SEPTEMBER 2017 WEATHER SUMMARY
FOR THE CENTRAL CALIFORNIA INTERIOR

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A strong high pressure ridge remained parked over the Western United States for the beginning few days of the month. Extreme heat was one of the large impacts in Central California. High temperatures ranged from around 105 to 110 degrees in the San Joaquin Valley during the 1st through the 3rd, while lows remained in the upper 70s to lower 80s. Quite a few long-standing temperature records were broken during this period. In addition to the heat, much of the region experienced stormy weather during the 3rd. For example, Bakersfield reported thunderstorms with gusty winds (gusts just above 40 mph at Meadows Field Airport) late that afternoon; some parts of town experienced a gustnado, or a rotating column of air similar to a dust devil, that develops due to strong thunderstorm downdrafts (or outflow winds). This is a more common phenomenon in the desert areas of the southwestern United States, such as in Arizona. Much of the south end of the San Joaquin Valley in Kern County also reported thunderstorms with gusty winds through the evening hours. The gusty winds produced blowing dust and flowed northward to around Yosemite National Park by the late evening hours. These winds posed quite a challenge for fighting wildfires in the Sierra Nevada, especially in and around Yosemite. If that was not enough, thunderstorms also plagued the Tehachapi Mountains, as well as the Frazier Park/Pine Mountain Club areas with heavy rain and flash flooding.

On the 4th, unsettled weather continued due to a warm, moist subtropical airmass and a closed low pressure system off the Central California coast. Showers and isolated thunderstorms continued to affect parts of the San Joaquin Valley. Over the Central Valley, the moisture in the mid-levels, or in the form of altocumulus-type cloud cover, lingered for at least a couple of more days, so low temperatures continued to remain warmer than average, or lowered only to the low-mid 70s. Other locales remained relatively warm overnight under the cloud cover. Thunderstorms remained an almost daily occurrence in the higher elevations of the southern Sierra Nevada until the 6th and for much of the previous month, especially during the last half of August.

By the 7th, temperatures had fallen to at least a few degrees below average, and a drier airmass was in place. Thunderstorm development was mainly suppressed by this day over the mountain areas. Low temperatures finally became somewhat pleasant during the mornings. However, this did not last very long.

Afternoon and evening thunderstorms returned to the mountain areas by the 8th. Coverage increased over the next three days, and thunderstorms impacted the desert areas as early as the 9th. Strong winds knocked over trees in Inyokern due to thunderstorms. More thunderstorms developed on the 10th, as deeper subtropical moisture arrived due to the influence of a persistent offshore low pressure system that was parked just off the Central California coast. As an embedded upper level disturbance moved over Central California around the offshore low pressure system, a severe weather outbreak occurred during the afternoon into the evening of the 11th in the Kern County mountain and desert areas, as well as much of the San Joaquin Valley. The main impacts were downburst (microburst) winds around 60 mph or higher in quite a few areas that resulted in downed power lines, caused severe damage to barn roofs, and knocked over large objects, including numerous trees and large equipment, including in the cities of Hanford and Corcoran, as well as near Caruthers. Other impacts included brief heavy rain, frequent lightning, and pea-sized (1/4 inch diameter) to nickel-sized (7/8 inch diameter) hail.

Thunderstorm coverage was limited to mainly the Sierra Nevada crest by the 12th, although a few thunderstorms developed during the afternoon in the Kern County desert areas, especially around Ridgecrest. On the following day, the upper-level low moved inland over southern California and brought strong thunderstorms to Yosemite National Park (park rangers at Tuolumne Meadows reported a storm cell that produced golf-ball sized hail) during the late afternoon. There were also some isolated thunderstorms during late in the evening in Bakersfield that dumped a half inch of rain in only about one hour; this was enough to produce street flooding and rank September as the 9th highest on record in terms of precipitation. In the wake the low, much cooler temperatures prevailed on the 14th, and reached several degrees below average. Highs reached into the lower to mid-80s throughout the lower elevation areas on the 14th-15th.

A weak ridge of high pressure brought a brief warm period during the 16th-18th, though temperatures were generally near average. On the 19th, another cooldown commenced when a dry low pressure system arrived; the other weather impact was an increase in winds. Gusts around 50 mph were recorded in the Kern County desert areas and around 40 mph along the west side of the San Joaquin Valley, mainly below the favored east-facing passes and canyons.

On the 21st, a winter-like system that originated from the Gulf of Alaska brought much cooler than average temperatures and the first significant snowfall to the higher elevations of the Sierra Nevada since the spring months. Record low maximum temperatures were reached throughout the San Joaquin Valley, including at the automated observing stations in Bakersfield, Fresno, Hanford, and Merced. About three inches of snow accumulation was observed at the Tuolumne Meadows Ranger Station in Yosemite National Park (elevation 8,694 feet); this was enough to shut down the roadway (Highway 120) through Tioga Pass, or just to the east. In addition, over an inch of rain fell in quite a few Sierra Nevada locations from Yosemite to Fresno County, and around a few hundredths to four tenths of an inch fell in the Central Valley. Finally, a couple of

locations in the Kern County mountain and desert areas reported gusts of 60 to 70 mph during the evening and overnight hours (including the early morning of the 22nd). A few other locations reached around 45 mph; one location to note was Tehachapi Pass along Highway 58.

Cool temperatures persisted for the next couple of days, though gradually warmed each day. A dry weather pattern commenced on the 22nd, while a generally northerly flow aloft was present. High pressure returned by the 26th, and an offshore flow set up to allow temperatures to further warm to several degrees above average through the 29th. On the evening of the 29th, some cooler marine air filtered into the San Joaquin Valley, so daytime high temperatures dropped to slightly below average on the 30th. Otherwise, locations in the mountains and desert remained warmer than average, and some gusty winds occurred in a few locations near the favored passes and canyons in eastern Kern County where gusts reached around 50 mph during the afternoon and evening.

Overall, September was an active month in terms of weather. Precipitation at the ASOS locations in the San Joaquin Valley was variable, while temperatures were above average (Table 1). In fact, above average temperatures prevailed in most of Central California, except in a few areas over the central Sierra Nevada (Fig 1). Above average precipitation occurred in quite a few locations such as in Kern County and parts of the Sierra Nevada; however, most areas in the San Joaquin Valley and the higher terrain along its west side otherwise received near to below average precipitation (Fig 2).

Table 1 – September 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	79.3	+2.3	0.52	+0.40
Fresno	77.2	+0.9	0.16	-0.01
Hanford	75.3	+2.0	0.16	-0.01
Madera	75.7	+3.0	0.08	-0.17
Merced	73.9	+2.0	0.02	-0.27

Temperature/Precipitation Rankings for September

Bakersfield – 16th warmest September on record; 9th wettest September on record.
Fresno – 20th warmest September on record; 33rd wettest September on record.

Triple Digit High Temperature Statistics in Bakersfield and Fresno through September 30th:

Bakersfield – Total of 67 days (ties for 2nd highest calendar year on record, also set in 1939). Average is 33 days (based on 30 years, or 1981-2010).

Fresno – Total of 53 days (ties for 10th highest calendar year on record, also set in 1945). Average is 36 days (based on 30 years, or 1981-2010).

Figure 1 – Departure from Average Temperature for September 2017

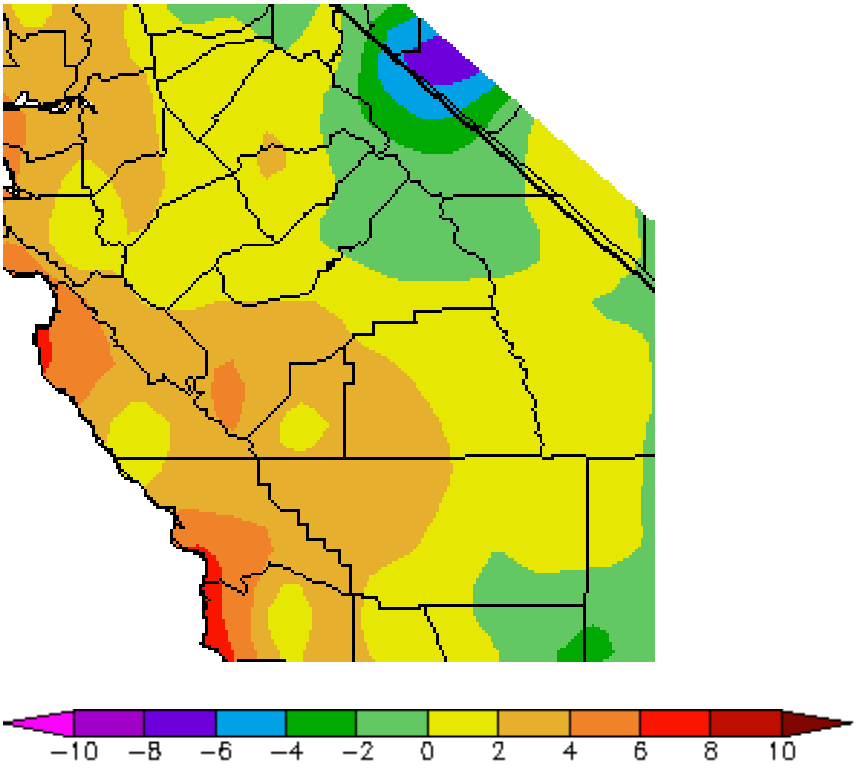
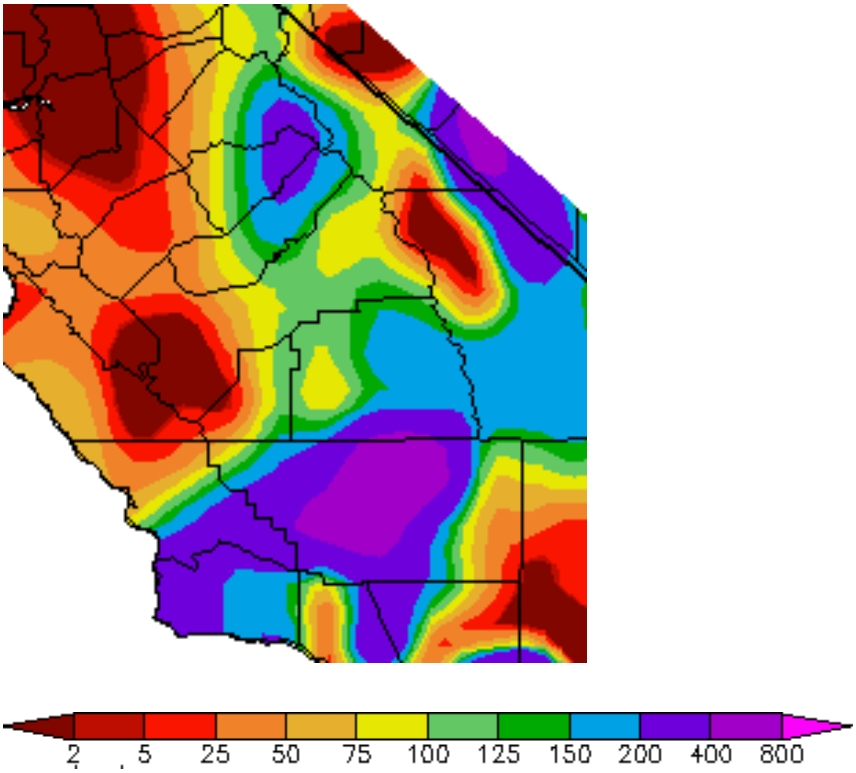


Figure 2 – Percent of Average Precipitation for September 2017



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