OCTOBER 2010 WEATHER SUMMARY
FOR THE CENTRAL CALIFORNIA INTERIOR

By Gary Sanger, Climate Services Focal Point
And Brian Ochs, Assistant Climate Focal Point
WFO San Joaquin Valley-Hanford

Note: This summary has been updated for the Arizona tornado outbreak on October 6th.

The warm, unstable airmass that arrived at the end of September remained over interior central California through the 3rd day of October. However, cooler air arrived as an upper level trough moved over the area on the 4th. The airmass remained moist and unstable until the 6th, and then began to dry out by the 8th due to high pressure over the central California interior. By the 10th, temperatures warmed to slightly above normal.

Events for the first week of this month included several incidents of roadway flooding in Kern County, and several days of thunderstorms in the San Joaquin Valley. On the 2nd, the California Highway Patrol reported of large rocks that created hazardous conditions on Highway 178 in the Kern River Canyon near Bodfish; in fact a Flash Flood Warning had been issued around 2:15 that afternoon due to slow moving thunderstorms in the area. Some strong thunderstorms developed near and west of Frazier Park around noon of October 2nd; Pine Mountain Club reported hail around one-half inch in diameter (dime size). During that evening, thunderstorms developed over Yosemite National Park, with some heavy rain over the area that caused nuisance flooding. Showers and thunderstorms redeveloped during the afternoon and evening of the 3rd. On the night of the 3rd, and into the early morning hours of the 4th, quite a few thunderstorms developed over the Hanford and Visalia areas, and spread northward into Fresno, Madera, and Mariposa. Lightning was quite frequent with these storms, and large hail about the size of half-dollars (1.25 inches) was reported near Mariposa around 1:00 AM on the 4th.

As for October 5th, there were quite a few showers, including snow showers in the higher elevations of the Southern Sierra Nevada, mainly above 7,500 feet. The storm that produced these showers subsequently moved into Arizona, triggering numerous thunderstorms. The storm also spawned eight tornadoes in northern Arizona, including near Flagstaff, during the early morning hours of the 6th; a new record for the most tornadoes in one day for Arizona. (There have been two days on which four tornadoes touched down in the central and southern San Joaquin Valley: November 22nd, 1996 and February 27th, 2000.)

On October 6th, the showers continued over the Sierra and much of the San Joaquin Valley, including the west side. Flooding was reported on Highway 33 near Taft due to numerous showers and thunderstorms during the late afternoon and early evening hours, as moisture remained quite abundant and wrapped around an upper level low centered near the coast of central California. By the 7th, the low had ejected eastward toward the northern Rockies, and finally shut off the moisture over the over as an upper-level high pressure ridge began to approach from the Pacific Ocean.

By the second week of the month, pleasant weather returned to the area due to the upper level

ridge, with temperatures warming back to near normal by October 9th and slightly above normal for the 10th. The ridge dominated the weather for the next several days, with high temperatures in the central and southern San Joaquin Valley reaching the mid 90s on October 13th through the 15th. Fresno set record high minimum temperatures for three consecutive days: October 12th, 13th, and 14th, and again on the 16th.

An upper-level trough brought precipitation and cooler temperatures to interior central California beginning October 16th. Temperatures dropped as much as 14 degrees from the 16th to the 17th, as a strong push of cold air moved into the San Joaquin Valley. The trough triggered thunderstorms across the region on October 17th, and one thunderstorm generated hail up to an inch in diameter, classifying the thunderstorm as severe.

An upper-level disturbance moved across California on the 19th, triggering strong thunderstorms in the southern California deserts that approached severe criteria. A few of these thunderstorms moved west, into the Kern County desert near Boron, Edwards AFB and Randsburg.

There was a brief respite before the next upper-level trough reached California on October 24th. This system tapped into a deep fetch of tropical moisture that extended across much of the northern Pacific Ocean. As a result, snow levels were high and most of the precipitation that fell in the Southern Sierra Nevada was in the form of rain. The parent low stalled southwest of the Queen Charlotte Islands, keeping the trough from digging into the southern half of the San Joaquin Valley. As a result, there was a tight precipitation gradient from north to south, with 3-4 inches of rain falling on Yosemite National Park, but only a few hundredths falling in the south end of the San Joaquin Valley and around a half inch in the Tehachapi Mountains.

Runoff from the heavy rain over Yosemite National Park caused the Merced River to rise. Fortunately the river did not flood, but it did crest at a stage of 9.51 feet at Pohono Bridge. This was only 6 inches below the flood stage at that point of 10.0 feet.

Despite the shortfall of rain over the Kern County mountains and deserts as the cold front moved through, the system generated very strong winds over the ridges and through and below the mountain passes of the Kern County mountains. There were two separate episodes of strong winds during the early morning of October 25th. The first, which began around 2:30 AM, saw gusts as high as 92 mph. The second episode, four hours later, saw gusts up to 65 mph. Trees were damaged in and near Tehachapi and Twin Oaks, and power lines were downed.

Another very cold airmass moved into interior central California with this trough. Low temperatures on October 26th for the central and southern San Joaquin Valley ranged from 40 to 50 degrees. Low temperatures for the Valley were even colder—by around 5 degrees—the next morning, ranging from 35 to 47 degrees. The 27th also saw a moderately strong offshore flow develop over southern California. East winds over the Tehachapi Mountains funneled through the Grapevine and Tehachapi Pass into the south end of the San Joaquin Valley. The winds warmed adiabatically as they descended to the Valley floor, resulting in Bakersfield reaching a high of 78 degrees.

Warming continued on October 28th and 29th, ahead of an upper-level trough digging down the

eastern Pacific off the California coast. Fresno had a high of 78 degrees both days, while Bakersfield warmed to 82 degrees on the 28th, and was only a degree cooler the next day. The trough moved onshore during the night of October 29th-30th, bring rain and snow (above 5500 feet) to interior central California. Snowfall in the Southern Sierra Nevada ranged from around an inch at Bald Mountain to 8 inches at Tamarack Summit. Up to two inches of snow fell near Pine Mountain Club in the San Emigdio (western Tehachapi) Mountains, and light snow fell in the hills above the Tehachapi Pass. Below the snow line (around 5500 feet), up to an inch of rain fell in the Southern Sierra Nevada and the foothills, except at the Lake Kaweah Pool, where 1.20 inch of rain was recorded. On the San Joaquin Valley floor, rainfall amounts were as high as 0.36 inch. (By coincidence, the amounts of rainfall at both Bakersfield and Fresno on October 30th were the same as the monthly totals for May, the last month prior to October in which measurable rain fell.) In addition, wind gusts up to 63 mph developed overnight not only over the mountains but also along the west side of the San Joaquin Valley.

October ended with the upper-level trough moving east of California, allowing an upper-level ridge to build into the state. With a stable airmass, breaks in the high clouds over the region on the 31st allowed patches of dense fog to develop on the San Joaquin Valley floor by daybreak, especially in the Merced area. Otherwise, October ended on a quiet weather note.