NOAA Climate Science and Services Monthly Climate Update

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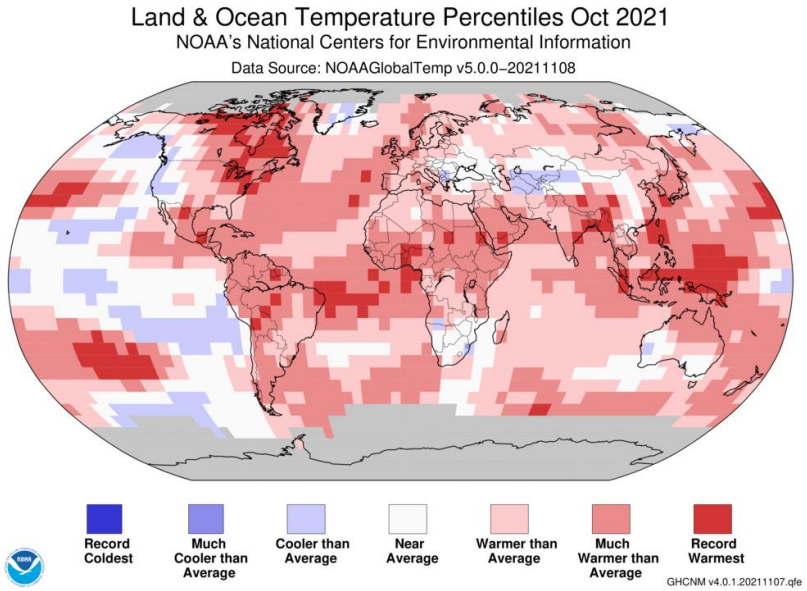
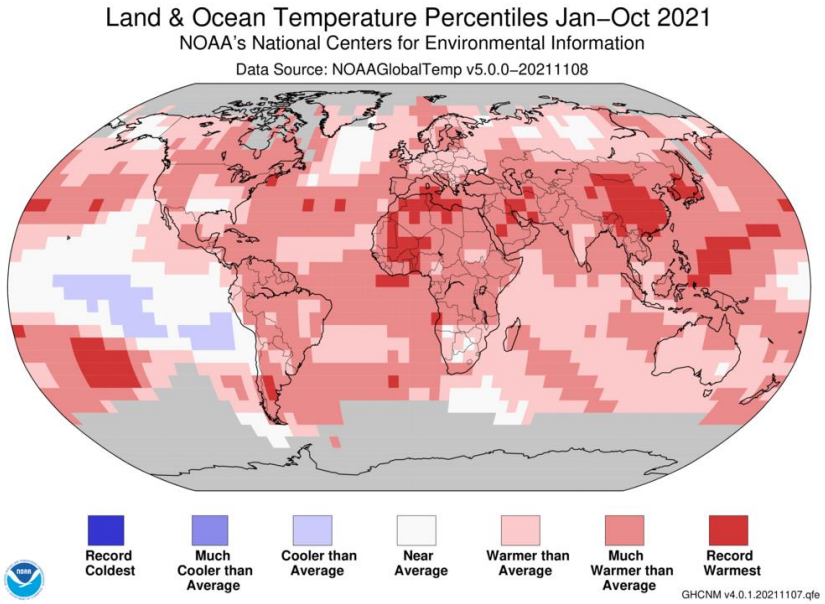
November 2021

Global Temperature

The global temperature record dates back to 1880 (142 years)





October 2021

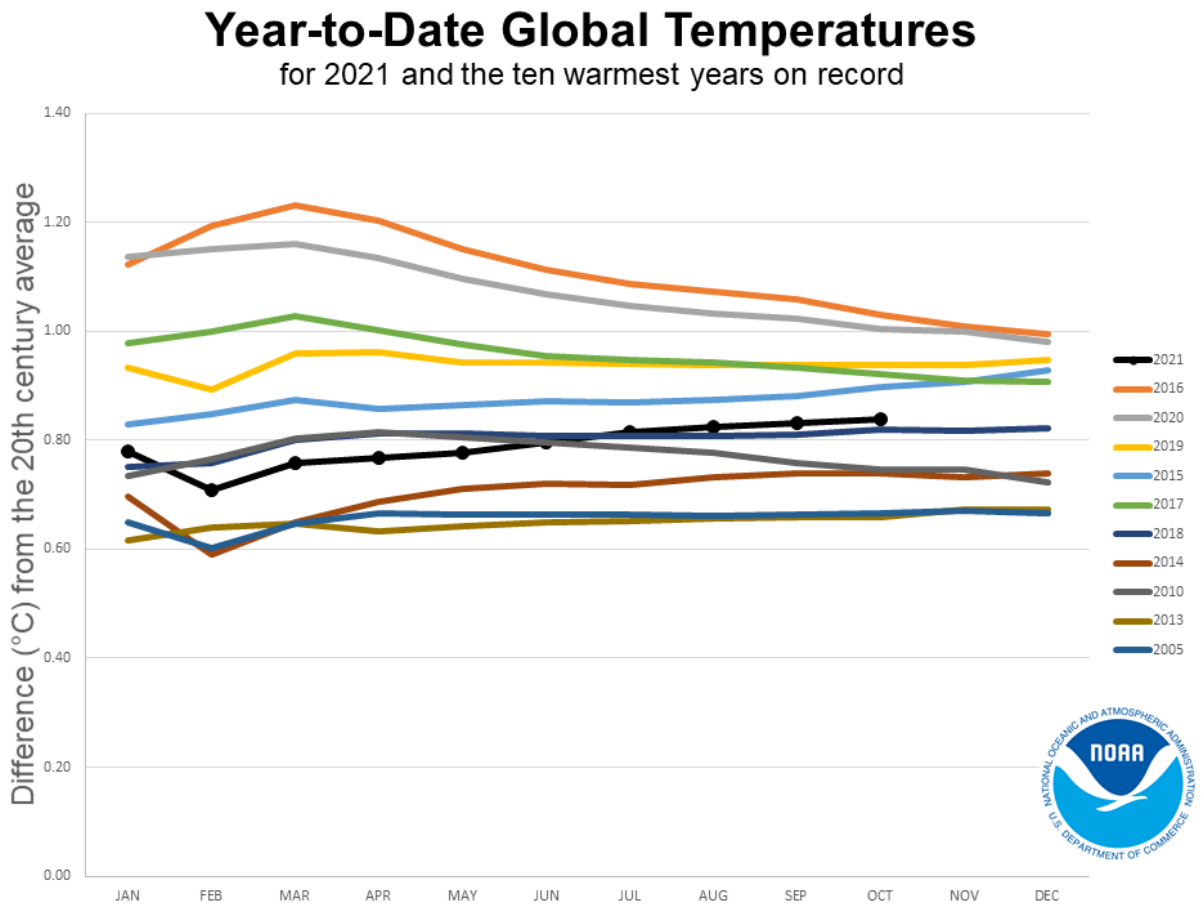
- **Global Land & Ocean:** +0.89°C / +1.60°F; the 4th warmest Oct on record
- **Global Land:** +1.39°C / +2.50°F; 3rd warmest Oct on record
- **Global Ocean:** +0.71°C / +1.28°F; the 5th warmest Oct on record

Year to Date 2021

- **Global Land & Ocean:** +0.84°C / +1.51°F; the 6th warmest Jan-Oct on record
- **Global Land:** +1.34°C / +2.41°F; 6th warmest Jan-Oct on record
- **Global Ocean:** +0.65°C / +1.17°F; 7th warmest Jan-Oct on record

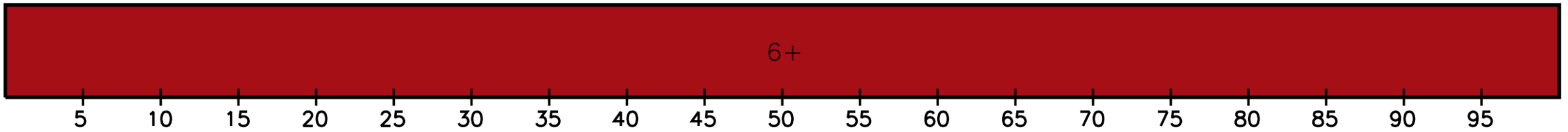
Global Temperature

The global temperature record dates back to 1880 (142 years)



January–October 2021

- Virtually certain that 2021 will be a top 10 year
- Very likely to rank among 6 warmest years

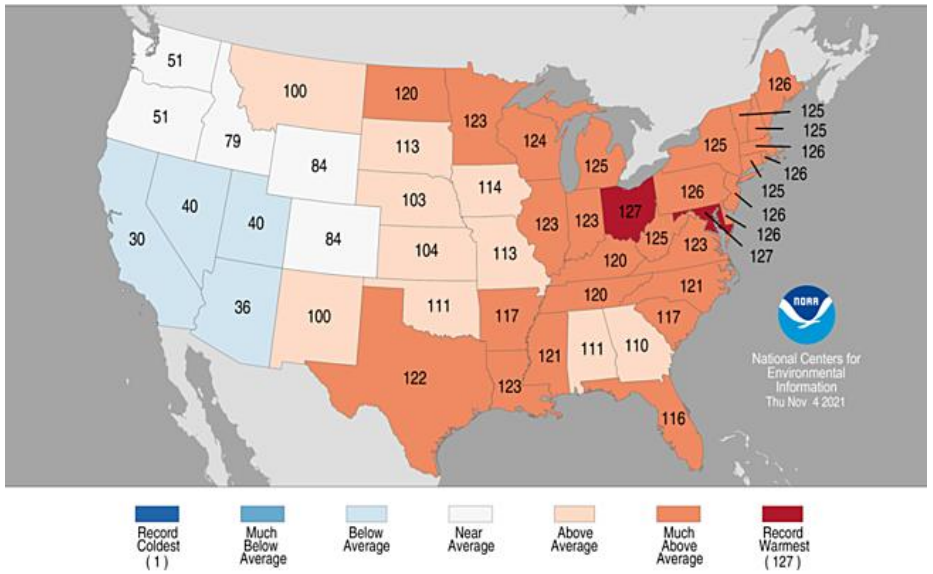


Contiguous U.S. October 2021

Temperature: 57.0°F, +2.9°F, the 6th warmest Oct on record

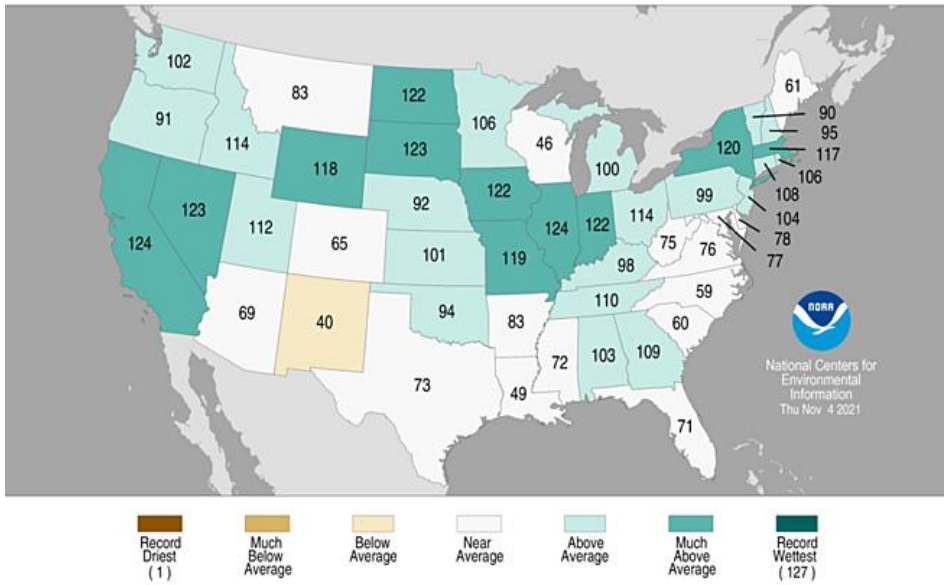
Precipitation: 3.11”, +0.95”, 9th wettest Oct on record

Temperature Percentiles October 2021
Period: 1895-2021 (127 years)



- Above-average temperatures across much of the central and eastern contiguous U.S.
- OH and MD had warmest October
- The Southwest states had below-average temperatures

Precipitation Percentiles October 2021
Period: 1895-2021 (127 years)



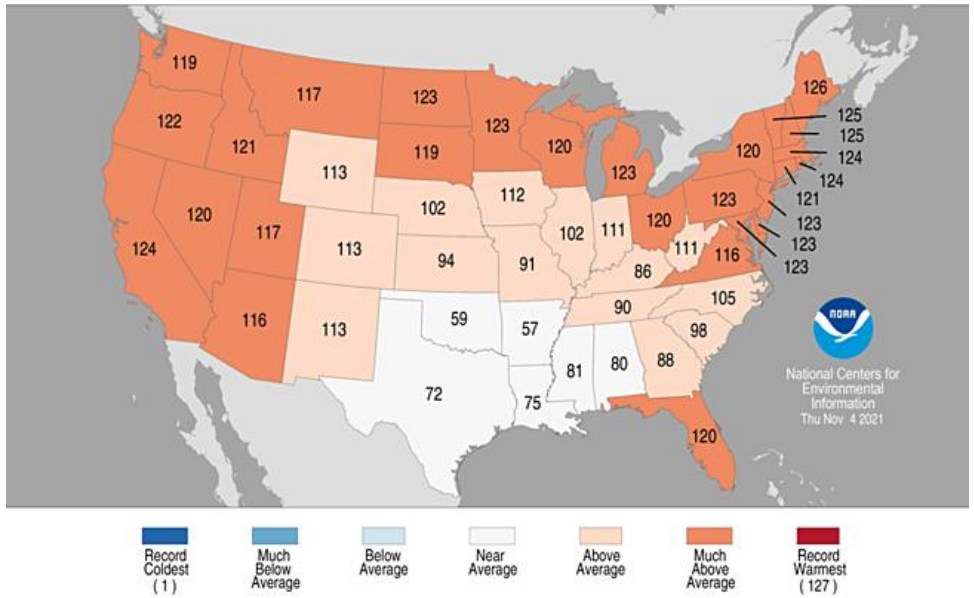
- Above-average precipitation across parts of the West, Plains, Great Lakes, Midwest, Southeast, and Northeast
- NM was the only state to have below-average precipitation for the month
- CA and IL had 4th wettest October on record

Contiguous U.S. January-October 2021

Temperature: 57.0°F, +2.0°F, 9th warmest Jan-Oct on record

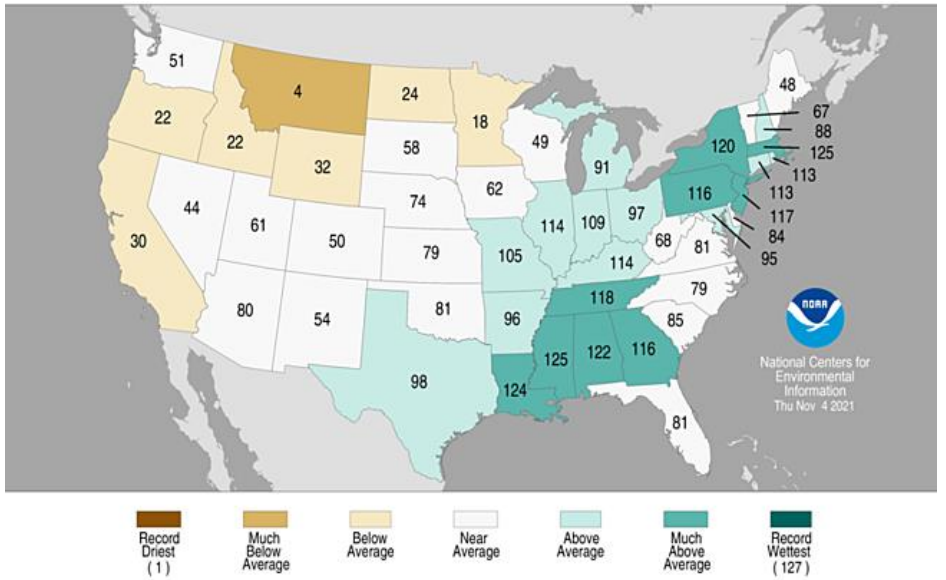
Precipitation: 26.74”, +1.38”, wettest third of record

Temperature Percentiles Jan-Oct 2021
Period: 1895–2021 (127 years)



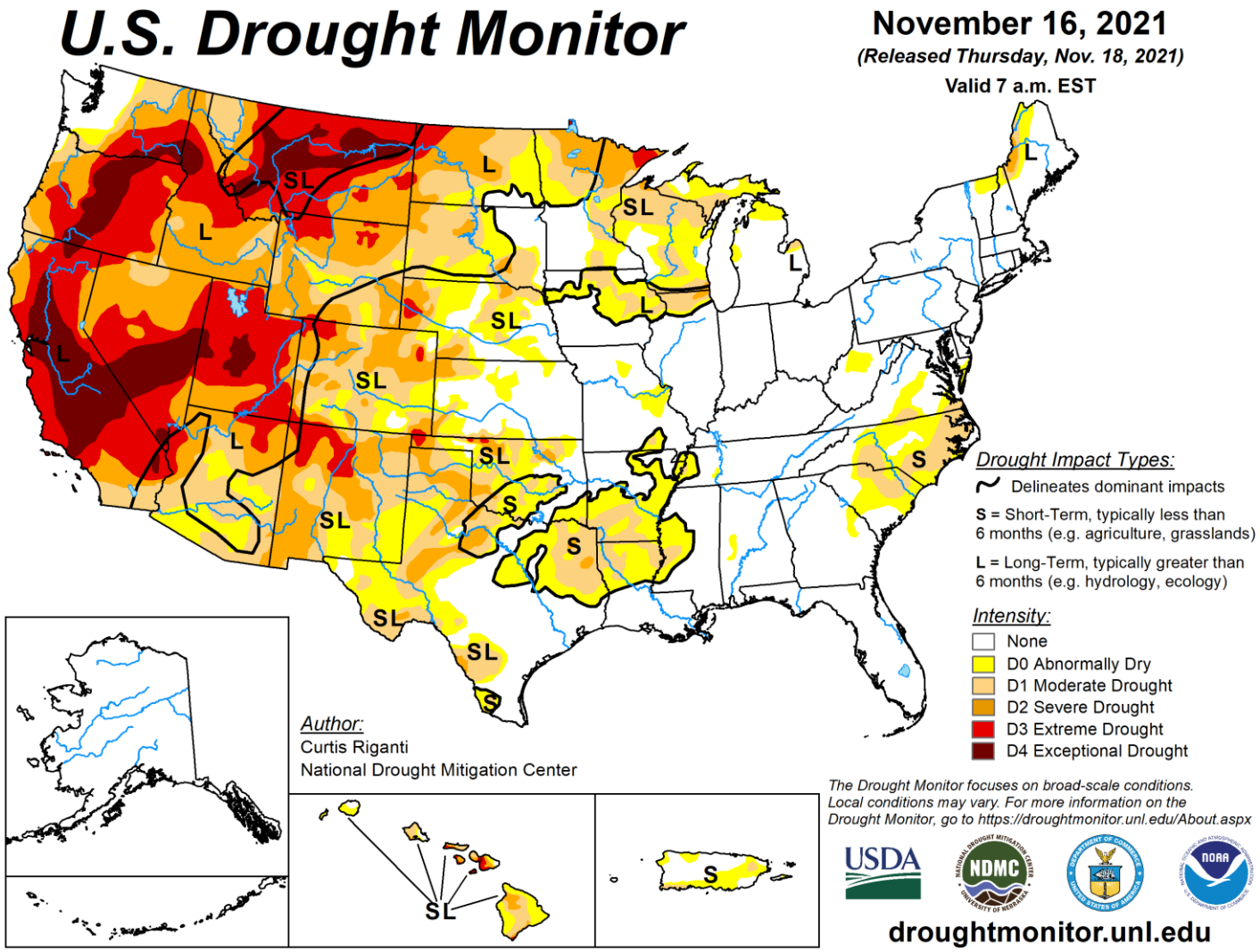
- Above-average temperatures across much of Lower 48
- ME, VT, and NH had a top three warm Jan-Oct
- Near-average statewide temperatures observed across parts of the South

Precipitation Percentiles Jan-Oct 2021
Period: 1895–2021 (127 years)



- Below-average precipitation across parts of the West and northern Plains
- Wetter-than-average precipitation from the Deep South to the Great Lakes and into the Northeast

Current U.S. Drought



48.8% of Contiguous U.S. in Drought

(↑ 2 percentage points since mid-Oct)

Exceptional atmospheric river: October 2021

19-26 Oct. Event Summary

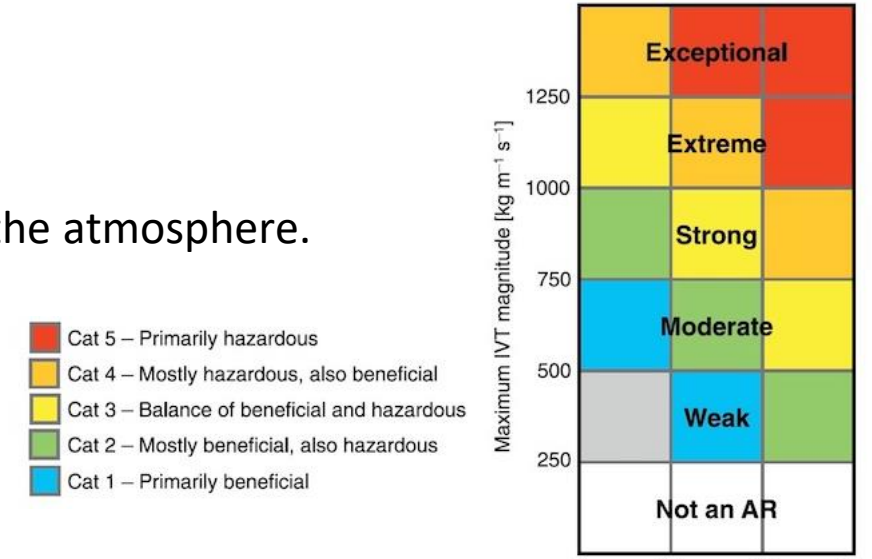
Atmospheric river: long, narrow corridor of concentrated moisture in the atmosphere.

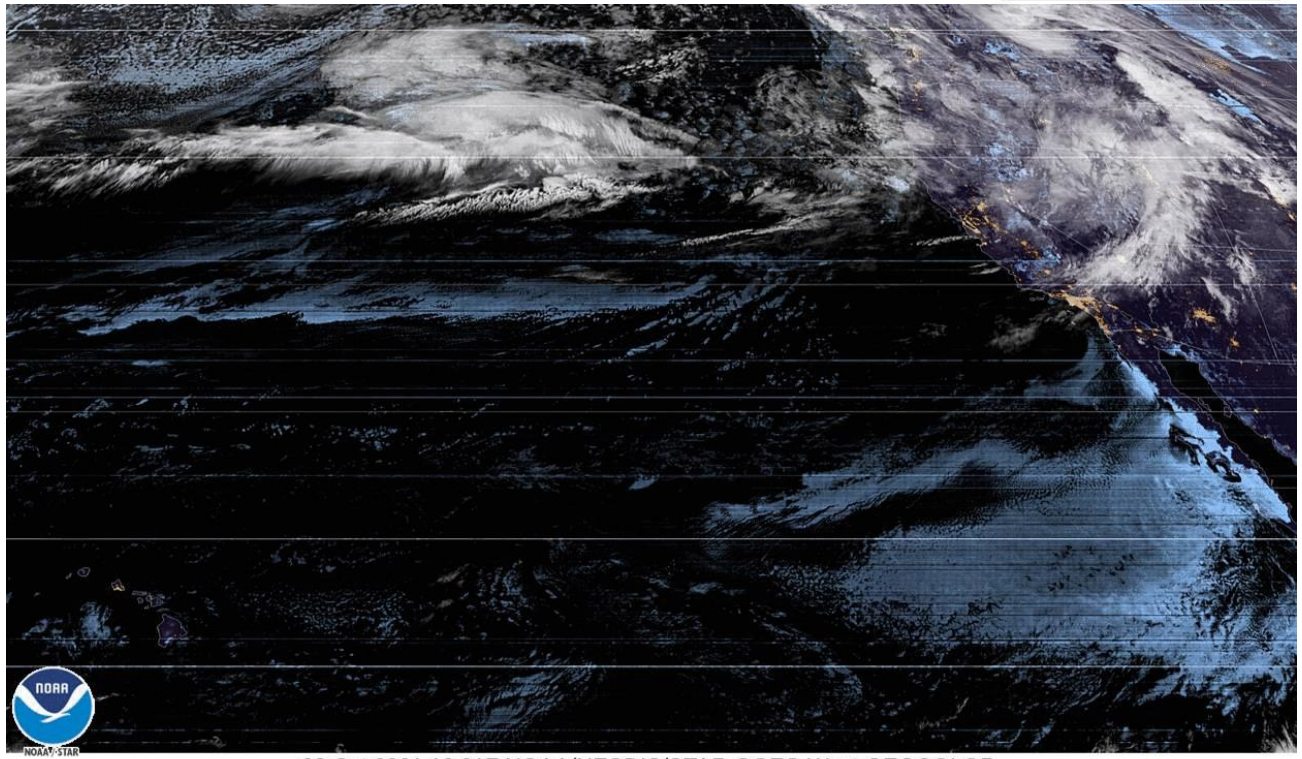
Multiple atmospheric rivers made landfall along the US West Coast 19 - 26 Oct.

The first two atmospheric rivers produced AR 4 (‘**extreme**’) conditions in southwestern Oregon and AR 2/AR 3 conditions were observed elsewhere along the coast from the San Francisco Bay Area to the Olympic Peninsula.

The third reached AR 5 conditions (‘**exceptional**’) over California near Point Reyes due to the combination of strength and duration.

The third was the strongest October atmospheric river to make landfall in the Bay Area in the last 40 years.





23 Oct 2021 12:01Z NOAA/NESDIS/STAR GOES-West GEOCOLOR

CW3E
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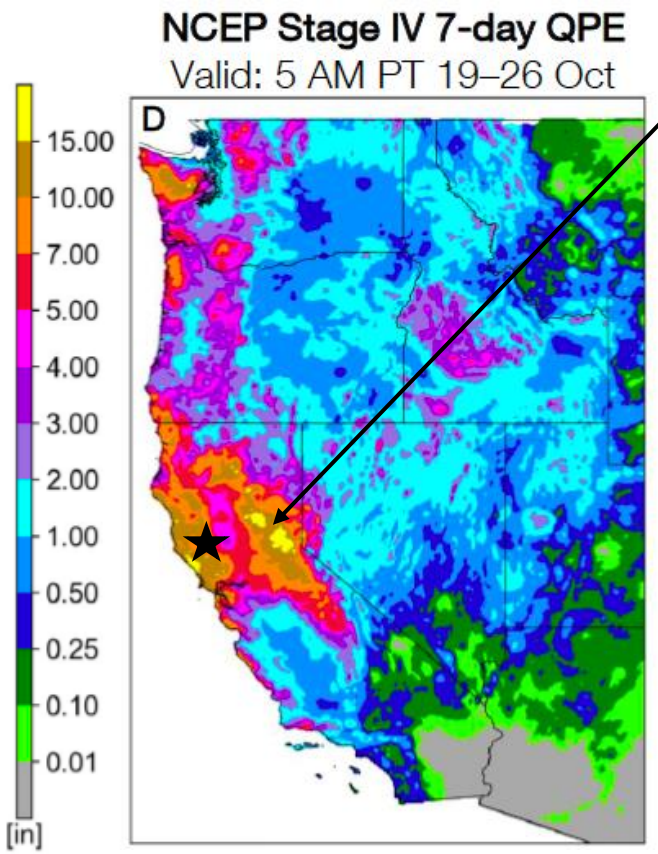
19-26 Oct. Event Summary

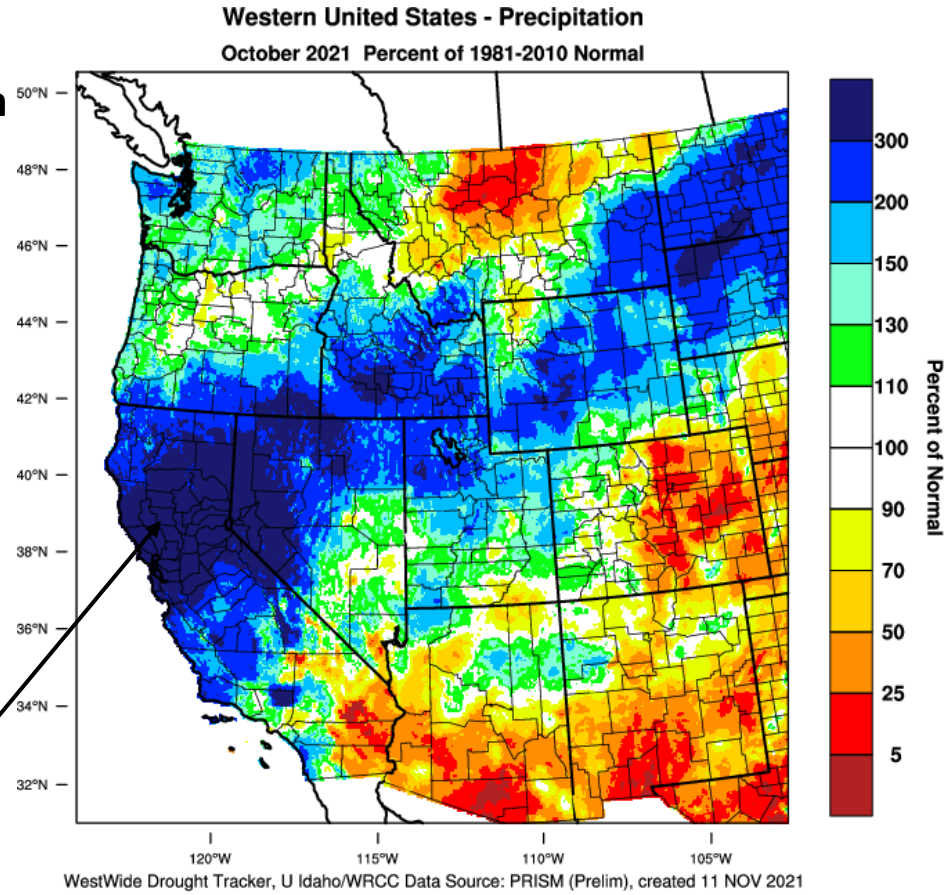


Portions of Northern California received more than **15 inches of total precipitation** from the three storms.

Santa Rosa 1000-year rainfall event:
24 hours, 7.83 inches.

Third AR – significant snow accumulations (>12 inches) in the Sierra Nevada, Washington Cascades, Sawtooth Range in Idaho, and the Ruby Mountains in Nevada.

Northern California experienced **>300%** normal October rainfall.



Extended storm summary at: https://cw3e.ucsd.edu/cw3e-event-summary-19-26-october-2021/

CW3E

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Damaging impacts

Large storm total rainfall resulted in **rockslides and minor landslides** at various locations in northern California.

Recent burn scars saw **enhanced runoff containing ash and sediment**, though no impactful post-wildfire debris flows were reported. Though storm total precipitation was high, **rainfall intensity was likely insufficient to trigger impactful debris flows**.

Wind gusts > 70 mph in the Marin Headlands and Santa Cruz Mountains.
Wind gusts > 50 mph in the Sacramento Valley and western foothills of the Northern Sierra Nevada.

The combination of heavy rain and high winds **downed trees** and caused **power outages** throughout the Bay Area.

Riverine flooding on the Russian River in Sonoma County.

Rockslide on State Route 70

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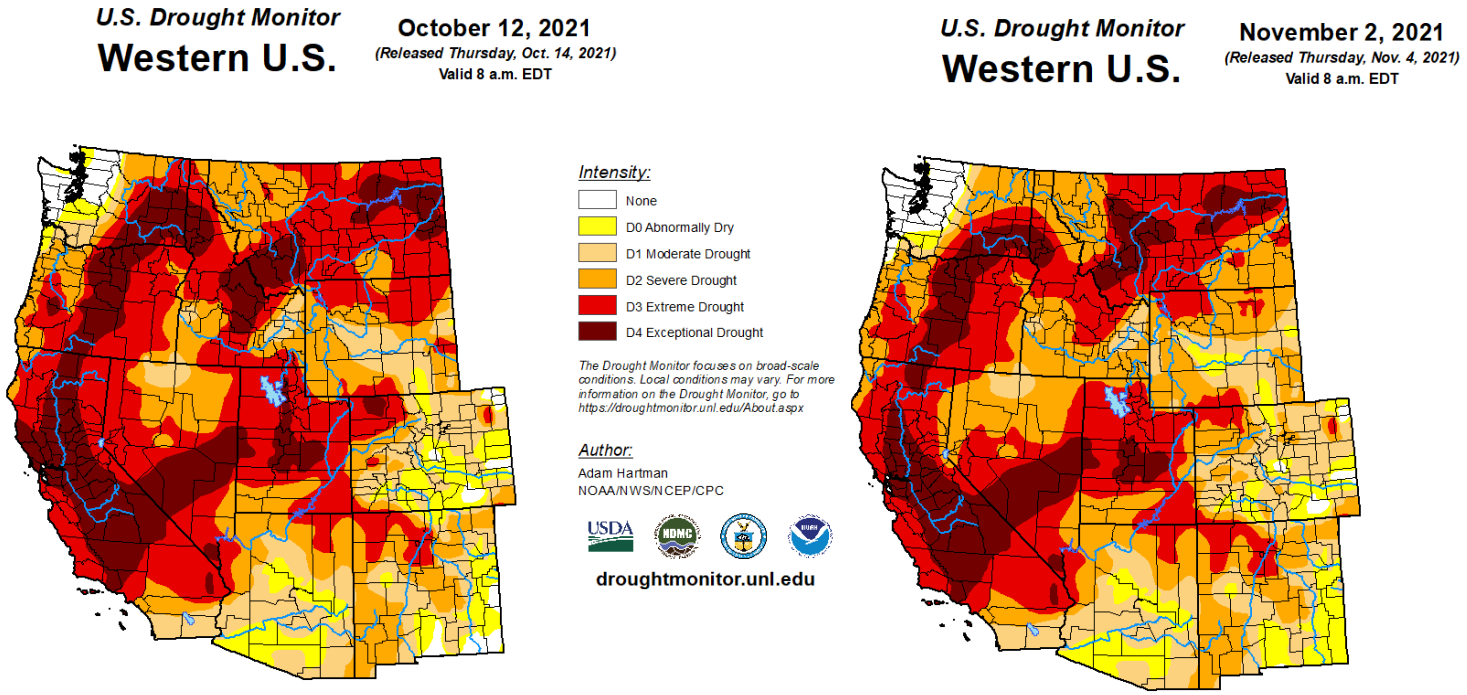
Beneficial impacts

Modest increases in reservoir levels were observed in California, though modestly for an AR 5 due to dry antecedent conditions.

Mitigated wildfire concern in central and northern California.



Some areas surrounding the Southern Sierra Nevada and the Southern Central Valley saw improvements, but **dry soil moisture largely persist in the region**.

It is still early in the season, and we will need subsequent precipitation events in the wet season to get out of drought conditions.

CW3E

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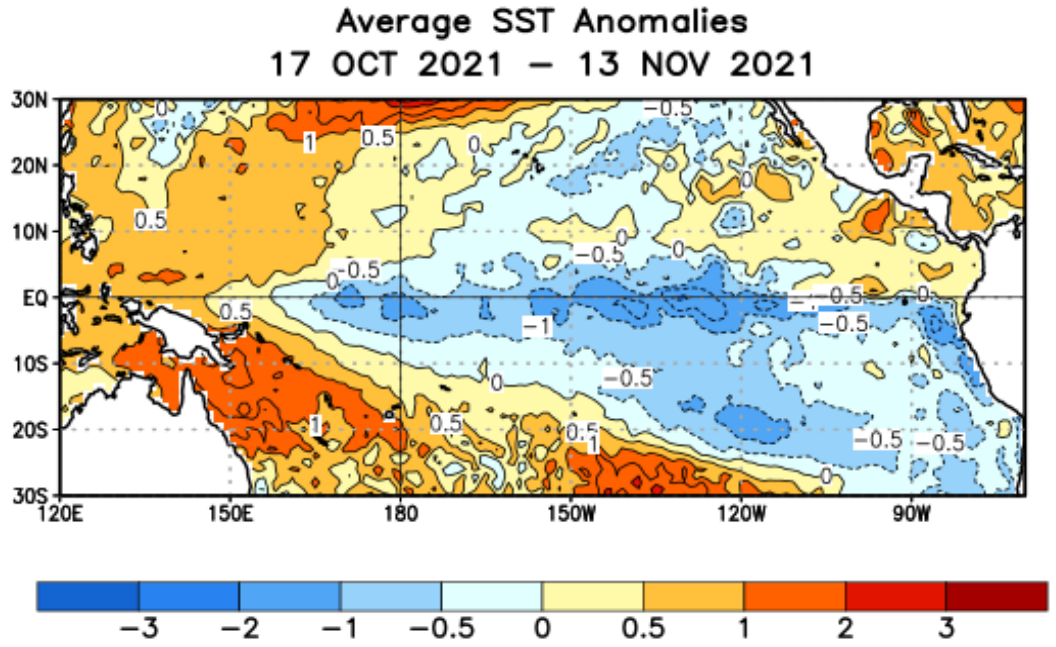
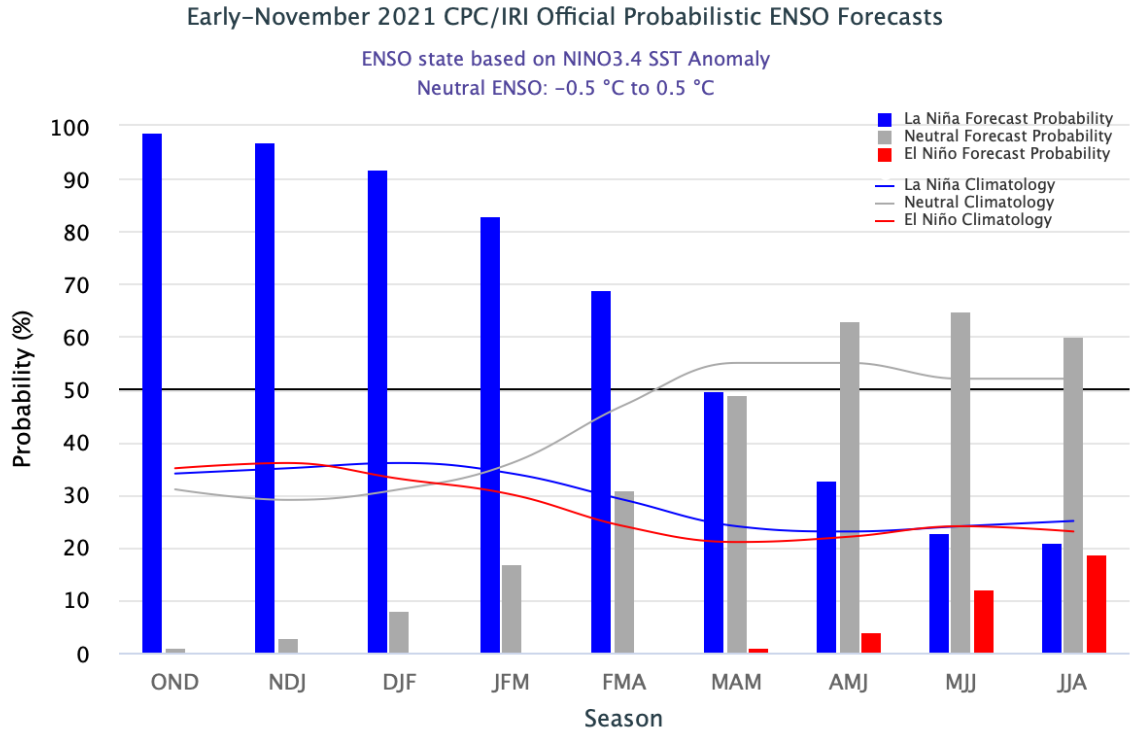
AR Landfall Alerts at:
https://cw3e.ucsd.edu/arscale_alerts/

Sea Surface Temperatures and ENSO





Sea surface temperatures

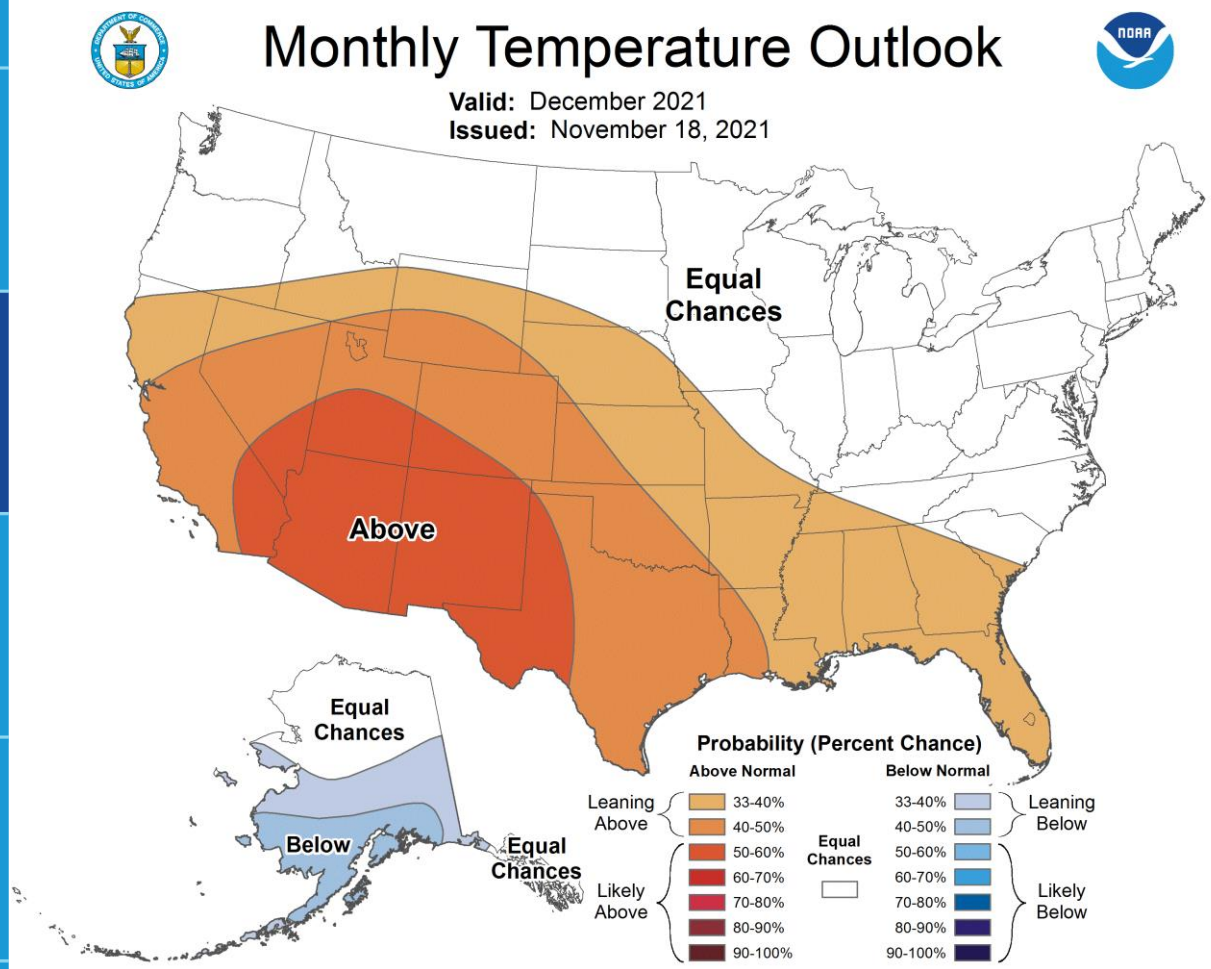
- Below normal sea surface temperatures continue across the central and eastern Pacific Ocean near the equator
- The oceanic and atmospheric observations currently reflect La Nina conditions

ENSO forecast

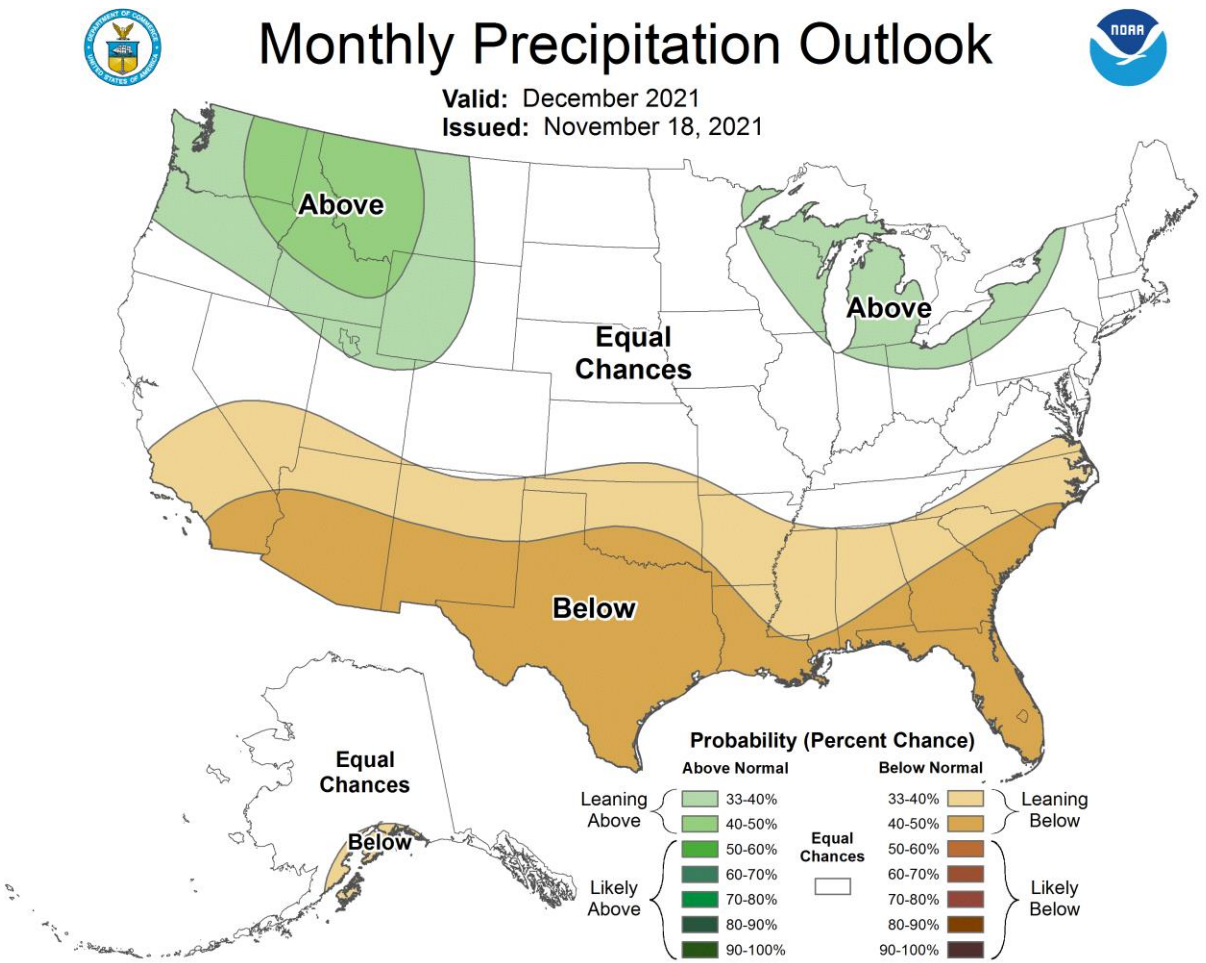
- La Niña is likely to continue through the Northern Hemisphere winter 2021-22 (~90% chance) and into spring 2022 (~50% chance during March-May)
- Chances for ENSO neutral conditions increase in spring and summer

Monthly Forecast (December)

December Average Temperature Probability

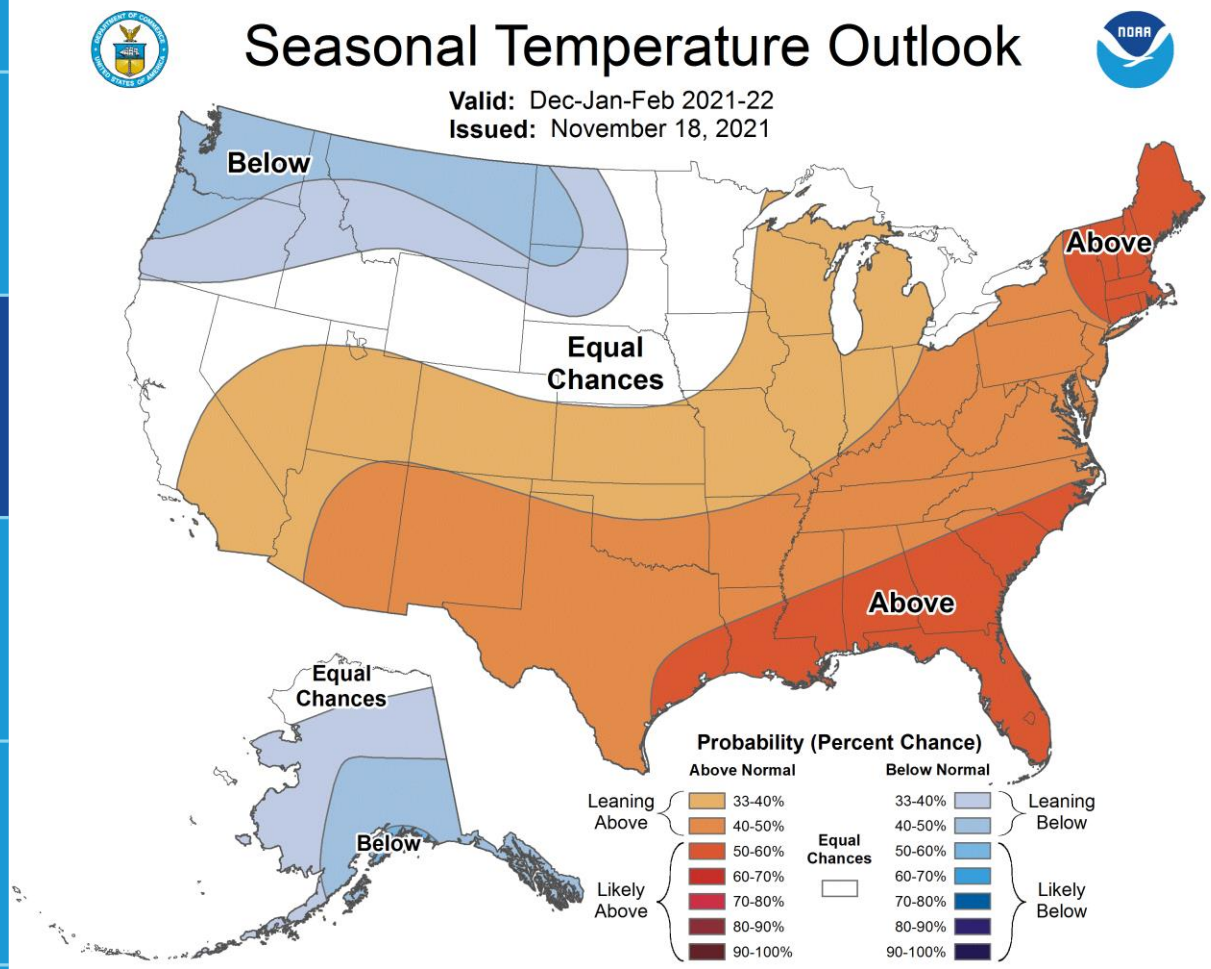


December Total Precipitation Probability

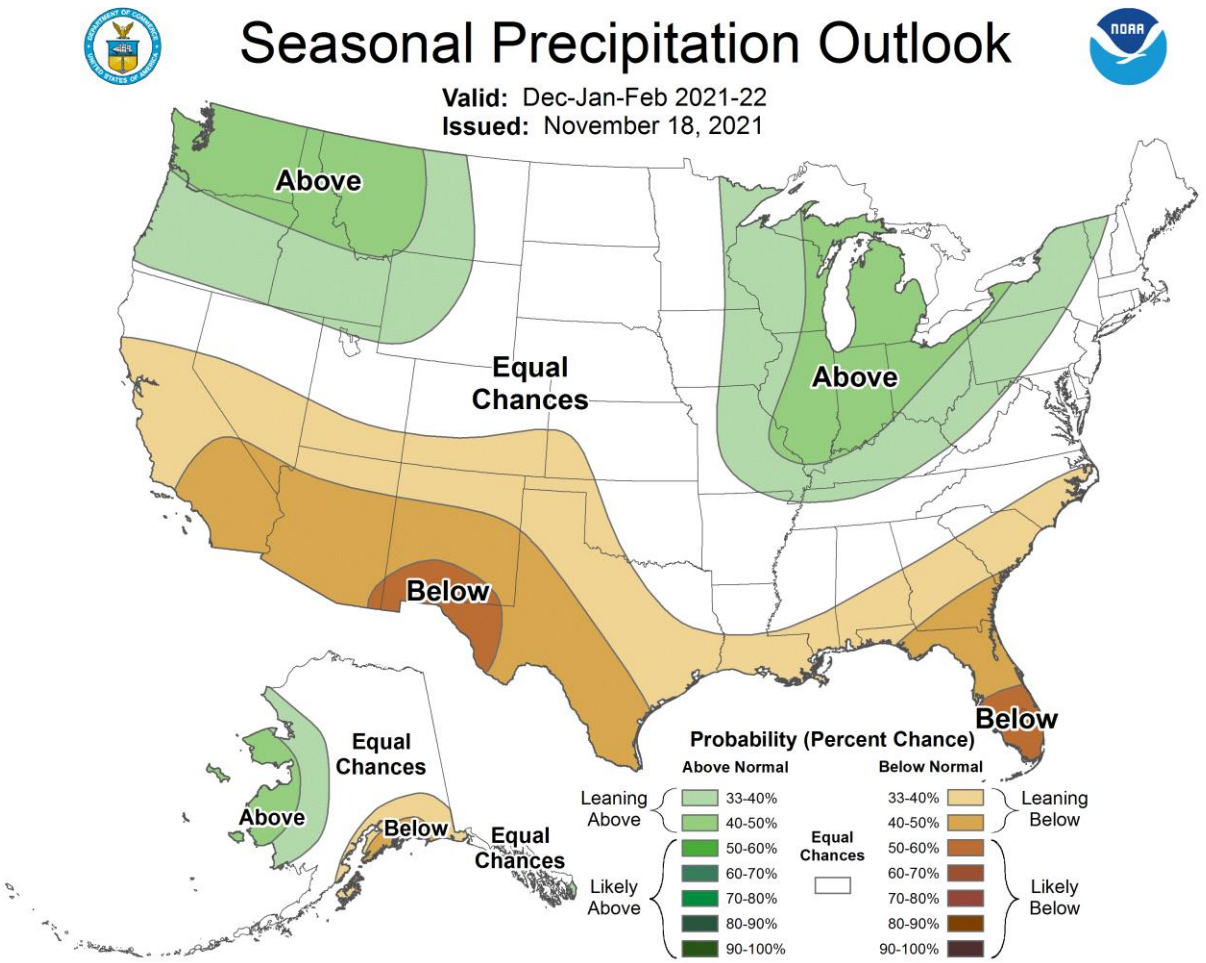


Three-month Forecast (Dec, Jan, Feb)

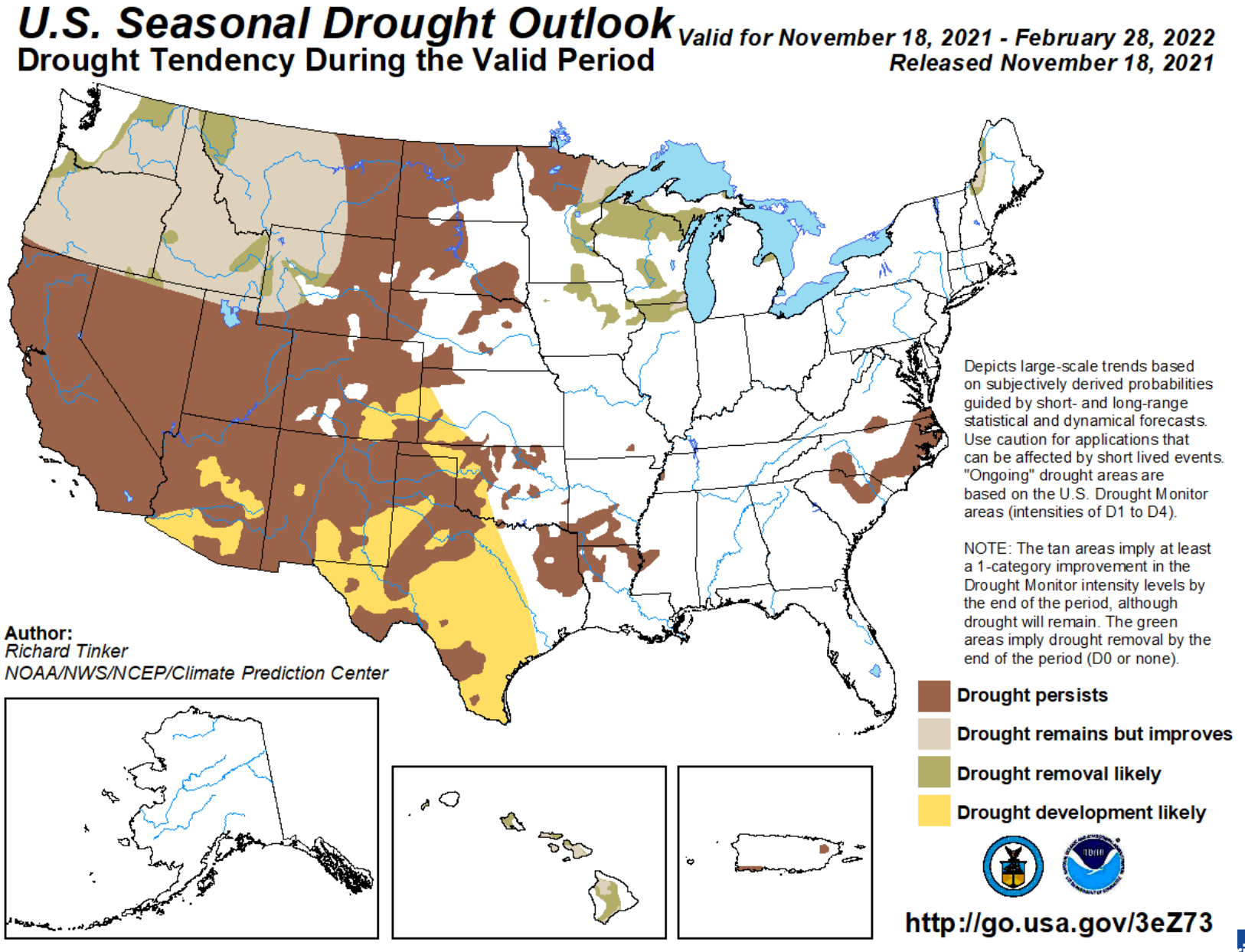
Dec-Jan-Feb Average Temperature Probability



Dec-Jan-Feb Total Precipitation Probability



U.S. Drought Outlook



For More Information

TODAY'S PRESENTATION:

- http://www.ncdc.noaa.gov/sotc/briefings

NOAA's National Centers for Environmental Information: www.ncdc.noaa.gov

- Monthly climate reports (U.S. & Global): www.ncdc.noaa.gov/sotc/
- Dates for upcoming reports: http://www.ncdc.noaa.gov/monitoring-references/dyk/monthly-releases

NOAA's Climate Prediction Center: www.cpc.ncep.noaa.gov

U.S. Drought Monitor: www.drought.gov

Climate Portal: www.climate.gov

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