JANUARY 2011 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

The new year (and decade) began with the latest in a series of Pacific storms that stretched back to December 17th, 2010. This storm brought strong, gusty winds to the region, especially to the base of the Grapevine, where gusts up to 89 mph were recorded on January 2nd. Snow fell on both the Grapevine and Tehachapi Pass, closing both routes between the San Joaquin Valley and southern California. Unlike the storms in December, this storm was focused more on Fresno, Kings, and Tulare counties, Fresno recorded 1.51 inch of rain on January 1st-2nd, while Bakersfield only received 0.16 inch. This was a cold storm, with the snow level falling to around 2500 feet. With the San Joaquin Valley floor and the lower foothills saturated from the record rains of the latter half of December, flood watches were posted for the New Year's Day holiday weekend.

As the night of January 1st-2nd progressed, wind gusts to 50 mph were recorded in the far south end of the San Joaquin Valley, at the base of the Grapevine. Over an inch of snow had fallen in Squirrel Valley--at 2700 feet in the hills above Lake Isabella--by 9:45 PM. The winds at the base of the Grapevine continued through the 2nd, with a peak wind of 89 mph recorded during the afternoon. Several roads on the San Joaquin Valley floor flooded due to runoff from locally heavy rains onto the saturated ground. In the Tehachapi Mountains, heavy snow closed Interstate 5 over the Grapevine (a total of 8 inches of snow fell at Lebec), and 52 cars were stuck on Highway 168 in the Southern Sierra Nevada at the 7000 foot level near Kaiser Point. Snow even fell in the Kern County deserts, with Ridgecrest reporting accumulating snow and snow falling at Edwards Air Force Base.

The upper-level low moved south to off Point Conception on January 3rd. This kept a southerly flow over the Tehachapi Mountains, with advisory-level winds continuing at the base of the Grapevine. Although the precipitation had mostly ended, lingering runoff continued to create flooding hazards.

Once this system passed through the region, persistent high pressure, along with a fairly strong inversion layer above the area began to set up by the 3rd. This initially created foggy conditions by the evening of the 3rd throughout the central and southern San Joaquin Valley, albeit patchy. .

With abundant standing water on the San Joaquin Valley floor, dense fog developed during the night of January 4th-5th. The fog lifted into a stratus layer that blanketed the San Joaquin Valley during the afternoon of the 5th, with the stratus persisting through the night of the 8th-9th.

Locations in the mountains rose to above normal temperatures, while those in the San Joaquin Valley remained consistently below normal, or from the upper 30s to lower 40s, even into the daylight hours during the period from the 4th through the 9th.

An upper-level trough that moved through California, on the 8th-9th, had little impact on the stratus, other than to raise the bases of the clouds. This resulted in the stratus spreading into the Southern Sierra Nevada foothills, creating areas of fog. Temperatures in the foothills fell below freezing during the morning of January 10th, and moisture from the fog froze to create icy road surfaces.

Dry air moving into central California on the 10th caused some erosion of the Valley stratus. An upper-level low off the coast near San Francisco spun a trough through central California, bringing light rain to interior central California on January 11th-12th, and for many locations, this was the last rain that would fall in January.

After this weak system passed, skies cleared out during the afternoon of January 12th, and temperatures were able to rise into the lower 60s, or slightly above normal values. With clear skies and light winds, conditions were perfect for fog development that evening. Skies over the central and southern San Joaquin Valley cleared out by the following afternoon and brought another day of slightly above normal maximum temperatures. Although fog redeveloped over the San Joaquin Valley shortly after sunset, the fog remained only through the late night hours. By the early morning of the 14th, a weak upper-level trough mixed the atmosphere enough so that many locations in the San Joaquin Valley experienced a heavy drizzle, which resulted in measurable precipitation in some locations.

On the 14th and 15th, the fog lifted into a stratus deck over the San Joaquin Valley with only partial clearing by the afternoon, and a few locations in the foothills reported morning fog. Stratus continued over the San Joaquin Valley during the night of January 15th-16th, with dense fog in parts of the Southern Sierra Nevada foothills. There was some clearing during the evening of the 16th over the south end of the Valley, as dry downslope winds eroded the stratus. However, once the downslope winds ended, the stratus filled back to the Tehachapi Mountains, creating areas of dense fog on Valley-facing slopes with visibilities of 500-1000 feet.

A mid-level atmospheric disturbance that tracked across central California during the late afternoon and early evening of January 17th squeezed some drizzle out of the stratus, but the layer remained intact. The stratus persisted through the 18th before an upper-level trough brought some clearing to the west side of the San Joaquin Valley during the morning of January 19th. An offshore flow developed over California on the 20th, drying the airmass over the San Joaquin Valley and breaking up the stratus.

Although the fog and stratus kept central and southern San Joaquin Valley temperatures near or below normal, mountain and desert locations once again experienced above normal temperatures. Once the stratus broke up, central and south Valley temperatures also warmed to above normal for a few days before sufficient moisture had evaporated and resaturated the lowest levels of the atmosphere. While dense fog had been a nightly occurrence since January 21st, by the 24th, the fog was lingering well into the late morning with only partial afternoon clearing. Locations experienced near zero visibility at times during most of late January. This persistent dense fog continued for the next several days, affecting air travel into and out of the San Joaquin Valley and keeping high temperatures well below normal.

The persistent ridge of high pressure finally gave way to a low pressure system that originated from the Gulf of Alaska by the early morning hours of the 30th, when snow began to fall on the higher elevations of the southern Sierra Nevada. Some locations received several inches of snow from the early morning until the following evening. A brief break from the generally warmer and dry conditions above the valley floor and the persistent fog and stratus over the San Joaquin Valley finally commenced. Windy conditions occurred in the desert areas in eastern Kern County, with reports of wind damage to power poles, as a result of this low on the 30th. This low trekked across central California during the afternoon and evening on the 30th, and instability was enough for a few afternoon thunderstorms to develop in areas of the southern San Joaquin Valley that briefly received sufficient solar radiation. As a result of this convection, some areas received over half an inch in a period of around an hour and a half. This low moved out of the area by the evening of the 30^{th,} and a cooler airmass remained over the region into the last day of the month.

Prevailing high pressure during most of this month allowed the region to realize below normal precipitation throughout the central California interior and warmer than average temperatures above the persistent inversion layer, or above the valley floor. Much of the San Joaquin Valley actually remained near normal in temperatures, since there were a sufficient number of cloudy days that kept the high temperatures a little below average, while low temperatures generally remained above average due to this cloud cover.