MARCH 2024 WEATHER SUMMARY
FOR THE CENTRAL CALIFORNIA INTERIOR

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An active and stormy pattern began the month with Tornado Warnings issued for locations in the San Joaquin Valley on the 1st and 2nd. In addition, Winter Storm, Blizzard, and High Wind Warnings were in effect for locations outside of the San Joaquin Valley on the first couple of days. During these first two days, around several inches up to four feet of snow fell in the Sierra Nevada, mainly above 6,000 feet, although snow levels briefly lowered to around 3,000 feet by the evening of the 2nd. Below average temperatures prevailed with gusty winds at times until the 3rd, with the strongest gusts in the mountains and desert. Precipitation with this event ended on the 3rd, and some weak systems afterward passed over the region, including on the 6th and 11th. A strong easterly wind event occurred in the Sierra Nevada and eventually into the Kern County mountains and desert on the night of the 13th until the morning of the 15th. In addition, strong, gusty winds occurred during the overnight hours of the 13th into the 14th. Unsettled weather continued until the 19th, though with mainly minor impacts. Quiet and relatively warm weather prevailed from the 20th until the 22nd. Another series of storms brought showers and mountain snow, thunderstorms, and gusty winds on the 23rd through the 24th and at times until the end of the month.

Number of Days with Freezing Temperatures

Bakersfield: 0 for March (month's average of 0 days); total since November 1st: 2 (season average of 11 days)

Fresno: 0 for March (month's average of 0 days); total since November 1st: 0 (season average of 11 days)

Hanford: 0 for March (month's average of 1 day); total since November 1st: 16 (season average of 27 days)

Madera: 0 for March (month's average of 1 day); total since November 1st: 20 (season average of 23 days)

Merced: 0 for March (month's average of 1 day); total since November 1st: 12 (season average of 26 days)

Table 1 – March 2024 Summary Statistics– NWS Hanford, CA ASOS Sites						
Location	**Monthly Average Temp (deg F)**	**Departure from Average (deg F)**	**Temperature Rank**	**Total Monthly Precipi-tation (inches)**	**Departure from Normal (inches)**	**Precipitation Rank**
Bakersfield	57.3	-1.3	62nd lowest	1.12	-0.03	49th highest
Fresno	57.8	+0.4	33rd highest	2.13	+0.23	48th highest
Hanford	57.1	+0.4	31st highest	1.28	-0.21	54th highest
Madera	55.4	-0.7	35th highest	1.40	-0.58	51st highest
Merced	55.6	+0.4	36th highest	2.48	+0.66	36th highest

A stormy pattern occurred on the 1st and 2nd with light to moderate rain in the lower elevations and moderate to heavy mountain snow in the higher elevations of the Sierra Nevada. Isolated thunderstorms occurred in the Central Valley and Sierra Nevada foothills on both the 1st and 2nd, and a tornado touchdown was reported at an elementary school in Madera on the late afternoon of the 1st. This tornado had a rating of EF-0, which is the weakest on the Enhanced Fujita (EF) Scale (with the strongest rating of EF-5). On the 2nd, a strong thunderstorm produced a funnel cloud between around 5:00 and 5:40 PM that moved from just south of Corcoran to just west of Porterville; this prompted two separate Tornado Warnings. However, no tornado touchdown was confirmed with this storm.. Precipitation around 0.25 inch to 1.00 inch fell in the San Joaquin Valley, with heavier amounts in the Sierra Nevada foothills, or 1.50 to 3.00 inches. Gusty winds developed at times in the Central Valley, Sierra Nevada foothills, and the coastal ranges adjacent to the west side of the San Joaquin Valley. The strongest gusts were around 65 mph in the coastal ranges, and quite a few locations reported gusts of 30 to 35 mph in the remaining areas. Up to four feet of snow fell in the Sierra Nevada, including in the higher elevations of Yosemite National Park, while several inches up to around two feet accumulated in areas to the south. This amount of snow was enough to increase snowpack in the southern Sierra Nevada by about 17 percent which brought the snowpack to 94 percent of average as of the 3rd (and would stand at 89 percent of average for April 1st). Snow levels were generally around

6,000 feet on the 1st and 2nd, but were lowered to 3,000 feet by the evening of the 2nd. Light snow accumulated down to elevations of around 3,000 feet on the night of the 2nd into the morning of the 3rd. On the 3rd, numerous locations in eastern Kern County, including the Mojave Desert slopes and the desert floor, reported gusts over 50 mph during the morning and afternoon hours with some isolated gusts that exceeded 75 mph on the morning of the 3rd. Otherwise, below to near average temperatures with variable cloudiness prevailed.

A quiet period occurred on the 4th and 5th with temperatures near to slightly below average. The mornings were chilly, as quite a few locations in the San Joaquin Valley dipped into the upper 30's on both mornings. On the 6th, a low pressure system brought subtropical moisture into the southern and western portions of our forecast area. This produced scattered showers and thunderstorms over the coastal ranges, west side of the San Joaquin Valley, and over portions of Kern County, mainly western portions. Most locations that reported precipitation received a trace up to around a tenth of an inch of rain, except for localized amounts up to around 0.50 inch in these areas due to heavier showers and thunderstorms. Snow showers also developed in the Kern County mountains towards Frazier Park on the afternoon of the 6th into the morning of the 7th.

On the 8th until the 10th, the weather was generally quiet. Another weak storm system arrived late in the night of the 10th and lasted until the morning of the 11th. Little or no precipitation was recorded in the San Joaquin Valley, except for some light showers near Merced. A dusting up to a couple of inches of snow accumulated in the Sierra Nevada at elevations above 6,000 feet. Gusty westerly winds returned to the Kern County mountains and desert on the night of the 11th and lasted until the morning of the 13th, as gusts reached around 45 to 50 mph with some stronger isolated gusts near 70 mph over exposed ridgetops in the mountains. Winds briefly abated on the 13th, but picked back up on the night of the 13th with a directional shift to the east and northeast. Winds also increased over the Sierra Nevada and foothills beginning on the night of the 13th into the morning of the 14th, due to a strong upper-level low that passed over the Great Basin.. A gust of 97 mph was reported at a private weather station above North Fork in the Sierra Nevada in Madera County, or south of Yosemite National Park; otherwise, gusts near 70 mph were reported in quite a few mountain locations as far south as Kern County. As for the Kern County desert areas, gusts of 45 to 50 mph were reported in quite a few places during the 14th. In addition, northerly winds picked up at Merced where a gust of 35 mph was recorded during the afternoon of the 13th, or ahead of the upper-level disturbance.

On the 15th until the 22nd, a drying and warming trend occurred, except for a few afternoon showers and thunderstorms over the mountains at times on the 17th through the 19th. Above average high temperatures arrived on the 17th and lasted until the 22nd as a ridge of high pressure dominated the pattern. The warmest highs occurred in the Central Valley and rose to as warm as the lower 80's on the 18th through the 20th.

During the 23rd and 24th, a stormy pattern occurred throughout the region as cold, unstable air brought scattered showers and thunderstorms to the Central Valley, snow to the Sierra Nevada and Kern County mountains, along with gusty winds (gusts of 45 to 55 mph) in the desert areas of eastern Kern County. Brief heavy rainfall and hail (from pea-sized to penny-sized, or one quarter of an inch to three quarters of inch in diameter) accompanied the stronger storms. Cooler than average temperatures prevailed during the 23rd and 24th, but milder temperatures and drier conditions occurred on the 25th as a weak ridge of high pressure passed over Central California. However, another round of gusty winds took place along the Mojave Desert slopes in eastern Kern County where gusts reached around 55 mph in a few spots.

Another storm arrived on the 27th, although it was weak with generally light precipitation (mainly up to 0.25 inch) outside of the higher elevations of the Sierra Nevada from around Yosemite to northeastern Fresno County where seven to eleven inches of snow were reported. A stronger storm passed over the region from late on the 29th until the 31st. Most of the precipitation fell in much of our forecast area during the evening of the 29th into the morning of the 30th. During this period, amounts of 0.50 inch to over an inch of precipitation accumulated in the San Joaquin Valley into the Sierra Nevada foothills, as well as the coastal ranges. Several inches up to around 1.5 feet of snow accumulated in the Sierra Nevada above 5,000 feet from Yosemite NP to Fresno County with lesser amounts (up to a foot) to the south. More gusty winds developed in western portions of the San Joaquin Valley into the Sierra foothills in Mariposa and Madera Counties, where gusts around 35 to 40 mph were reported, along with some isolated stronger gusts to around 50 mph. In addition, gusty winds returned to the Kern County mountains and desert, with recorded gusts around 45 to 55 mph. Afterward, isolated afternoon and early evening showers and thunderstorms developed in the Central Valley and adjacent coastal ranges on the 30th and 31st; although mainly light precipitation (up to around 0.25 inch) was reported on each day.

By the end of the month, near to below average temperatures prevailed throughout the region (Fig 1). However, variable precipitation was recorded across the forecast area (Fig 2). Near to above average precipitation was reported in much of the San Joaquin Valley; however, below average snowfall occurred in portions of the Sierra Nevada south of Yosemite National Park.

Table 2 – Seasonal Precipitation for ASOS Locations (ending on March 31st, 2024)						
Location	**Since Jan 1st (inches)**	**Departure From Average (inches)**	**Since Jul 1st (inches)**	**Departure From Average (inches)**	**Since Oct 1st (inches)**	**Departure From Normal (inches)**
Bakersfield	4.99	+1.47	7.03	+1.57	5.95	+0.54
Fresno	7.40	+1.41	8.48	-0.81	8.29	-0.92
Hanford	5.97	+1.48	7.73	+0.74	7.25	+0.32
Madera	6.42	+0.37	8.44	-0.83	8.31	-0.92
Merced	9.94	+3.55	13.06	+3.05	12.94	+2.98

Table 3– Warmest High Temperatures and Coolest Low Temperatures of the Month for ASOS Locations				
Location	**High**	**Date(s)**	**Low**	**Date(s)**
Bakersfield	80	19th & 22nd	40	4th, 5th & 15th
Fresno	80	19th & 20th	42	5th & 15th
Hanford	81	19th & 20th	37	5th & 15th
Madera	78	19th & 20th	35	15th
Merced	80	20th	35	15th

Daily Records Set During March 2024

Bakersfield – No daily records reached.

Fresno – No daily records reached.

Hanford – No daily records reached.

Madera – No daily records reached.

Merced – 1st: Record high daily precipitation of 1.04 inches set, which broke the old record of 0.98 inch set for the date in 1970.

23rd: Record high daily precipitation of 0.67 inch set, which broke the old record of 0.57 inch set for the date in 1945.

Fig 1 – Departure from Average Temperature for this month

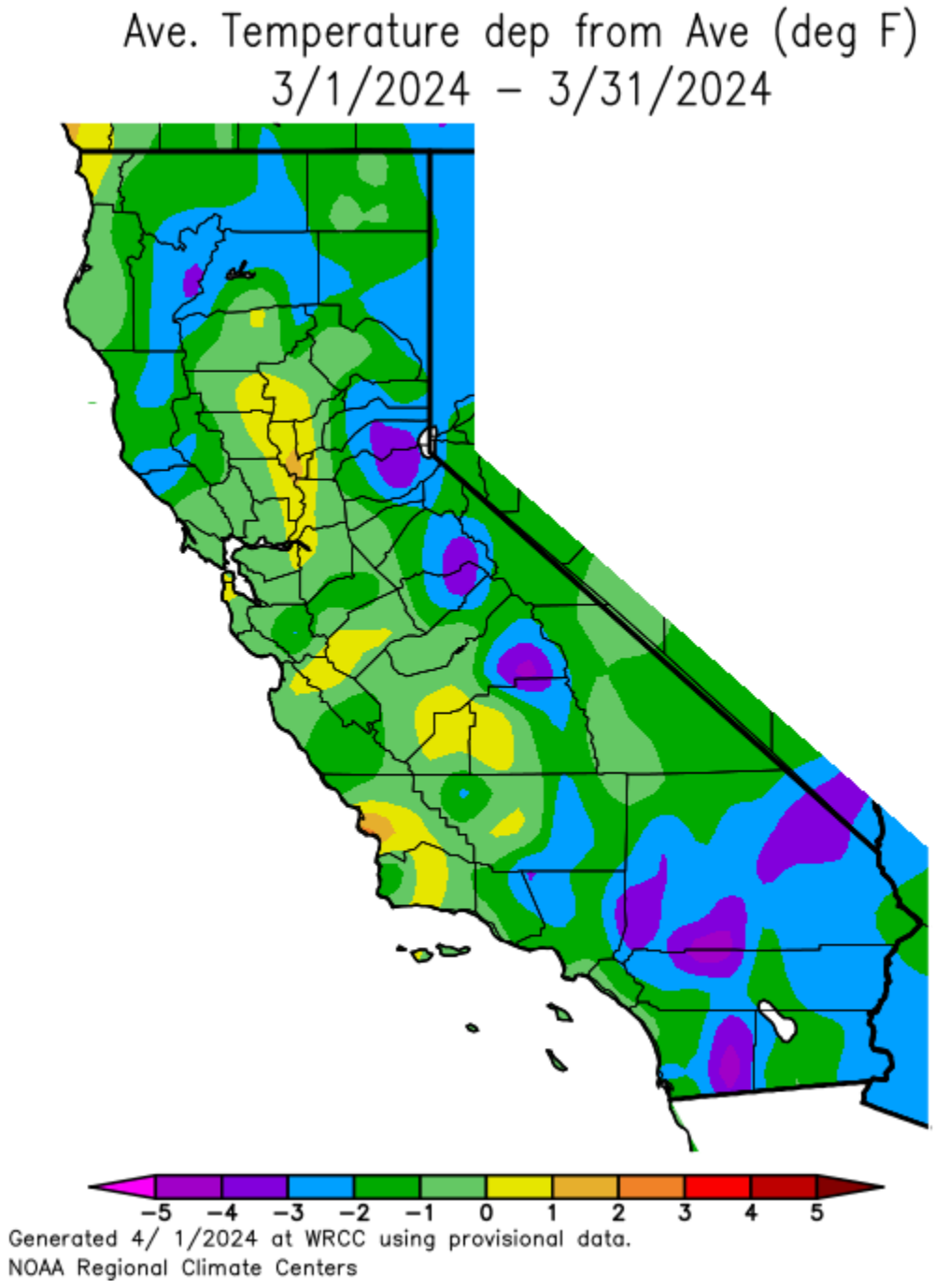

Fig 2 – Percent of Average Precipitation for this month