

Weather this Week April 11, 2022

Hi Folks,

Over the past week a weather system clipped the North Coast with some light showers spreading inland. This is depicted in Figure 1 which shows the observed precipitation map from the National Weather Service California Nevada River Forecast Center (CNRFC). Over the weekend, wind was the major weather event drying out the landscape. Gusts over 50 mph

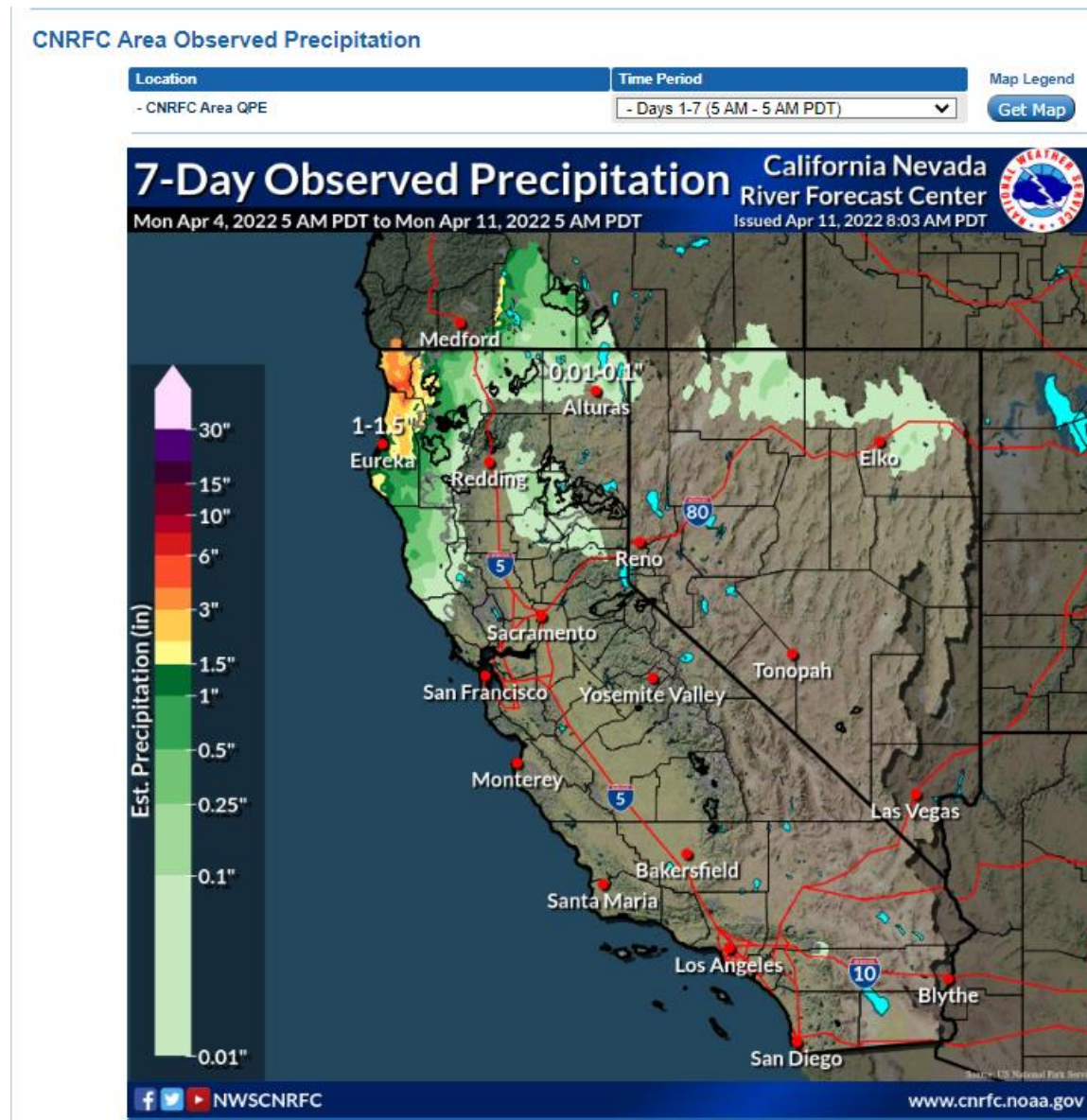


Figure 1. CNRFC map of observed precipitation from 4/4/22 to 4/11/22 5am PDT.

Over the next six days, multiple weather systems pass through with some notable precipitation accumulation in places. This is depicted in the CNRFC map of forecast precipitation in Figure 2. In Figure 2 multiple inches of precipitation are forecast for the Sierra Nevada while less than an inch is forecast for Reno, NV. This is indicative of atmospheric river behavior with most of the moisture raining out on the west slope. It is possible that more precipitation will fall in the next six days than did from April through June of last year. It will also be (in some places) more precipitation than was observed in the January through March 2022 window continuing the whiplash extremes of this year. This is really helpful for getting snowmelt into the streams and augmenting that flow with storm runoff which should help reservoir supplies. It also offsets the extreme drying from the winds over the weekend.

CNRFC Area Precipitation Forecast

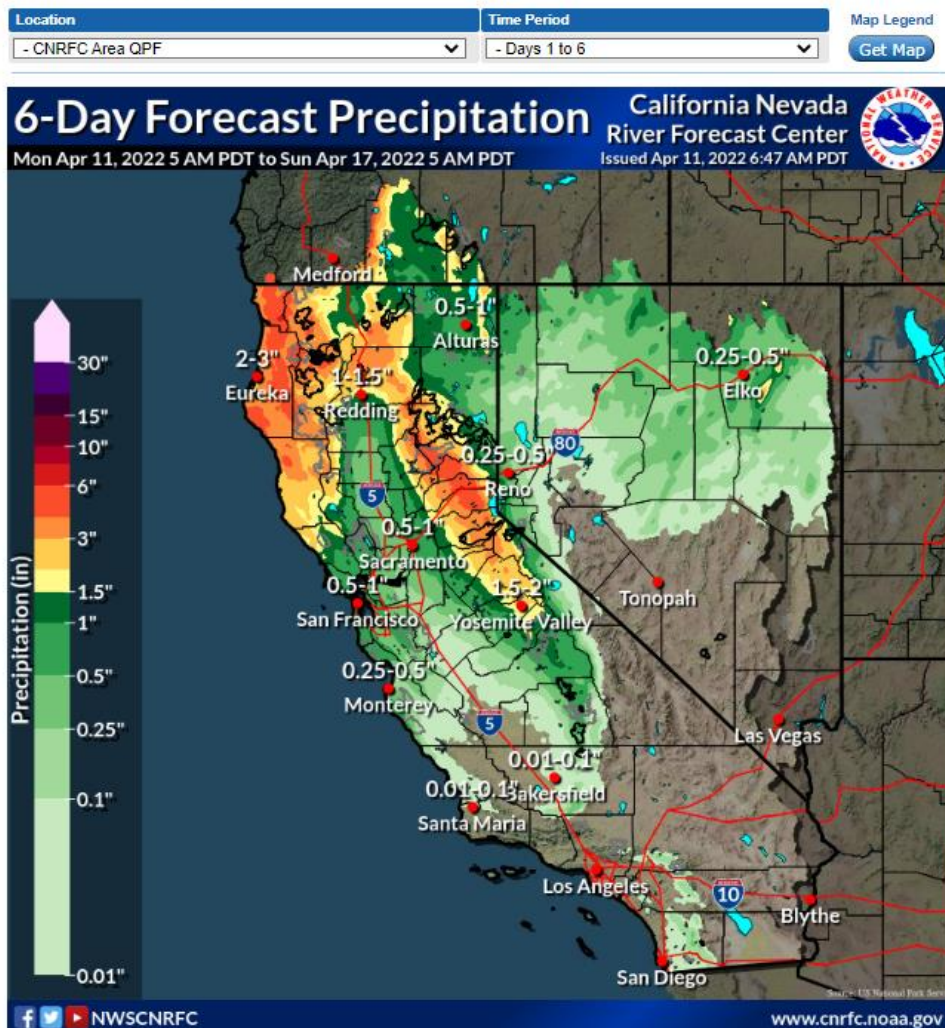


Figure 2. CNRFC map of forecast precipitation from 4/11/22 to 4/17/22.

Looking at this week's storms from an atmospheric river perspective, we can see three pulses of moisture impacting California using the AR landfall tool from the Scripps Institution of Oceanography Center for Western Weather and Water Extremes (CW3E) which is shown in Figure3. The data depicted is from the European Center for Medium Range Forecasting (ECMWF) as the US model data from NOAA is unavailable this morning.

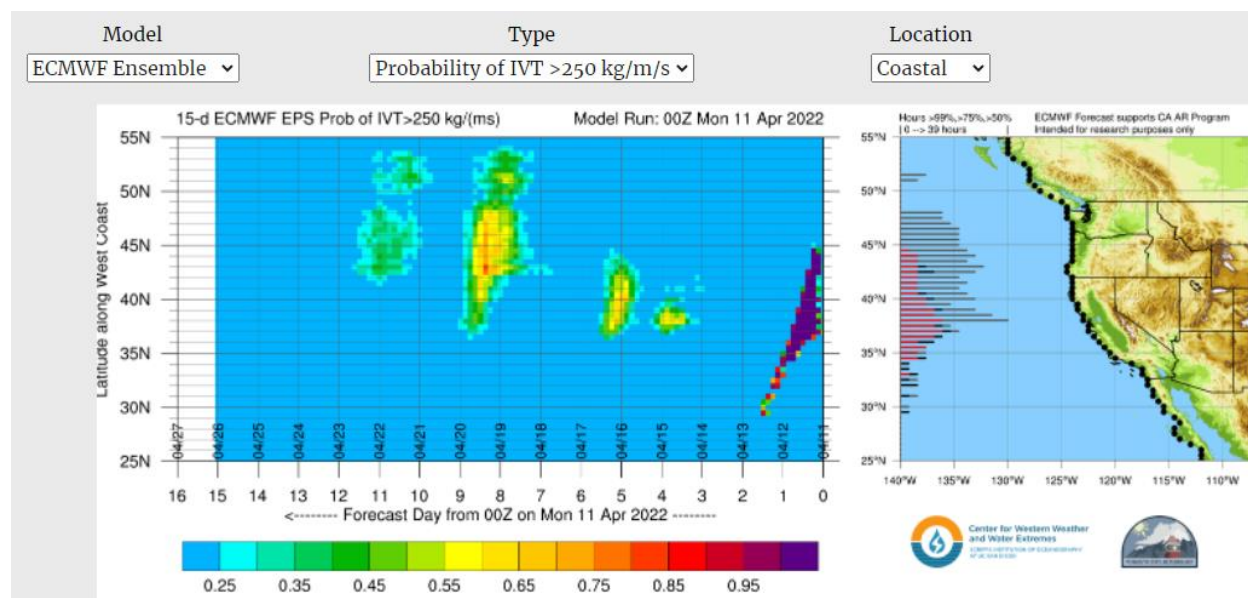


Figure 3. AR Landfall Tool from CW3E showing AR activity over the next 15 days (only 15 because the data is from ECMWF).

The first AR is arriving today with the longest duration of conditions (widest area of purple on the graphic) lasting most of the day at latitudes between Yosemite and Lake Tahoe. A second, less certain pulse (colored yellow) shows up Thursday into Friday and the third on Saturday. Looking out into the second week, a fourth pulse may show up around the 19th or 20th of the month. This is indicative of the high-pressure system offshore losing strength allowing storms to push in from the Gulf of Alaska. Looking at the forecast model run this morning shows that in week 2, the high pressure in the eastern Pacific is weaker than the system in the western Pacific. Stronger systems are needed to enable blocking conditions and dry weather.

As far as the snowpack goes, the automated sensors reported an average of 8.9 inches of snow water equivalent (the amount of water in the snowpack) on April 4, 2022. By April 8, this value had fallen to 7.2 inches. Today's value (April 11) shows 6.0 inches. Considering the peak snowpack represented by the sensors was 16.1 inches, over half of the snowpack has melted before mid-April. Remember though that the sensors only show a portion of the snow fields in an elevation band where snow is present most of the time and accommodates the terrain and land use restrictions. It also represents

locations that historically correlated well with spring runoff. When the historical patterns are not present, the snow pillow data does not tell the full story. This is where the remote sensing of snow data becomes key.

For the basins that have the augmented data, corrections to the forecast volumes can be made as the full picture of the snowpack is present and is aligned with the ground-based sensors. Having this complete picture will be key to navigating ongoing climate change as the patterns of snow distribution on the landscape will continue to change. Continued advancements in technology may enable the airborne data to become satellite data at some date in the future. Having the interim data will be important to ensure the data can be understood and used by the resources management and forecast communities.

Next week's update will be on Monday 4/18/22. Please let me know if you have any questions.