JUNE 2009 WEATHER SUMMARY FOR THE CENTRAL CALIFORNIA INTERIOR

By Gary Sanger and Brian Ochs
WFO San Joaquin Valley-Hanford

June began with an upper-level low west of California, producing a southwest flow aloft over the state that brought mid-level moisture to the region. This moisture produced scattered thunderstorms over the Southern Sierra Nevada, as well as some showers over the Coastal Range. A couple of these showers moved into the west side of the San Joaquin Valley, but rainfall amounts were light.

The low was kept nearly stationary for the first few days of the month by a "rex block" formed by the low and an upper-level high in the Gulf of Alaska. In addition, a strong low was located over Hudson Bay, and troughs rotating around the low dropped into the Rocky Mountains, also blocking any eastward progress of the low. As a result, there was the threat of showers and thunderstorms over the Southern Sierra Nevada each afternoon and evening as solar heating combined with orographic lift to trigger convection.

An upper-level jet max rounded the low on June 2nd, moving into the western San Joaquin Valley where it triggered isolated thunderstorms. That night, satellite loops showed the low beginning to elongate south to north, with the flow over California turning likewise. The southerly flow aloft triggered thunderstorms over the Kern County mountains and deserts around sunrise, then spread north up the Southern Sierra Nevada. A few debris showers even drifted over the San Joaquin Valley.

Shortly after 11 PM on June 3rd, thunderstorms developed over Merced County as an upper-level disturbance rotating around the offshore low interacted with the moist, unstable air. The thunderstorms continued overnight, and then ended in the morning as the low entrained drier air in the circulation around it. With the dry air over the region, interior California enjoyed a mostly sunny day.

Thunderstorms developed over western Fresno County during the evening of June 4th, and rapidly grew in intensity. One severe thunderstorm had a reflectivity of 73 dBz, and a VIL (vertically integrated liquid) of 43 g/kg. Hail up to an inch in diameter fell near the town of Helm, and outflow winds were estimated at around 60 mph.

The low finally moved onshore on the 5th, and lifted northeast into northern Nevada that evening. An upper-level trough remained over California, with an unseasonably cold airmass aloft. Upper-level impulses moving through the trough continued the threat of afternoon and evening mountain convection, with isolated light showers drifting over the San Joaquin Valley at times. Temperatures fell to some 10-15 degrees below normal, and stayed well below normal for the next week.

Upper-level short-waves dropped into the trough on June 12th and 13th, but were not strong enough to move the trough eastward. The second short-wave did trigger a few showers and thunderstorms, but these stayed mainly north of Merced County. More short-waves followed, on the 14th and 15th, bringing some mountain showers, but no thunderstorms.

The trough finally began moving east on June 16th, bringing a rapid warming to the region. Fresno warmed to above normal on June 17th, with Bakersfield following a day later. Both cities hit 100 degrees on the 19th, then fell back below normal as an upper-level trough moved across California. This trough deepened the marine layer along the coast, allowing marine air to spill through Pacheco Pass as well as push through the Sacramento Delta. Winds gusted to around 35 mph as the cool air filled the San Joaquin Valley, and high temperatures on June 20th were down 10-12 degrees from the previous day.

The trough remained over California through June 22nd. A closed low began forming on the 23rd, turning the flow aloft over central California more southerly. This southerly flow, combined with an upper-level ridge over the southwestern U.S., brought another warming trend to interior central California. Temperatures in the central and southern San Joaquin Valley warmed into the mid to upper 90s on June 23rd, with triple digits returning to the region the next day.

Temperatures at Bakersfield and Fresno fell back into the 90s on June 25th and 26th as a short-wave weakened the ridge, but as the ridge rebounded, both cities saw temperatures above 100 for the last four days of the month.

The month ended with the upper-level ridge center located near the Four-Corners area. This produced a southeast to south flow aloft over California, and brought a push of subtropical moisture into interior central California. Scattered showers and thunderstorms developed over the Southern Sierra Nevada during the afternoon and evening of June 29th. The next day, another push of moisture brought a band of mid-level clouds to the region. Isolated showers developed over the Southern Sierra Nevada, including the foothills near Coarsegold and Oakhurst, and a couple of afternoon thunderstorms formed along the crest. In addition, a few sprinkles fell on the San Joaquin Valley floor, including parts of Clovis, just north of Fresno-Yosemite International Airport.

Bakersfield ended the 2008-09 rain season with a total of 4.95 inches, 76.3 % of the normal of 6.49 inches. Fresno had a season total of 7.77 inches of rain, or 69.2 % of the normal of 11.23 inches. This was the third consecutive rain season for both cities with below-normal totals.