JULY 2017 WEATHER SUMMARY
FOR THE CENTRAL CALIFORNIA INTERIOR

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This summer month began with a typical warm, dry pattern that occurs early in the month. During the first few days of the month, daytime high temperatures reached the upper 90s in most of the San Joaquin Valley and just above 100 degrees in the Kern County desert areas. Few clouds developed over the highest elevations of the southern Sierra Nevada. High pressure was generally the rule during this period; however, a dry trough of low pressure moved over the area during the night of the 1st and into the morning of the 2nd. This feature brought gusty winds through Pacheco Pass in western Merced County with gusts around 35 mph during this time. Low temperatures were relatively cool due to the dry airmass in place in much of central California; however, daytime high temperatures changed very little. The exception was some localized cooling due to the winds funneling through Pacheco Pass, as highs reached into the lower 90s around Merced and Los Banos on the 1st and 2nd. Elsewhere, there was little change in the weather and temperatures, although temperatures once again rebounded as high pressure began to rebuild on the 3rd.

Temperatures continued to warm during the 4th-8th as the high pressure ridge strengthened over much of the western United States. High temperatures topped 105 degrees in most San Joaquin Valley locations on the 7th-8th, and around 110-115 degrees in the Kern County desert. Low temperatures did not fall below 80 degrees on the morning of the 8th in some Kern County locations such as Mojave, Taft, and Bakersfield. In addition, thunderstorms developed mainly over the higher elevations of the Sierra Nevada on the 6th and 7th, with more activity reported on the 7th. On the 8th, the focus of storm activity shifted to the Kern County desert areas from Edwards AFB to near Ridgecrest; any thunderstorms on this day over the Sierra developed to the east of Tulare County on the eastern slopes. Thunderstorm wind gusts reached as high as 54 mph at Edwards AFB (at the north gate) and 52 mph at the Ridgecrest City Hall; quite a few locations had gust reports over 40 mph in the desert.

On the 9th, another very hot day occurred, although temperatures were not as warm. Mid-level clouds and moisture arrived by the morning, due to an influx of moisture from a collapsing thunderstorm complex that moved from the southeast during the previous overnight hours. Thunderstorms developed over the Sierra Nevada (this time to the east of the Schaeffer Fire that continues to burn since June 24th in southeastern Tulare County), as well as the Kern County desert and mountains. Thunderstorms developed over much of the same areas in eastern Kern County as during the previous afternoon and evening. Storms produced frequent lightning and

brief heavy rain. One storm was strong enough to produce flash flooding in Pine Mountain Club to the west of the Grapevine. Large fires were breaking out in southern California, as well as in southwestern Kings County near Avenal, as temperatures were very warm.

On the 10th and 11th, thunderstorms remained a daily occurrence on the Sierra Nevada crest, but temperatures lowered slightly on each day. Temperatures fell even more on the 12th and into the 13th, as a dry southwest flow set up over the region. Also, humidity noticeably dropped, and mountain thunderstorm development became mainly suppressed or confined to the east side of the Sierra Nevada.

Temperatures remained above average for the next several days, and thunderstorm coverage became even less to non-existent, at least over the mountains and desert. Temperatures remained at least a few degrees above average for the middle part of the month. However, a moisture surge did arrive from the coast that was enough to produce a few thunderstorms on the night of the 16th and into the morning of the 17th. The moisture originated from northern Baja California due to decayed thunderstorms, and the mid-level flow was positioned so that moisture could travel from the southwest, rather than the typical southerly to southeasterly direction. A few sprinkles fell along the west side of the San Joaquin Valley during the following afternoon. However, the moisture was limited, and the lower levels remained quite dry, especially in the Sierra Nevada and in the mountains along the west side of the San Joaquin Valley, where some more large fires broke out such as the Park Fire (northwest of Avenal in far southwestern Fresno County) and the Detwiler Fire (Mariposa County).

On the 18th through the 20th, drier air did arrive from the northwest and persisted during this time, and thunderstorms became nonexistent in central California. Temperatures moderated to around average. Afterward, high pressure returned, and warming occurred during the 21st through the 23rd; temperatures rose back to about 5-10 degrees above average by the end of this period. Shower and thunderstorm coverage increased a little each day over the Sierra Nevada.

Isolated showers and thunderstorms developed over the mountains and desert areas in Kern County by the afternoon hours of the 24th, as the mid-level flow became more southerly and brought additional tropical moisture to the region. However, thunderstorm development was fairly weak over the mountain and desert areas; the deeper subtropical moisture remained to the east of the Sierra Nevada and Great Basin (flash flooding was occurring in these areas, as is more frequent than in our region). A similar pattern continued for the next couple of days; however, temperatures dropped slightly on the 25th and 26th.

The ridge of high pressure edged back towards the west, including over central California on the 27th and for the rest of the month so that temperatures trended back up. Temperatures rose back to several degrees above average during this period. Thunderstorm development over the

mountains was generally suppressed as deeper subtropical moisture remained well to the east and south. However, isolated thunderstorms did return over the Sierra Nevada crest on the 30th and 31st, as a weak upper-level disturbance brought sufficient mid-level moisture to this area.

Overall, July 2017 was much warmer than average, mainly due to persistent strings of days of above average high temperatures. There was a continuous stretch from the beginning and into the middle of the month when highs reached above 100 degrees throughout much of the San Joaquin Valley. High temperatures in the Kern County desert frequently reached around 105 to 110 degrees. Precipitation was near to below average for most of the region, except where strong thunderstorms developed over the mountains, especially early in the month. The San Joaquin Valley typically receives little or no measurable rainfall during the summer months.

Table 1 – July 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	89.1	5.3	0.00	0.00
Fresno	86.5	3.5	0.00	-0.01
Hanford	83.8	4.6	0.00	-0.02
Madera	82.7	4.0	0.00	-0.02
Merced	81.7	3.9	0.00	-0.01

Temperature/Precipitation Rankings for July

Bakersfield – 2nd warmest July on record; ties for driest July on record (Usually no rain falls in July here; occurred in 63 other Julys since records began in 1893).
Fresno – 7th warmest July on record; ties for driest July on record. (Usually no rain falls in July here; 56 other Julys reported no precipitation since records began in 1881).

Figure 1 – Departure from Average Temperature for July 2017

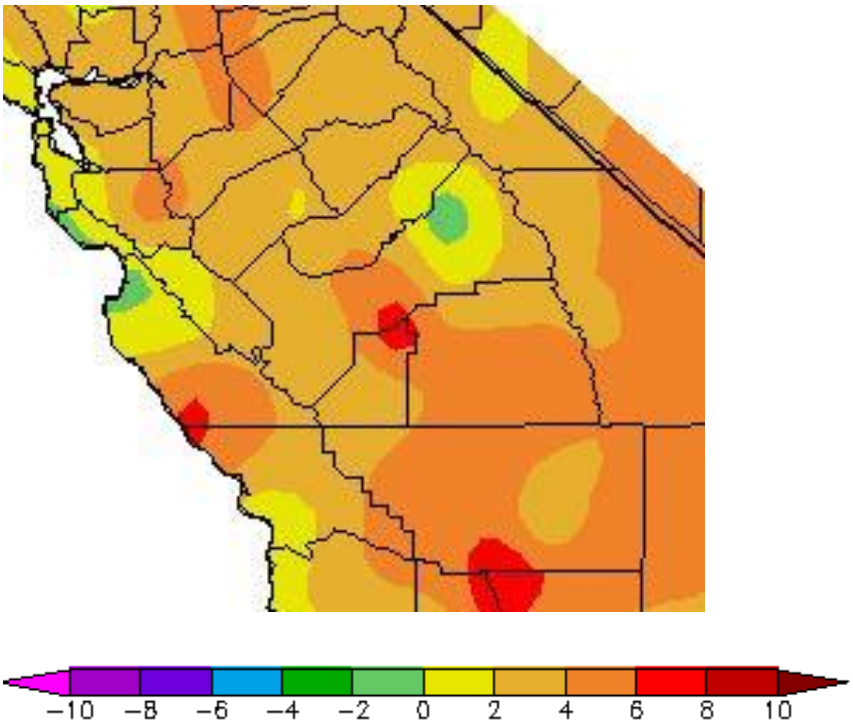
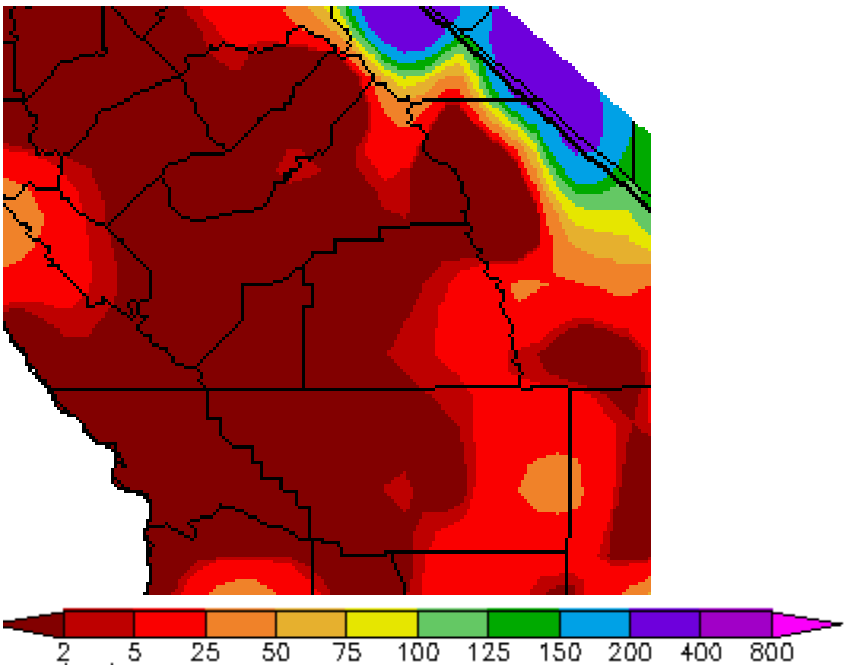


Figure 2 – Percent of Average Precipitation for July 2017



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