OCTOBER 2021 WEATHER SUMMARY
FOR THE CENTRAL CALIFORNIA INTERIOR

By Brian Ochs, Climate Services Focal Point
Colin McKellar, Assistant Climate Services Focal Point
WFO San Joaquin Valley-Hanford

This month ended with cooler than normal temperatures and above average precipitation. The first cold storm of the season arrived late on the 7th and brought rain and high elevation snow to the Sierra Nevada. Another system arrived on the 11th that caused widespread strong and gusty winds with blowing dust. A more significant, moisture laden, storm arrived on the night of the 24th and brought copious amounts of precipitation until the evening of the 25th. This was the wettest storm that occurred during the month of October in quite some time, or since at least 2009. Afterwards, morning and nighttime fog that was dense at times became an almost daily occurrence until the end of the month in the San Joaquin Valley. Unlike the previous month, no triple-digit heat was reported in our forecast area in October 2021, though not at all unusual in October.

Table 1
October 2021 Summary Statistics
NWS Hanford, CA ASOS Sites

Location	Monthly Average Temp (deg F)	Departure from Average (deg F)	Temperature Rank	Total Monthly Precipi-tation (inches)	Departure from Normal (inches)	Precipitation Rank
Bakersfield	62.8	-2.1	46th coolest	0.94	+0.66	9th highest
Fresno	65.1	-1.6	66th coolest	1.27	+0.71	18th highest
Hanford	63.0	-2.2	34th coolest	1.10	+0.64	9th highest
Madera	62.6	-2.2	28th coolest	0.57	+0.13	33rd highest
Merced	62.8	-1.3	51st coolest	1.73	+1.09	4th highest

Warmer than normal daytime temperatures prevailed until the 5th. Highs reached into the 90's at the warmest locations in the San Joaquin valley and Kern County desert. Dry conditions prevailed, while gradually rising humidity occurred during the 4th and 5th. Unfortunately, the KNP Complex and Windy Fires continued to burn and produce a large amount of smoke that pushed into the San Joaquin Valley and affected populations throughout much of this region with unhealthy air quality at times.

On the 6th and 7th, temperatures began to lower towards seasonal averages. By the night of the 7th, the first cool season storm brought below normal temperatures and precipitation to the region. Rain and mountain snow mainly began after midnight on the 8th. Some locations received little or no precipitation, especially south of Fresno County. However, there was a line of heavier showers from just southwest of Fresno to North Fork that produced up to one inch of rain in about three to four hours during the morning of the 8th. The heaviest rainfall amounts were around North Fork, other nearby Sierra Nevada foothill communities, and the southeast side of Clovis; Fresno reported 0.40 inch with this storm. Snow flurries fell at elevations as low as 6,000 feet. Otherwise, measurable snow (or one to three inches) accumulated at 7,000 feet and above, such as at Huntington Lake to the northeast of Fresno.

Relatively cool weather persisted on the 9th and through the next several days. On the 11th, there was a strong low pressure system that tracked over the Great Basin and provided strong, gusty winds to much of the Central Valley, West Side Hills, and through the passes leading into the Mojave Desert in eastern Kern County. Gusts of 40 to 50 mph were reported throughout the San Joaquin Valley and West Side Hills on the 11th; these winds brought blowing dust and low visibility. Visibility was reduced to near zero at times during the afternoon at some locations in the San Joaquin Valley. Gusty winds persisted in the West Side Hills and along the west side of the Central Valley until the 12th. As for eastern Kern County, gusts around 80 mph were reported in the mountains northeast of Tehachapi and towards Mojave, while a gust over 100 mph was reported to the west of Ridgecrest, or just west of Highway 395 (Indian Wells Canyon). In addition, this system brought additional light snow showers to the Sierra Nevada down to just below 7,000 feet. On the 12th, most locations reported lighter winds by the afternoon with cooler than average daytime temperatures. Bakersfield even tied a record low maximum temperature on the 12th with a high of only 67 degrees, which also occurred on this date in 2008. Below average to near seasonal temperatures, though with a gradual warming trend, occurred afterward for a few days as high pressure began to build over much of California.

Warm temperatures returned for a couple of days in the region, including on the 16th and 17th. Low humidity was also accompanied with this warmth, including in the Sierra Nevada where fires continue to burn with some increase in activity and smoke. Fortunately, the smoke remained mainly near the fires and did not produce the poor air quality like was observed in the San Joaquin Valley during early in the month.

Another storm system brought precipitation on the night of the 17th into the morning of the 18th, including rain in the lower elevations and snow down to around 5,000 feet in the Sierra Nevada towards the end of the event on the morning of the 18th. Snow amounts were mainly a dusting up to around one inch. Amounts were generally light with this system, or around 0.25 to 0.40 inch with the heaviest amounts, and mainly less than a tenth of an inch in the San Joaquin Valley. Bakersfield received 0.03 inch of rain on the morning of the 18th, and it was the first measurable

precipitation since April 26th, or in 176 days (almost 6 months)! Winds increased once again during the afternoon of the 17th in the Central Valley and West Side Hills, though were not as widespread as on the 11th. The strongest winds were focused near the passes and over the ridges in the West Side Hills where gusts reached over 50 mph and is some cases exceeded 60 mph. In addition, gusty winds with similar strength developed on the evening of the 17th and continued until the early evening of the 18th in portions Kern County, including over some of the ridge tops in the Tehachapi Mountains and below the mountain passes leading into the Mojave Desert. Gusts at some isolated mountain locations peaked over 70 mph.

Warm and dry weather prevailed on the 19th until the 23rd. However, a strong storm system accompanied by a tropical fetch of moisture (known as an atmospheric river) brought a large of amount of rainfall to elevations mainly below 8,000 feet. Initially, the storm arrived with higher snow levels but began to lower soon after, or once precipitation began its southward movement. Rainfall amounts were impressive, with widespread amounts of 0.75 inch to 1.50 inches in the San Joaquin Valley and as high as 4 to 6 inches in the Sierra Nevada. Snow amounts were mainly around one to two feet in the higher elevations of the Sierra Nevada, with a dusting to a couple of inches down to around 5,000 feet. Yosemite Valley had 4.69 inches of rain in a 24-hour period ending on the 25th. This was the 11th highest amount recorded for a 24 period, and the last time a similar amount of rainfall occurred for a 24-hour period was on March 10, 1995.

ON the 26th through the 30th, a warming trend began, while dry weather prevailed. By the 29th, daytime highs were around 5 to 10 degrees above seasonal averages. As the storm recently brought abundant precipitation, nighttime and morning fog began to occur by the early morning hours of the 26th in the San Joaquin Valley. Patchy dense nighttime and morning fog development continued at times with varying locations and intensity in the Central Valley until the 30th, and dense fog with visibility down to around 200 feet was reported in quite a few spots on the morning of the 30th. In addition, the dry and stable pattern allowed air to stagnate in the Central Valley and may have contributed to additional fog development later in the period.

The last day of the month was slightly cooler, but the weather remained dry. Overall, the month ended up with above average precipitation and cooler than normal temperatures.

Table 2 – Seasonal Precipitation for ASOS locations (ending on October 31st)						
Location	**Since Jan 1st (inches)**	**Departure From Average (inches)**	**Since Jul 1st (inches)**	**Departure From Average (inches)**	**Since Oct 1st (inches)***	**Departure From Normal (inches)***
Bakersfield	2.97	-1.78	0.94	+0.61	0.94	+0.66
Fresno	6.44	-1.89	1.27	+0.63	1.27	+0.71
Hanford	4.72	-1.43	1.10	+0.58	1.10	+0.64
Madera	Missing	Missing	0.57	+0.09	0.57	+0.13
Merced	6.45	-2.42	1.73	+1.04	1.73	+1.09

*Water Year 2021-2022 (October-September) begins this month.

Table 3 – Warmest High Temperatures and Coolest Low Temperatures of the Month for ASOS locations				
Location	**High**	**Date(s)**	**Low**	**Date(s)**
Bakersfield	94	3rd	45	13th
Fresno	93	2nd	45	19th
Hanford	93	2nd	36	13th
Madera	92	1st & 2nd	39	14th & 19th
Merced	93	2nd	37	19th

Daily Records Set During October 2021

Bakersfield –

12th: Record low maximum temperature of 67 degrees tied (also set in 2008).

Fresno –

25th: 0.86 inch of rain set the highest precipitation amount for the date, which broke the old record of 0.33 inch set in 1927.

Hanford –

25th: 1.01 inches of rain set the highest precipitation amount for the date, which broke the old record of 0.30 inch set in 1940.

Madera –

25th: 1.57 inches of rain set the highest precipitation amount for the date, which broke the old record of 0.33 inch set in 1940.

Merced –

25th: 0.51 inch of rain set the highest precipitation amount for the date, which broke the old record of 0.41 inch set in 1919.

Fig 1 – Departure from Average Temperature for October 2021

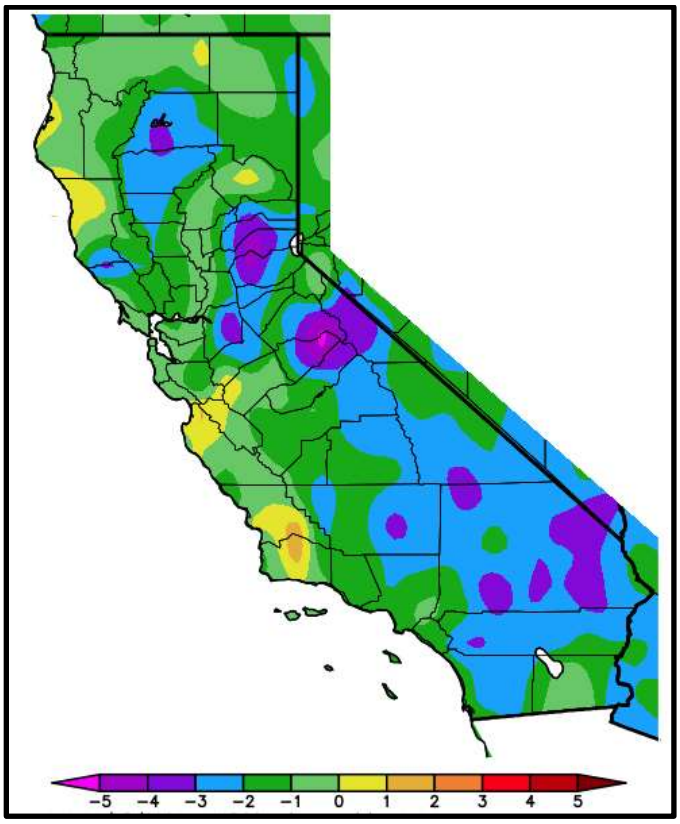
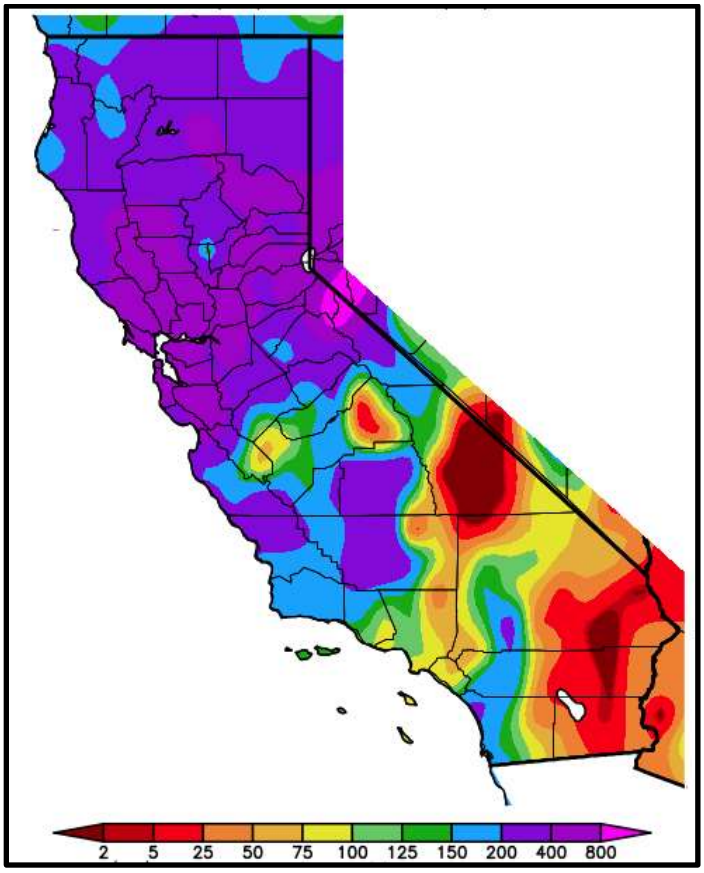


Fig 2 – Percent of Average Precipitation for October 2021



*Images above (i.e., Figures 1-2) courtesy of Western Region Climate Center