NWS FORM E-5 U.S. DEPARTMENT OF COMMERCE HYDROLOGIC SERVICE AREA:
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL WEATHER SERVICE **SAN JOAQUIN VALLEY - HANFORD, CA**

REPORT FOR:

MONTHLY REPORT OF RIVER AND FLOOD CONDITIONS

MONTH: **January** YEAR: 2023

TO: Hydrometeorological Information Center, W/OH12x1
National Weather Service/Office of Hydrology
1325 East-West Highway #7116
Silver Spring, MD 20910

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(In Charge of Hydrologic Service Area)

DATE: Feb 3rd, 2023

When no flooding occurs, include miscellaneous river conditions, such as significant rises, record low stages, ice conditions, snow cover, droughts and hydrologic products issued (WSOM E-41).

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¦ ¦ An **X** inside this box indicates no flooding occurred for the month within this hydrologic service area.
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The month of January started off quite wet as an atmospheric river that brought impacts on New Year's Eve continued to do so on New Year's Day. Moderate to heavy rainfall early in the morning in Kern County lead to rockslides and mudslides in areas with steep canyons and/or loose sediment. Showers lingered through the early morning hours until the trough/AR exited the region later on New Year's Day. A break in the wet weather pattern prevailed for the next few days across the HSA. This break was cut short by a storm system that impacted the region Jan 4 – Jan 6. This system brought moderate rainfall across the valley and foothills, with isolated heavy rainfall in thunderstorms that formed in the San Joaquin Valley on January 5th. The system exited the region early on Jan 6th, which lead to another brief lull in activity before another system impacted the region on Jan 7th. The Jan 7th storm system was much colder in nature than the previous storm systems, with much lower QPF amounts and lower snow levels. The low snow levels helped mitigate hydrological concerns. However, the region would not be so lucky with the powerful storm system that impacted Central California the following week, which prompted numerous River Statements, Flood Advisories, Flood Warnings, and even Flash Flood Warnings across the district.

A well-advertised atmospheric river began to encroach upon the HSA late on Jan 8th and early on Jan 9th. A Flood Watch was issued for a majority of the HSA well in advance to the event as weather models indicated high confidence in the event occurring. This storm had very high snow levels with a deep subtropical moisture tap that lead to precipitation starting late Jan 8th, becoming more widespread Jan 9th. On the morning of Jan 9th, multiple snow level radars indicated snow levels starting off around 7,000 feet and rose to as high as 9,600 feet as the atmospheric pushed inland. The core of the AR (atmospheric river) targeted the HNX HSA mid to late morning on Jan 9th. This lead to an extended period of moderate to heavy rain across the region during that time period, especially Fresno County and northward. In particular, Arroyo Pasajero region near Coalinga took the brunt of the heavy rain. Los Gatos Creek saw significant rises through the morning of Jan 9th, with the Los Gatos LGCC1 station reaching a Flood of Record at 14.07 ft. Other stations in this flood plain also noted significant rises. Here is a quote from Bibek Joshi at DWR regarding flows and rises through the region on the 9th.

"Los Gatos Creek at Coalinga stage crested at 14.1 feet this morning at 11 AM. This stage is the highest ever recorded at this location. Previous highest measured stage at this location was on March 10, 1995 at 12.77 feet (5,700 cfs). The USGS rating ends at 10.15 feet so the discharge above the rating table

is an estimate. Panoche Creek – I-5 overcrossing crested at 13.4 feet this afternoon at 1PM. Highest recorded stage at this location is 13.46 feet on February 3, 1998. Both locations recorded sharp rise in stage and much higher stage than the forecast issued this morning."

Flooding in the region was inevitable, with parts of Los Gatos Road getting washed out. Flooding also occurred eastward towards the I-5, where some road closures were noted due to flooding. Additionally, one swift water rescue was done by the Coalinga Fire Department at Phelps Ave at its intersection with Highway 33.

Flooding was also a major issue in other parts of the HSA, especially across the Sierra Nevada foothills and communities within that region. Numerous rockslides occurred late in the morning of Jan 9th, when rainfall rates near 1" per hour were observed at a couple of RAWS stations in Fresno County. In particular, a major rockslide occurred near Tollhouse in Fresno County which shut down the 4 lane on Highway 168. Unfortunately, this occurred in close proximity to the NYE rockslides which also had significant impacts to the same roadways. Other high impact flood events on the 9th included a debris-laden flow in the El Portal area and a culvert that washed out near Hume Lake on 10 Mile Road, which made travel nearly impossible in and out of the region where 300 people were located at the time. As day progressed, flooding impacts continued to spread southward as the Atmospheric River moved southward. Significant flooding was noted near Three Rivers on the afternoon of the 9th as intense rain bands passed over the area. Several emergency response personnel were trapped behind flood waters who were in place to limit flood water impacts on structures. Dry creeks in Strathmore began to rapidly rise leading to bank full and back flowing along the Friant-Kern Canal. About 40 homes were impacted from the flooding with water ranging from several inches deep to several feet. Late in the evening of the 9th, some run-off due to the warm nature of the storm system and additional rainfall in the foothills lead to Mills and Hughes creek with raging flows. Both creeks are uncontrolled, so when flows approached 13,000 CFS occurred the evening of the 9th just below Pine Flat Dam, it was actually just the creeks. No releases were occurring from Pine Flat Dam at the time. High flows were also noted at couple other dams in the region, including the Manzanita dam hitting nearly 1,500 CFS and the Burns, Bear and Mariposa Reservoir reaching capacity on the afternoon of the 9th. An Evacuation Warning and a Flood Warning were issued for the Kings River this evening, but water was successfully diverted to weirs branching off the Kings River, so no major impacts were noted.

Unfortunately for Merced and the town of Planada, a much different outcome occurred on the morning of January 10th where both locations were paralyzed by floods. A combination of wet antecedent conditions, run-off from this system, along with 2-3 inches of rain falling around Merced lead to major flooding for these two locations on January 10th. Leading up to the event, the CNRFC had been forecasting Bear Creek above McKee Road to hit major flood stage by Jan 10th. NWS Hanford had issued a River Flood Watch, and then Warning for this forecast point accordingly. This verified well as this forecast point achieved a Flood of Record on the morning of Jan 10th, with a stage of 26.18 feet measured. This blew away the previous record crest of 24.65 ft on April 4th, 2006. The 4,000 residents of Planada were ordered to evacuate as flood waters from Bear Creek did major damage to the town due to a breached levee. Many homes, businesses, and roadways ended up under water on the morning of the 10th in Planada. The sheriff's office in Merced County was forced to use boats to rescue stranded residents in Planada on the morning of the 10th. Devastating floods also impacted the city of Merced due to record high flows on the 10th along Bear Creek. Despite the major property losses incurred by this flood event, no lives were lost due to swift actions taken by local EM's and law enforcement in Merced and Planada. A major disaster was declared by President Joe Biden in Merced County on January 14th due to the flooding. In terms of the River Flood Warning, NWS Hanford kept it going through Jan 11th, and replaced it with a Flood Warning, which remained in effect for about a week until the waters receded in the affected locations.

Another significant impact related to this flooding was with Amtrak, which had to shut down operations on Jan 10th due to the ongoing flooding in Merced County.

While a majority of the rain fell on Jan 9th, impacts on the 10th outside of Merced County proved hazardous. An MCS passed through the central valley around 530 AM on the 10th, with breezy conditions around 30-35 mph measured. Wet soil due to the previous days' rainfall proved to be tragic as a large Eucalyptus tree fell on highway 99 near Goshen, leading to roadway fatalities. As the January 10th progressed, high flows along the San Joaquin River were noted. Skaggs Bridge Park was closed due to flood waters from the river. Around 9,500 CFS was recorded at RSBC1 – San Joaquin River below Highway 145. This was roughly a height of 13.5 feet recorded when Skaggs Bridge Park closed. Hydrological issues became less of a threat on the 10th due to much lower PWAT levels, but this was traded off for higher SB CAPE values, as the cold core of the system was overhead. One storm did warrant a Flash Flood Warning over a burn scar from 2021 in Tulare County. By afternoon, discrete convection formed across the valley, with once supercell becoming dominant in Tulare County. This storm lead to a Tornado Warning with multiple reports of a funnel cloud from media and the public. A tornado survey was conducted, but not evidence of damage was found. Total rainfall numbers from this event were very high. Just below the snowline, multiple stations recorded 48 hour rainfall totals in the 8-10" range, including Shaver RAWS. Throughout the valley, 1-3 inches of rain fell during the same time period. Per the WPC, this was one of the most powerful Atmospheric River events California had experience in 19 years, with the HNX HSA taking the brunt of the storm (Fig 4).

By the evening of the 10th and the days of January 11th – January 12th, activity had mostly subsided before another round of showers associated with a storm system arrived on the 13th and 14th. No notable hydrological concerns came from this storm system, other than a couple of dams in the Sierra Nevada seeing increased flows (North Fork and Crane Valley). Off and on rain occurred across the HSA through Jan 19th before a break in the wet pattern. Dry troughs passed through the region, which lead some high wind impacts, but hardly any measurable precipitation, other than high elevation snow in the Sierra Nevada. High pressure dominated the region Jan 25th-Jan 28th, before the last storm system of January impacted the HSA. This storm system was very cold, with snow levels down to around 2500 feet. It brought a few inches of snow to the Sierra Nevada, as well as the mountain passed in Kern County. This snow created some travel concerns for the I-5 through Tejon Pass as well as Highway 58 through Tehachapi Pass. In other words, the second half of the month was actually quite dry relative to the first half of the month.

All in all, the month of January had dramatic impacts on the Drought Monitor for the region. Numerous areas saw at least 1 or 2 levels upgraded due to the excessive rainfall the HSA received for the month (Fig 2). The Sierra Nevada snowpack for the HNX area saw percentages well above normal for the first of February, at 246% of normal for the date. Most of CA's snowpack was above 200% as well (Fig 3). Reservoirs filled up significantly, with Friant Dam reaching 80% capacity. Overall, this month from a hydrological perspective ended up as one of the most impactful for the district in nearly 25 years.

ASOS rainfall totals for the month of January:

Merced (MCE)	5.22"
Madera (MAE)	2.39"
Fresno (FAT)	4.59"
Hanford (HJO)	3.06"
Bakersfield (BFL)	1.69"

Records Broken:

Bakersfield –

9th: 0.80 inch of rain was recorded, which broke the previous record high daily precipitation of 0.75 inch set on this date in 2018.

Fresno –

9th: 1.53 inches of rain was recorded, which broke the previous record high daily precipitation of 0.57 inch set on this date in 1930.

Hanford –

9th: 1.30 inches of rain was recorded, which broke the previous record high daily precipitation of 0.82 inch set on this date in 1979.

Madera –

No daily records reached.

Merced –

9th: 1.80 inches of rain was recorded, which broke the previous record high daily precipitation of 0.80 inch set on this date in 1907.

HYDROLOGIC PRODUCTS ISSUED THIS MONTH

FLASH FLOOD WARNINGS*

1054 AM PST Mon Jan 9 2023 Fresno and Madera County
404 PM PST Tue Jan 10 2023 KNP Complex Scar in Tulare County
1114 PM PST Sat Jan 14 2023 Madera and Fresno County

FLASH FLOOD WATCHES

*No Flash Flood Watches were issued in the HSA in January.

FLOOD WATCHES

237 AM PST Tue Jan 3 2023
123 AM PST Fri Jan 6 2023
150 AM PST Sun Jan 8 2023 (Bear Creek above McKee Road)
117 PM PST Thu Jan 12 2023

FLOOD ADVISORIES (Counties affected)

436 PM PST Mon Jan 2 2023 Fresno
1115 PM PST Wed Jan 4 2023 Fresno and Kings Counties
240 AM PST Thu Jan 5 2023 Fresno, Kern, Kings Counties
512 AM PST Thu Jan 5 2023 Fresno, Madera, Mariposa, Merced
716 AM PST Thu Jan 5 2023 Fresno, Kings, Madera and Tulare
351 PM PST Thu Jan 5 2023 Tulare
727 AM PST Mon Jan 9 2023 Fresno
729 AM PST Mon Jan 9 2023 Fresno and Kings
822 AM PST Mon Jan 9 2023 Fresno and Madera
954 AM PST Mon Jan 9 2023 Madera, Mariposa and Merced
124 PM PST Mon Jan 9 2023 Friant Dam Releases – Fresno and Madera
322 PM PST Mon Jan 9 2023 Fresno
644 PM PST Mon Jan 9 2023 Kern
820 PM PST Mon Jan 9 2023 Kern and Tulare
837 PM PST Mon Jan 9 2023 Fresno
108 PM PST Tue Jan 10 2023 Madera, Mariposa and Merced
927 AM PST Sat Jan 14 2023 Merced
1032 AM PST Sat Jan 14 2023 Fresno, Madera, Mariposa and Merced
1225 PM PST Sat Jan 14 2023 Fresno, Madera and Tulare
117 PM PST Sat Jan 14 2023 Kern and Kings
136 PM PST Sat Jan 14 2023 Fresno and Kings
219 PM PST Sat Jan 14 2023 Kern
252 PM PST Sat Jan 14 2023 Fresno and Tulare
1016 PM PST Sat Jan 14 2023 Madera
549 PM PST Mon Jan 16 2023 Tulare

Flood/River Flood Warnings

934 PM PST Sun Jan 8 2023 Bear Creek above McKee Road
1029 AM PST Mon Jan 9 2023 Fresno
1029 AM PST Mon Jan 9 2023 Fresno and Kings
700 PM PST Mon Jan 9 2023 Fresno and Tulare (Kings River, time approximated)
904 AM PST Wed Jan 11 2023 – extended Flood Warning for Merced, replaced River Flood Warning

HIGH IMPACT EVENTS

Rockslide that shutdown Highway 168 in Fresno

Bear Creek Flooding Drone Footage

2 Fatalities near Visalia/Goshen on Highway 99 after tree fall

Overview of Amtrak Closures

Tulare County Supercell/Funnel Cloud

Fig 1 – Percent of Average Precipitation for January 2023

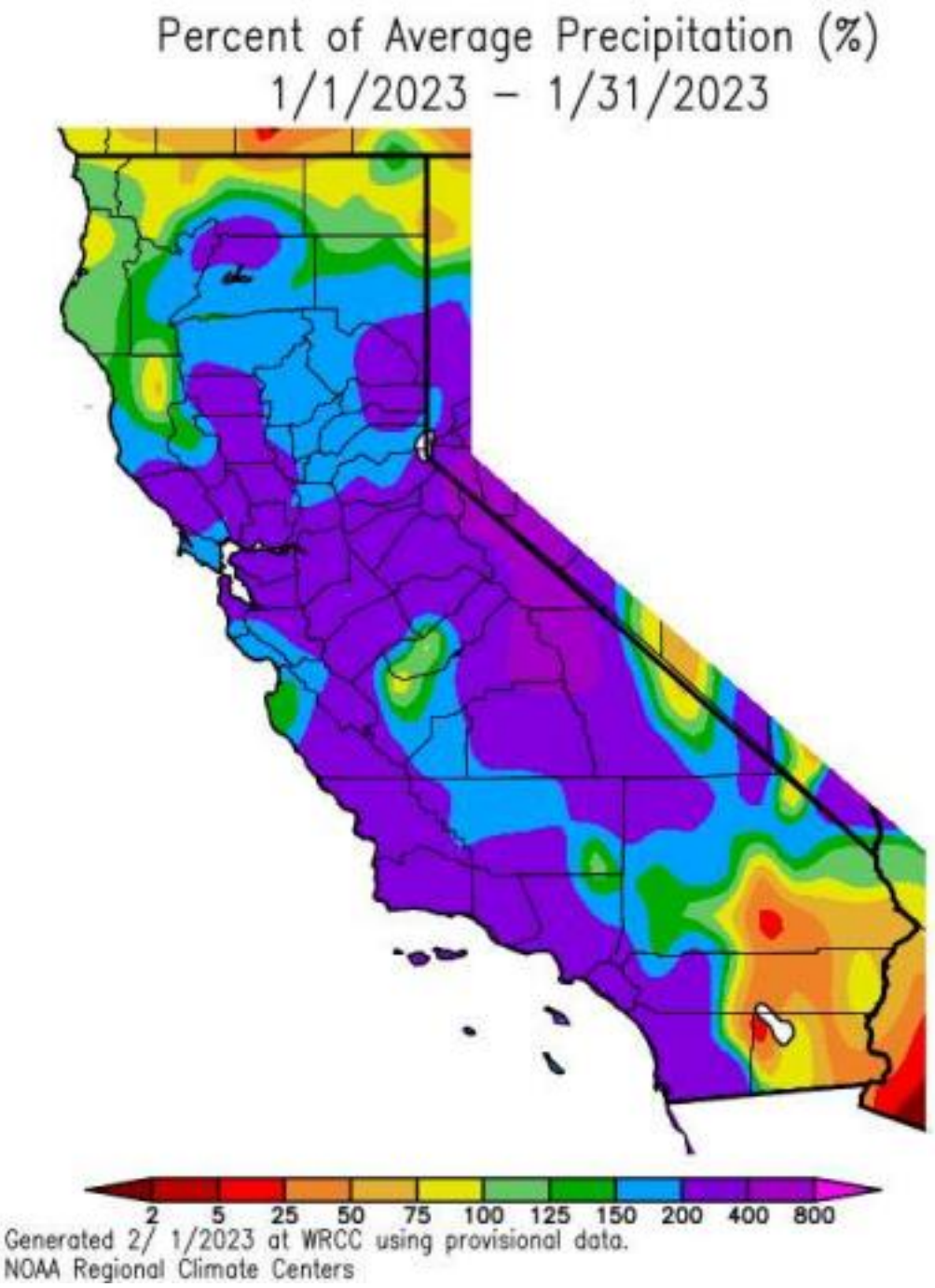


Fig 2 – Drought Status for the state of California

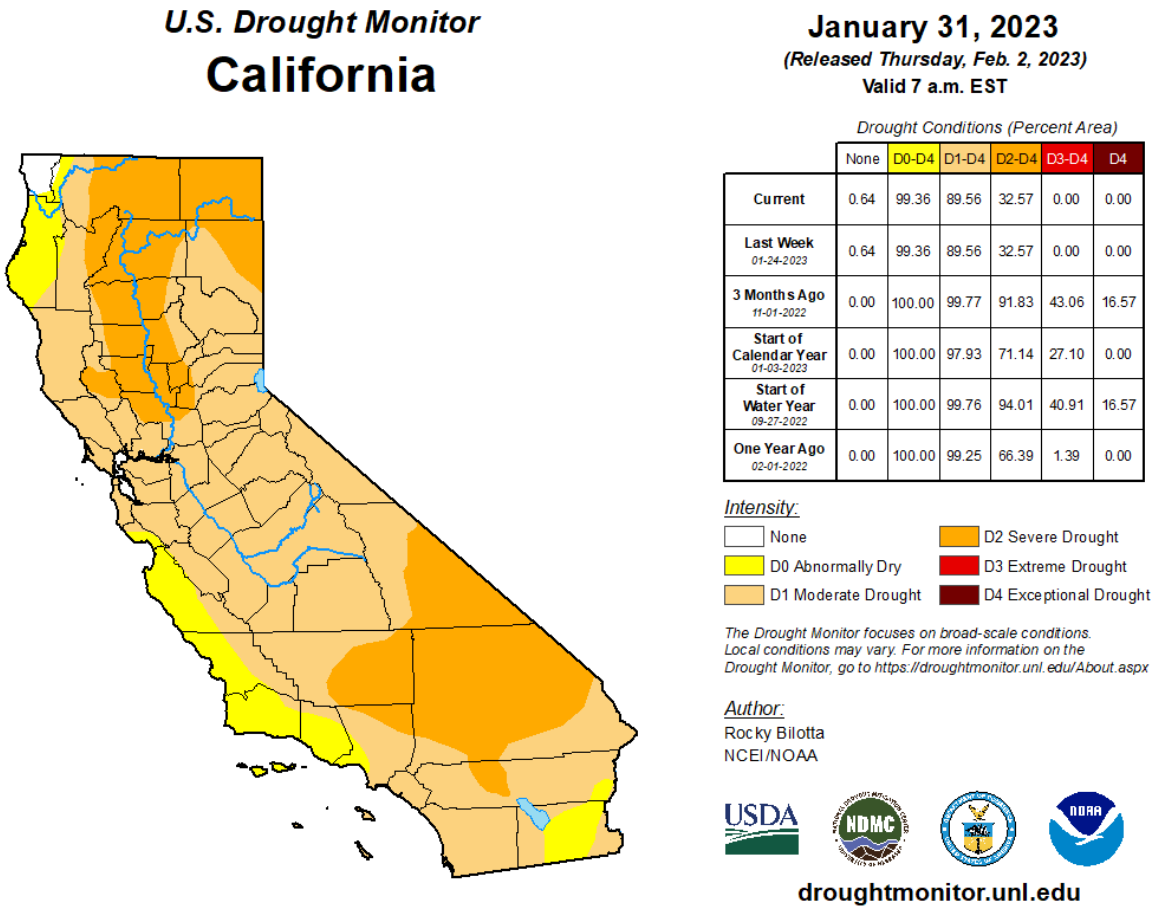
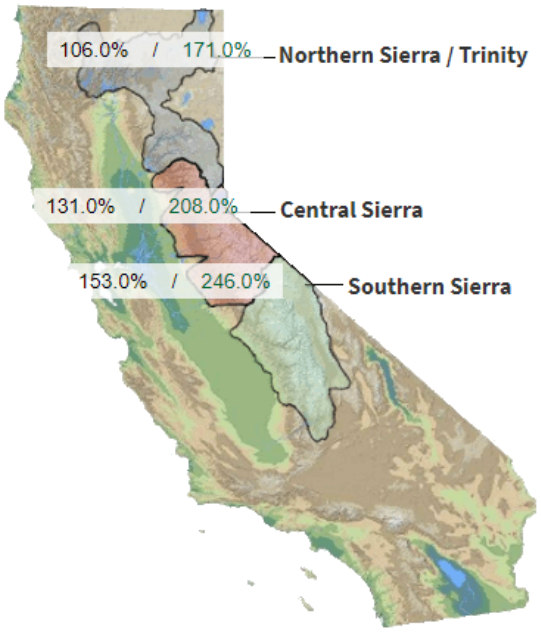


Fig 3 - Snowpack as of Feb 1st 2023

Provided by the California Cooperative Snow Surveys

Data For: **01-Feb-2023**

% Apr 1 Avg. / % Normal for this Date



Change Date : 01-Feb-2023

NORTH	
Data For: 01-Feb-2023	
Number of Stations Reporting	32
Average snow water equivalent	30.2"
Percent of April 1 Average	106%
Percent of normal for this date	171%

CENTRAL	
Data For: 01-Feb-2023	
Number of Stations Reporting	49
Average snow water equivalent	35.3"
Percent of April 1 Average	131%
Percent of normal for this date	208%

SOUTH	
Data For: 01-Feb-2023	
Number of Stations Reporting	32
Average snow water equivalent	34.7"
Percent of April 1 Average	153%
Percent of normal for this date	246%

STATEWIDE SUMMARY	
Data For: 01-Feb-2023	
Number of Stations Reporting	113
Average snow water equivalent	33.7"
Percent of April 1 Average	129%
Percent of normal for this date	206%

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Fig 4 – Jan 9-10 Atmospheric River Rank (Courtesy of the WPC)