

DECEMBER 2010 WEATHER SUMMARY FOR THE CENTRAL CALIFORNIA INTERIOR

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December began with an upper-level ridge over California. With a stable airmass over the region, skies cleared and early morning temperatures in the rural areas fell to near freezing on the 1st. As fog developed toward sunrise, the risk of clear (or “black”) ice of bridges and overpasses increased.

A developing Pacific storm dropped south from the Gulf of Alaska on December 3rd-4th, strengthening the ridge and bringing warmer temperatures to the region. Fresno reached a high of 64 degrees on the 4th, and the average temperature for the date of 57 degrees was 10 degrees above normal. The high at Bakersfield on the 4th also was 64 degrees.

The center of the storm remained offshore on December 5th, generating strong southerly winds over interior central California. Winds downsloped through the Grapevine into the south end of the San Joaquin Valley, with a spotter estimating gusts of 60-70 mph near the Interstate 5-Highway 99 split, and Meadows Field in Bakersfield had gusts to 41 mph. The downslope winds also warmed Bakersfield to a high of 69 degrees. The storm was moved rapidly through the region during the evening of the 5th, with most of the precipitation falling while the area was still in the warm sector of the storm. As a result, snow levels remained above 8,000 feet and accumulations were lighter than expected.

The storm lifted northeast through the Great Basin into Idaho during the night of December 5th-6th and the following morning. This allowed an upper-level ridge to move over California, creating conditions for patchy night and morning fog in the central and southern San Joaquin Valley. The fog was most prevalent in the Atwater-Merced area and along the Highway 198 corridor from Lemoore through Hanford to Visalia and Tulare, the normally fog-prone areas. One surprise was the development of dense fog in the Mojave Desert and Indian Wells Valley during the morning of the 6th. The visibility at Edwards AFB fell to 1/8 of a mile, and the ASOS at the China Lake N.W.T.C. reported a visibility of less than a quarter mile. The fog began lifting by mid morning, but formed again the next morning, only not as thick. The visibility at Edwards AFB fell to 1-1/2 mile during the morning of December 7th, but remained above 7 miles at the China Lake Naval Weapons Test Center.

The upper-level ridge was weakened by an upper-level short-wave that moved through the Pacific Northwest on December 9th. The short-wave brought a fetch of subtropical moisture to central California, with upslope clouds developing along the Valley-facing slopes of the Kern and Tulare County mountains. These clouds persisted through the 10th in a strong northerly flow aloft, and impulses riding this flow along the leading edge of the ridge triggered a few showers. Winds funneled through the passes of the Tehachapi Mountains, with gusts to 45 mph at California City during the late morning of the 10th, becoming more widespread during the afternoon before subsiding after sunset. The upper-level ridge began to redevelop on the 11th,

and temperatures warmed throughout the area, even in San Joaquin Valley locations, through over the next couple of days. While the ridge persisted through the 13th, fog eventually made its way into the San Joaquin Valley during the early morning hours of the 12th. A stratus deck persisted over the valley until the morning of the 14th, just ahead of a low pressure system; However, the low clouds had dissipated during the daytime on the 13th over Kern County, including in the Bakersfield area and southern end of the San Joaquin Valley, allowing dense fog to form in this area during the early morning hours since enough radiational cooling had occurred.

Rain and higher-elevation snow fell over much of the area on December 14th into the morning of the 15th. A brief break in the precipitation then occurred through the day of the 16th as a weak upper-level ridge passed over the area. During this period, an upper-level low dropped out of the Gulf of Alaska, and began tapping into a long fetch of subtropical moisture. This set the stage for an unprecedented string of storms to hit interior central California, surpassing even the storms of mid-January at the beginning of the year.

The first in a series of low pressure systems, rotating around an upper level low pressure system centered off the coast of the Pacific Northwest, moved through the central California interior, during the night of the 16th into the 17th, bringing copious amounts of moisture to the area. By the evening of the 17th, many locations in the central and southern San Joaquin Valley received from a half inch to over one inch of rain. Locations in the southern Sierra Nevada foothills received up to 3 inches of rain over a 24 hour period. During the evening of the 17th into the early morning hours of the 18th, local roadway flooding, mudslides, and rockslides were reported in the central and southern San Joaquin Valley from Bakersfield northward, in the mountain areas of Kern County, and in the southern Sierra Nevada foothills.

There was a break in the weather during most of the day of December 18th, but the next storm arrived during the late afternoon and continued overnight and into the next day. By the time midnight arrived, Bakersfield had recorded a record 1.37 inch of rain. Even more rain fell the next day at Meadows Field, shattering rainfall records. Below is the Record Event Report summarizing the records from the six-day series of storms:

...SUMMARY OF PRECIPITATION AND TEMPERATURE RECORDS AT BAKERSFIELD
AND FRESNO DURING THE DECEMBER 17-22 SERIES OF STORMS...

A SERIES OF STRONG PACIFIC STORMS MOVED INTO CENTRAL AND SOUTHERN
CALIFORNIA BEGINNING DECEMBER 17TH AND CONTINUING THROUGH THE 22ND.
BAKERSFIELD SHATTERED SEVERAL PRECIPITATION RECORDS DURING THIS
PERIOD...AS WELL AS SETTING A RECORD HIGH MINIMUM TEMPERATURE ON
THE 19TH. FRESNO SET A RECORD HIGH MINIMUM TEMPERATURE ON DECEMBER
18TH...AND HAD RECORD RAINFALL THE NEXT DAY.

BAKERSFIELD...

18TH...RECORD RAINFALL FOR THE DATE OF 1.37 INCH. THE OLD RECORD WAS
0.30 INCH...SET IN 1921.

19TH...RECORD RAINFALL FOR THE DATE OF 1.53 INCH. THE OLD RECORD WAS 0.48 INCH...SET IN 1984. THIS ALSO WAS THE WETTEST DAY ON RECORD FOR DECEMBER AT BAKERSFIELD. THE PREVIOUS WETTEST DAY IN DECEMBER WAS DECEMBER 27TH 1936...WITH 1.02 INCH OF RAIN.

18-19TH...THE 24-HOUR RAINFALL OF 2.31 INCHES WAS THE HIGHEST 24-HOUR RAINFALL ON RECORD FOR DECEMBER. THE PREVIOUS RECORD WAS 1.15 INCH...SET ON DECEMBER 3-4TH 1914. THIS ALSO WAS THE 3RD HIGHEST 24-HOUR RAINFALL ON RECORD FOR BAKERSFIELD AFTER FEBRUARY 9-10TH 1978 /3.02 INCHES/ AND JANUARY 24-25TH 1999 /2.32 INCHES/.

19TH...RECORD HIGH MINIMUM TEMPERATURE FOR THE DATE OF 55 DEGREES. THE OLD RECORD WAS 53 DEGREES...SET IN 1981.

20TH...THE RAINFALL FOR THE DATE AT MEADOWS FIELD WAS 0.85 INCH. THIS WAS ONLY 0.01 INCH SHY OF THE RECORD RAINFALL FOR THE DATE OF 0.86 INCH...SET IN 1943.

THE RAINFALL AT MEADOWS FIELD...BAKERSFIELD FOR DECEMBER THROUGH THE 22ND WAS 4.95 INCHES. THIS BROKE THE RECORD FOR THE WETTEST DECEMBER ON RECORD...SURPASSING THE PREVIOUS WETTEST DECEMBER... 2.98 INCHES FOR DECEMBER 1931. DECEMBER 2010 ALSO IS THE 2ND WETTEST MONTH ON RECORD FOR BAKERSFIELD /SO FAR/...AFTER FEBRUARY 1998 WITH 5.36 INCHES OF RAIN.

FRESNO...

17TH...RECORD RAINFALL FOR THE DATE OF 1.12 INCH. THE OLD RECORD WAS 1.10 INCH...SET IN 1977.

18TH...RECORD HIGH MINIMUM TEMPERATURE FOR THE DATE OF 52 DEGREES. THE OLD RECORD WAS 51 DEGREES...SET IN 1894.

19TH...RECORD RAINFALL FOR THE DATE OF 0.90 INCH. THE OLD RECORD WAS 0.69 INCH...SET IN 1952.

Snowfall in the southern Sierra Nevada was in measured in feet, with total new snow accumulations reaching around 15 feet at Wet Meadow and Crabtree Meadow. There were numerous reports of flooding in the southern Sierra Nevada foothills and on the central and southern San Joaquin Valley floor, as runoff from the heavy rains overwhelmed drainage systems.

There was a break in the weather on December 23rd and 24th, as a weak upper-level ridge moved into California. Light winds and a stable airmass aloft allowed areas of dense fog to develop over parts of the central and southern San Joaquin Valley. But the break was short-lived, as yet another storm was dropping south out of the Gulf of Alaska.

Christmas Day, 2010, saw precipitation move north over the central California interior, as the upper-level low remained offshore. The heaviest rain and snow fell during the late afternoon and evening of December 25th, and some flooding was reported during the evening on the east side of the San Joaquin Valley. East Bakersfield was the hardest hit, as the saturated ground could not absorb the additional runoff. On the evening of Christmas Day, Bakersfield received 0.42 inch of rain, raising the total for Meadows Field through the 25th to 5.37 inches. This broke the old record for the wettest month of 5.36 inches set in February 1998.

In the high country of the Southern Sierra Nevada, between 6 and 13 inches of new snow fell from December 25th through the morning of the 26th.

The storm quickly moved east during the night of December 25th-26th, and skies began clearing from the west. This allowed dense fog to develop over parts of the central and southern San Joaquin Valley during the early morning hours of December 26th. Weak upper-level short-waves moved through California during the nights of the 26th-27th and the 27th-28th, bringing some mid-level and high clouds to the region. This only flattened a weak upper-level ridge over California, and did not prevent fog from redeveloping, although the fog did form later on these nights than on the 25th-26th.

The last storm of the month arrived on December 28th and continued into the next day. Fresno had a record rainfall of 0.92 inch on the 28th, breaking the old record of 0.72 inch, set in 2004. The two-day total at Fresno-Yosemite International Airport was 1.54 inch, which pushed the December rainfall to 5.92 inches for the second wettest December on record for Fresno; the wettest December was in 1955, with 6.73 inches. Fresno also surpassed Bakersfield for the monthly total by a tenth of an inch.

Up to 4 feet of fresh snow fell on the high country of the Southern Sierra Nevada, and strong winds developed over much of the region as a very cold airmass moved into the central California interior. While the winds kept central and southern San Joaquin Valley lows in the upper 20s to mid 30s on the morning of December 30th, light winds allowed lows to fall a few degrees colder the next morning. Lows in the coldest, wind-sheltered Valley locations bottomed out in the mid 20s on the 31st, and even Bakersfield and Fresno fell below 32 degrees. December 31st was not only the coldest low of the month at both Bakersfield and Fresno, it also was the coldest low of the year for Fresno, and tied with November 30th for the coldest low at Bakersfield.

Below is a listing of climate headlines for Bakersfield and Fresno for December, highlighting the unusually wet nature of the month:

...BAKERSFIELD HAS ITS SECOND WETTEST CALENDAR YEAR ON RECORD...
...FRESNO HAS ITS 7TH WETTEST CALENDAR YEAR ON RECORD...
...BAKERSFIELD HAS ITS WETTEST DECEMBER ON RECORD...
...BAKERSFIELD HAS ITS WETTEST MONTH ON RECORD...
...FRESNO HAS ITS SECOND WETTEST DECEMBER ON RECORD...
...FRESNO HAS ITS FIFTH WETTEST MONTH ON RECORD...
...BAKERSFIELD HAS ITS WETTEST START TO THE RAIN SEASON ON RECORD...
...FRESNO HAS ITS 3RD WETTEST START TO THE RAIN SEASON ON RECORD...

...BAKERSFIELD TIES FOR ITS 7TH WARMEST DECEMBER ON RECORD...
...FRESNO TIES FOR ITS 5TH WARMEST DECEMBER ON RECORD...