National Weather Service
National Oceanic and Atmospheric Administration

CA NV River Forecast Center
CNRFC - Sacramento, CA

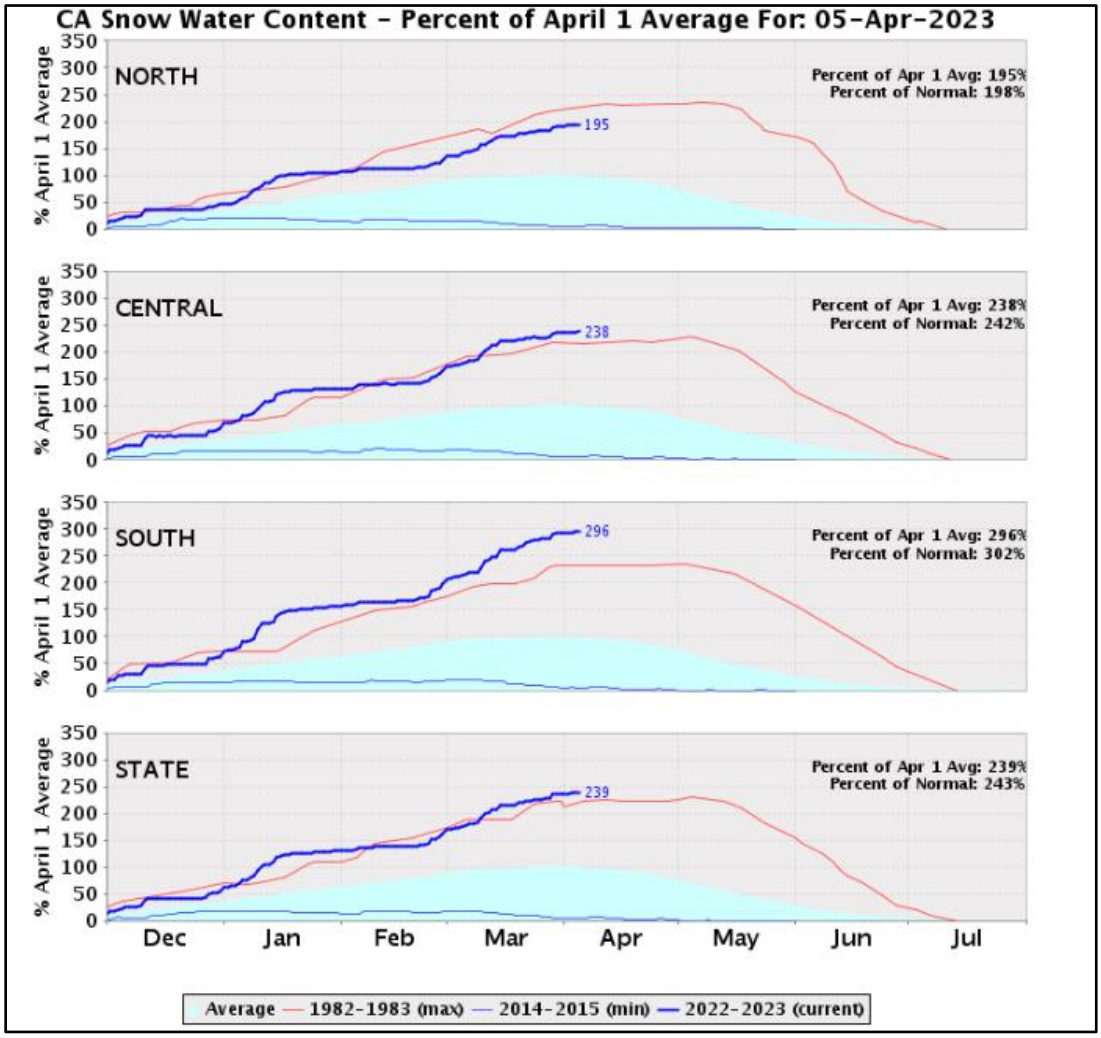
Water Resources Update – April 6, 2023

Summary:

- Record snowpack for April 1 in the Central and Southern Sierra.
- March Precipitation sets record in the Tulare region.
- High uncertainty with mid-April weather; potential for more snow.
- Large snowpack years often have cool Spring temperatures (1983, 1993, 1995, 1998, 2005, 2011).

Details:

Record snowpack for much of the Central and Southern Sierra. Many April 1st snow courses also eclipsed the April 1, 1969 Snow Water Equivalent (SWE) measurements.



Source of graphic: https://cdec.water.ca.gov/snowapp/swcchart.action

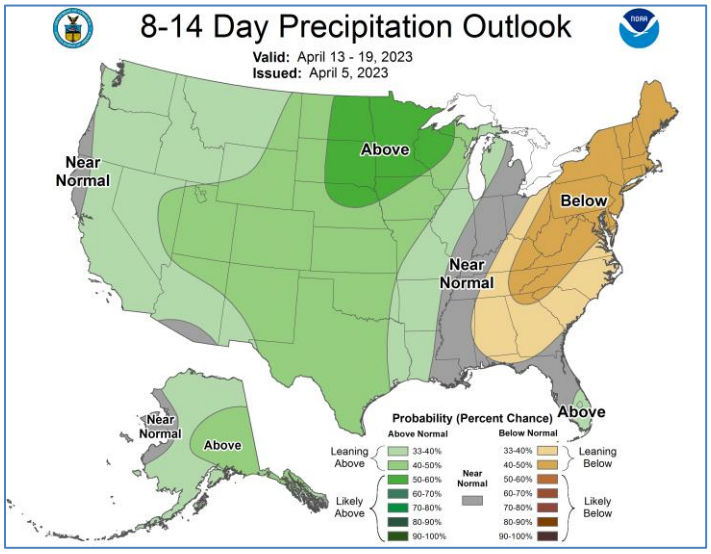
Record wet March in the Tulare Region

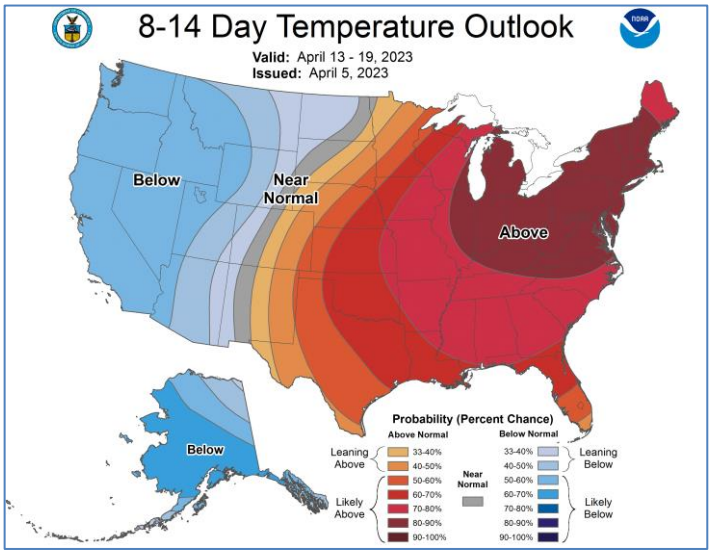
March 2023 saw 17.11 inches of precipitation in the 6-Station Index, the wettest March on record (previous record was 15.04 inches in 1991 (the 'miracle March'). This was the 7th wettest month on record for any month in the region, and already guarantees that the WY2023 will be at least the 4th wettest year on record.

	6 Station Index		6 Station Index	WY	6 Station Index
Mar 2023	**17.11"**	Jan 1969	20.90"	1969	56.26"
Mar 1991	15.04"	Jan 2017	19.30"	1983	56.15"
Mar 1943	14.44"	Dec 1966	19.16"	1998	54.15"
Mar 1995	13.21"	Dec 2010	18.68"	**2023**	**50.59" (through April 4)**
Mar 1938	12.17"	Feb 1936	17.83"	1967	50.07"
Mar 1983	11.10"	Dec 1955	17.12"	1978	49.91"
Mar 1945	10.76"	**Mar 2023**	**17.11"**	1938	47.59"

April Outlook

The rest of April remains highly uncertain. Currently there is good agreement for a cut-off low April 12-13, but the track of systems like these is difficult to predict. There are also several ensemble members showing rain/snow potential for the April 18-20 time frame. The overall outlook from CPC is for low confidence in continued wetter than average weather with higher confidence in a cold pattern over much of the region.

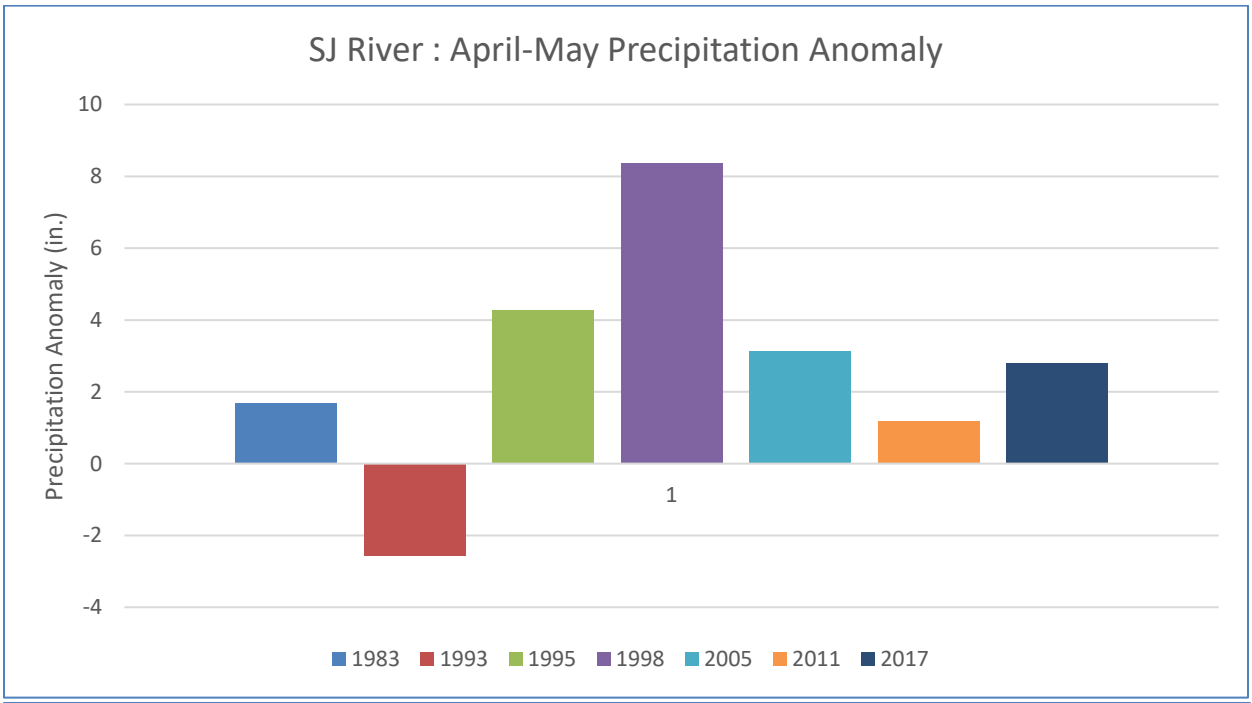


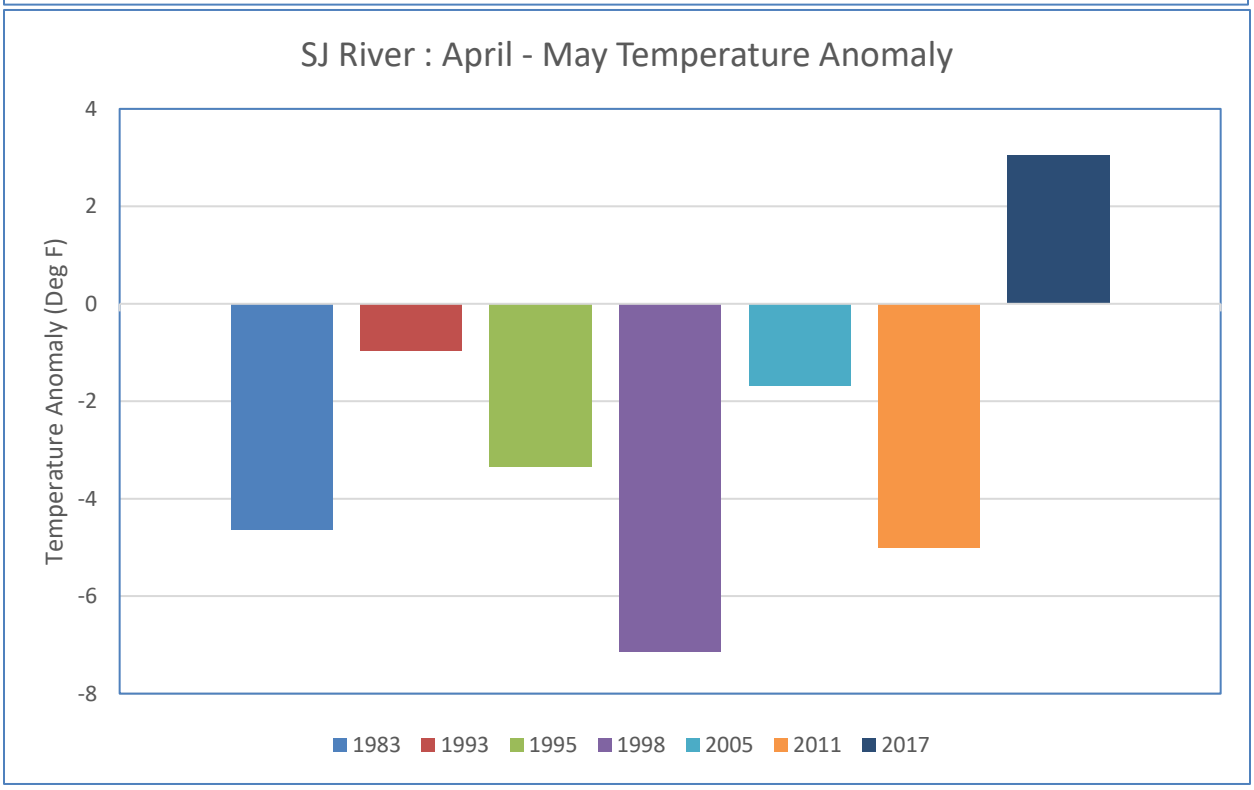


Source:
https://www.cpc.ncep.noaa.gov/products/predictions/814day/814prcp.new.gif
https://www.cpc.ncep.noaa.gov/products/predictions/814day/814temp.new.gif

Cold – Wet pattern in high snowpack years

Predicting how the record snowpack will melt out is of high interest. Looking back at the past largest snowpack years in the San Joaquin region, most of the years had a wetter than average April-May, with colder than average temperatures. The outliers were a warm 2017 and a dry 1993. The data below is for the San Joaquin River watershed above Friant Dam.



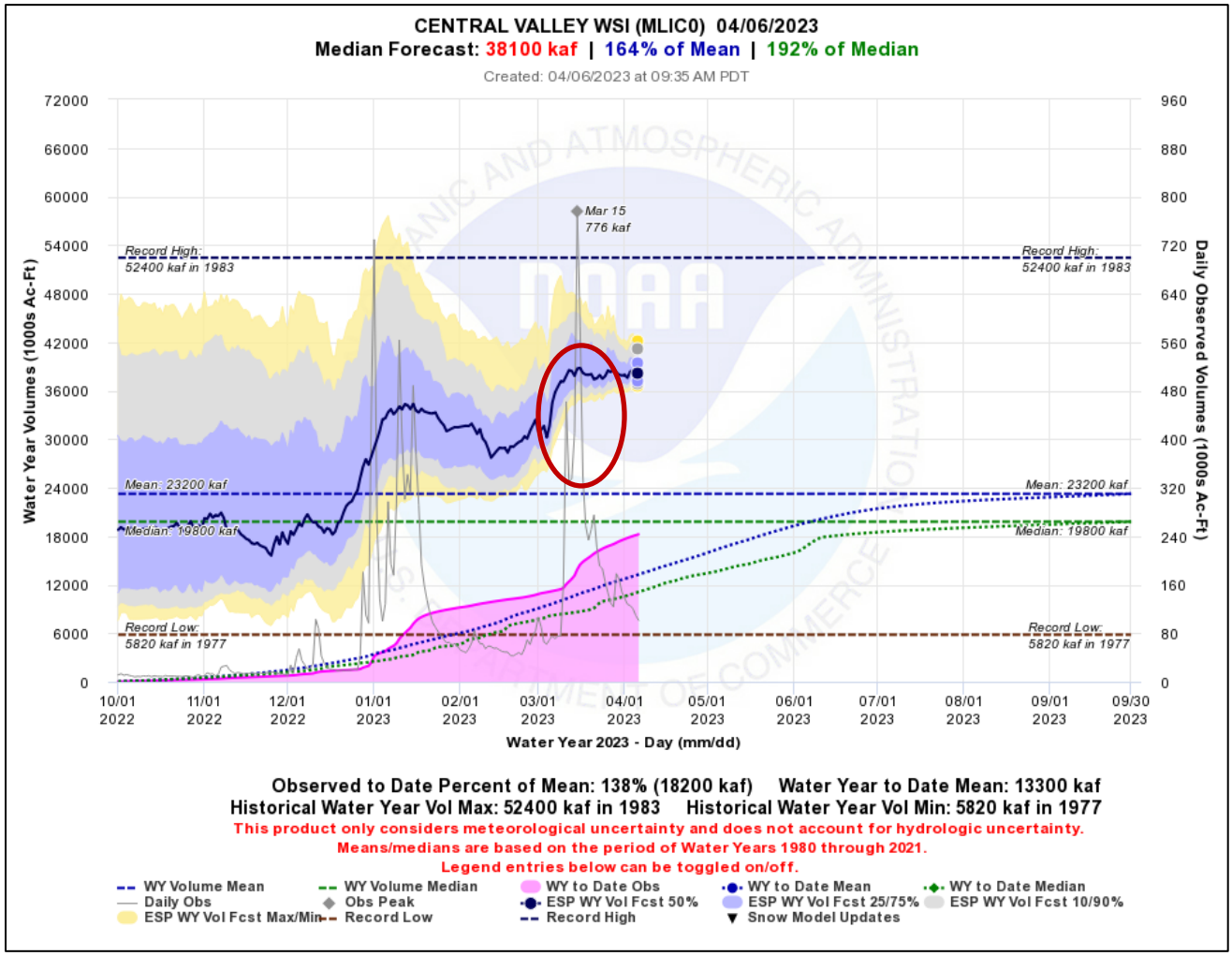


Water Supply Impacts (HEFS = Hydrologic Ensemble Forecast Service)

Since mid-March, CNRFC water supply forecasts have remained fairly flat, following the heavy runoff event of March 15. While the Central and Southern Sierra have been the focus of the heavy precipitation, the northern third of California also had above average runoff.

While not as spatially widespread as WY 1983, the overall WY2023 runoff should easily eclipse the 150% of average mark. The current median forecast for the Central Valley Index is 38.1 MAF or 164% of average, and amazingly **3.6 MAF more than the past three years combined** (WY2000-WY2022).

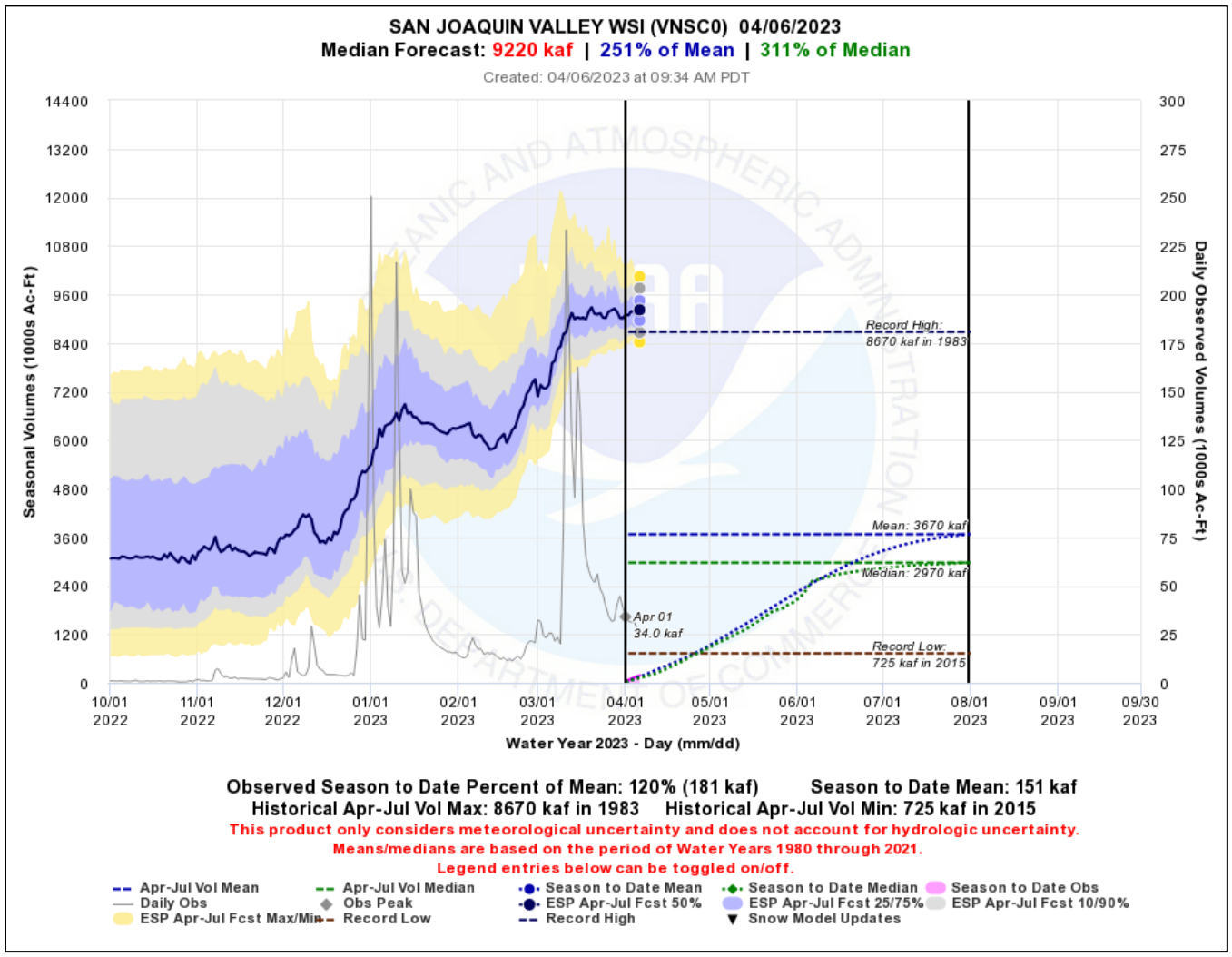
Water Year Runoff Projection



Source: https://www.cnrfc.noaa.gov/ensembleProduct.php?id=MLIC0&prodID=9

Water Supply Outlook for San Joaquin region

The large snowpack in the central and southern Sierra puts this region at high risk for snowmelt flooding. The April – July runoff now has about an 90% chance of exceeding the WY1983 AJ runoff.



Conclusion:

After a record setting year for snow accumulation in the central and southern Sierra, we begin to shift attention to the melt season. Ideally the melt season will be long and extended, which would help to "flatten the curve." A dry and cooler May and June would go a long way to keep snowmelt flooding to a minimum. But with such a huge snowpack, flooding at some point is almost inevitable.

CNRFC
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