

Carson River – Weather and Water Outlook

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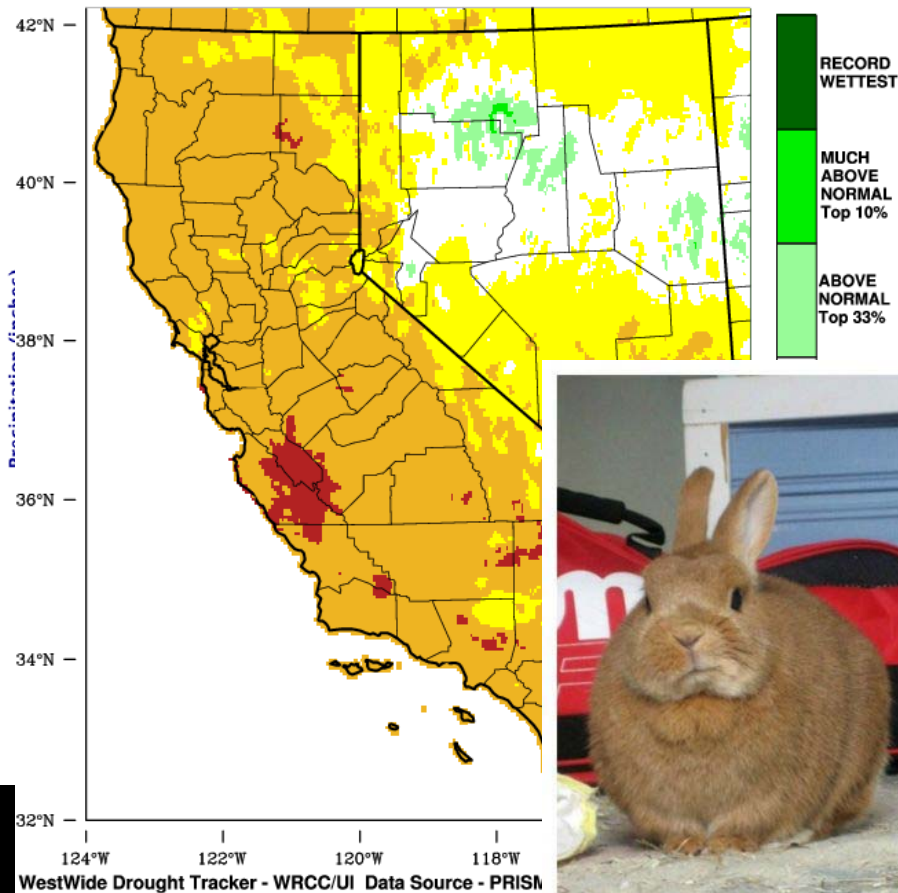
Reno National Weather Service
Forecasting for the Sierra and western Nevada since 1905



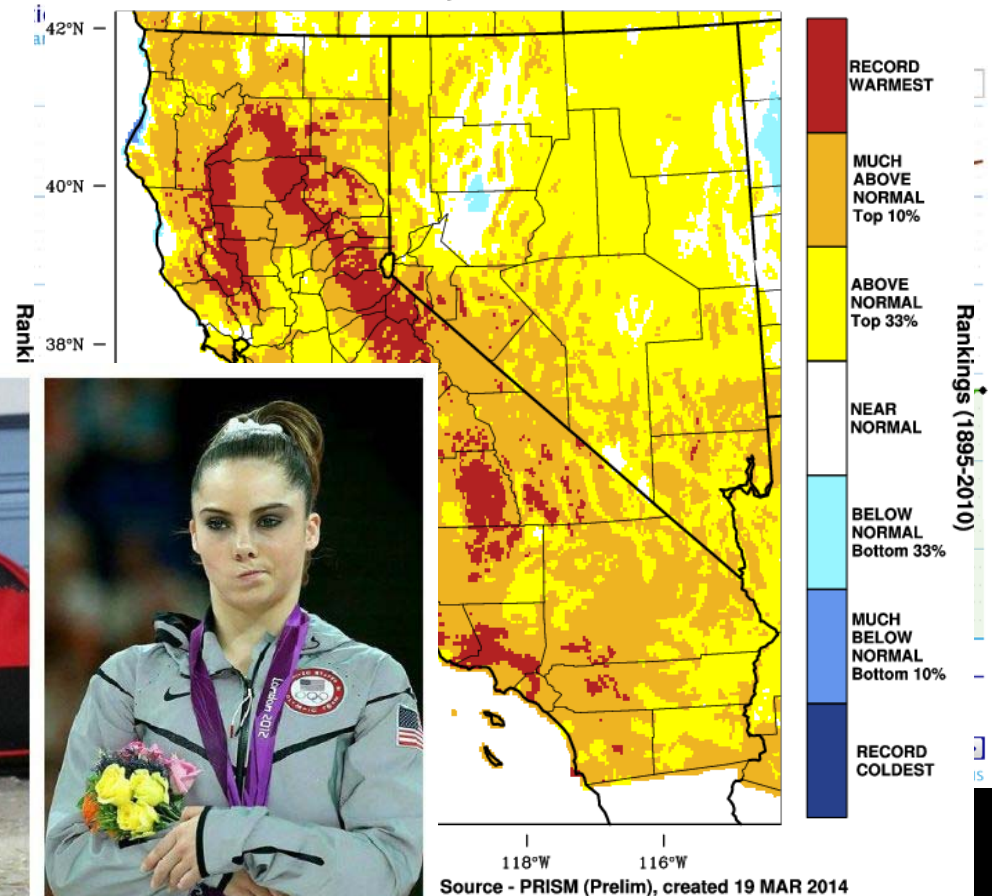


LOOK BACK AT WINTER 2013-14

California - Precipitation
October-February 2014 Percentile

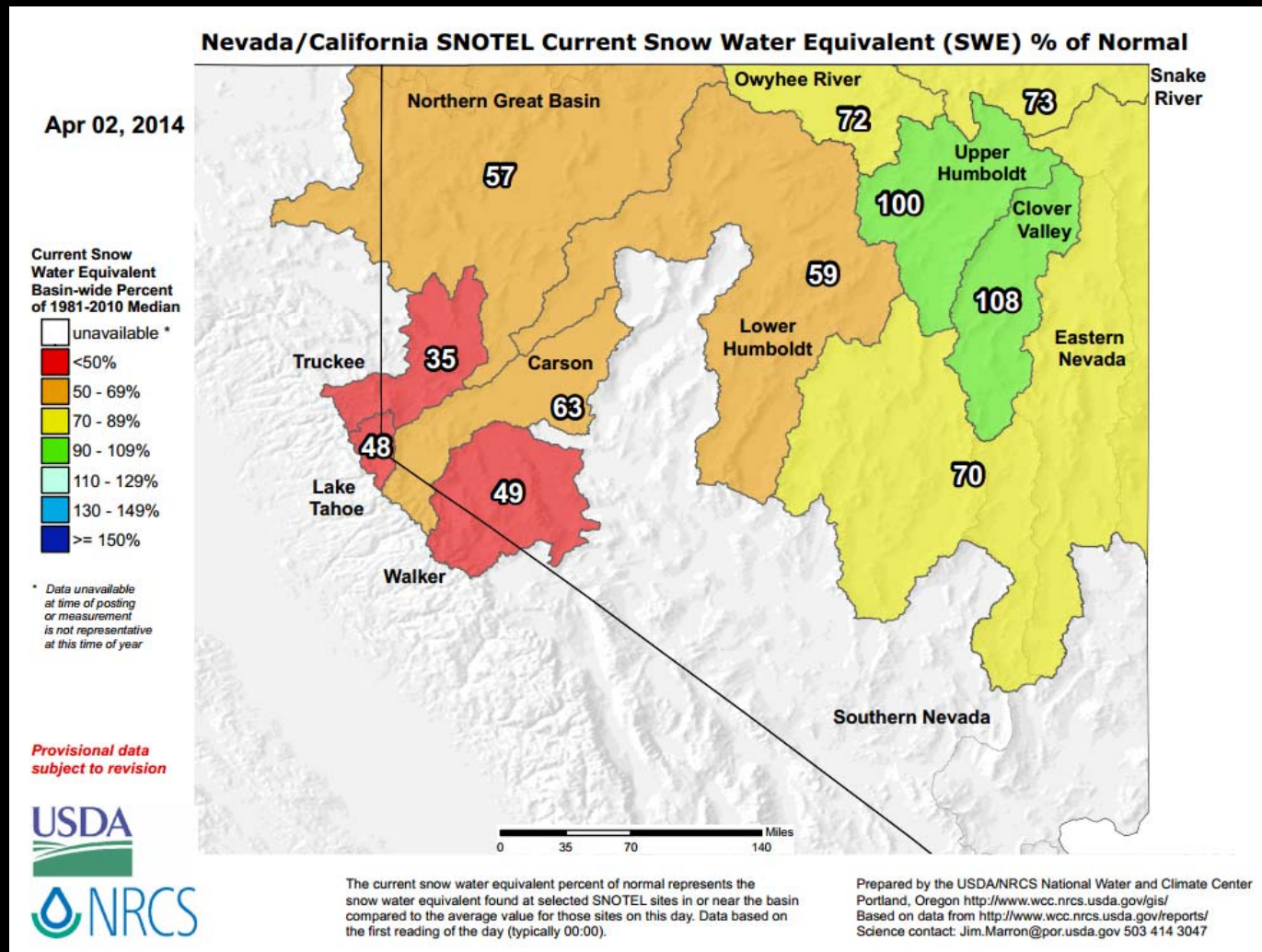


California - Mean Temperature
October-February 2014 Percentile



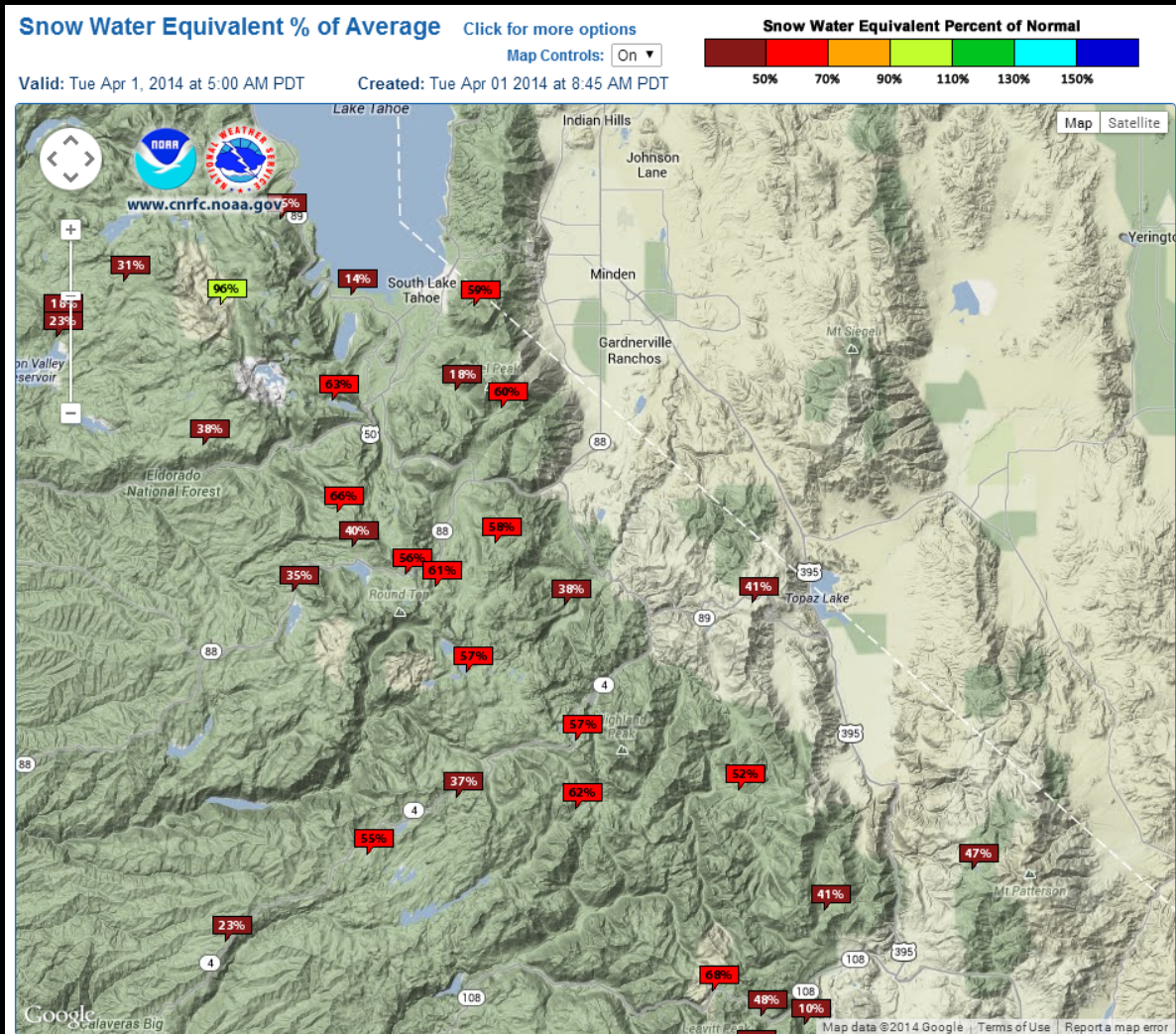
Water Year 2014 – Big Picture Context

- After two winters of below normal precipitation – 2013-14 brought yet another dry winter. It was warm too = high snow levels.
- Central Nevada did “relatively well” precip wise.



Water Year 2014 – Big Picture

- ❶ Poor snowpack conditions in the Sierra in general
- ❷ Carson River Basin – **63%** of normal; Truckee – 35%, Walker – 49%
- ❸ Elevations above 7000' doing much better than those below 7000'



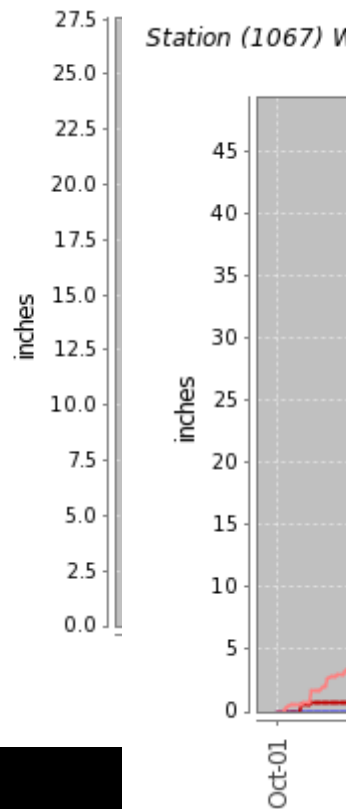
Zoom In – Carson Watershed

- ❶ Snow Water Equivalents are 50s/60s % of normal above 7000'
- ❷ 30s/40s % of normal below 7000'

Horse Meadows

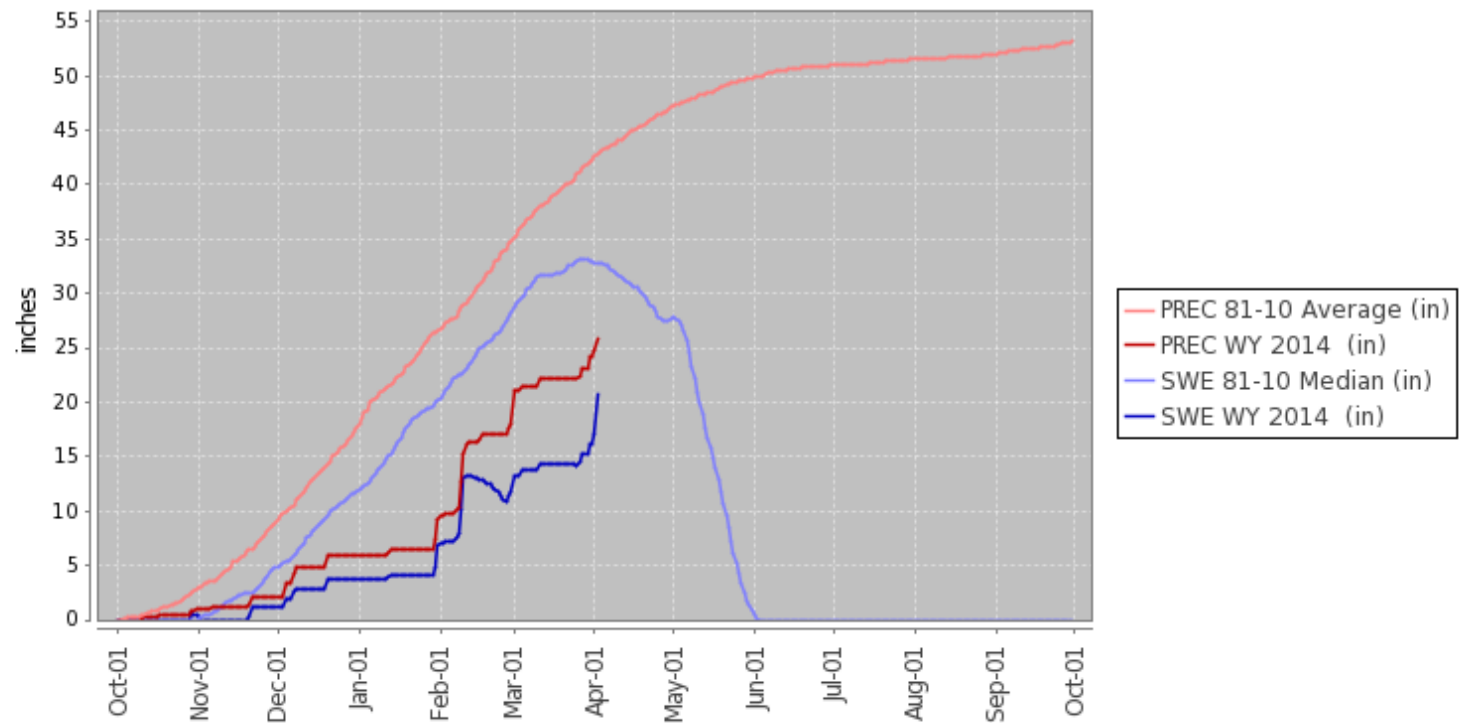
Station (1050) WATERYEAR=2014 (Daily) NRCS National Water and Climate Center - Provisional Data - subject to revision

Carson Pass



Ebbetts Pass

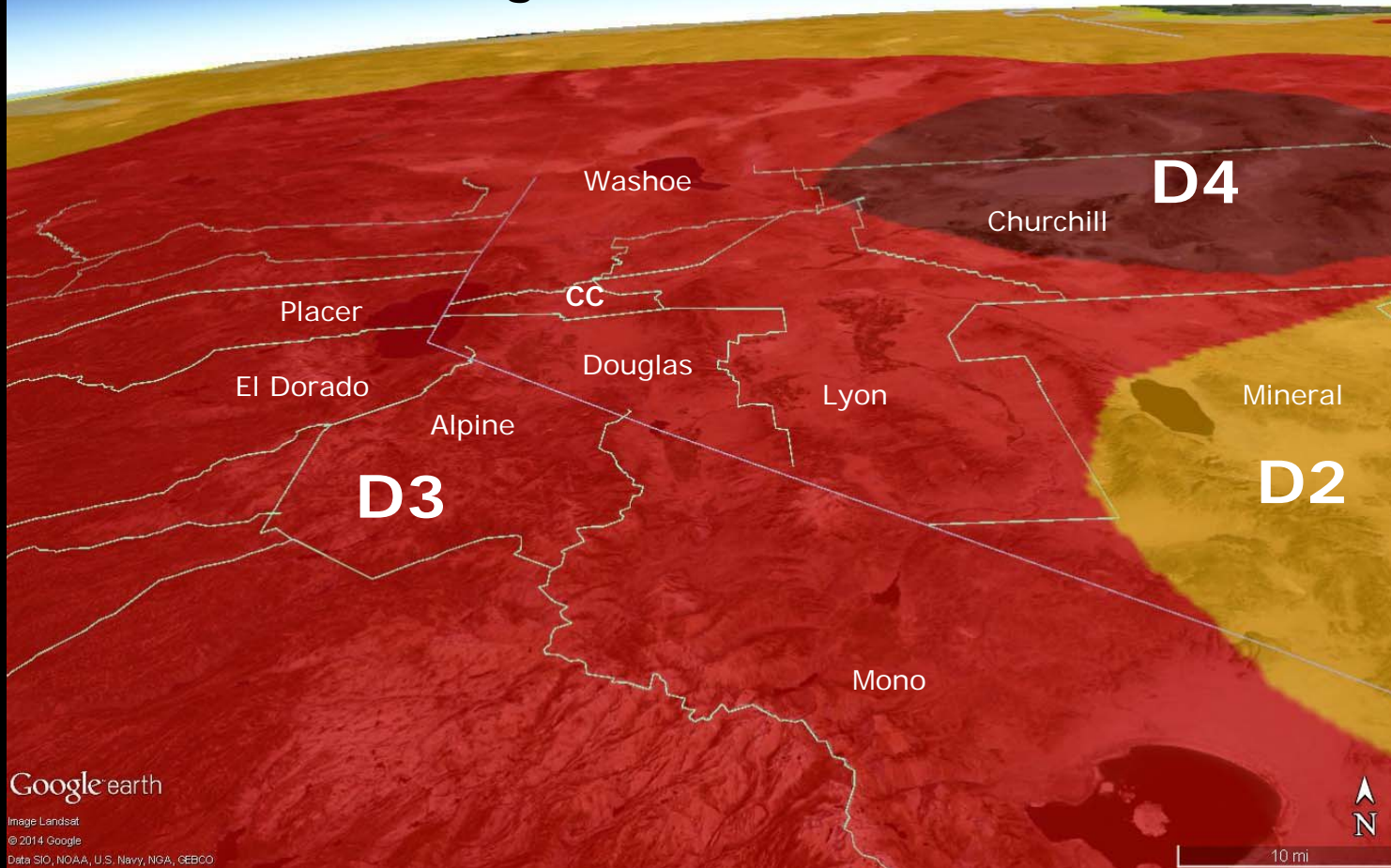
Station (462) WATERYEAR=2014 (Daily) NRCS National Water and Climate Center - Provisional Data - subject to revision
Wed Apr 02 15:49:28 PDT 2014





Zoom In – Carson Watershed

- These SNOTEL sites are above 8000'
- Some have big differences between total precipitation and snow water equivalent – higher snow levels + periods of snowmelt already

United States Drought Monitor – March 25

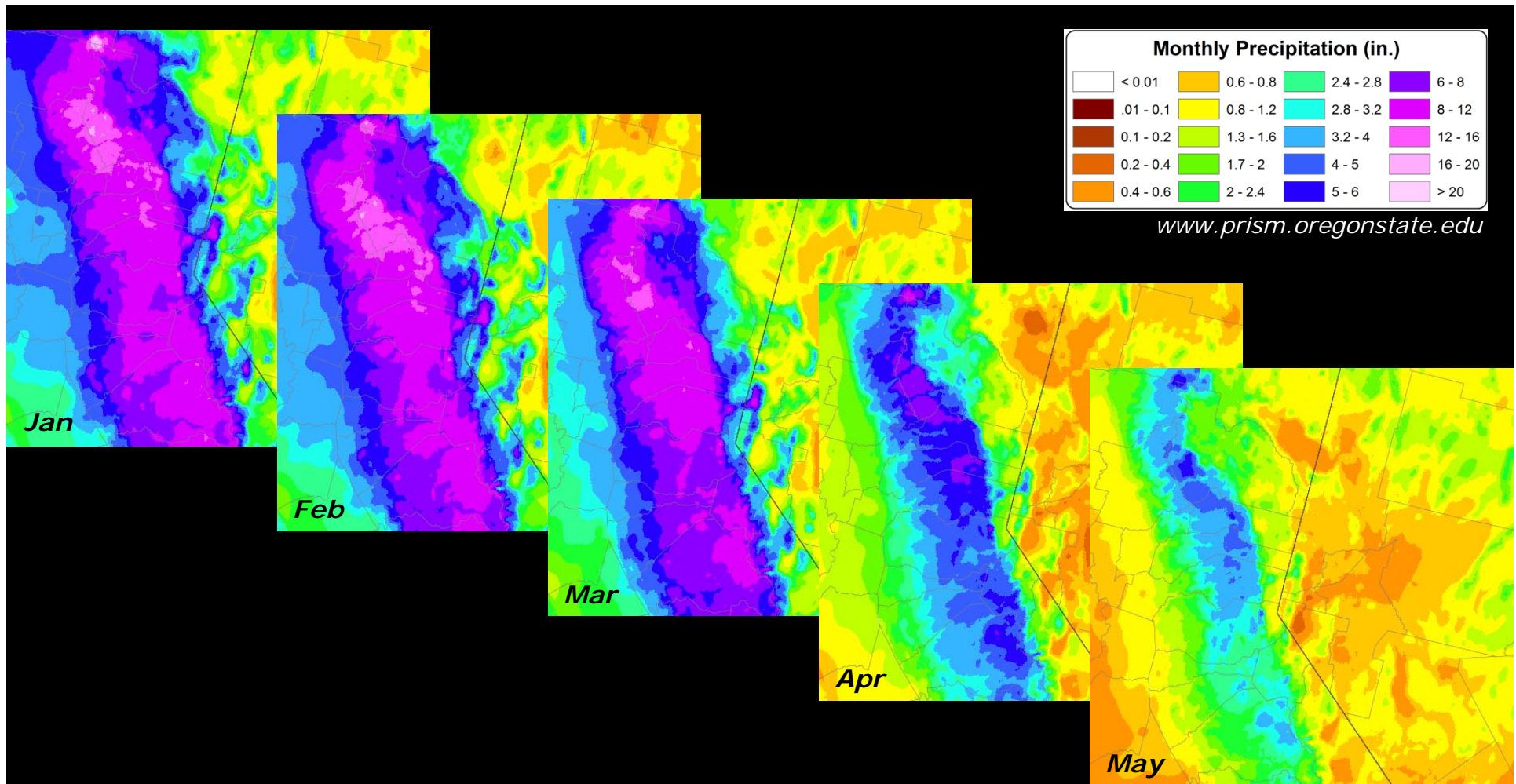


Drought Situation

-  Drought impacts likely to persist or intensify after this past dry winter – now three in a row!
-  **D3** – Extreme Drought is 2nd from highest classification. Major crop/pasture losses, widespread water shortages outside of city systems

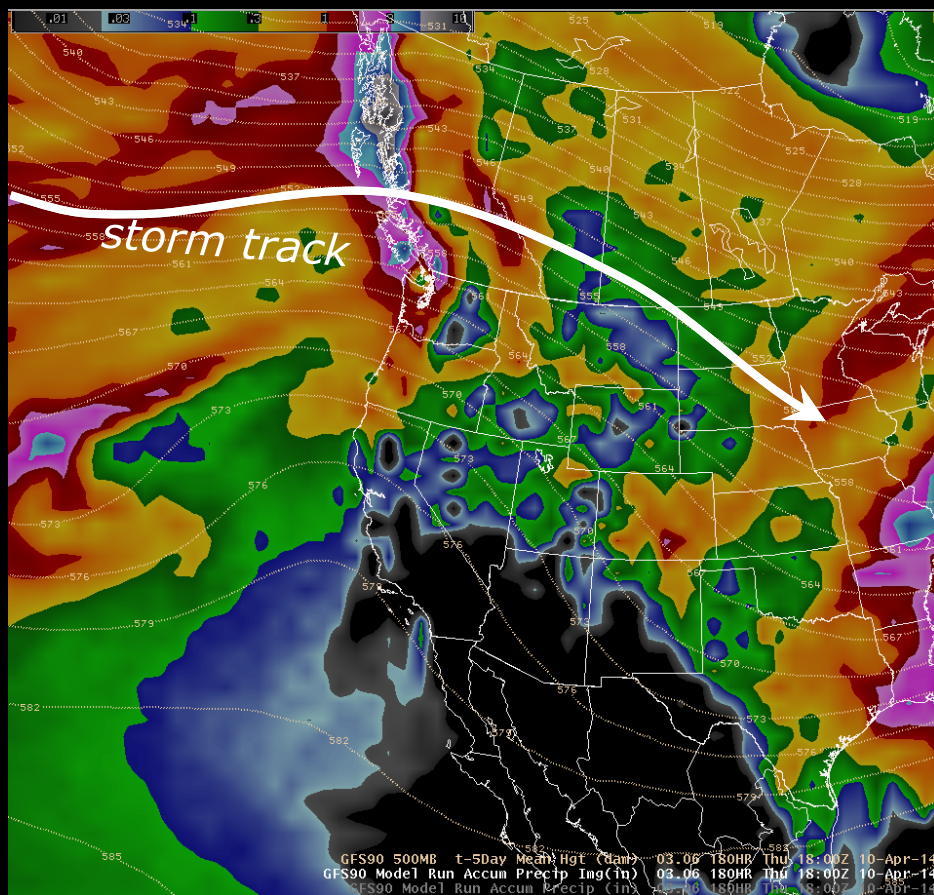


WEATHER AND WATER OUTLOOK

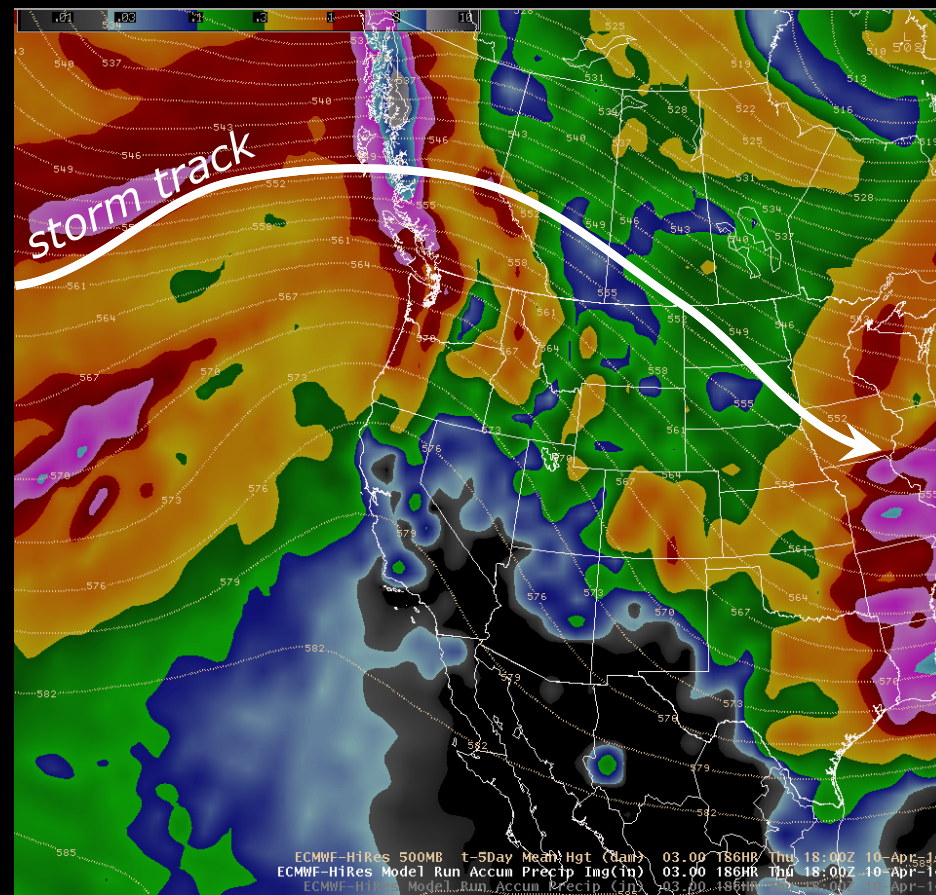


Context – April Ends the Winter Storm Season

- ☑ Carson City – 71% of annual precipitation falls November-March
- ☑ April and May can have big storms – but they're warmer, higher snow levels – limited benefit to snowpack



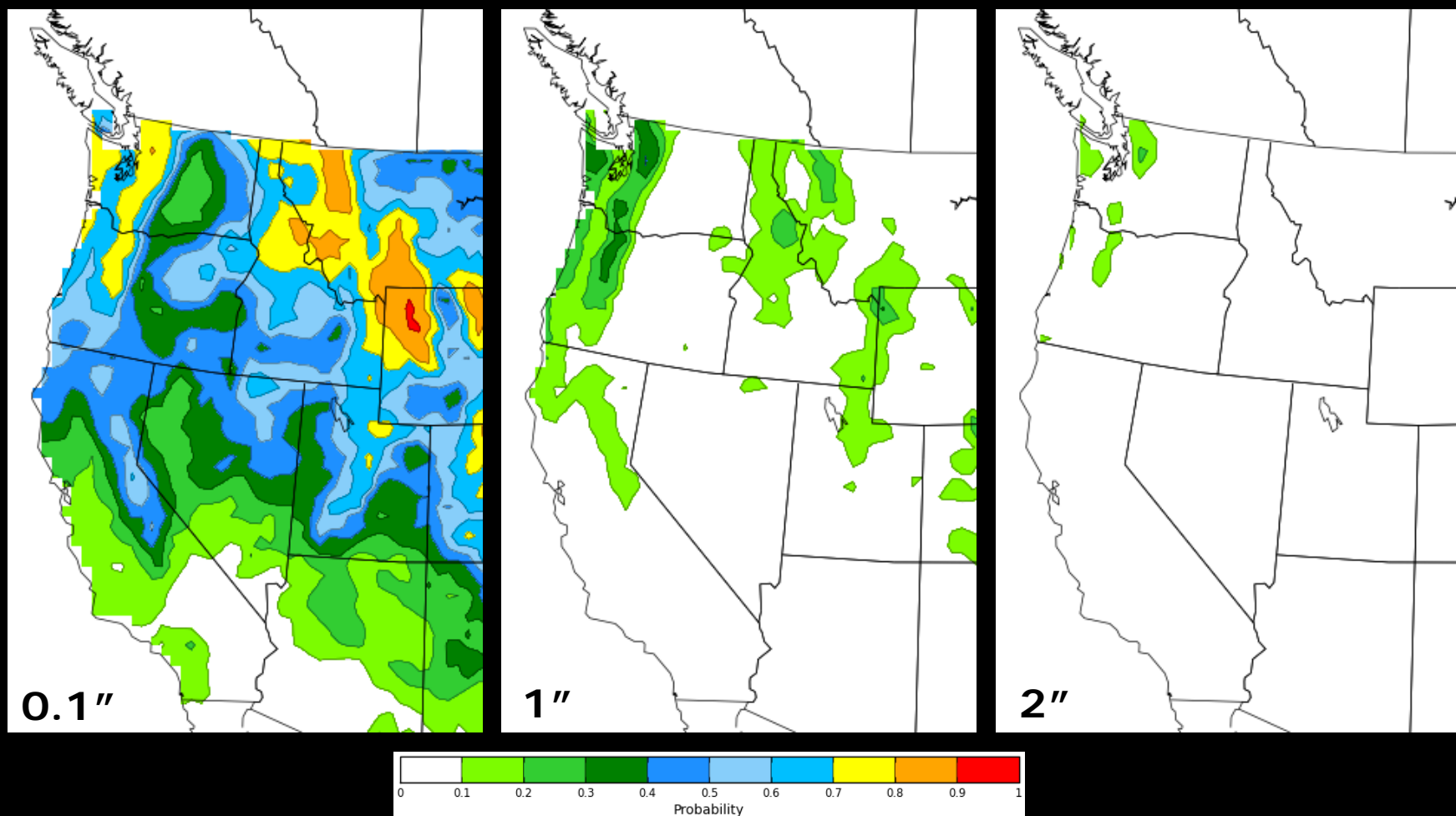
Liquid equivalent and 500mb mean height – 06 UTC GFS



Liquid equivalent and 500mb mean height – 00 UTC ECMWF

Scenarios – Precipitation thru next Thursday

- High pressure ridge to shift storm track (atmospheric rivers) north
- Minimal precipitation expected for the Carson watershed. Medium to high confidence.
- Temperatures trend to above normal (70s in the valleys)



Probabilities of 0.1", 1", and 2" total

Outlook for Week 2 – April 10-17

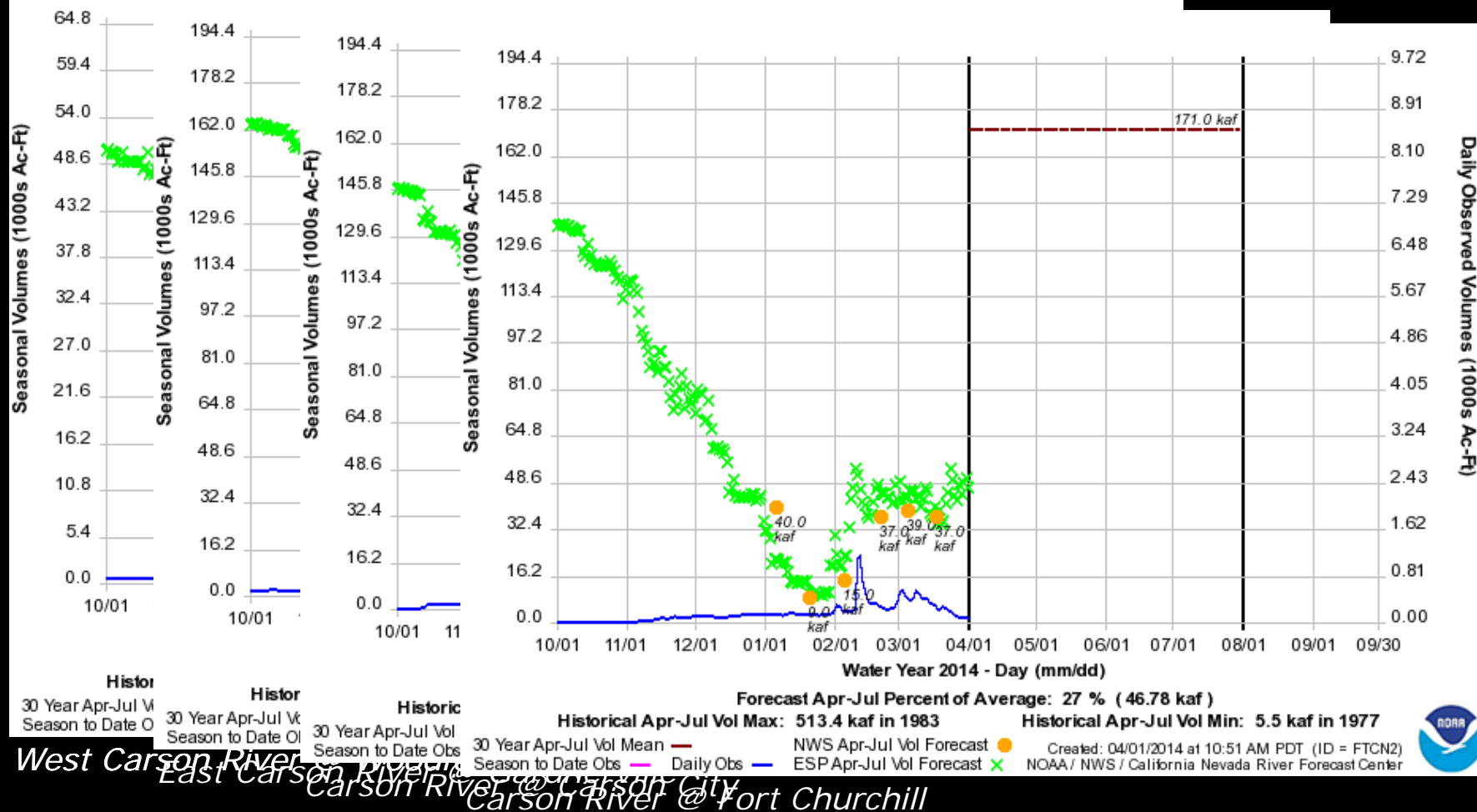
- Weak storms possible – but low risk of a significant AR. Medium confidence.
- Meaningful precipitation is unlikely in the Carson watershed.
- Temperatures – near normal but low confidence forecast

Seasonal Precipitation Outlook – April-June



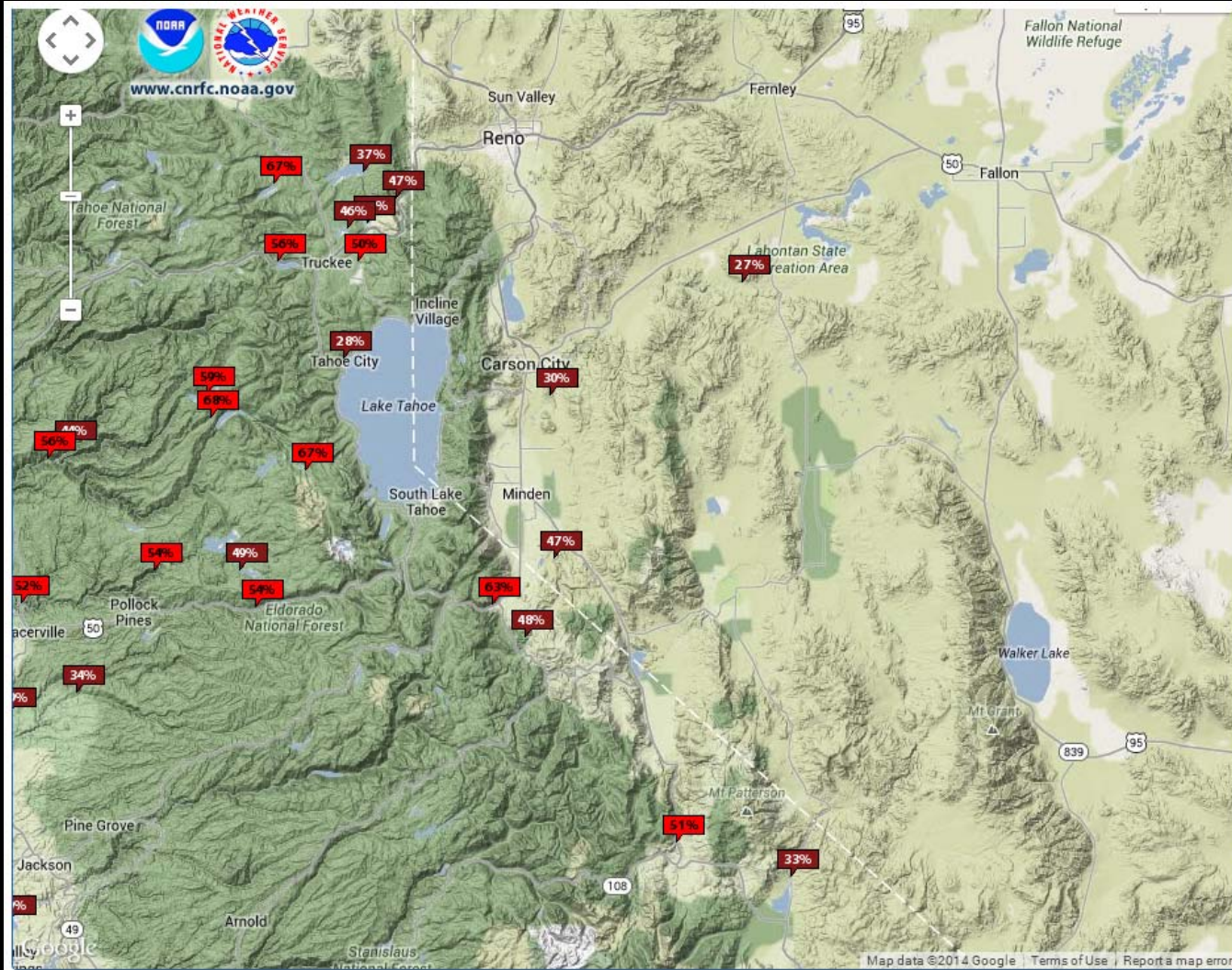
Latest Spring Outlook

- 🌀 Official outlook – signals from global weather patterns are favoring a drier than normal Spring but confidence in that forecast is low.
- 🌀 Forecast skill of these outlooks is not great. Plan for anything.
- 🌀 Above normal temperatures favored – medium confidence.



Bottom Line – Streamflow Forecasts for 2014

- CNRFC uses observations, 15-day weather forecasts, and 60 years of historical data to produce a range of daily stream flow outlooks for the April-July snowmelt period.
- What is displayed is the 50% exceedance probability from that range



Bottom Line – Streamflow Forecasts for 2014

- Restating the obvious – well below normal streamflow expected
- Peak flows forecast – April 27 – May 19 (~4 weeks earlier than normal)
- Most likely 1-day volume at peak flow – 1,800 af (Carson City)

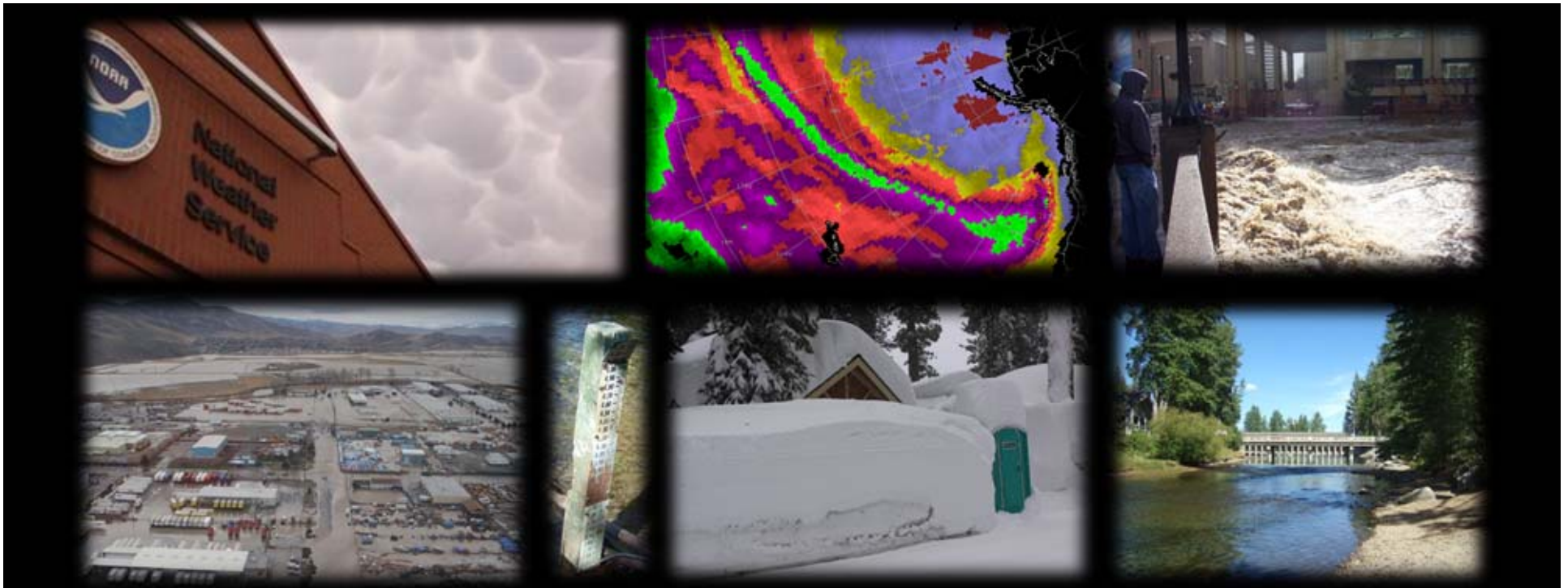


Is El Niño Returning??

- 🌊 Very warm water just below surface is moving eastward across the Pacific –may set the stage for El Niño development later this year
- 🌊 Long range projections favor Neutral or El Niño developing – but we're in the **Spring Predictability Barrier**
- 🌊 High uncertainty on potential El Niño strength. Even if it did develop – impacts to the region are **nebulous at best**.

Three Key Takeaways

- 🌊 Unless we have a particularly stormy April – Carson River has a **high likelihood of well below normal streamflow** this spring/summer
- 🌊 Risk of snow melt flooding is **low**
- 🌊 Drought likely to **persist and/or intensify** this year, with enhanced wildfire risks, and serious impacts to wildlife, ranching, and agriculture



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