture from the ocean. Dry soils are less able to retain the resulting rainfall, causing floods.

Warmer summers will mean stronger (though less frequent) monsoon events.

NM Flash Flood Events by Month
Storm Data (1993-2015)

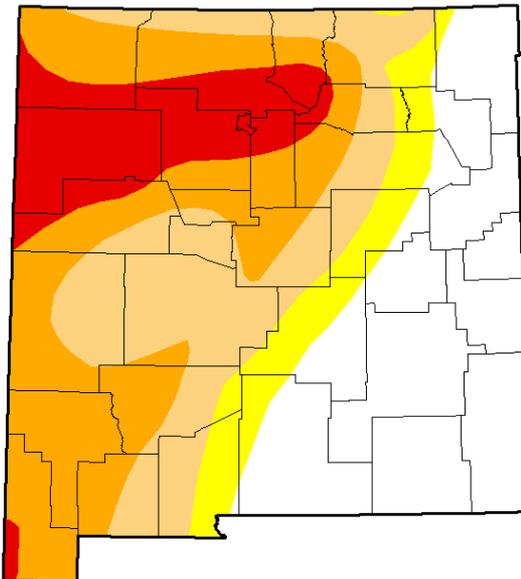


<http://www.weather.gov/abq/svrwxclimo>

Drought

A normal and recurrent feature of climate, which consists of a deficiency in precipitation over an extended period of time.

U.S. Drought Monitor New Mexico



November 23, 2004
(Released Thursday, Nov. 25, 2004)
Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	31.28	68.72	60.22	38.41	12.93	0.00
Last Week 11/16/2004	31.28	68.72	60.22	38.41	12.93	0.00
3 Months Ago 9/24/2004	17.12	82.88	68.30	50.56	7.72	0.00
Start of Calendar Year 1/23/2003	0.00	100.00	100.00	100.00	79.35	22.87
Start of Water Year 9/28/2004	17.79	82.21	67.33	50.56	7.70	0.00
One Year Ago 11/25/2003	0.00	100.00	100.00	93.64	66.84	11.57

Intensity:



The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Author:
Candace Tankersley
NOAA/NESDIS/NCDC



<http://droughtmonitor.unl.edu/>

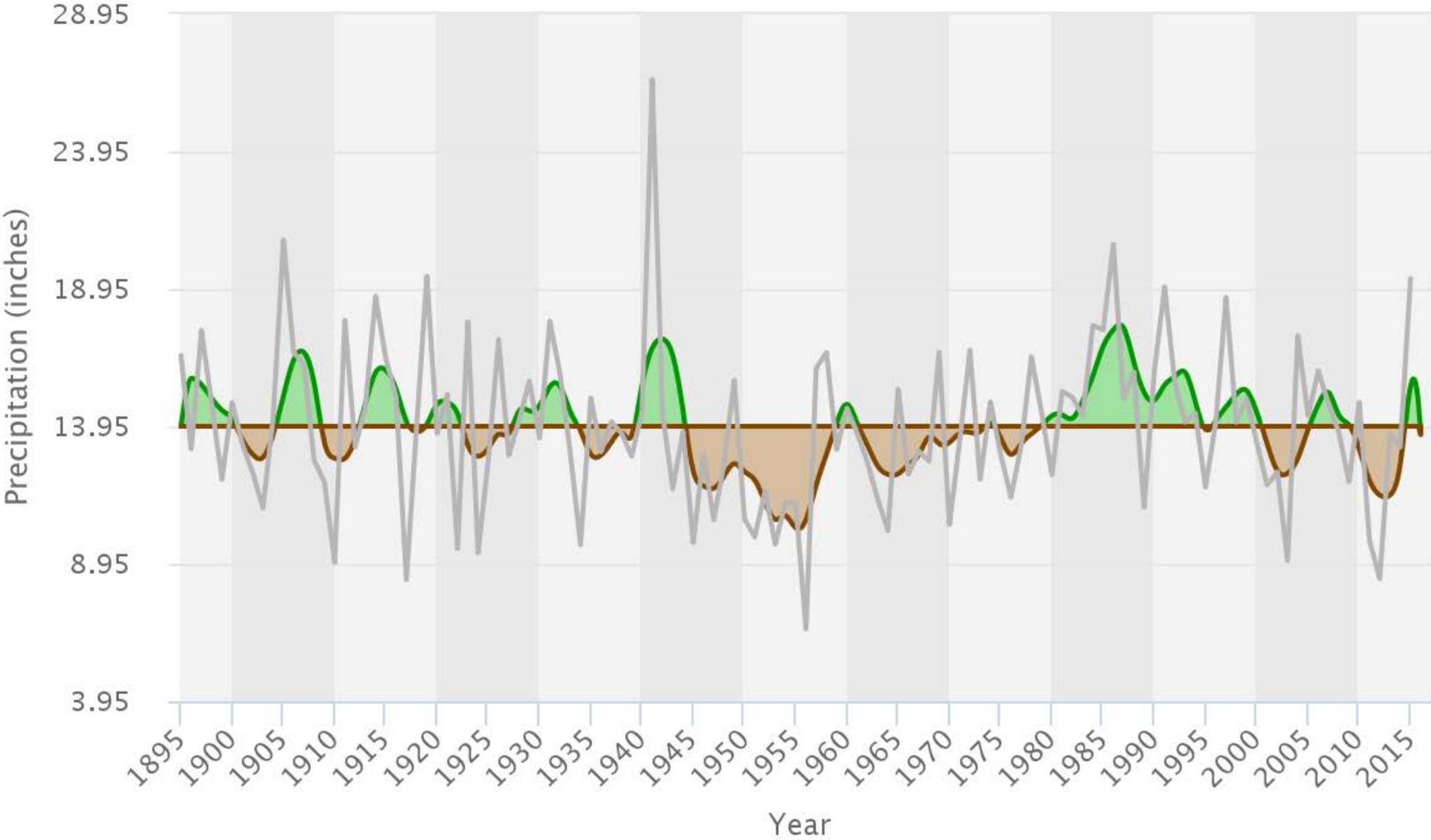
Droughts in New Mexico can be severe, lasting for years and covering large expanses of the state.

In the early 2000s large portions of the state were under the designation D3-D4, which means extreme to exceptional drought conditions.



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Climate Trends – State: NM, Season: Annual



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The Last Drop

What happens when droughts become more prolonged and severe?
When water reservoirs run dry?