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: **December** YEAR: 2022

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

SIGNATURE: Andy Bollenbacher
(In Charge of Hydrologic Service Area)

DATE: Jan 23rd, 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 pattern from dry to wet dramatically changed over the Hanford HSA with multiple, high-impact atmospheric rivers reaching the district in December. Valley rain and mountain snow happened early in the month of December across the HSA with up to 1.25 inches of rain below the snowline in the Sierra Nevada. Appreciable rainfall also fell in the San Joaquin Valley in this time frame. A couple of daily rainfall records were broken in Hanford with this storm system. On December 1st, 0.34 inches of rain broke the daily record (old record 0.27 inches set in 2019) and on December 3rd, 0.49 inches of rain broke the daily record (old record 0.45 inches set in 1941). We had a respite in the rainfall pattern for about a week before a stronger storm system approached the region by December 10th. This system brought valley rain and mountain snow through December 11th. Around 1/2 to 1 inch of rain was recorded through the valley, with 3-5 inches of rain in the Sierra Nevada below the snow line. Merced saw 1.05 inches of rain, which broke the daily record (old record 0.94 inches set in 1937).

A few light showers lingered through December 12th. Another break in the precipitation occurred through the middle of the month before another significant atmospheric river passed through the region December 26th and 27th. This system brought up to an inch of rain in the valley with 3-6 inches of rain in the Sierra Nevada below the snowline. This system was responsible for a few rockslides across the Sierra Nevada foothills, including a fatal rockslide that killed 2 people near the Yosemite National Park entrance on Highway 140. Two daily rainfall records were set on the 27th; the first at Fresno where 1.18 inches of rainfall broke the daily record of 0.74 inches set in 1977 and the other at Hanford where 0.95 inches of rainfall broke the daily record of 0.94 inches of rain set back in 1991.

After the Dec 26-27th atmospheric river, a major, slow moving storm system began to encroach upon the district. This storm had very high snow levels, above 9,000 feet at the onset of the event which started December 30th. Rainfall became moderate over the night of the 30th to the 31st, which lead to some snow melt due to the warm nature of the event. Strong winds on the Diablo/Coastal Range side of the CWA lead to significant rain shadow in the valley, however, this was made up for the Sierra Nevada and Foothills. Through the 30th and 31st, rivers responded moderate to heavy warm rainfall, which sent Pohono Bridge to 8.05' on the 31st, and Bear Creek at McKee Road to about 20 feet, which is monitor stage for that location. No river forecast points hit flood stage through this event though. Numerous rockslides occurred with this event especially on the evening of the 31st. One significant rockslide

shutdown highway 168 near Tollhouse in Fresno County on the 31st. Additional impacts similar in nature occurred in Oakhurst and other foothill towns that are near steep hillsides that could be exposed to "calving" which involves warm rain melting ice just under the surface, allowing for rocks to slide down canyons. PG&E reported high flows of 3,500 CFS at W26 below Manzanita in Auberry area (near Kerckhoff Dam) in the afternoon of the 31st, as warm rain continued to allow excessive runoff due to snowmelt. Willow Creek also saw significant rises through day on Saturday the 31st of December, with flows topping out around 1,400 CFS on the 31st. Later in the evening on the 31st as the rain bands pushed further south and southeast, nuisance flooding around the Bakersfield area occurred, especially in poor drainage areas. The system had mostly exited the area by the time the clock struck New Year's in the Hanford HSA. One daily rainfall record for Merced was set, 0.86 inches of rain fell which broke the daily record (old record 0.70 inches set in 1952) set for the date. Once things were all said and done, some locations such as Yosemite HADS recorded nearly 9" of rain.

The drought situation did improve quite a bit across the HSA due to the multiple atmospheric river events in the month of December. The drought monitor across the region saw a few areas upgraded from D4 to D3 (Figure 2), mainly in the valley and foothill regions. Parts of the Sierra Nevada were upgraded to D2 from D3 or even up to D1 where the snowpack measured well above normal water year to date. In fact, the Southern Sierra Nevada was at 209 % of normal for the snowpack. The average SWE (snow water equivalent) was at 16.6" for the same locations (Fig 3).

ASOS rainfall totals for the month of December:

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

HYDROLOGIC PRODUCTS ISSUED THIS MONTH

FLASH FLOOD WARNINGS*

529 PM PST Sat Dec 10 2022 Oak Burn Scar Mariposa County
531 PM PST Sat Dec 10 2022 Washburn Burn Scar Madera/Mariposa County

FLASH FLOOD WATCHES

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

FLOOD ADVISORIES

1045 PM PST Sat Dec 3 2022	Sierra Nevada
1245 AM PST Sun Dec 4 2022	Fresno County
1047 PM PST Sat Dec 10 2022	Sierra Nevada Foothills
950 AM PST Tue Dec 27 2022	Merced County
535 PM PST Tue Dec 27 2022	Kern/Tulare
718 PM PST Tue Dec 27 2022	Kern/Tulare
1015 AM PST Sat Dec 31 2022	Mariposa County
1107 AM PST Sat Dec 31 2022	Fresno County
1150 AM PST Sat Dec 31 2022	Sierra Nevada
719 PM PST Sat Dec 31 2022	Bakersfield Area
931 PM PST Sat Dec 31 2022	Kern County

HIGH IMPACT FLOOD LSR'S

0900 AM DEBRIS FLOW 1 NNW YOSEMITE NAT'L PA 37.72N 119.68W
12/27/2022 MARIPOSA CA PARK/FOREST SRVC

*** 2 FATAL ***
ROCK SLIDE NEAR THE INTERSECTION OF SR 140
AND BIG OAK FLAT ROAD IN YOSEMITE PARK
KILLED TWO PEOPLE.

0217 PM DEBRIS FLOW 3 ESE AUBERRY 37.05N 119.44W
12/31/2022 FRESNO CA LAW ENFORCEMENT

CALIFORNIA HIGHWAY PATROL REPORTED A LARGE
ROCKSLIDE ON SR 168 NEAR THE LOWER VISTA.

Fig 1 – Percent of Average Precipitation for December 2022

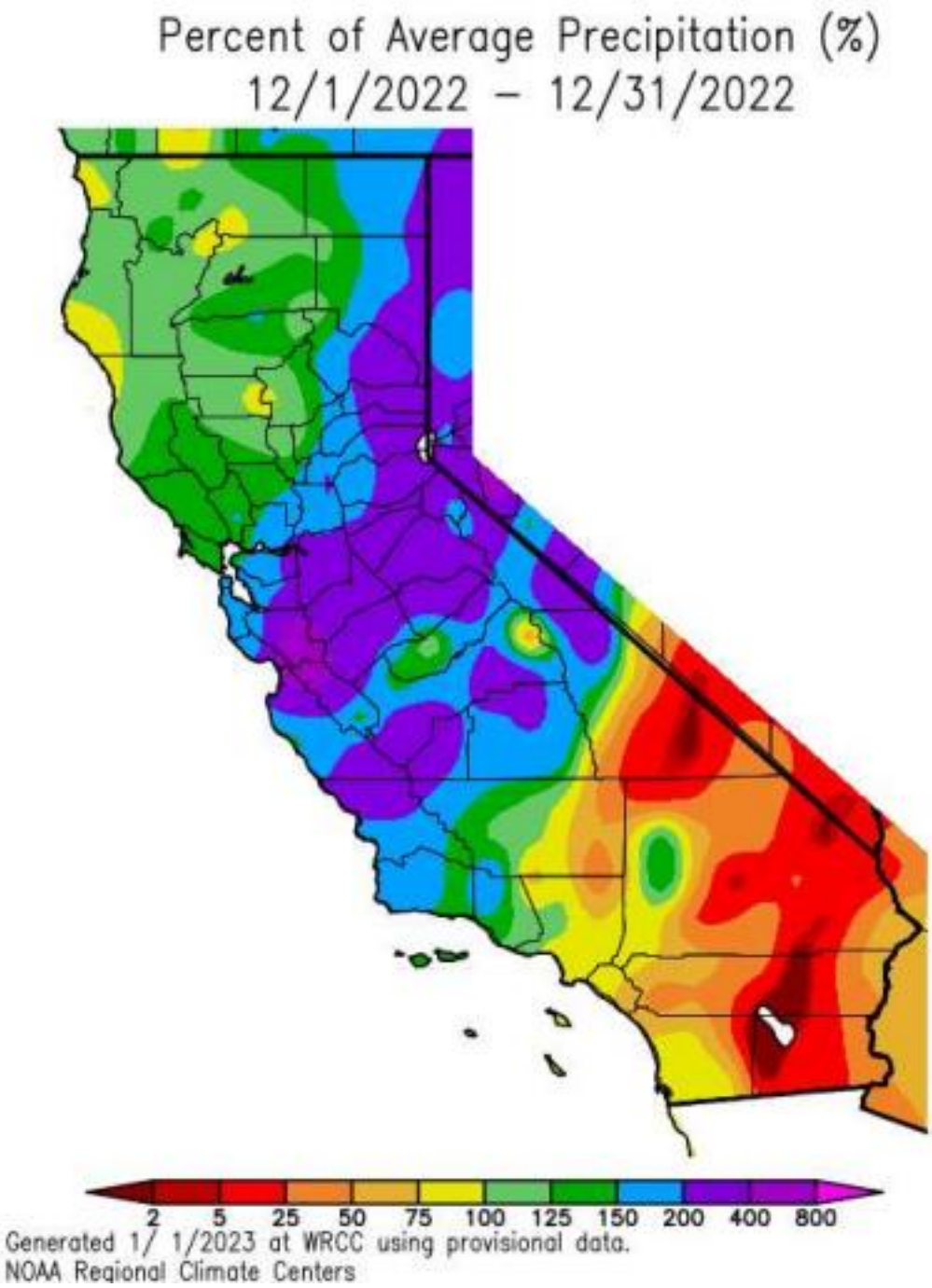


Fig 2 – Drought Status for the state of California

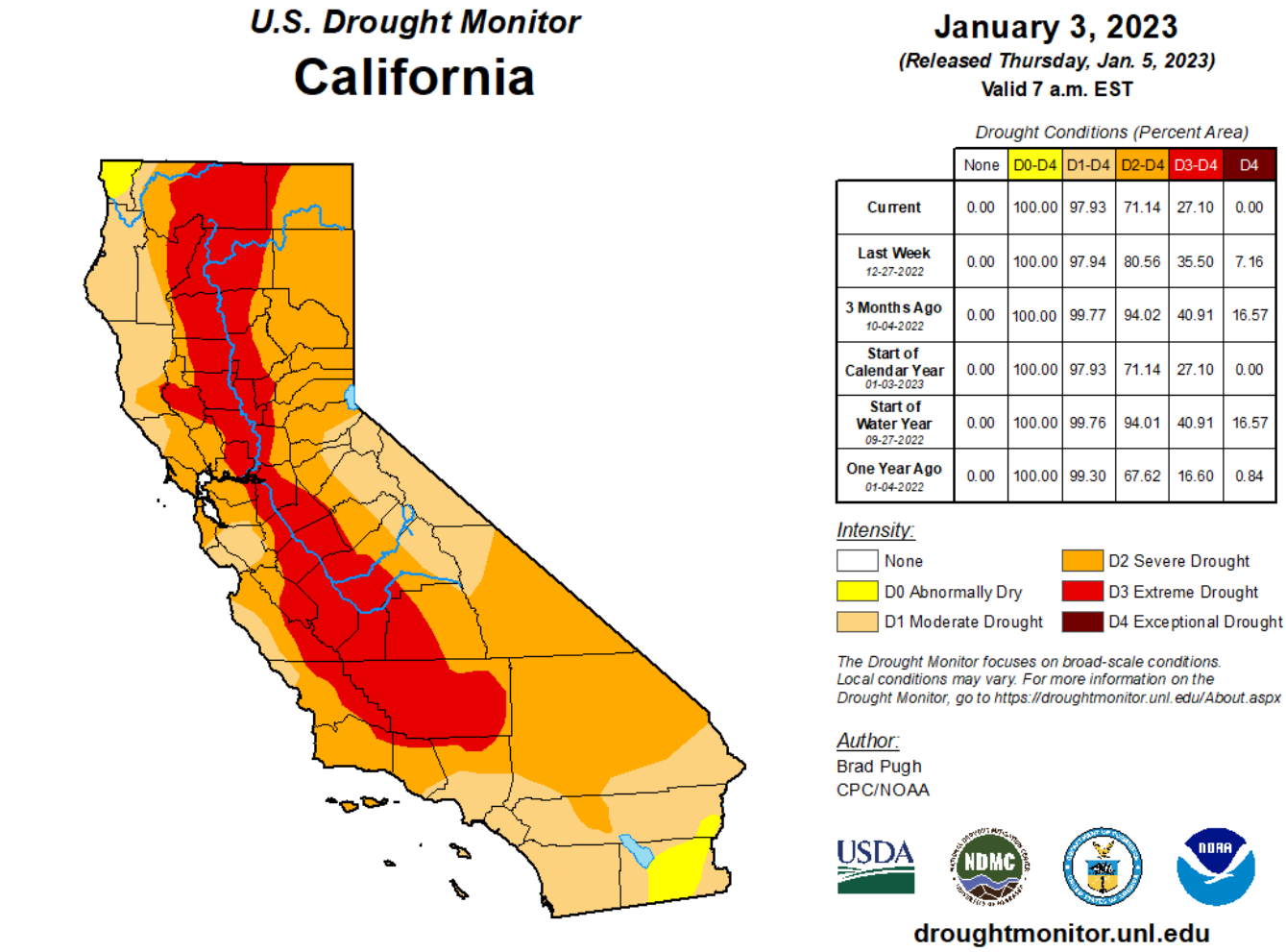


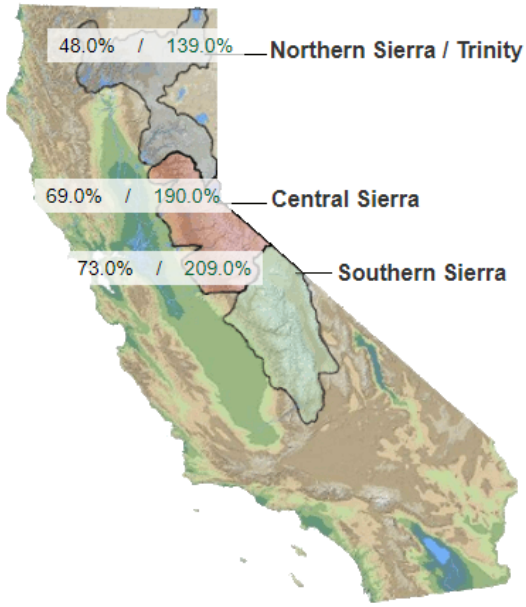
Fig 3 - Snowpack as of Jan 1st 2023

Snow Water Equivalents (inches)

Provided by the California Cooperative Snow Surveys

Data For: **01-Jan-2023**

% Apr 1 Avg. / % Normal for this Date



Change Date : 01-Jan-2023

NORTH	
Data For: 01-Jan-2023	
Number of Stations Reporting	33
Average snow water equivalent	13.6"
Percent of April 1 Average	48%
Percent of normal for this date	139%

CENTRAL	
Data For: 01-Jan-2023	
Number of Stations Reporting	53
Average snow water equivalent	18.7"
Percent of April 1 Average	69%
Percent of normal for this date	190%

SOUTH	
Data For: 01-Jan-2023	
Number of Stations Reporting	34
Average snow water equivalent	16.6"
Percent of April 1 Average	73%
Percent of normal for this date	209%

STATEWIDE SUMMARY	
Data For: 01-Jan-2023	
Number of Stations Reporting	120
Average snow water equivalent	16.7"
Percent of April 1 Average	64%
Percent of normal for this date	182%