DECEMBER 2017 WEATHER SUMMARY
FOR THE CENTRAL CALIFORNIA INTERIOR

By Brian Ochs, Climate Services Focal Point
Jim Andersen, Assistant Climate Services Focal Point
WFO San Joaquin Valley-Hanford

High pressure with patchy morning dense fog in the San Joaquin Valley prevailed for the first couple of days of the month. Daytime high temperatures were generally above average.

During the early morning hours of the 3rd, a low pressure system with an associated cold front brought mainly light precipitation and locally gusty winds, especially through the passes and canyons in eastern Kern County and a few locales along the west side of the San Joaquin Valley. Gusts were generally around 35 to 45 mph in these areas. By the 4th, colder air had filtered into the lower elevations, and low temperatures many locations reached below freezing in the San Joaquin Valley. Low temperatures in some locations in the Kern County desert areas dropped into the teens. Daytime highs were generally around average during the 4th and 5th; afterward, high pressure built over central California.

A prolonged period of very dry and warm air prevailed throughout much of California, including the 6th through the 15th. As for the central California interior, daytime highs warmed back to around 10 degrees above average for the next several days. The airmass became quite dry and stagnant so that nighttime lows remained around freezing or slightly above over the San Joaquin Valley until the 15th. Very little dense fog was observed during these days in the San Joaquin Valley, but a persistent layer of haze and poor air quality lingered. A strong inversion layer prevailed above the valley floor, and temperatures were 20-30 degrees warmer during the nighttime hours at elevations around 4,000 to 6,000 feet in the Sierra Nevada and much of the Kern County mountain areas. Relative humidity in this layer in the mountains reached as low as one percent, especially during much of the 12th and 13th; even humidity during the nighttime hours remained below ten percent.

Dry conditions continued into the 16th; however, the high pressure weakened briefly as a strong, but dry cold front passed over the region. The main effects due to this front were cooler daytime temperatures and very windy conditions. The areas along the west side of the San Joaquin Valley that experienced the very gusty winds had very mild morning lows and still warmer than average high temperatures. By the 17th, winds abated over much of central California, and daytime highs were generally cooler, though still a few degrees above average. However, morning and nighttime lows were chilly, as freezing temperatures returned to some locations in the San Joaquin Valley by the 17th. There was a slight warmup over the next couple of days as high pressure briefly strengthened once again.

A low pressure system arrived on the 20th and brought another light precipitation event. Most locations in the region received a hundredth of an inch to about one third of an inch. Snow levels did fall so that accumulation occurred below 4,000 feet, but was also light. The main effects were colder temperatures and gusty winds. Wind gusts reached around 40 mph along the west side of the San Joaquin Valley and 50 mph in the Kern County desert and mountain areas. Low temperatures fell into the 20s in many San Joaquin Valley locations on the morning of the 21st and the 22nd. Enough moisture remained from the previous storm system to allow for development of freezing fog in the San Joaquin Valley.

High pressure returned by the 23rd, and temperatures gradually rose over the next several days with mostly clear skies, except for some mid-level cloudiness during the 24th. Typically chilly temperatures remained during the nights and mornings, including in the lower elevations. Patchy fog continued to develop at times in the San Joaquin Valley at night and during the morning hour; otherwise, hazy sunshine was the rule during the daylight hours. Dry air once again returned to the mountain areas and caused concerns in terms of fire prevention, including on the 23rd through Christmas Day.

The last week of the month remained dry with above average daytime high temperatures. Low temperatures remained near to below average in the lower elevations, including the San Joaquin Valley. Poor air quality once again persisted during this last week throughout the Central Valley. Locations in the mountain areas, especially above 6,000 feet, continued to experience prolonged periods of very low relative humidity (below 10 percent) for much of the period from the 26th through the end of the month. A blocked jet stream pattern with high pressure over central California persisted for much of the month of December, so the month ended warmer than average in much of the area (Fig 1) with much below average precipitation in the entire forecast area (Fig 2). Very little snow fell in the mountain areas for the entire month.

Table 1 – December 2017 Summary Statistics for ASOS locations

Location	Monthly Average Temp (deg F)	Departure From Average (deg F)	Total Monthly Precipitation (inches)	Departure From Normal (inches)
Bakersfield	50.0	+2.2	0.04	-0.98
Fresno	48.0	+1.5	0.04	-1.73
Hanford	46.6	+2.1	0.04	-1.59
Madera	46.7	+1.4	0.09	-1.61
Merced	46.3	+1.7	0.08	-1.44

Temperature/Precipitation Rankings for December

Bakersfield – 32nd warmest December on record; 12th driest December on record.
Fresno – 32nd warmest December on record; 5th driest December on record.

Figure 1 – Departure from Average Temperature for December 2017

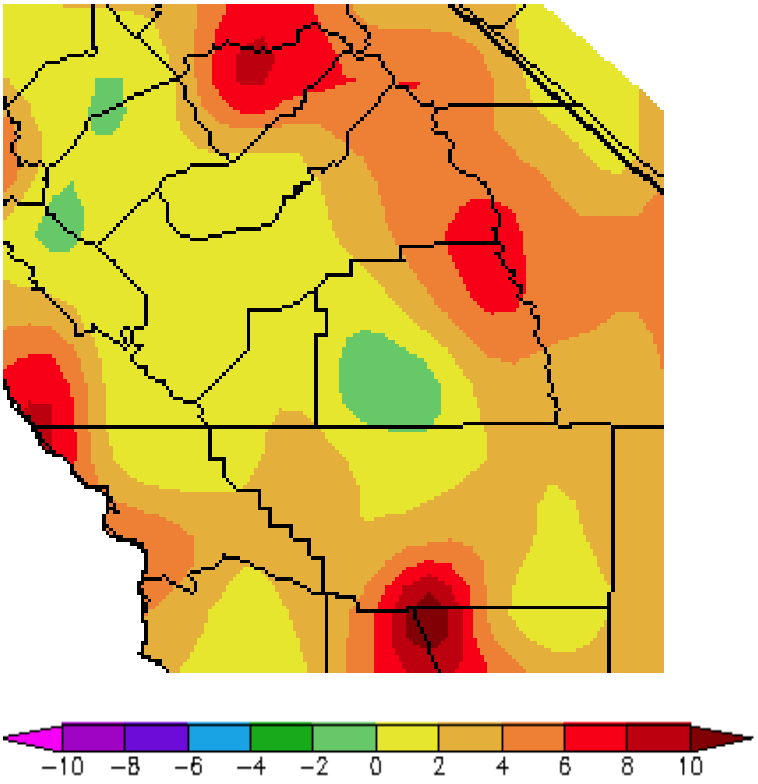
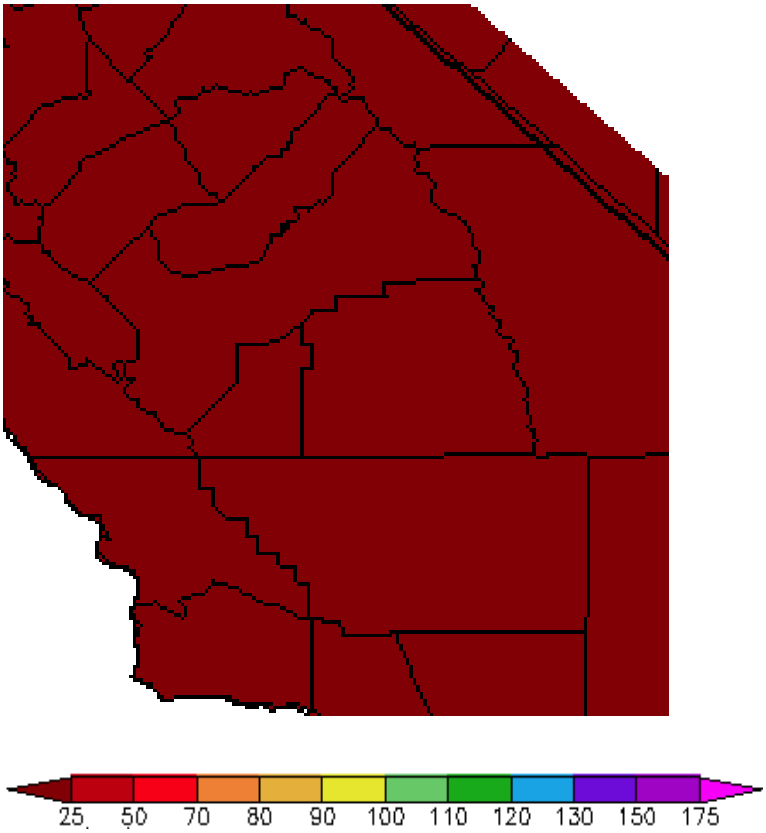


Figure 2 – Percent of Average Precipitation for December 2017 (Note: less than 25 percent of average for NWS Hanford's entire forecast area!)



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