DECEMBER WEATHER SUMMARY

By Gary Sanger
Climate Services Focal Point
WFO San Joaquin Valley-Hanford

As the storm that brought precipitation to the southern third of the central California interior at the end of November moved east, a high-pressure ridge pushed into the state. Temperatures warmed to well above normal, and high temperatures on December 3rd and 4th in the central and southern San Joaquin Valley were over 10 degrees above normal in many locations. Bakersfield warmed to 70 degrees on the 4th, the first time Meadows Field reached 70 degrees since November 16th, when the high was 74.

The first major Pacific storm since late October reached interior central California beginning December 5th. Cold air pushing into the region dropped temperatures back to near normal, and precipitation from the storm finally reached the area during the afternoon of the 6th. There was abundant moisture with this storm, with the heaviest San Joaquin Valley rain during the late afternoon and early evening hours. Precipitation continued through December 7th, and very cold air behind the cold front dropped snow levels down into the higher Sierra foothills. Fresno received a total of 0.31 inch from the storm; in two days, the rainfall at Fresno Yosemite International Airport equaled that received during the months of September, October and November combined.

Locally heavy snowfalls were recorded by spotters and SNOTEL stations in the Southern Sierra Nevada. Chilkoot Meadow received an estimated 32 inches of new snow, with several stations above 7000 feet reporting between 1 and 2 feet of fresh snow.

As the storm dropped through California, a closed upper-level low formed. As this low moved south, an upper-level disturbance rotating around it triggered a few moderate showers over the west side of the San Joaquin Valley on December 8th, mainly from Coalinga south. By late afternoon, rain and snow was spreading into the Frazier Park area of the Tehachapi Mountains, and snow levels were falling, reaching around 3500 feet by Sunday morning. Up to 5 inches of snow fell on Frazier Park during the night of December 8th-9th, and accumulating snow closed the Grapevine (at 4300 feet, 1000 feet lower than Frazier Park) for a time.

The storm moved east of the region on the 9th, but cold air remained pooled over the central and southern San Joaquin Valley, trapped by the surrounding mountains. Valley temperatures during the morning of the 9th bottomed out mostly in the upper 20s to mid 30s, although a few sites cooled to the mid 20s for a couple of hours. This set the stage for a series of nightly frost events, with eight consecutive nights of near- to sub-freezing temperatures for the central .and southern San Joaquin Valley.

An upper-level ridge developed in the east Pacific around mid December, centered near Hawaii. A series of storms rode over the ridge and into California, carried by a jet stream that had speeds of nearly 200 knots at times. While the first storm brought only light rain to the San Joaquin Valley, and a few inches of snow to the higher elevations of the

Southern Sierra Nevada, the main impact was to weaken the ridge and allow a stronger and more potent storm to reach central California beginning the night of December 17th-18th.

This second storm brought over a half-inch of rain to parts of the San Joaquin Valley floor. Flooding was reported in the Fresno metropolitan area, mainly due to the combination of locally heavy rains and poor drainage.

Very cold air accompanied the storm, settling into Yosemite Valley and resulting in over 4 inches of new snow to the Valley floor at an elevation of 4000 feet. In the high country, between 2 and 3 feet of new snow fell, spreading as far south as the Tulare County mountains, where Lodgepole measured 28 inches of new snow. Further south, as much as 6 inches of snow fell near the crest of the Tehachapi Mountains.

The third storm reached interior central California during the night of December 19th. This storm brought up to a foot of snow to the high country of the Southern Sierra Nevada north of Kings Canyon, and gusty winds to the Kern County mountains and the Indian Wells Valley. Gusts as strong as 64 mph were recorded in the Piutes (at the south end of the Sierra Nevada range), and there were several reports of gusts in excess of 45 mph.

The cold air that accompanied the storms settled into the San Joaquin Valley, plunging lows into the 26-31 degree range on the morning of the 21st. Another round of near-freezing temperatures was seen in the central and southern San Joaquin Valley the next day.

An upper-level ridge built into California behind the storms, bringing a stable airmass to the region. Areas of dense fog developed during the early hours of December 22nd, and lingered over the east side of the San Joaquin Valley into the afternoon. Fog became more widespread overnight, then lingered in some areas through the 24th into the morning of Christmas Day.

A weak upper-level trough moved through central California during the evening of December 25th. The main impacts were to bring a few showers to the Southern Sierra Nevada and Tehachapi Mountains (including the foothills), and to delay the onset of dense Valley fog until around 3:00 AM on the 26th. Behind the trough, gusty winds developed over the mountains and deserts, with numerous gusts to 50 mph, and a peak gust of 75 mph measured at the Mojave air/spaceport. The cold air that pushed into the San Joaquin Valley with the trough brought sub-freezing temperatures to the central and southern San Joaquin Valley, with several lows around 28 degrees on the morning of the 27th.

A second weak trough reached the area the night of December 27th-28th, bringing some sleet to the central and southern San Joaquin Valley, and snow fell in the Sierra foothills as low as 2500 feet; one inch of snow fell at 3300 feet near Mariposa.

A strong northwest flow aloft over California brought yet another impulse over central California during the night of December 28th-29th, bringing another round of light precipitation to the region. A fourth weak trough arrived the next night, then an upper-level ridge built into California from the east Pacific, pushing the jet stream east of California. This ended the precipitation over central California, but the stable airmass also brought dense fog to the central and southern San Joaquin Valley to close out the year.