



WINTER 2020-21 OUTLOOK

MARK O'MALLEY

NATIONAL WEATHER SERVICE

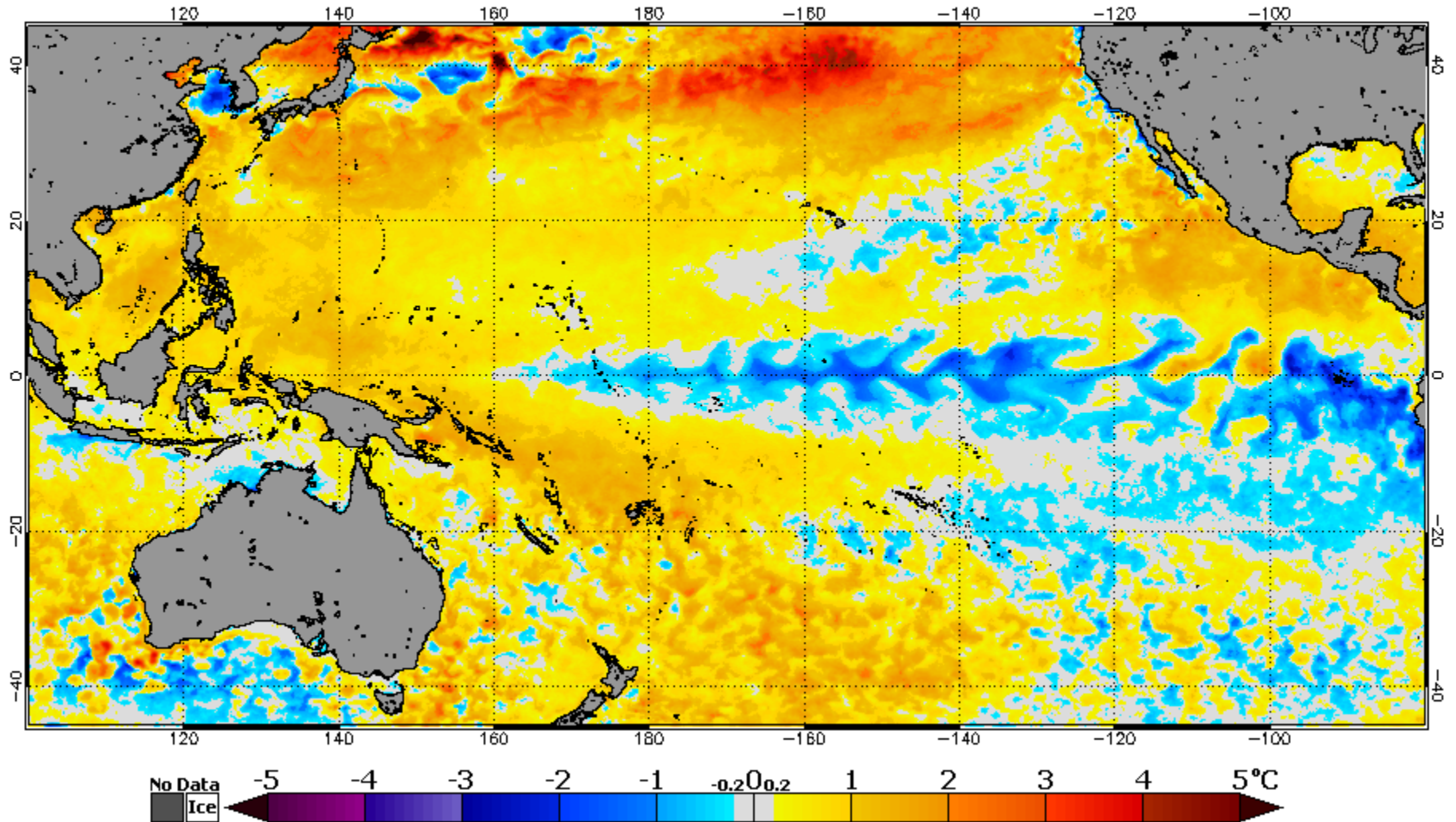
PHOENIX, AZ

WWW.WEATHER.GOV/PHOENIX



La Niña

NOAA Coral Reef Watch Daily 5km SST Anomalies (Version 3.1) 3 Aug 2020



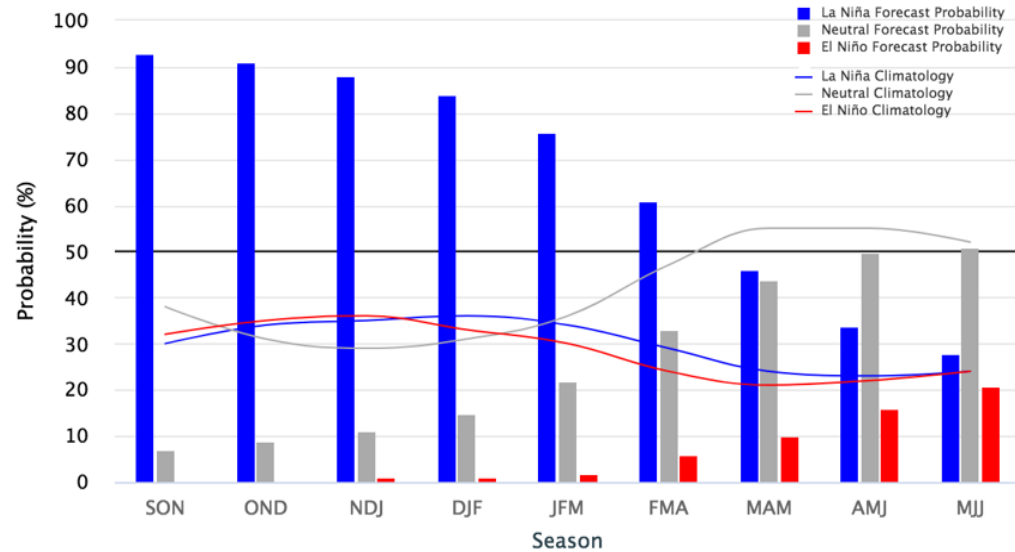


La Niña

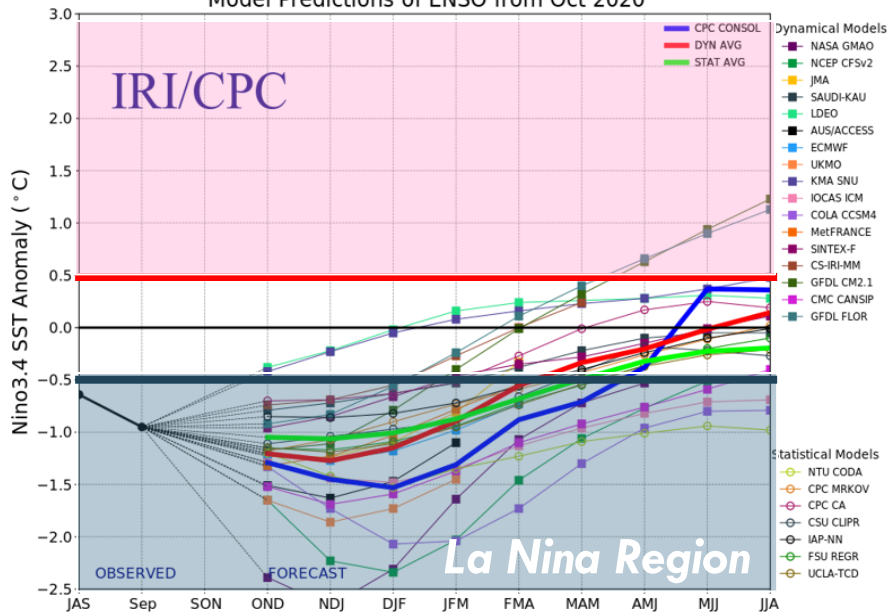
La Niña conditions are already evident, and will continue to strengthen into the winter

Early–October 2020 CPC/IRI Official Probabilistic ENSO Forecasts

ENSO state based on NINO3.4 SST Anomaly
Neutral ENSO: -0.5 °C to 0.5 °C



Model Predictions of ENSO from Oct 2020



➤ Forecast models are very consistent in depicting prolonged La Niña through the entire winter 2020-21

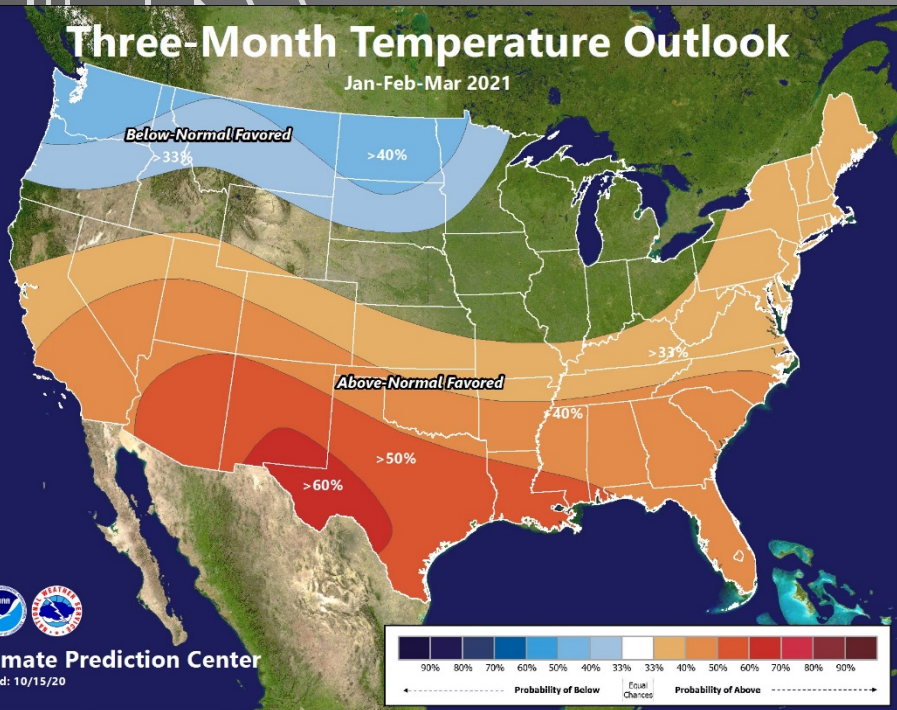
➤ There is growing evidence this will become at least a moderate event, with some potential for a strong La Niña event peaking around New Years



Temperature Outlook: Jan/Feb/Mar 2021

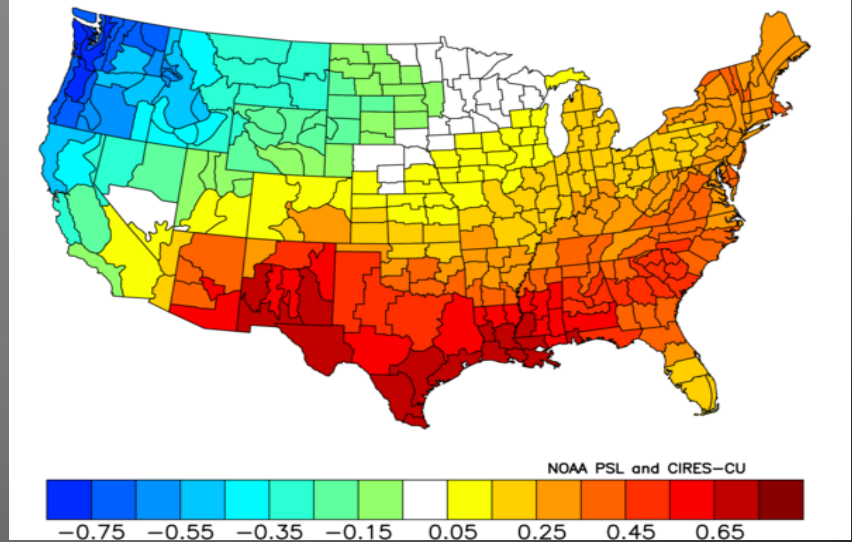
Three-Month Temperature Outlook

Jan-Feb-Mar 2021

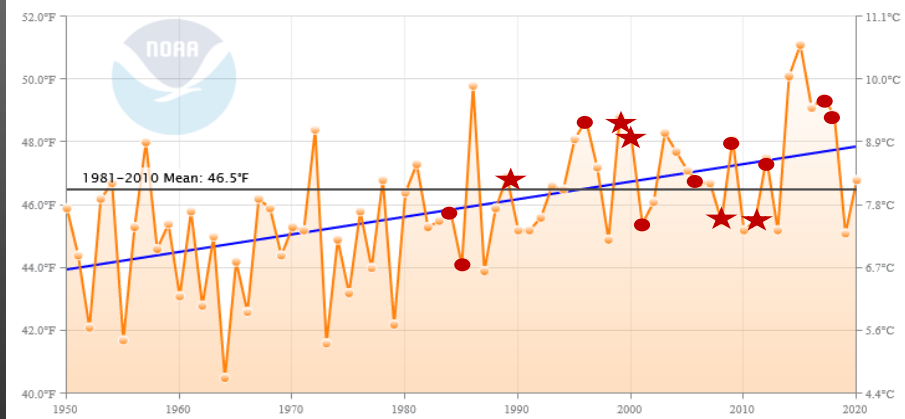


Climate Prediction Center
Issued: 10/15/20

NOAA/NCEI Climate Division Composite Standardized Temperature Anomalies Versus 1981–2010 Longterm Average
Jan to Mar 1984,1985,1989,1996,1999,2000,2001,2006,2008,2009 2011,2012,2017,2018



Arizona Average Temperature
January–March



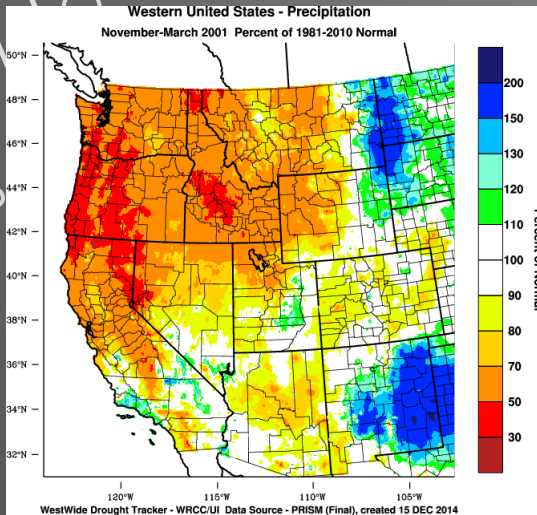
Three-month averages
Better odds for above normal temperatures

Red dots = Recent Weak-MDT La Niña

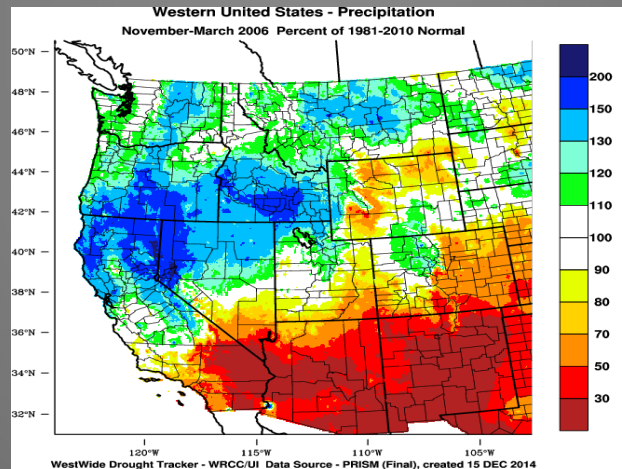
Red stars = Recent Strong La Niña



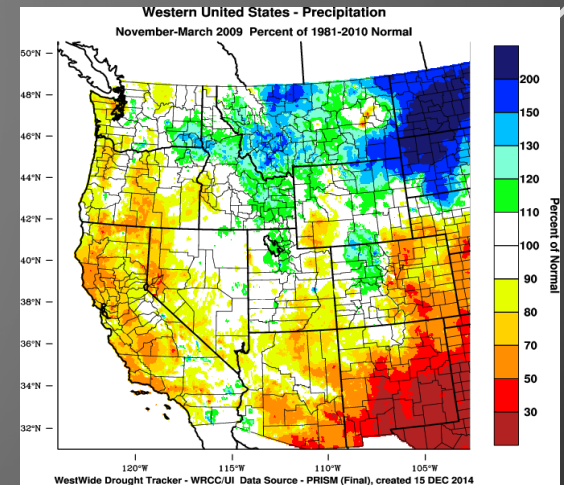
Recent Weak-Moderate La Niña Winters (Nov-Mar percent Average Precipitation)



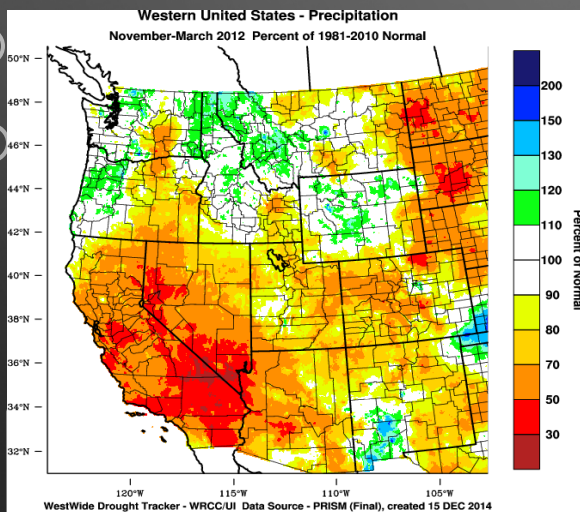
2000-01



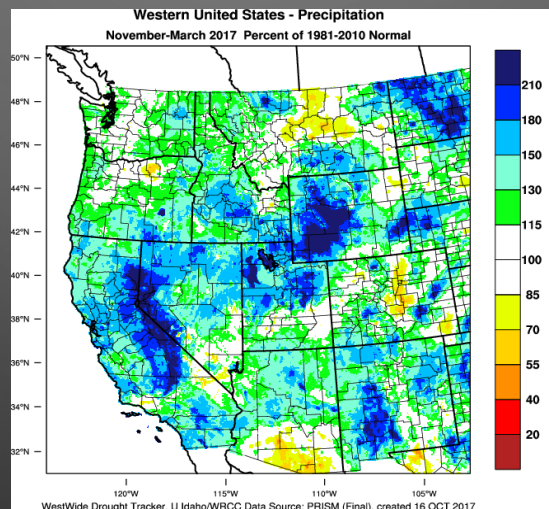
2005-06



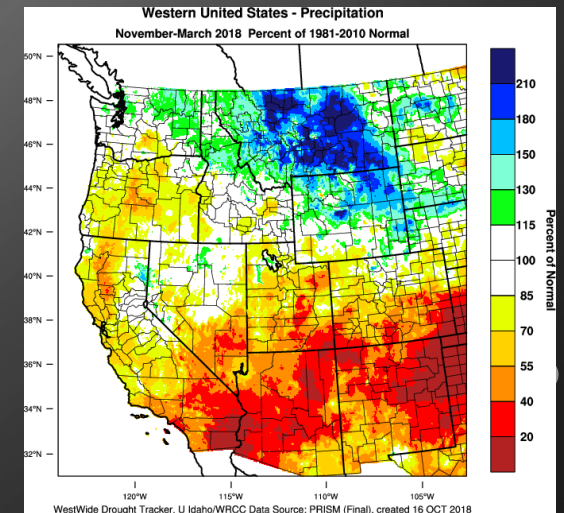
2008-09



2011-12



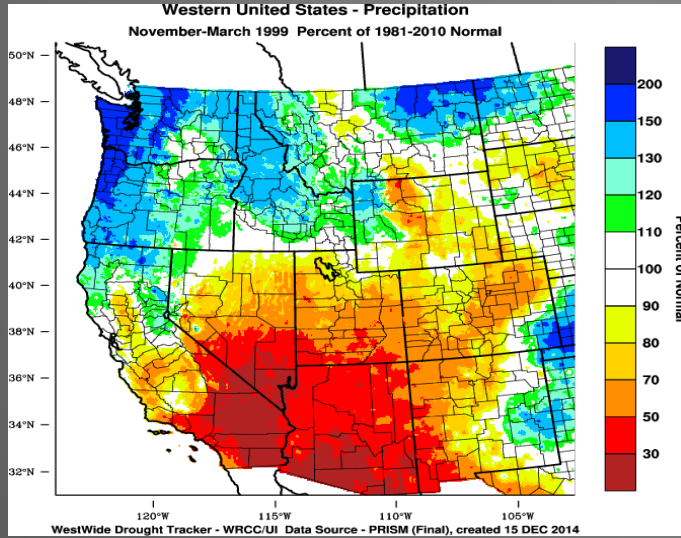
2016-17



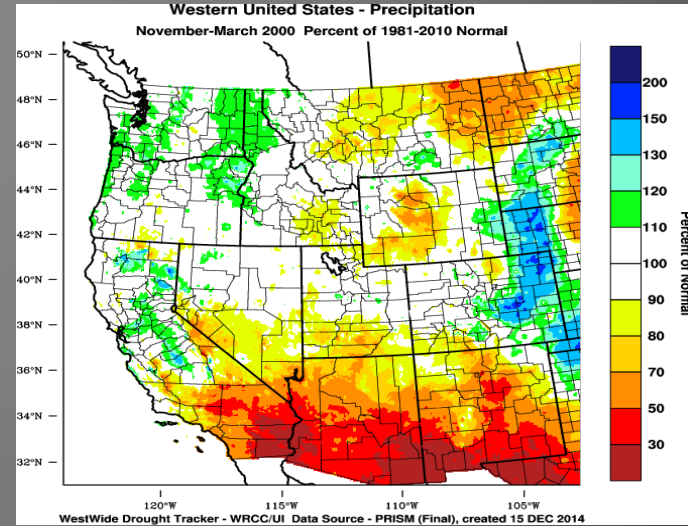
2017-18



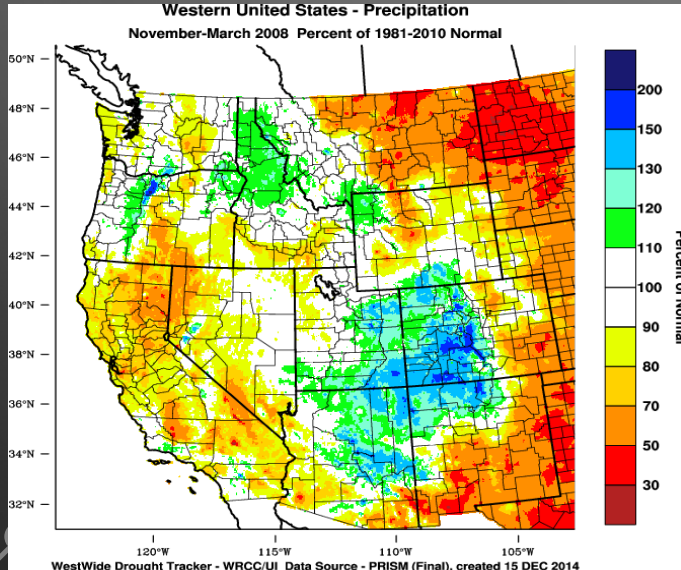
Recent Strong La Niña Winters (Nov-Mar percent Average Precipitation)



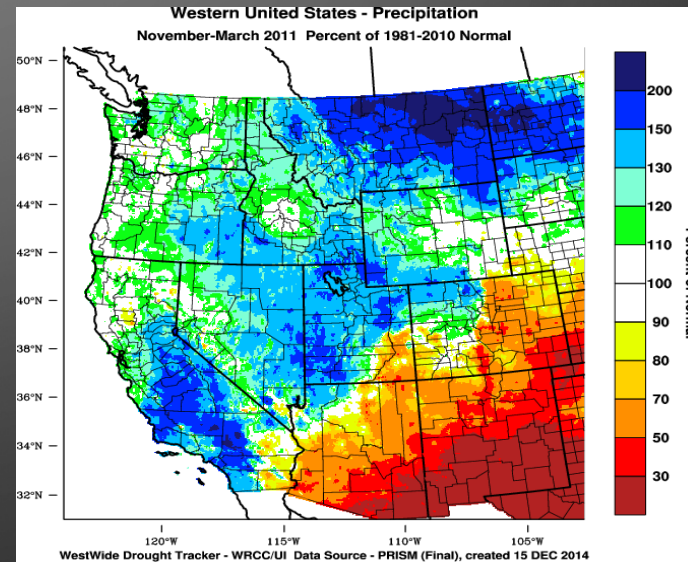
1998-99



1999-2000



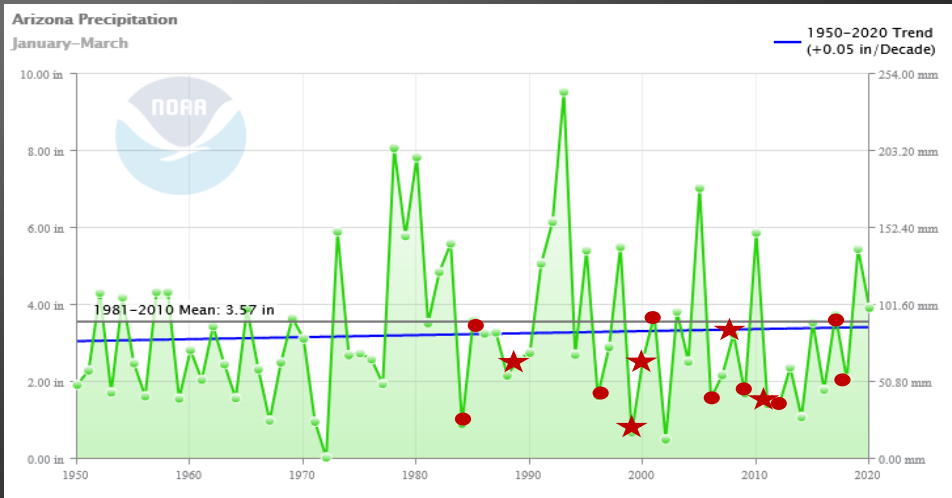
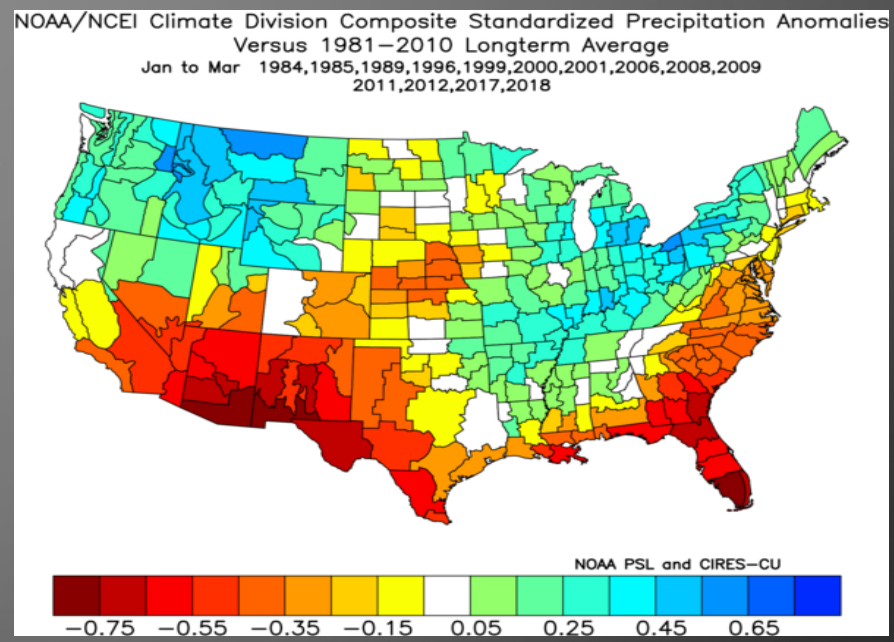
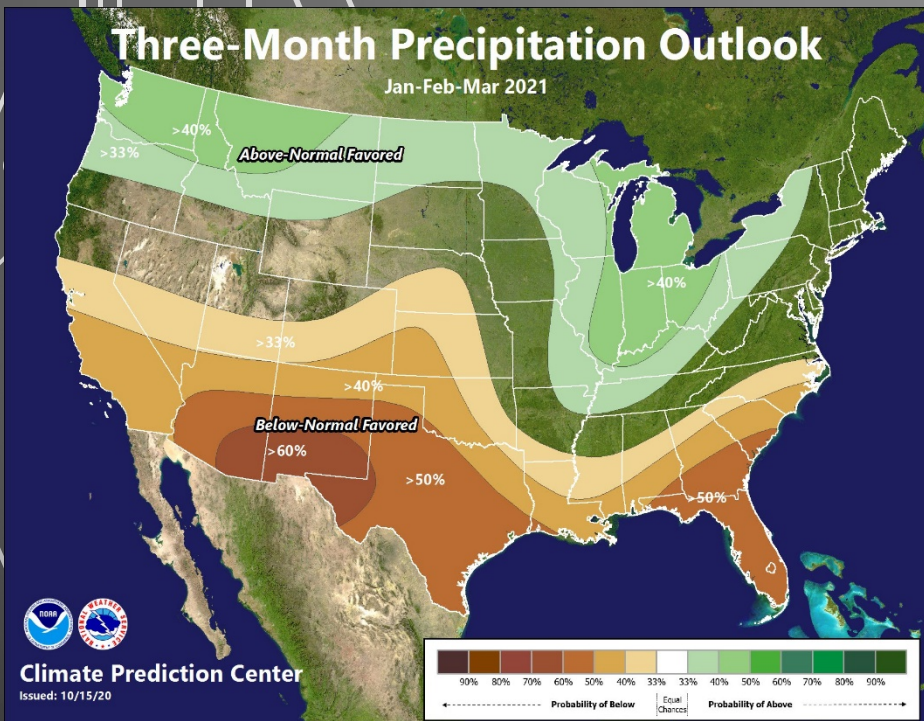
2007-08



2010-11



Precipitation Outlook: Jan/Feb/Mar 2021



Three-month averages

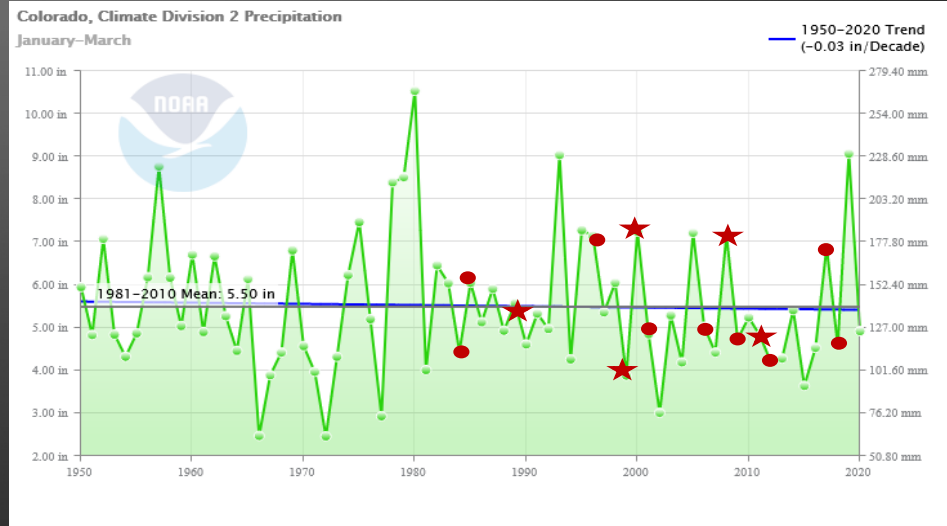
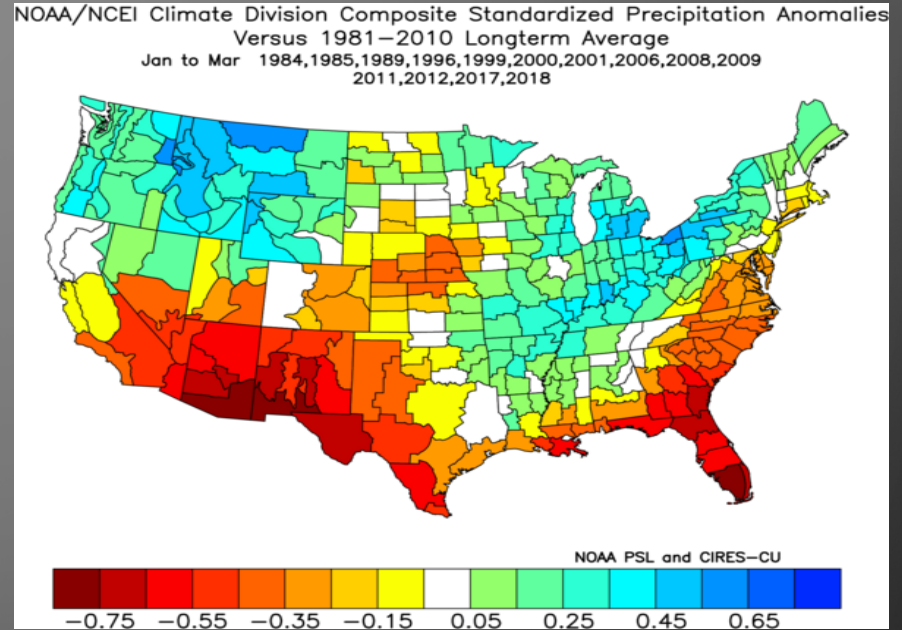
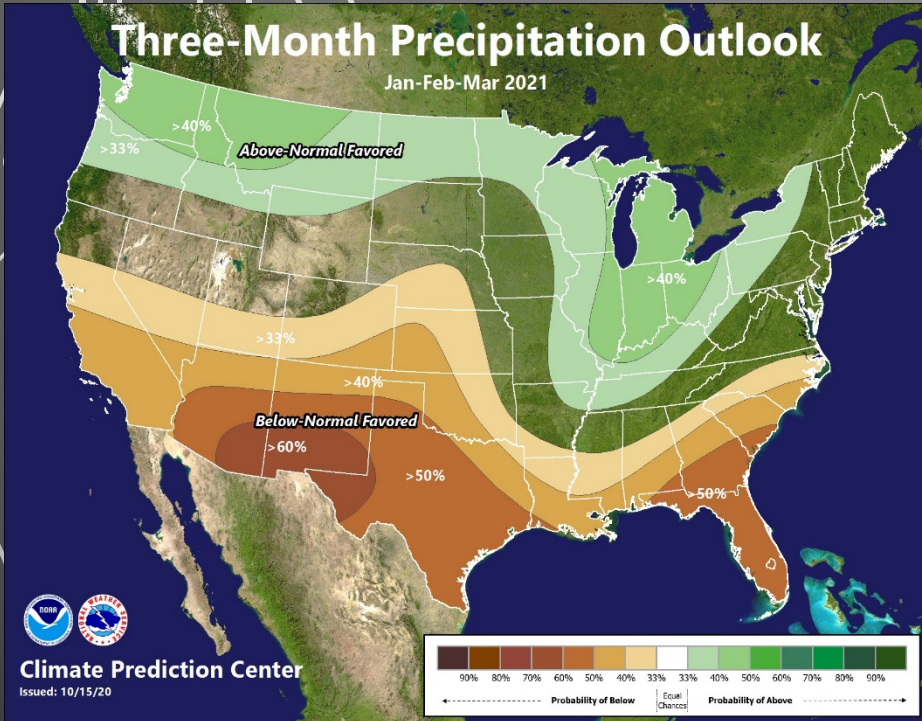
Better odds of below average precipitation

Red dots = Recent Weak-MDT La Niña

Red stars = Recent Strong La Niña



Precipitation Outlook: Jan/Feb/Mar 2021



Three-month averages

Better odds of below average precipitation

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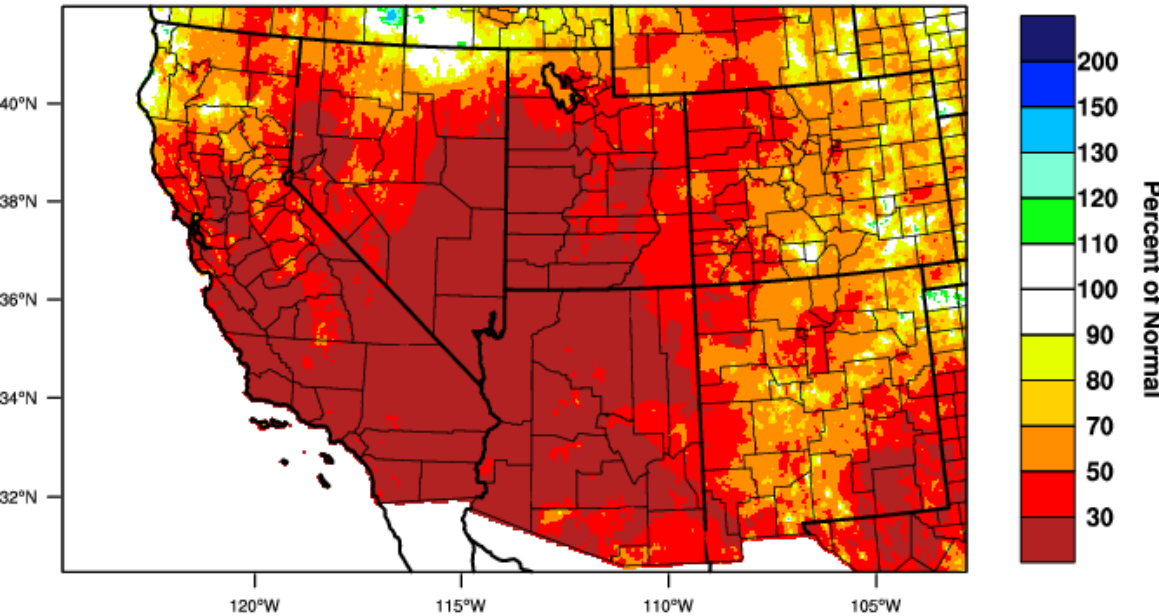
Red stars = Recent Strong La Niña



May-October 2020 Precipitation

Southwest - Precipitation

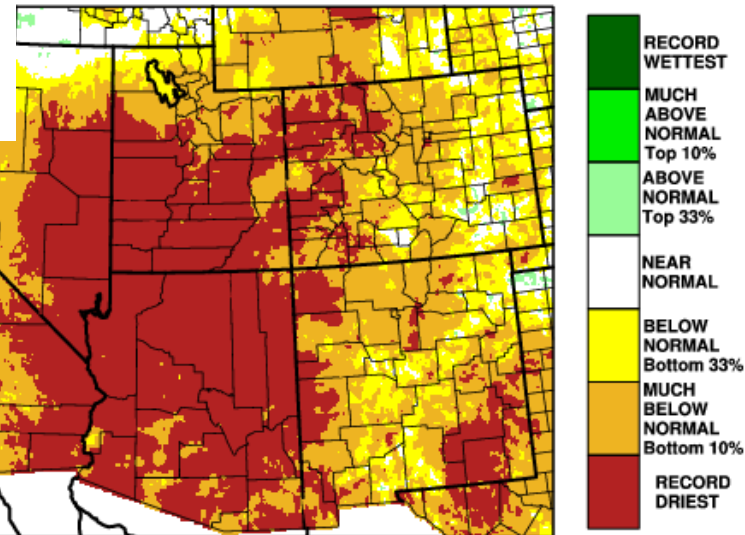
May-October 2020 Percent of 1981-2010 Normal



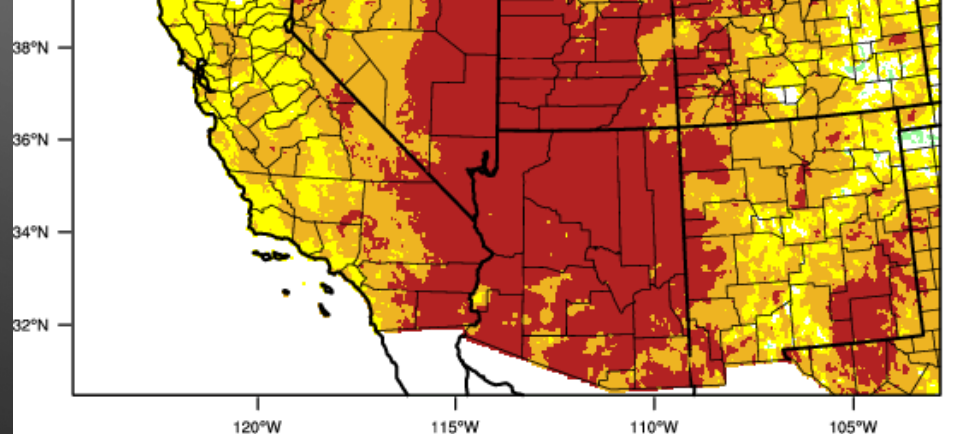
- Given this was the driest and hottest monsoon and early fall on record, soil moisture has likely been lessened substantially.
- Concerned that upcoming runoff will be negatively impacted

Southwest - Precipitation

October 2020 Percentile



WestWide Drought Tracker - U Idaho/WRCC Data Source - PRISM (Prelim), created 2 NOV 2020



WestWide Drought Tracker - U Idaho/WRCC Data Source - PRISM (Prelim), created 2 NOV 2020

Rankings (1895-2010)



SUMMARY

- The outlook for winter 2020-21 indicates La Niña conditions persisting through the spring
- La Niña may reach moderate to strong levels, and with a few exceptions historically La Niña results in drier than normal conditions across Arizona
- Odds are shifted towards a warmer than normal winter based on a combination of La Niña composites and trends over the past 10-15 years
- Climate models and historical La Niña composites indicate a strong tilt in odds towards a drier than normal winter
- Concerns exist that antecedent dry soils may negatively impact runoff in the upcoming water year even if near average snowfall occurs



QUESTIONS? CONTACT US!

Telephone: 602-275-0073



Home page: www.weather.gov/phoenix



Facebook: www.facebook.com/NWSPhoenix



Twitter: www.twitter.com/NWSPhoenix

E-mail: mark.omalley@noaa.gov

NWS.Phoenix@noaa.gov