

2015 NNSS Climate Summary

Persistent high pressure over the West resulted in a warm dry start to 2015. This was a continuation of the pattern that has resulted in drought conditions in the area since 2011. January through April were mostly dry with a limited number of “cold season” weather systems affecting the region. El Niño developed in the Pacific and was declared to have started at the end of March. The atmospheric response began to be noticed in May when a prolonged period of unsettled weather occurred. The month was also the first since August 2014 to record below average temperatures. June began on the cool side but quickly turned hot when strong high pressure developed over the region. “Cool” weather returned for most of July. August and September were warm and dry while October set records for precipitation. November and December were unusually cold and a little drier than normal.

Precipitation was near average average for the NNSS with all locations receiving at least five inches for the year. The highest annual total was 13.69" at Rainer Mesa and the lowest 5.39" at Yucca Mountain. The greatest 24-hour total was 3.50" at Mid Valley. There was an abbreviated but active monsoon season that provided some areas with significant precipitation from late June through mid-August. Most sites received over half of their annual precipitation in October.

Temperatures were above average for the year as a whole. Only a few outbreaks of cold air affected the region from January to March. The coldest temperature of the year, 3°F, was observed on the morning of December 27th at Schooner Crater. On the flip side, summer highs were typical but arrived a little early in mid-June with a prolonged period of above average heat. The hottest readings of the year were recorded from the 19th thru 27th of June. Desert Rock Airport and Meda 50 in the Armargosa Valley recorded the highest temperatures of the year, 109°F.

The following are the significant weather events experienced during 2015.

After a warm and dry January and February, a brief shift in the weather pattern occurred in March as several Pacific systems impacted the area with significant precipitation and below average temperatures. The system on the 2nd was particularly potent bringing widespread precipitation and snow to elevations above 5000 feet. Valley locations received from .25 to .75 of an inch of rain while the upper elevations received up to a foot of snow. This was the most significant snowfall since the beginning of December 2014.

May usually is a time when temperatures climb toward summer values and little precipitation is recorded on the NNSS. This May was quite the opposite. Most of the month's weather was influenced by a persistent trough of low pressure over the western U.S. which allowed several areas of low pressure to traverse the region. This pattern led to the development of scattered thunderstorms which produced a large range in precipitation totals on the NNSS. The higher terrain in the northern areas received the most precipitation with Schooner Crater measuring the highest total, 3.19". Measurable precipitation was recorded there on eight straight days, from the 22nd through the 29th. This is something that is rarely observed on the NNSS even during the winter rainy season. Temperatures were generally below seasonal values except near the end of the month.

Around the middle of June, the weather changed from spring to summer when a strong ridge of high pressure began to develop and took control of the weather over the Southwest. Temperatures quickly climbed to above normal values with these conditions persisting through the end of the month. Many sites at the lower elevations recorded high temperatures above 100° for a long period of time. For example, Desert Rock Airport recorded high temperatures of 100° or higher for 18 consecutive days, from the 13th to the 30th. By the end of the month, the ridge was centered to the north of the NNSS

which produced easterly flow across the region. This resulted in an increase in middle and upper level moisture and marked the arrival of the summer monsoon.

A trough of low pressure remained off the coast through the end of July and suppressed the upper-level ridge to the southeast. This pattern resulted in a mainly dry southwest flow over the area but also served to keep afternoon high temperatures several degrees below average. During this time, Hurricane Dolores developed off the coast of Mexico. The west coast trough helped to turn Dolores to the north and, on the 19th, a greatly diminished system was located off the southern California coast. Tropical moisture spread northward over the southwestern U.S. generating a widespread precipitation event on the NNSS. All locations received measureable rain with Mercury and Desert Rock Airport recording the most with over one half inch. Dry southwest flow returned from the 21st through 30th but July ended with another Pacific system moving into California drawing up moisture from the south which produced afternoon thunderstorms on the 31st.

October began with a trough of low pressure entering the West Coast. The base of the trough pinched off to form a cut-off low that was located off the southern California coast on the 4th. The low slowly moved inland through the 6th and brought abundant moisture northward which set the stage for the first of two heavy rain events that impacted the NNSS. Numerous showers and thunderstorms brought locally heavy rain during this period with most locations receiving 1-3" of rain.

The low was east of the area by the 7th but was not finished with the NNSS. The low made a broad clockwise loop over Mexico during the next seven days and ended up off the southern California coast again by the 15th. Although the low had weakened, it was able to once again bring significant moisture northward from Mexico. The low was drawn northeastward by a trough which moved inland over the West Coast and interacted with the subtropical moisture in place to initiate one of the most significant precipitation events ever observed on the NNSS. Early on the morning of the 18th a line of slow moving thunderstorms developed. Rain rates in excess of an inch per hour were measured and in some instances persisted for nearly three hours. As a result, widespread flash flooding occurred in Areas 5, 6, 14, 25 and 26 causing damage to roadways and "filling" the dry lakes in Areas 5 and 6. The most significant totals from the 18th were 3.50" at Mid Valley, 3.43" at Jackass Flats, and 3.14" at Port Gaston.

<u>Station</u>	<u>Highest (°F)</u>	<u>Date</u>	<u>Lowest (°F)</u>	<u>Date</u>	<u>Precipitation (in.)</u>
Mercury	105	6/20	23	12/27	6.09
Desert Rock Airport	109	6/20	21	12/29	6.39
Well 5B	107	6/27	11	1/2	5.69
Rainier Mesa	88	6/27	7	12/26	13.69
Yucca Dry Lake	103	6/26	14	12/28	6.74

James Wood