



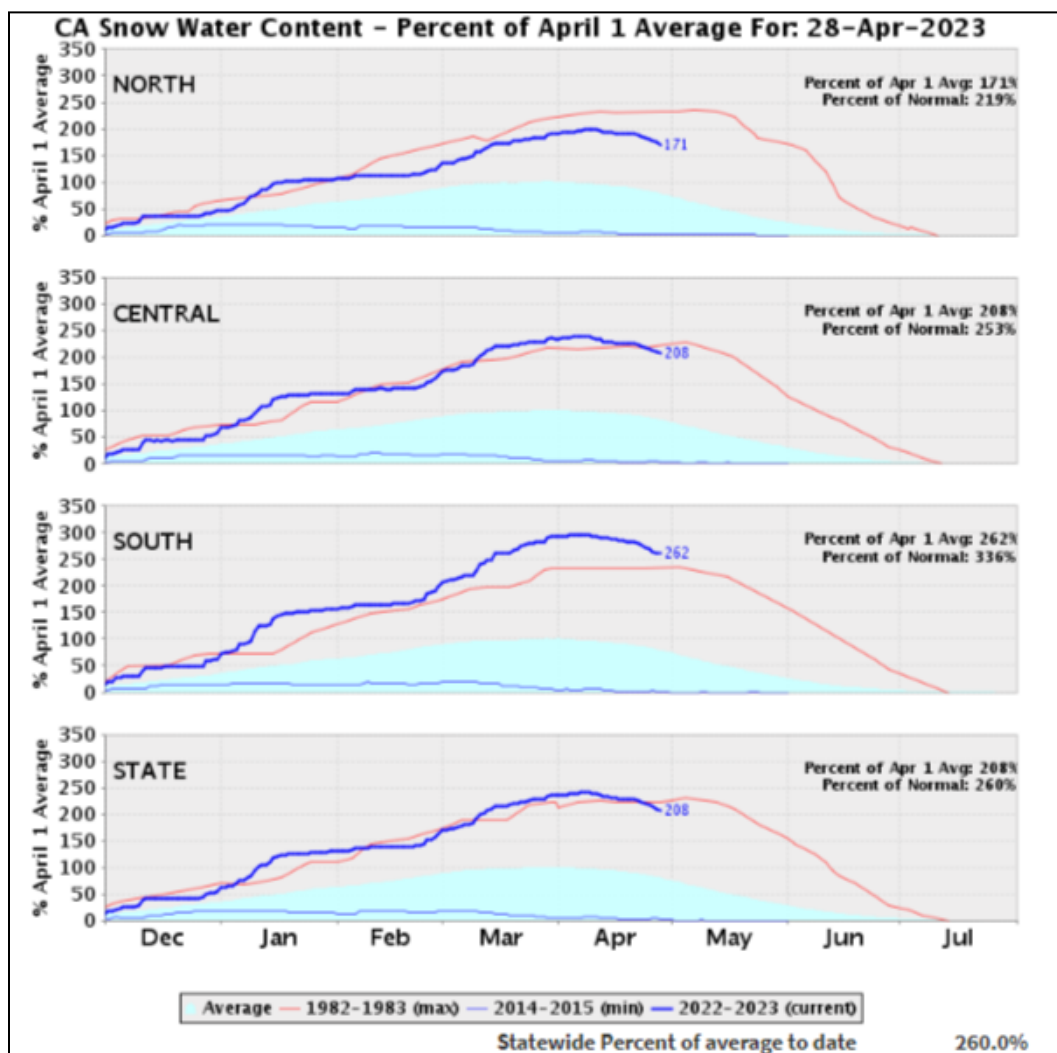
Water Resources Update - May 2, 2023

Summary:

- Record snowpack in the Southern Sierra continues
- Very dry April
- Cool start to May is causing volume shifts

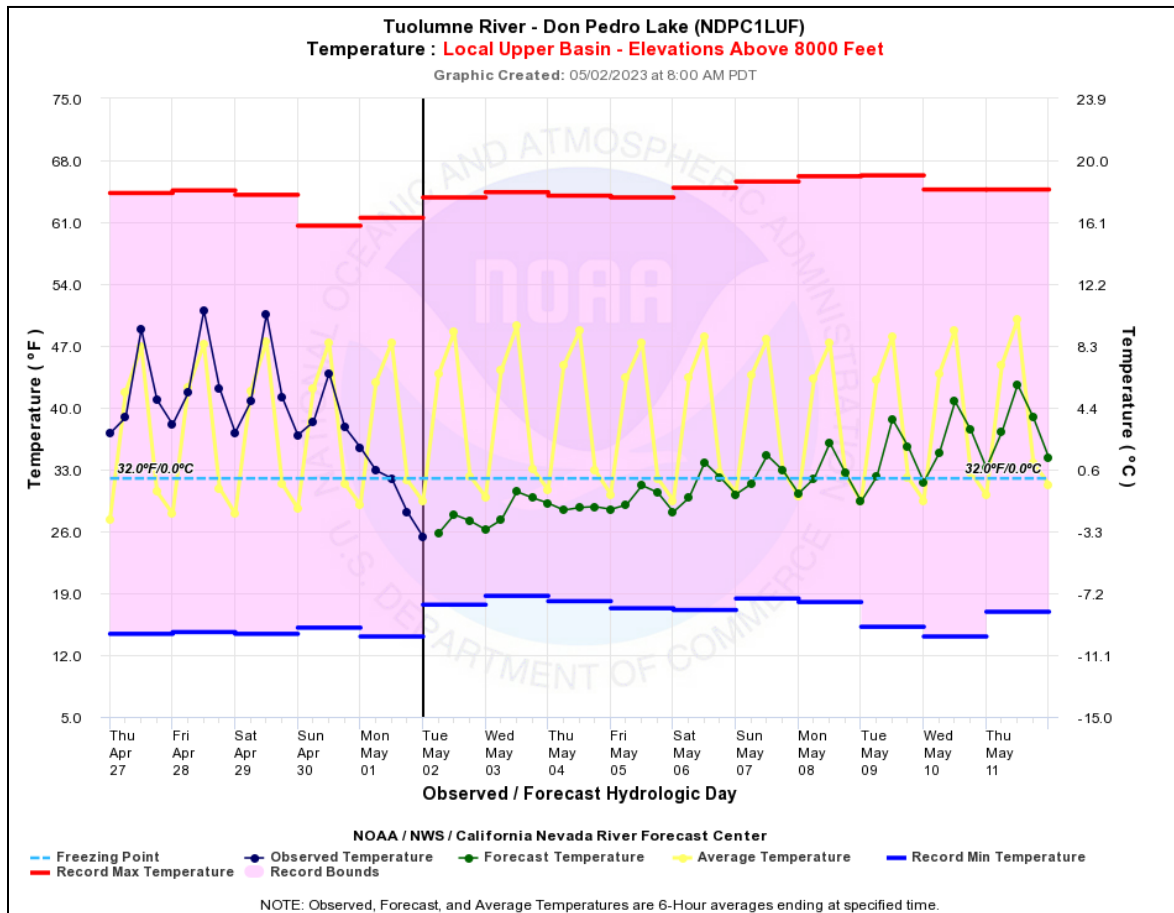
Details:

April was a fairly dry month overall. The 5-station San Joaquin index came in as the driest on record, and the 6-station Tulare index came in second driest on record. Given the extremely large snowpack in the Southern Sierra at the start of the month, and the fact that April is not typically one of the wetter months, the snowpack in the Southern Sierra is still the highest in recorded history for this time of year. But as you can see from the snow plots below, the difference between this year and the 1983 water year is diminishing. And the Northern and Central Sierra have fallen below the 1983 levels. The reasons for this are both due to temperature and precipitation differences. April 1983 was one of the coldest Aprils on record, and this year had slightly above average April temperatures. There was also above normal precipitation throughout the Sierra in April 1983.

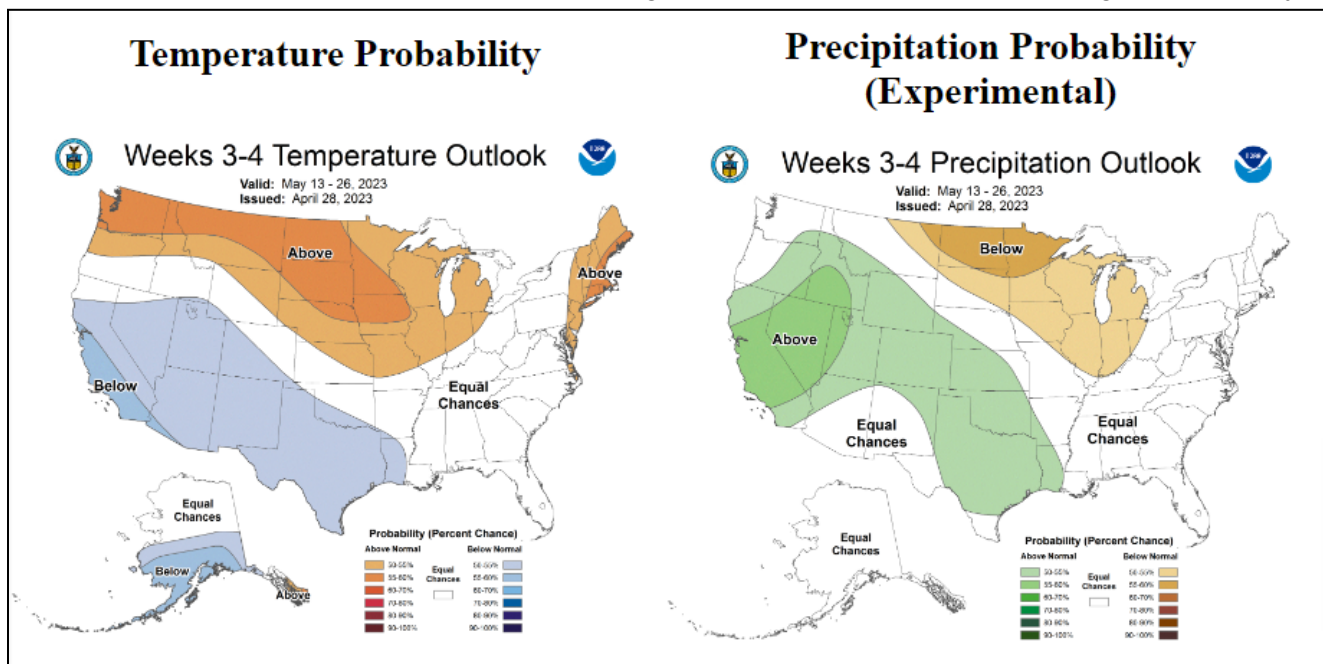


Cool start to May

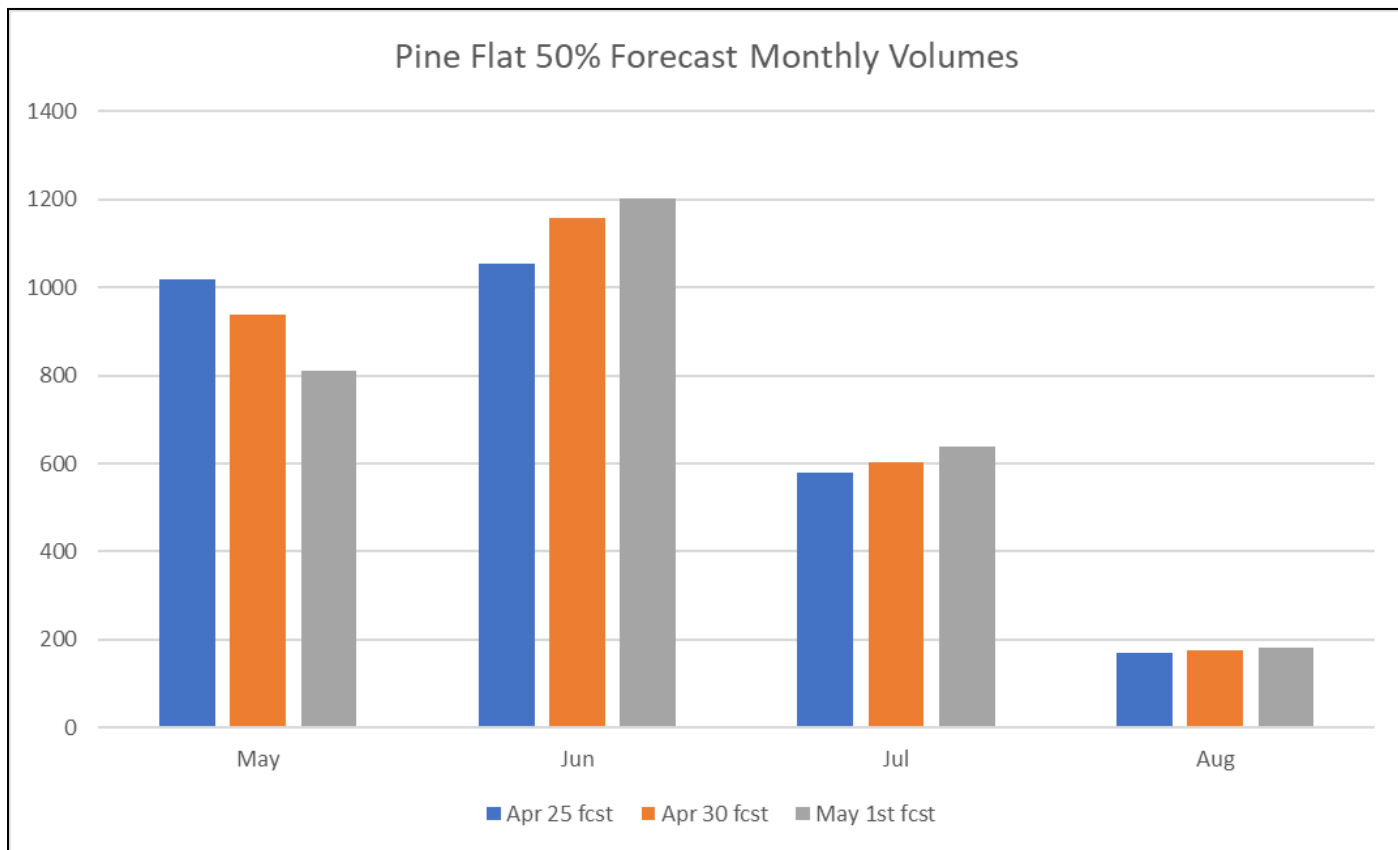
The beginning of May has started off much below normal in terms of temperature. Snowmelt rates have begun to drop off, and this trend is expected to continue given the below normal temperature forecast. The graphic below shows the 10-day temperature forecast for New Don Pedro.



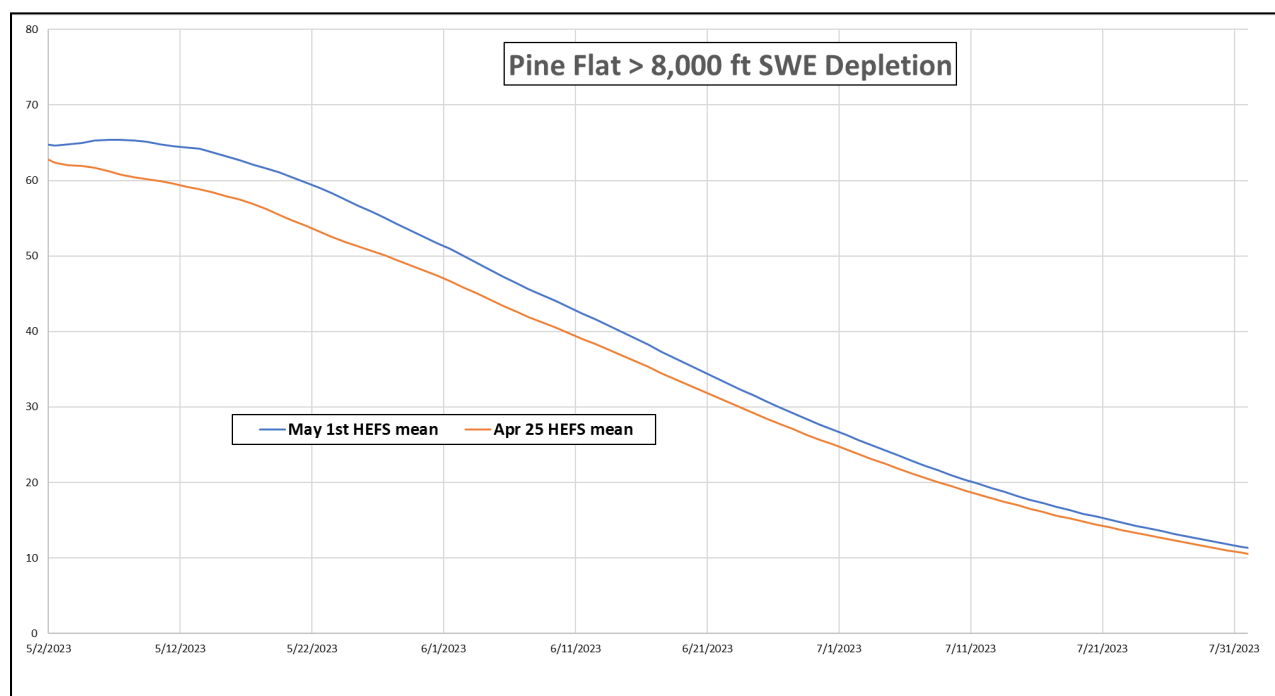
And the Climate Prediction Center (CPC) is forecasting below normal temperatures through most of May.



The Hydrologic Ensemble Forecast Service (HEFS) traces are picking up on this cool trend, and it is affecting runoff volume probabilities in the longer term. Below are the 50% inflow volume forecasts for Pine Flat Reservoir. The forecasts are from April 25th, April 30th, and May 1st. As you can see, the May volumes have been trending downward, and the June and July volumes have been trending upward.

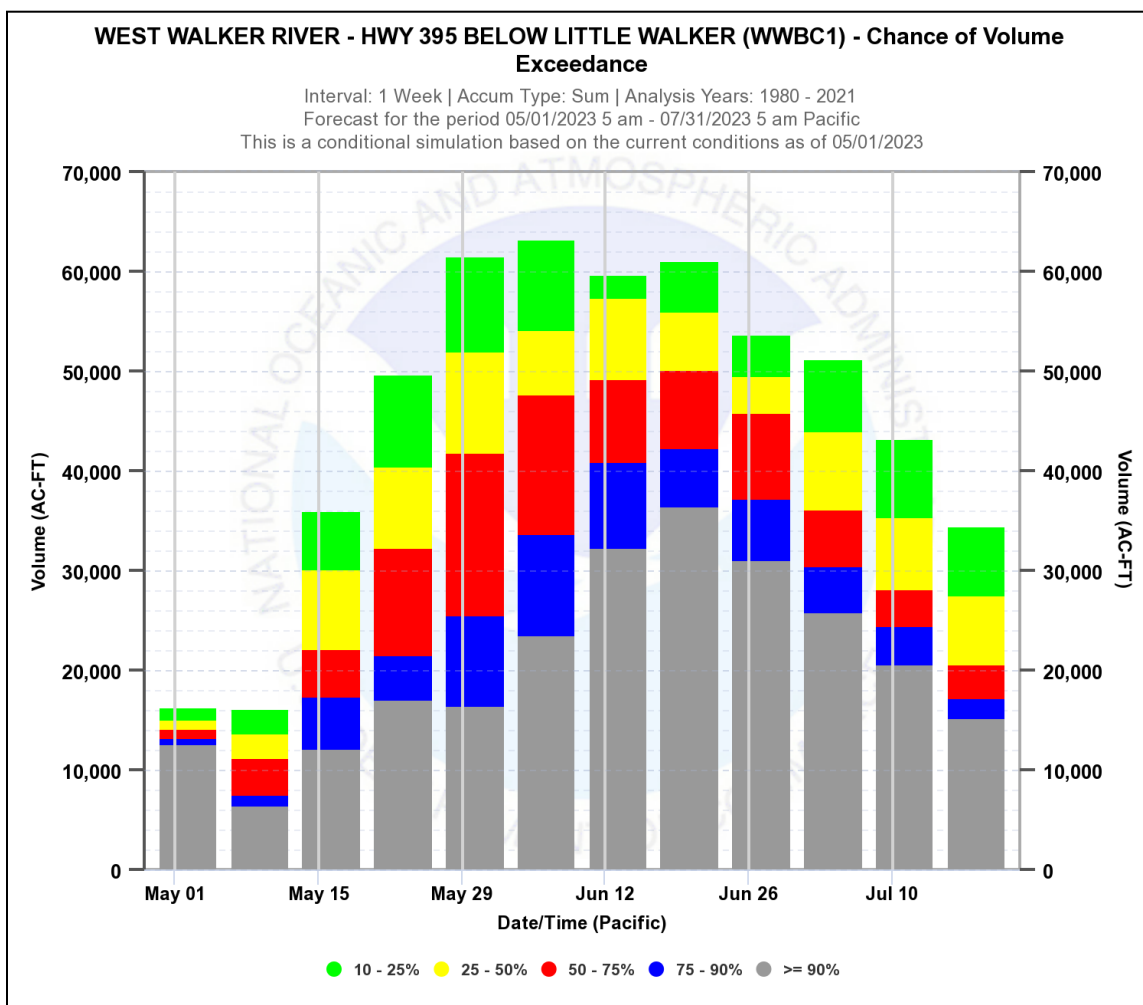


This is directly related to the near-term cool temperature forecast ensembles. This can also be observed in the modes SWE for Pine Flat. The graphic below shows the average SWE for the upper elevations (above 8,000 ft) coming from the HEFS.



As you can see, the April 25th forecast, which wasn't picking up on the cooling trend, was melting more snow in May. While the May 1st forecast is now hanging on to more high elevation snow in May, and even has a bit more SWE at the end of July compared to the April 25th forecast.

This cool influence can also be seen in weekly runoff volume probabilities. Below is the weekly runoff volume forecast for the West Walker River through the end of July. As you can see, the spread is quite small in the first week due to the fact that the ensembles are heavily influenced by the near-term cooling trend. And for the following weeks, the spread gets broader as near-term weather model influence diminishes, and climatological trends dominate.



Conclusion

With April behind us, the wet season is beginning to come to an end. The first half of May is shaping up to be very cool, with even some additional precipitation/snow. This will slow down the snowmelt temporarily, and shift more volume into June and July, especially for the higher elevation basins in the Southern Sierra and Eastern Sierra. When the peak melt will occur in these high elevation basins is still uncertain, and will be driven by the meteorology as we march our way through the spring.