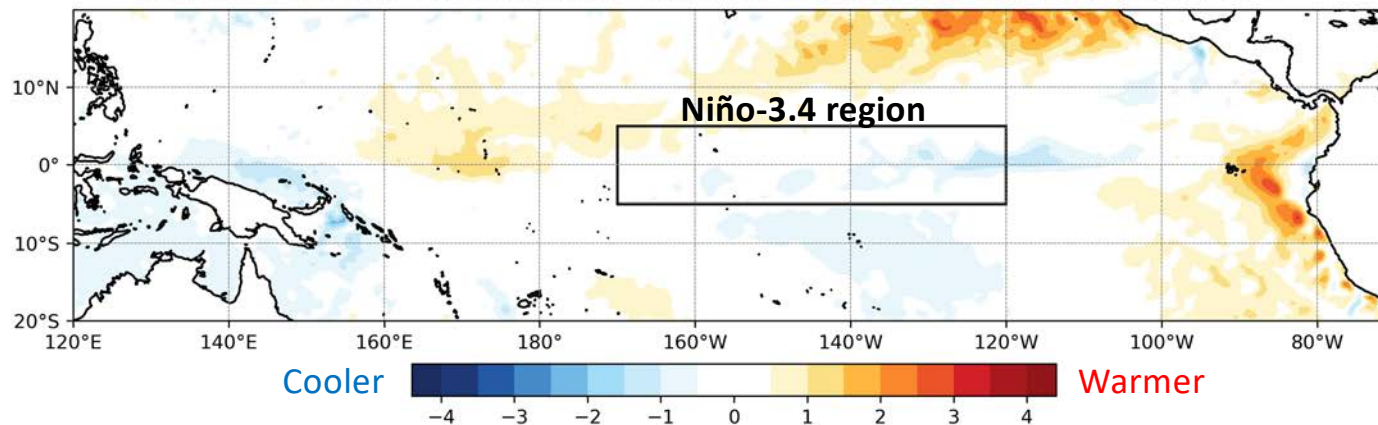




Update on the El Niño-Southern Oscillation (ENSO)

Relative SST Anomalies Week centered on 2026.04.08



Sea Surface
Temperatures
= SSTs

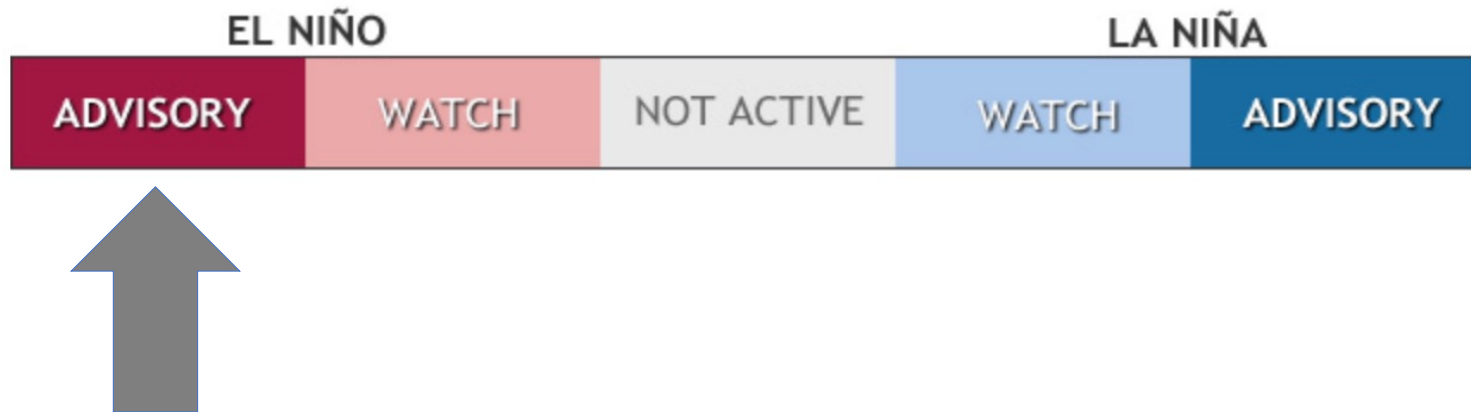
El Niño: Relative
Niño-3.4 index at
or above +0.5°C

Michelle L'Heureux
NOAA/NWS/NCEP/Climate Prediction Center

ENSO Forecast Team: Emily Becker (CIMAS/Miami), Daniel Harnos, Zeng-Zhen Hu, Nathaniel Johnson (GFDL), Yanyun Liu, Lindsey Long, Cristina Recalde, Wanqiu Wang, Caihong Wen, Jieshun Zhu

Northeast Regional Climate Center (NRCC) ENSO briefing
30 July 2026

Current ENSO Alert System (as of 9 July 2026)



El Niño Advisory

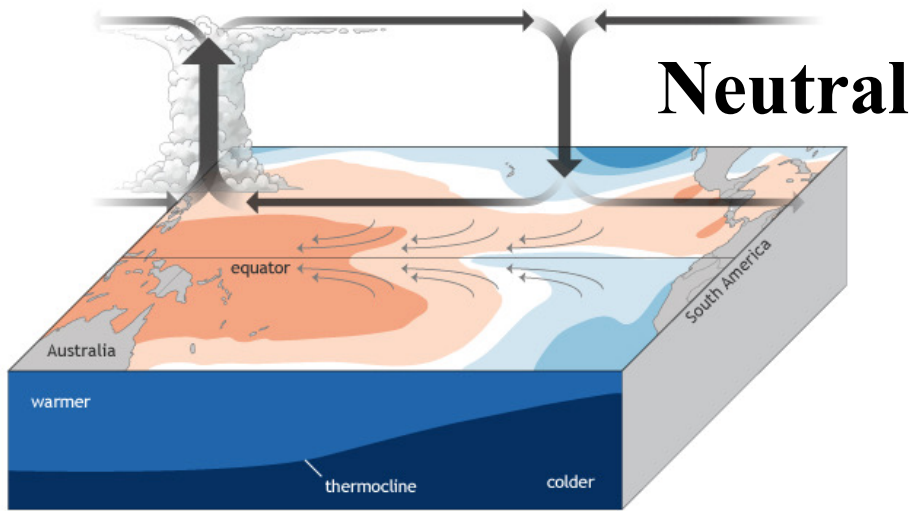
9 July 2026 Update:

El Niño continues and will strengthen through the end of the year, with a 97% chance it will persist through early spring 2027.

Updates on the 2nd Thursday of every month:

https://www.cpc.ncep.noaa.gov/products/analysis_monitoring/enso_advisory/ensodisc.shtml

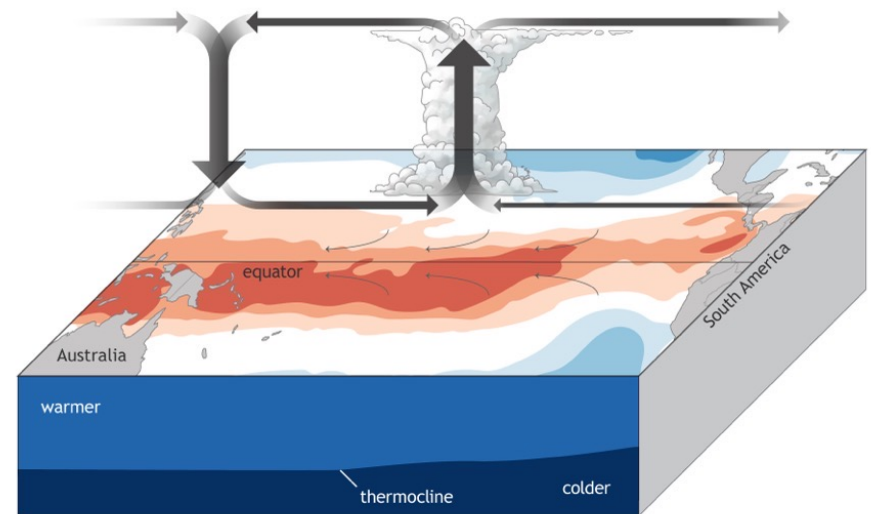
Atmosphere-ocean feedbacks during El Niño-Southern Oscillation
Neutral



NOAA Climate.gov

El Niño

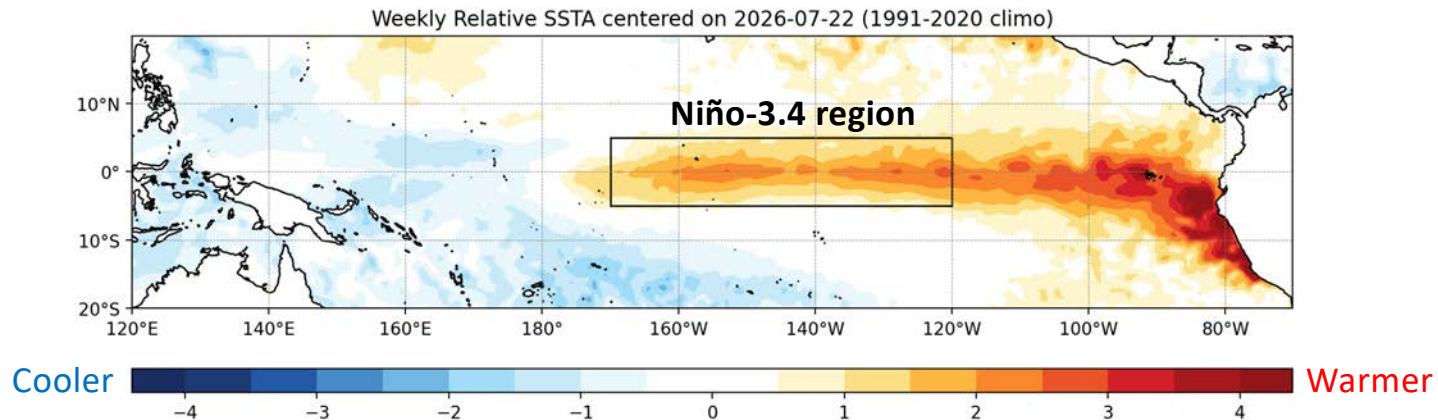
Atmosphere-ocean feedbacks during El Niño-Southern Oscillation
El Niño



NOAA Climate.gov

<https://www.climate.gov/news-features/blogs/enso/rise-el-niño-and-la-niña>

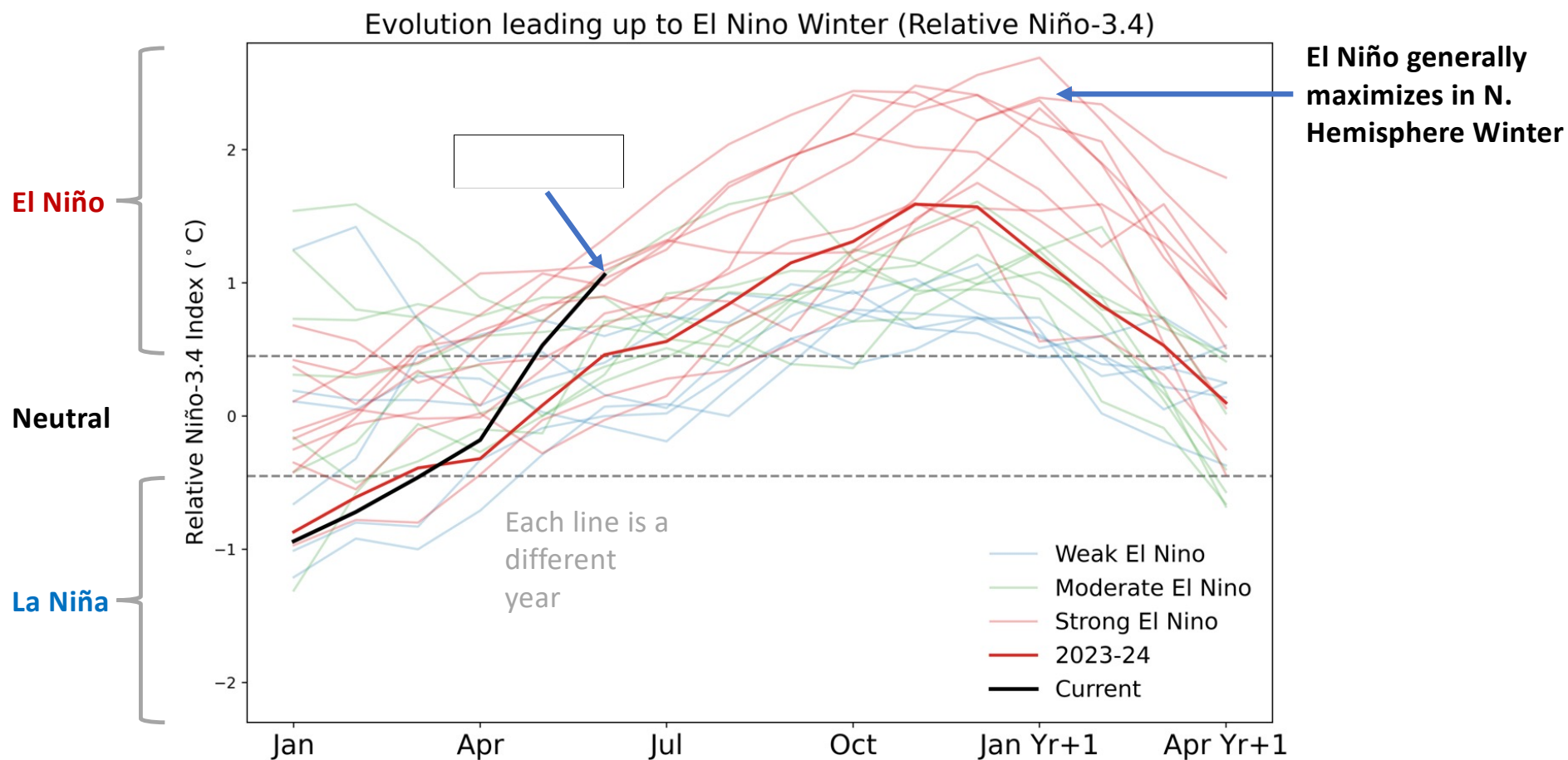
NOAA's Official ENSO Definition: The Relative Niño 3.4 index or Relative Oceanic Niño Index, "RONI" (3-month running average)



- We measure sea surface temperature (SST) departures from normal (or anomalies) in the “Niño-3.4 region” of the east-central equatorial Pacific Ocean.
- The boxed Niño-3.4 region is averaged together to form an “index” or time series – one number for each time step.
- The tropical mean SST index (average over the global tropics from 20°S-20°N) is subtracted from the Niño-3.4 index.
- The final index is called the “Relative Niño-3.4 index.” If there is a 3-month (seasonal) running average then it’s called the “Relative Oceanic Niño Index” or RONI.
- RONI values at or in excess of +0.5°C for at least five consecutive 3-month “seasons” are considered an El Niño event.

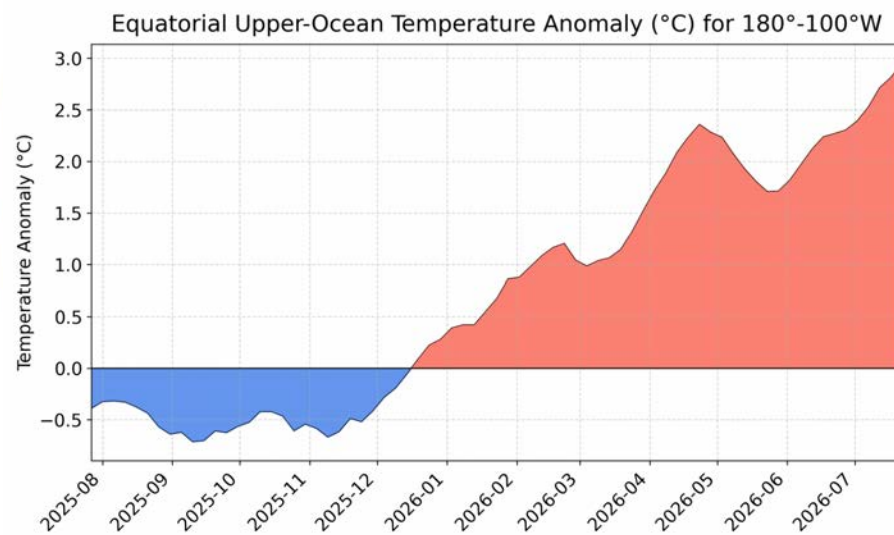
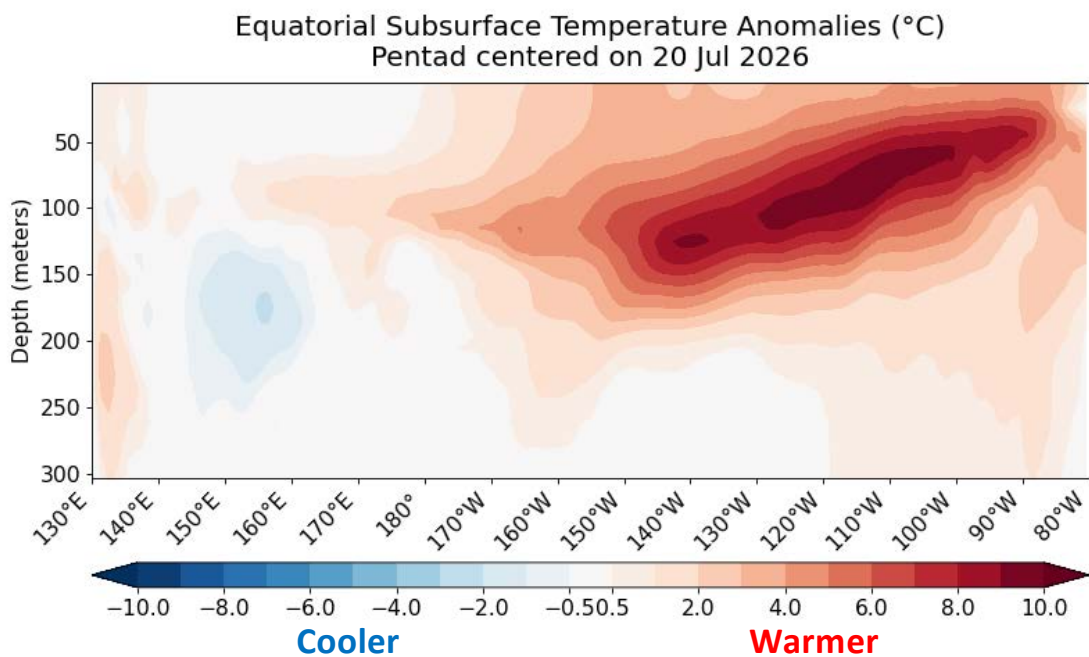
More info on RONI: https://www.cpc.ncep.noaa.gov/products/analysis_monitoring/enso/roni/announcement.php

Ranking June monthly averages, the current El Niño is 4th warmest since 1950.

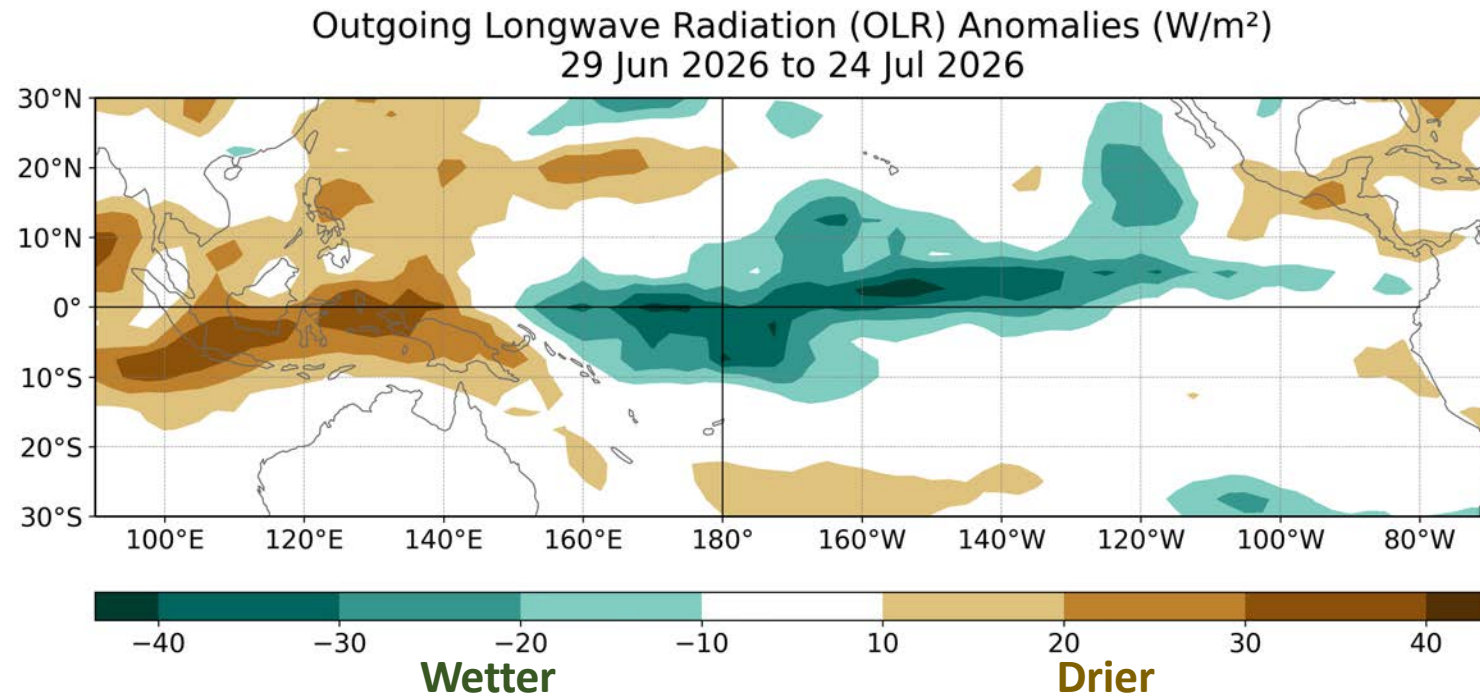


Data: NOAA/NCEI ERSSTv5

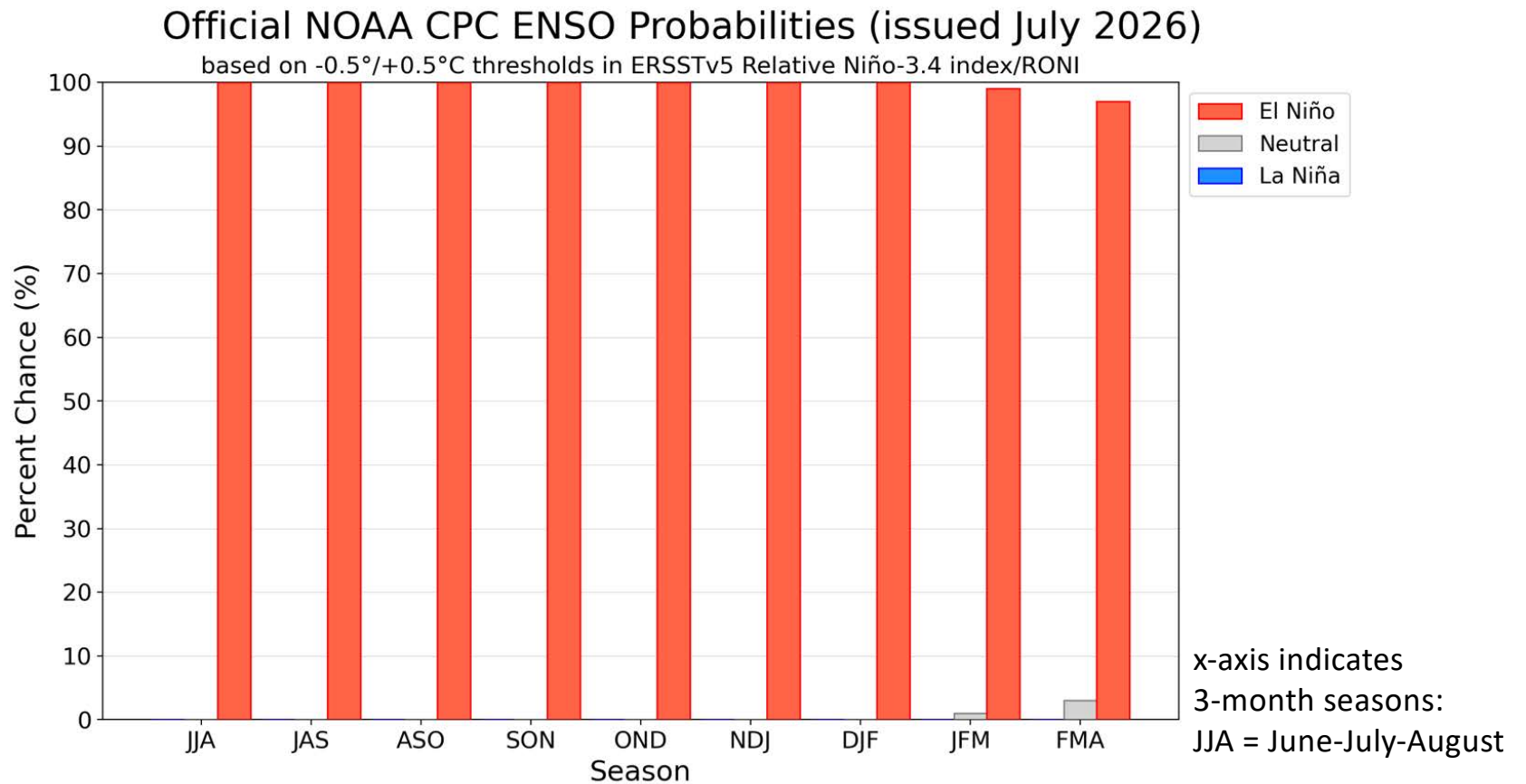
Subsurface Temperature Anomalies Along the Equatorial Pacific Ocean



Outgoing Longwave Radiation (OLR) Anomalies (proxy for tropical rainfall)



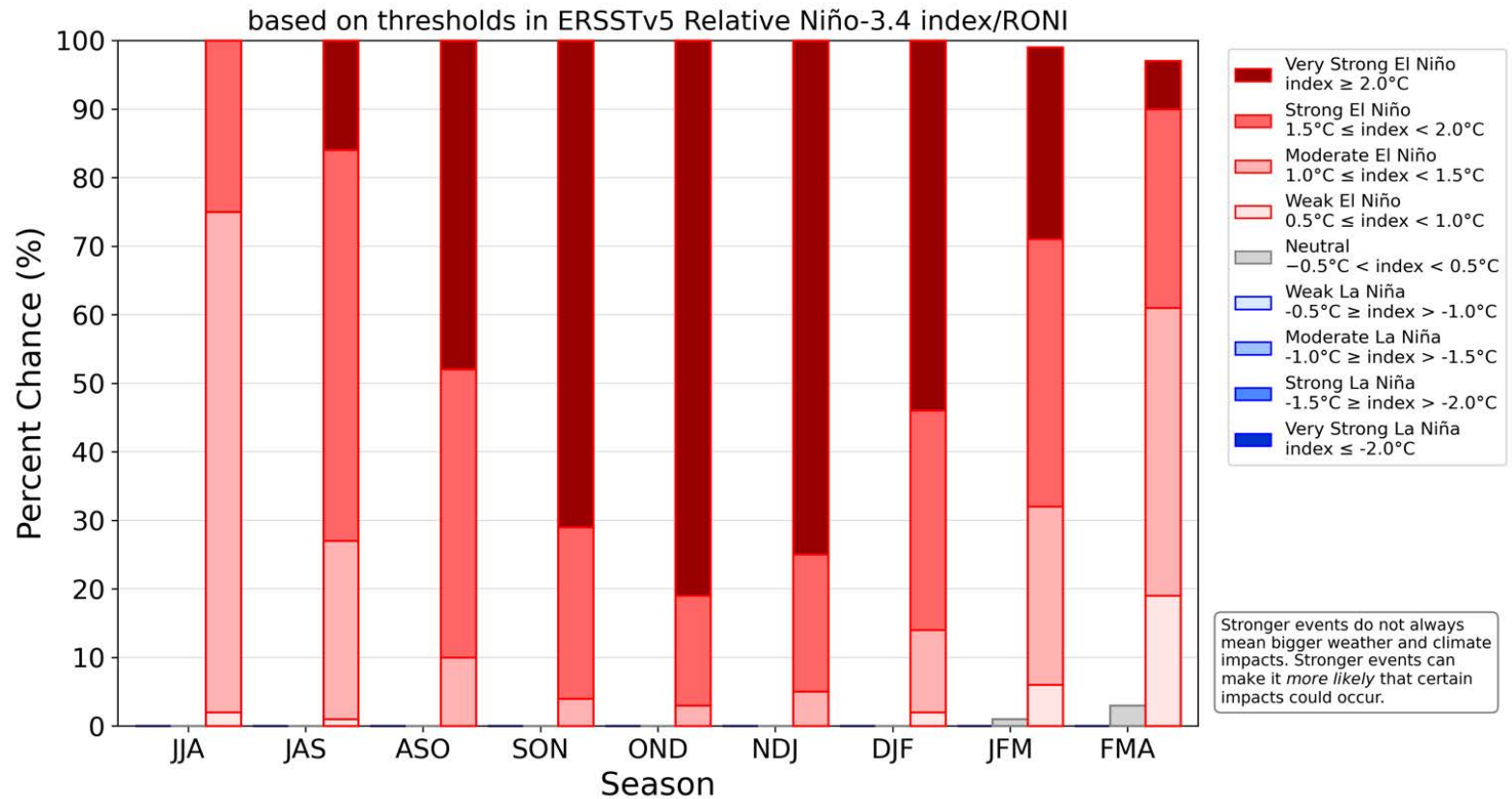
Current ENSO Outlook



At least a 97% chance El Niño will persist through early spring 2027.

How strong will this El Niño be?

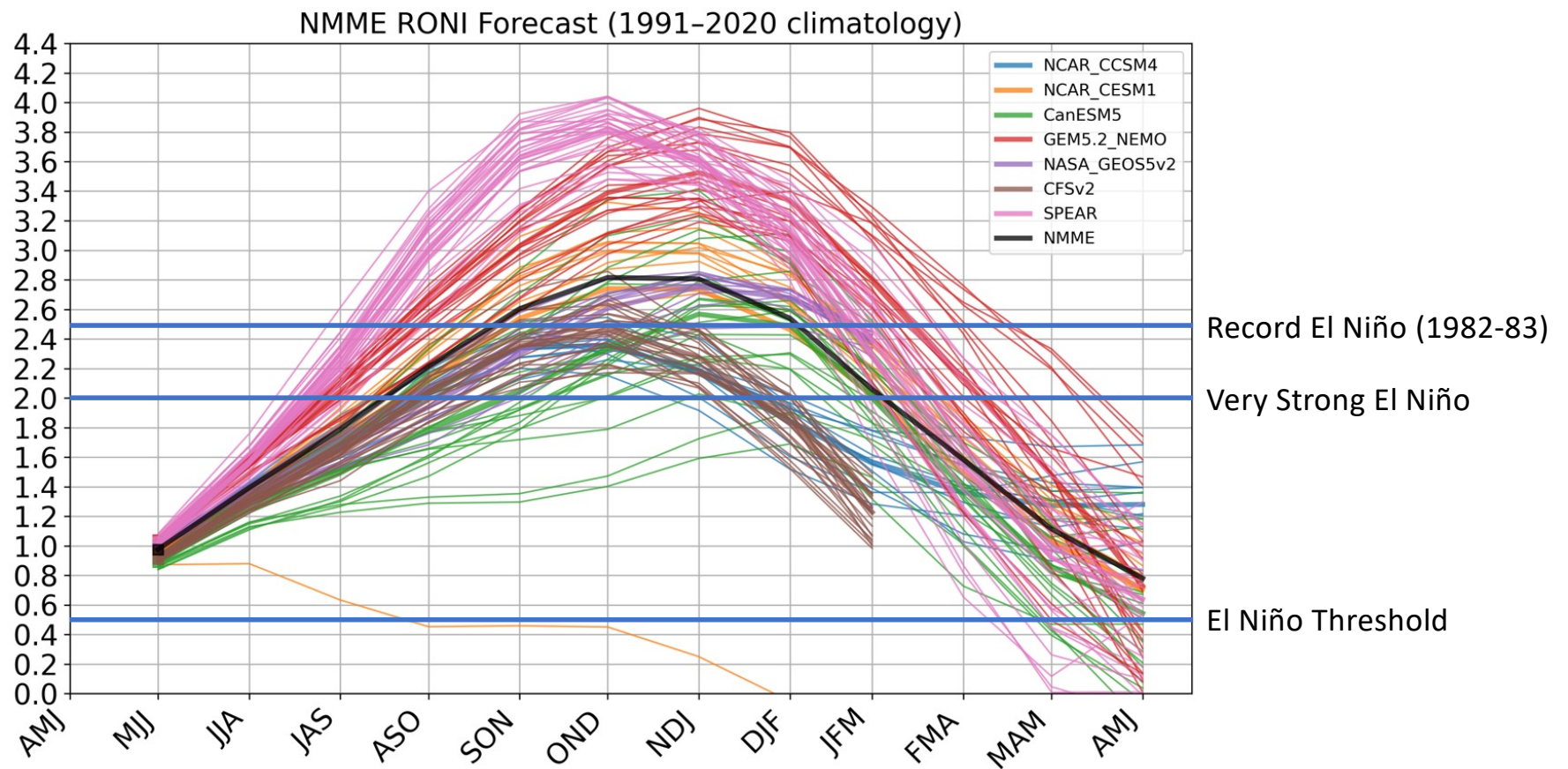
NOAA CPC ENSO Strength Probabilities (issued July 2026)



**For Oct-Dec 2026, there is an 81% chance of a “very strong” El Niño (7 past El Niños reached this level).
There is a 43% chance of an event that reaches or exceeds the record (+2.5C or greater)**

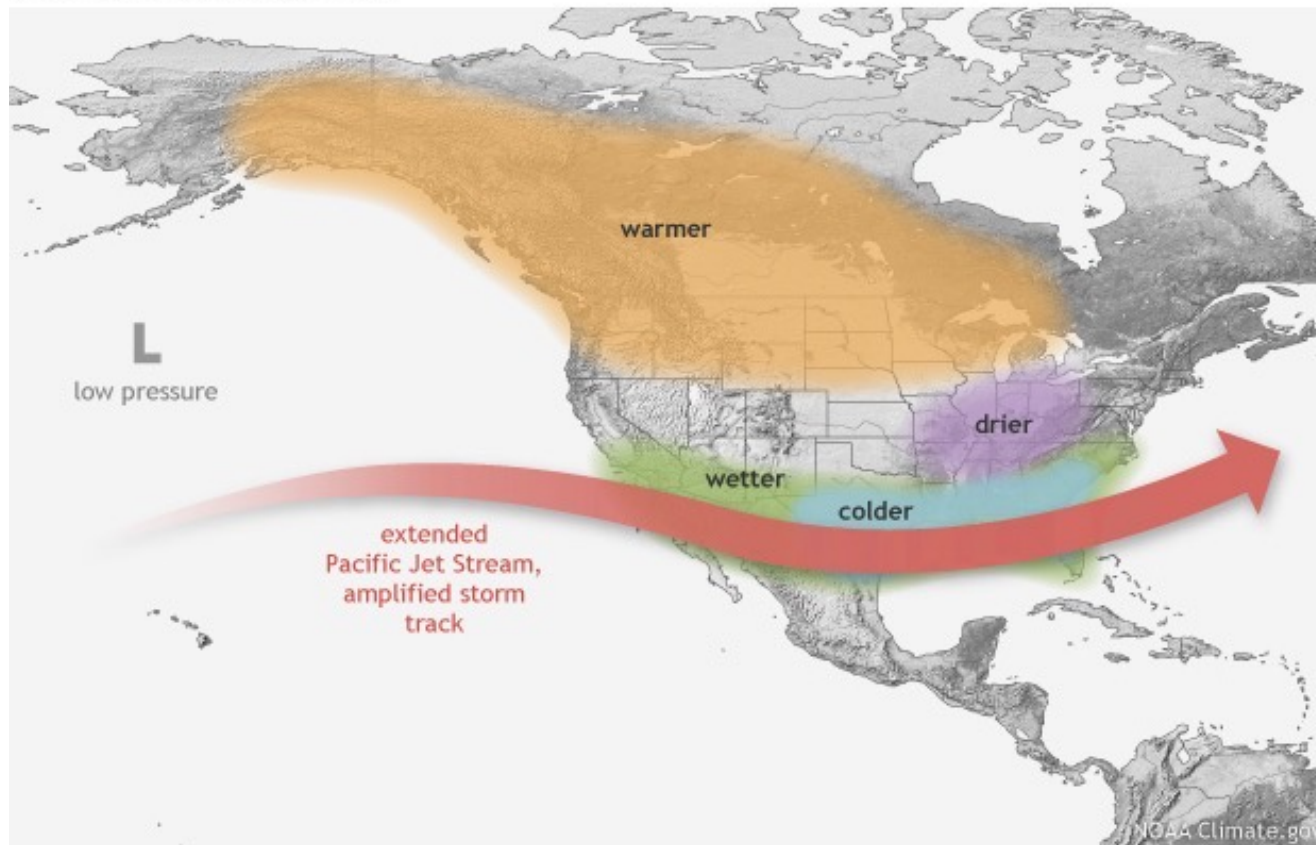
Why is there high confidence in a very strong El Niño?

North American Multi-Model Ensemble (NMME) model forecasts initialized in early July 2026



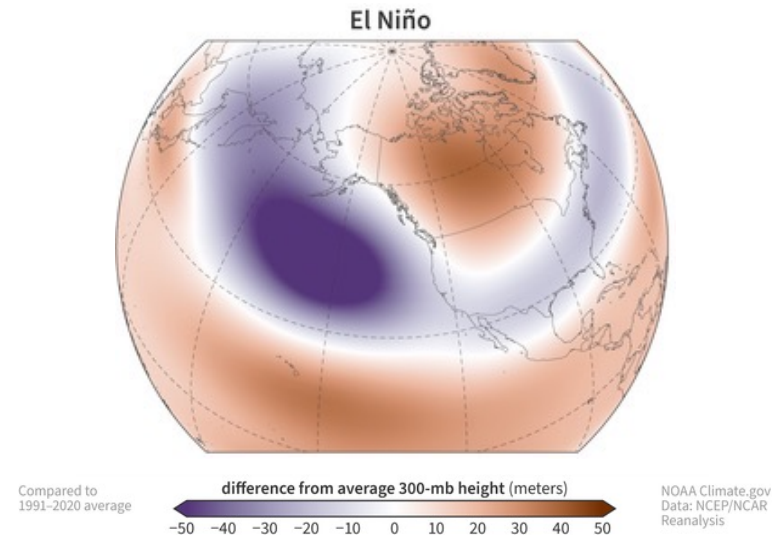
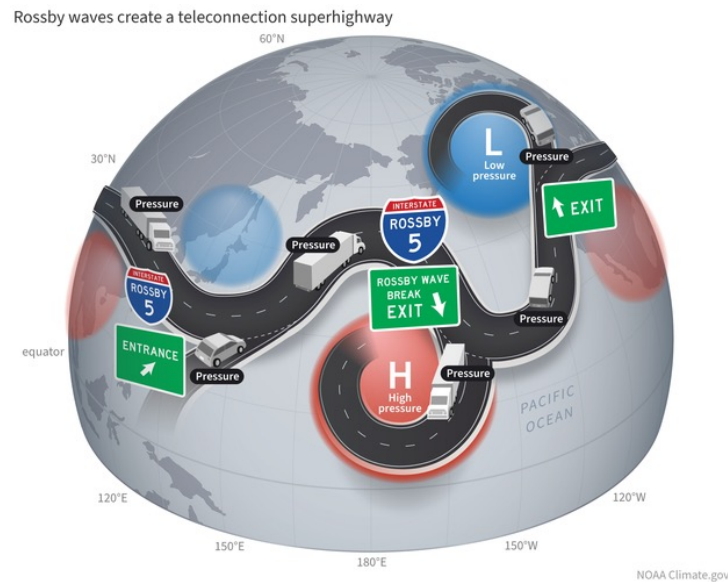
Schematic of Winter El Niño Impacts on the U.S.

WINTER EL NIÑO PATTERN



<https://www.climate.gov/news-features/featured-images/how-el-niño-and-la-niña-affect-winter-jet-stream-and-us-climate>

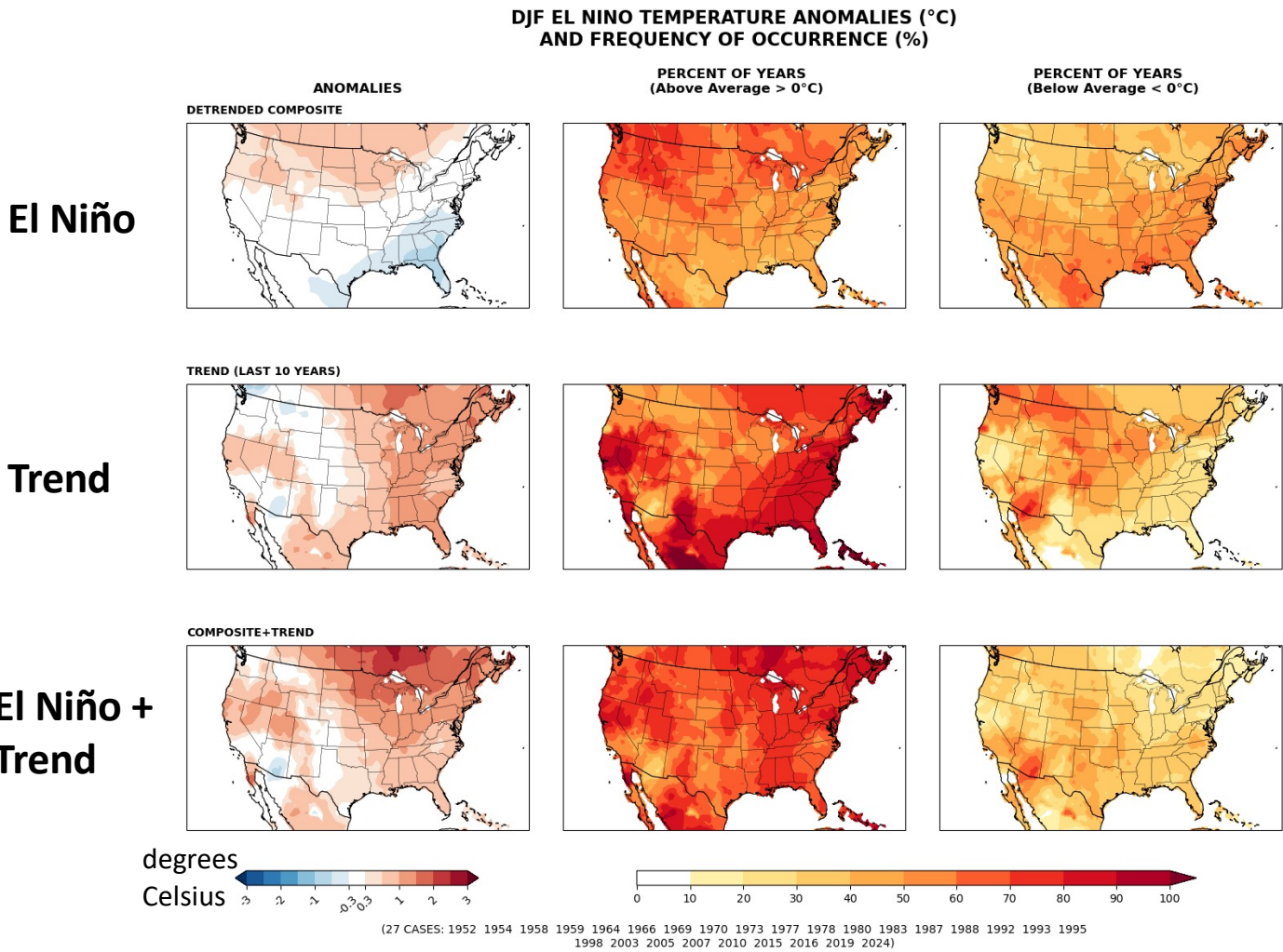
**There are no “El Niño Storms.” That is not how El Niño works.
El Niño can help set the background flow upon which weather events are steered.**



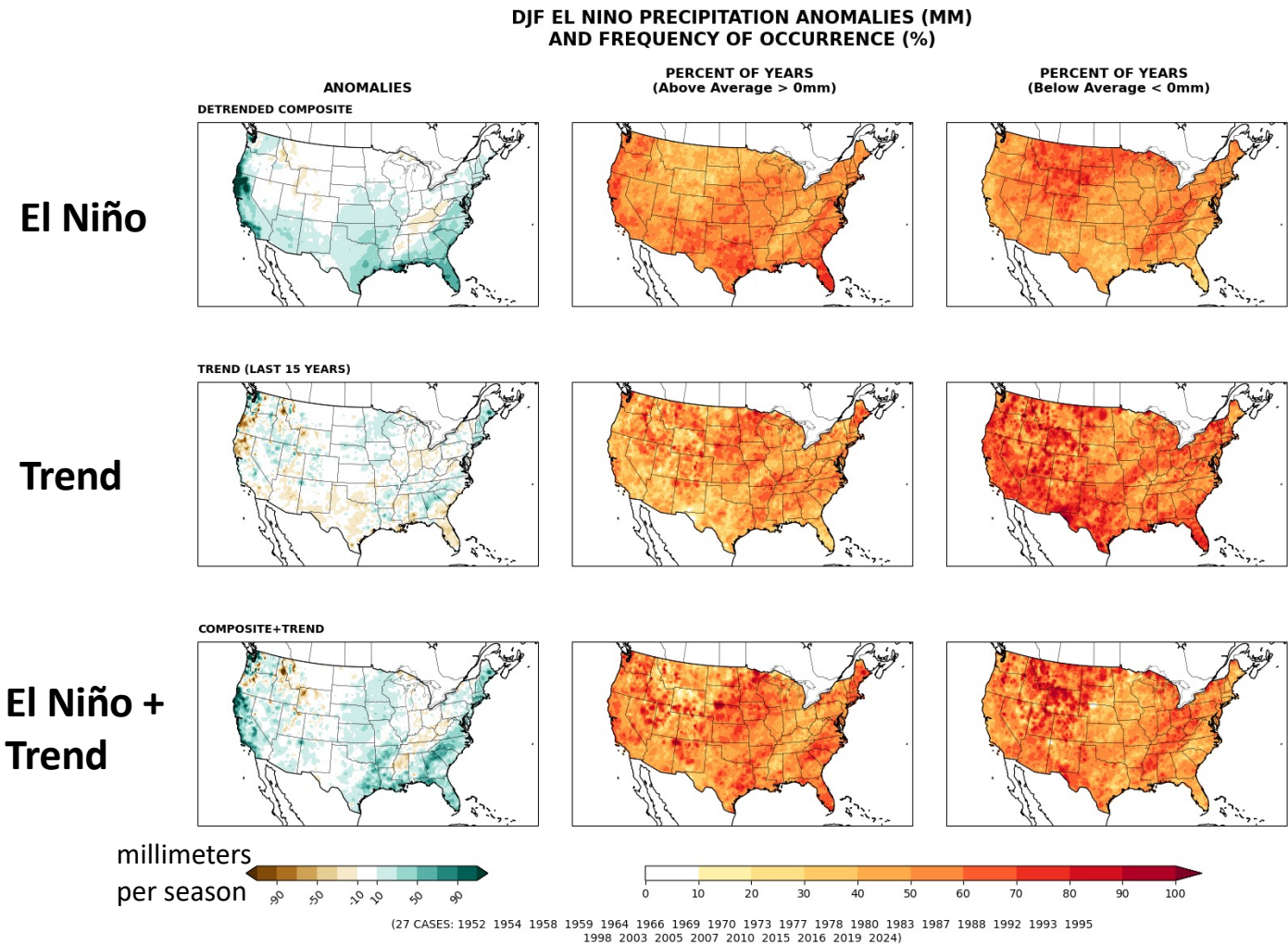
- A specific weather event (or extreme) can be made more likely by El Niño, but El Niño cannot be solely and entirely blamed for a certain event.
- Certain synoptic features + other climatic patterns/trends can also play significant roles in modulating the likelihood of extreme events.

<https://www.climate.gov/news-features/blogs/enso/what-are-teleconnections-connecting-earths-climate-patterns-global>

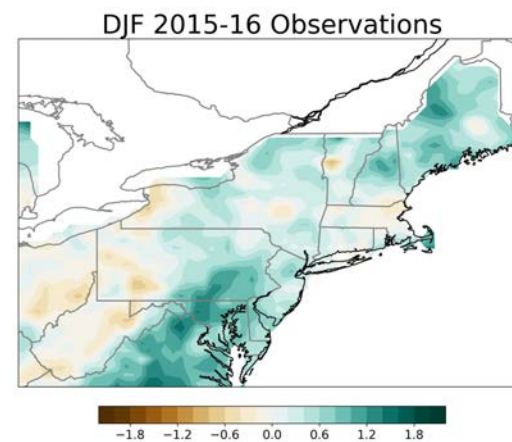
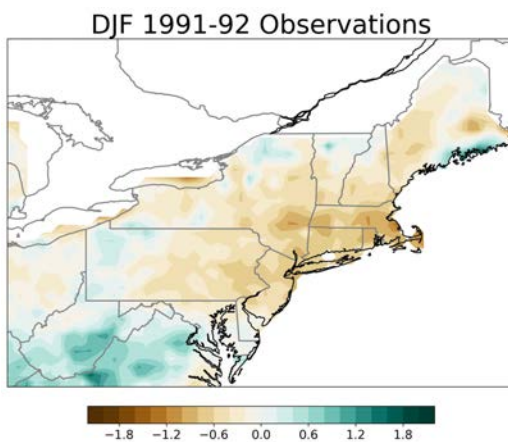
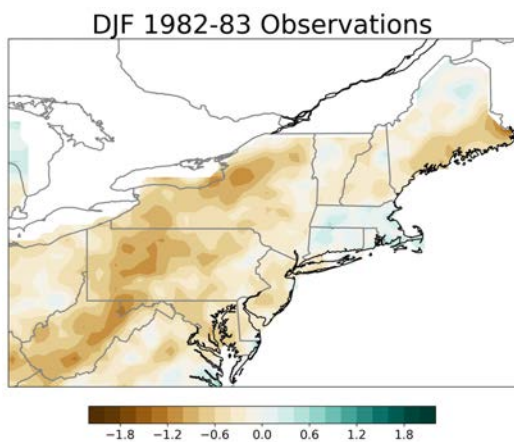
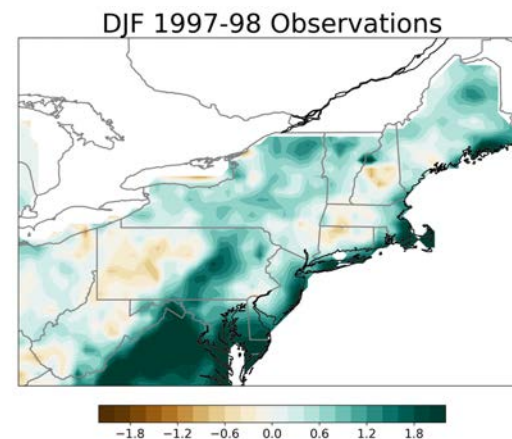
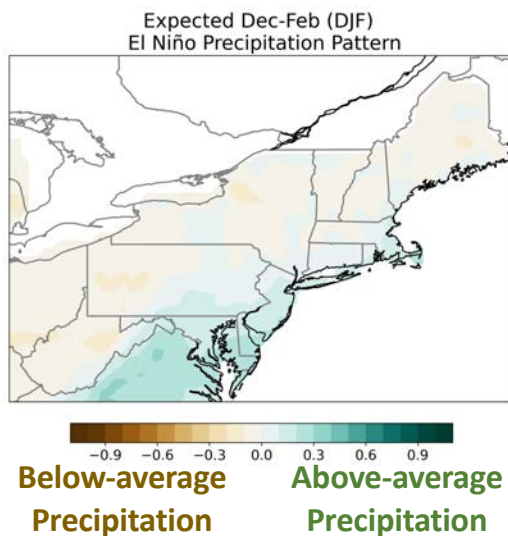
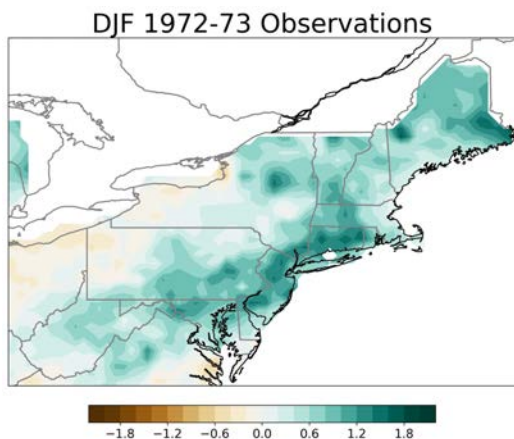
Average Temperature Anomalies during El Niño in December-February



Average Precipitation Anomalies during El Niño in December-February



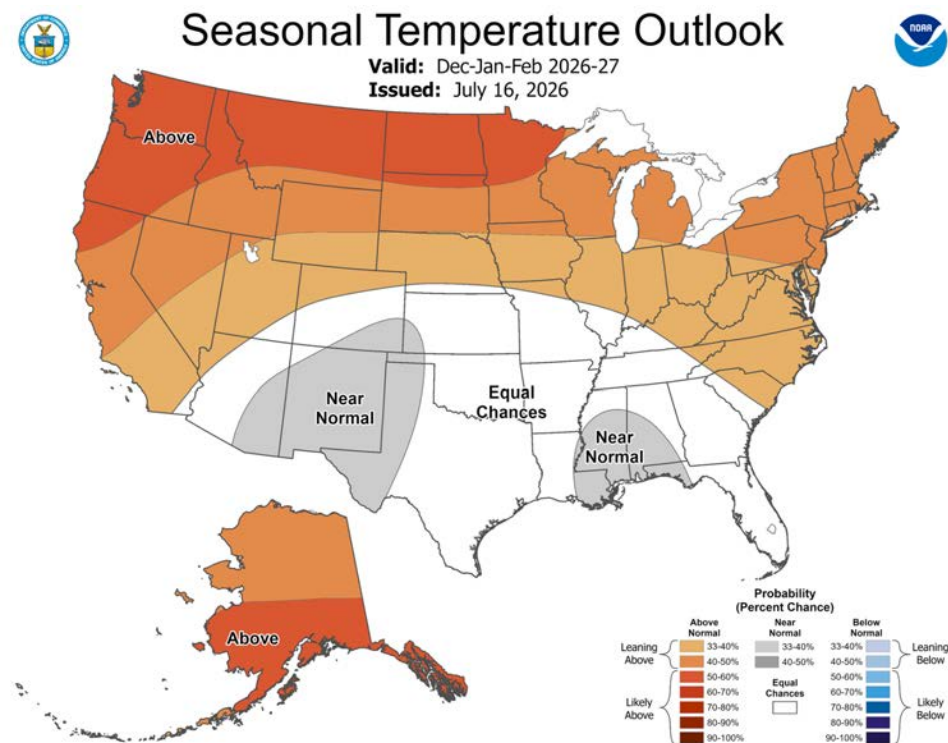
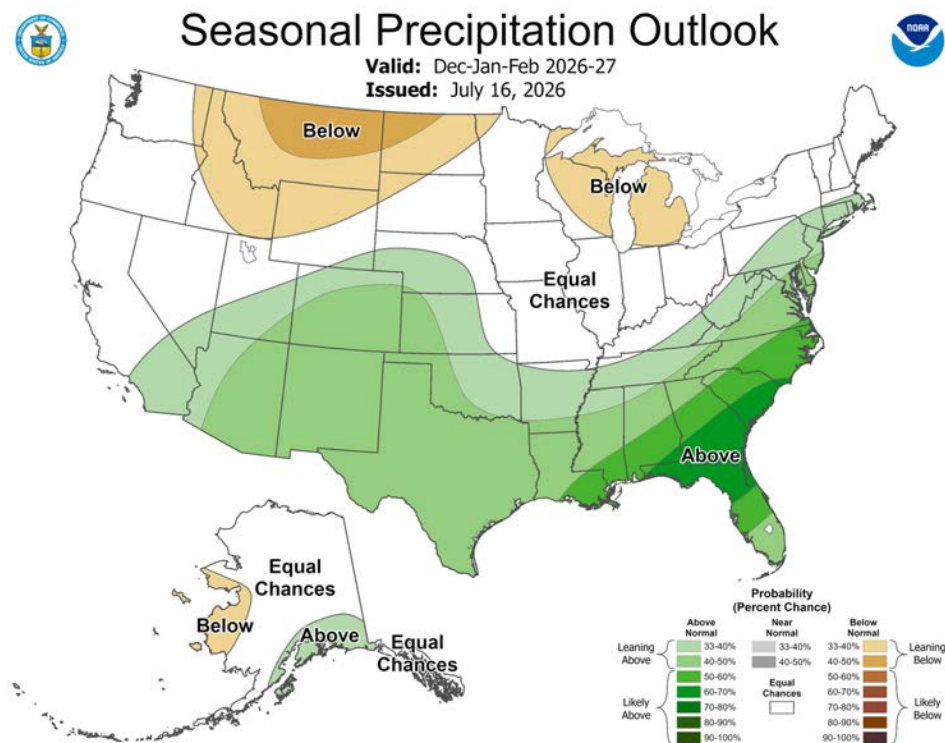
Caution: Even Very Strong El Niños Have Event-to-Event Variability



CPC Gauge-based Unified data 1959-2026 (units: mm/day)

CPC Seasonal Outlook for December-February 2026-27 (updated 16 July)

Uncertainty Is Expressed as Probabilities (% Chance of an Outcome)

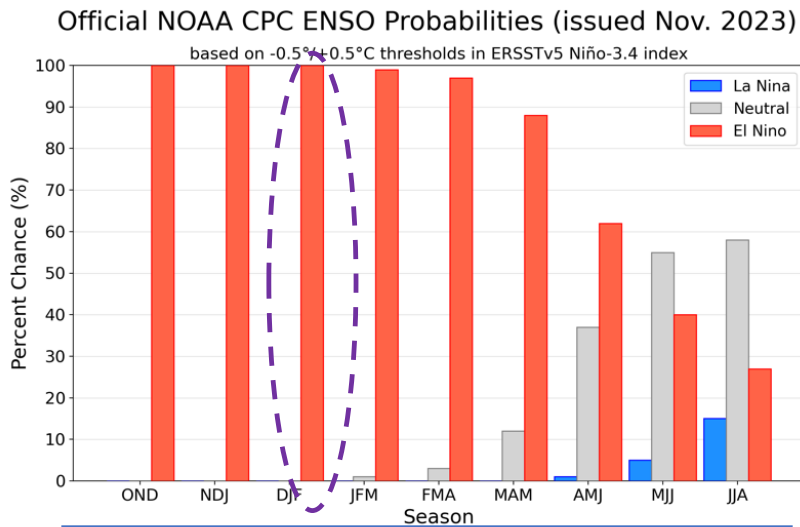


Outlooks for all upcoming 3-month seasons: https://www.cpc.ncep.noaa.gov/products/predictions/long_range/
(updates every month on the 3rd Thursday)

Caution: ENSO Probabilities Are Not the Same As Probability of Impacts

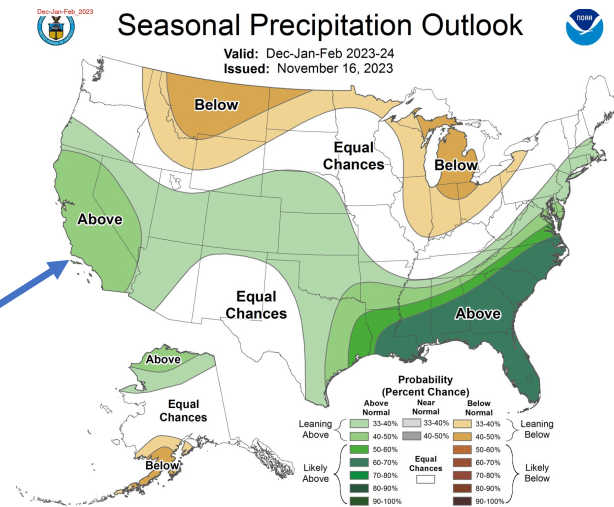
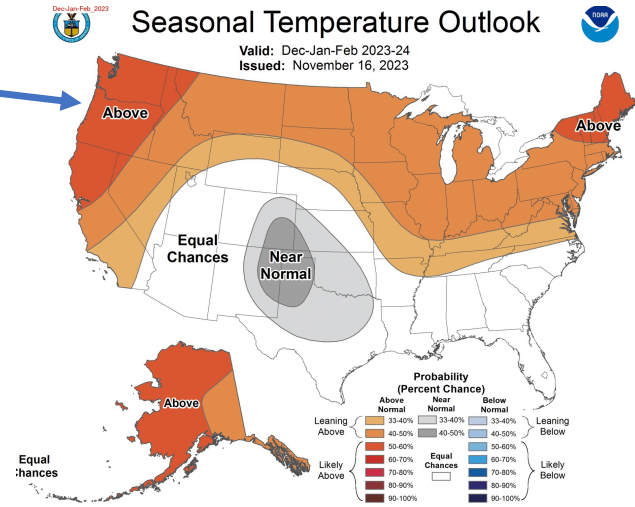
Example from past forecast made in November 2023:

50-60% chance of above average temperatures.



Close to 100% chance of El Niño

40-50% chance of above median precipitation.





Summary



- El Niño formed in May 2026 and is expected to strengthen through the end of the year, with a 97% chance it will persist through early spring 2027.
- In addition to surface temperatures, subsurface temperature anomalies and rainfall over the equatorial Pacific Ocean are consistent with a significant El Niño that is already in place.
- High confidence in a very strong El Niño (81% chance) by the end of this year is due to consensus from models and recent observations across the tropical Pacific Ocean. An event that matches or exceeds the previous record has a 43% chance.
- Even with a very strong El Niño, certain seasonal outcomes are favored but do not come with guarantees (uncertainty is expressed as probabilities). Odds of El Niño-related impacts will almost always be smaller than the odds of El Niño itself.
- For coastal New England, odds lean toward above-average precipitation during December-February. For the entire northeast, above-average temperatures are favored.



Resources



Monthly ENSO Discussion (update on the 2nd Thursday of every month, 9am Eastern):

https://www.cpc.ncep.noaa.gov/products/analysis_monitoring/enso_advisory/ensodisc.shtml

ENSO Outlook:

https://cpc.ncep.noaa.gov/products/analysis_monitoring/enso/roni/probabilities.php

ENSO Strengths:

https://cpc.ncep.noaa.gov/products/analysis_monitoring/enso/roni/strengths.php

Weekly ENSO briefing (updates Monday mornings; Tuesday if Federal Holiday):

https://www.cpc.ncep.noaa.gov/products/analysis_monitoring/lanina/enso_evolution-status-fcsts-web.pdf

https://www.cpc.ncep.noaa.gov/products/analysis_monitoring/lanina/enso_evolution-status-fcsts-web.ppt

CPC Seasonal Temp/Precip Outlooks (update on the 3rd Thursday of every month):

https://www.cpc.ncep.noaa.gov/products/predictions/long_range/seasonal.php?lead=1

Extra Slides

How much does each **Dec – Feb** season resemble
the expected ENSO precipitation pattern?

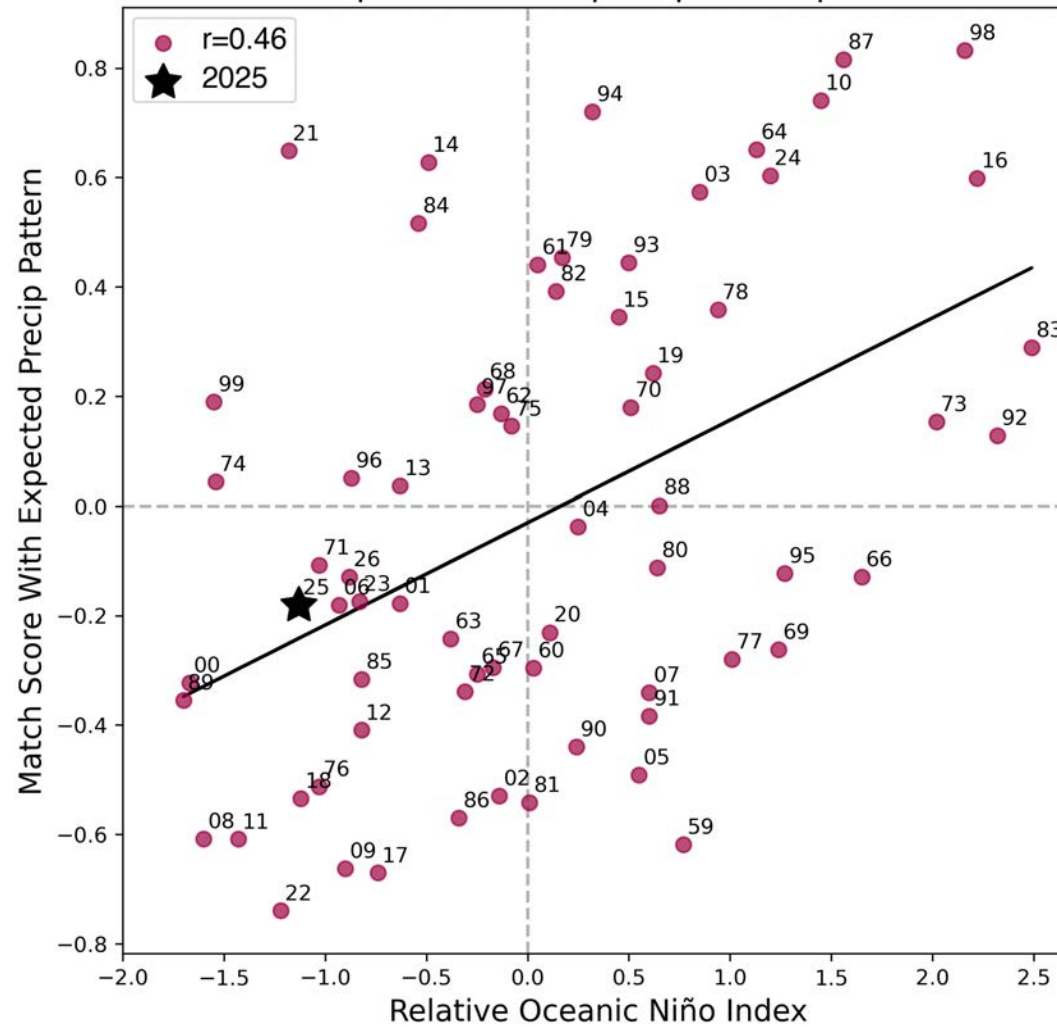


Table of historical El Niño and La Niña events based on RONI

Table goes back to 1950: https://www.cpc.ncep.noaa.gov/products/analysis_monitoring/enso/roni/

RONI values in Red
are El Niño events

RONI values in Blue
are La Niña events

Seasons:
DJF = December-
February
JFM = January-March
etc.

Year	DJF	JFM	FMA	MAM	AMJ	MJJ	JJA	JAS	ASO	SON	OND	NDJ
2010	1.5	1.1	0.6	0.1	-0.5	-1.0	-1.3	-1.5	-1.7	-1.7	-1.7	-1.6
2011	-1.4	-1.2	-0.9	-0.7	-0.5	-0.3	-0.4	-0.5	-0.7	-0.9	-1.0	-1.0
2012	-0.8	-0.6	-0.6	-0.5	-0.3	0.0	0.3	0.4	0.4	0.2	-0.1	-0.4
2013	-0.6	-0.6	-0.5	-0.4	-0.4	-0.4	-0.4	-0.3	-0.3	-0.2	-0.2	-0.3
2014	-0.5	-0.5	-0.3	0.0	0.1	0.0	-0.1	-0.1	0.1	0.4	0.5	0.6
2015	0.5	0.4	0.5	0.6	0.8	1.0	1.3	1.6	1.9	2.2	2.3	2.4
2016	2.2	1.8	1.3	0.5	-0.1	-0.6	-0.9	-1.0	-1.1	-1.1	-1.1	-1.0
2017	-0.7	-0.5	-0.3	-0.1	0.1	0.1	-0.2	-0.5	-0.7	-1.0	-1.1	-1.3
2018	-1.1	-1.0	-0.9	-0.7	-0.3	0.0	0.1	0.2	0.4	0.7	0.8	0.7
2019	0.6	0.6	0.6	0.5	0.3	0.2	0.0	-0.1	0.0	0.1	0.2	0.2
Year	DJF	JFM	FMA	MAM	AMJ	MJJ	JJA	JAS	ASO	SON	OND	NDJ
2020	0.1	0.1	0.0	-0.3	-0.6	-0.8	-0.8	-0.9	-1.2	-1.5	-1.5	-1.4
2021	-1.2	-1.0	-1.0	-0.8	-0.6	-0.5	-0.6	-0.7	-0.9	-1.1	-1.2	-1.2
2022	-1.2	-1.2	-1.3	-1.3	-1.2	-1.0	-0.9	-1.0	-1.1	-1.1	-1.0	-1.0
2023	-0.8	-0.6	-0.4	-0.2	0.1	0.4	0.6	0.9	1.1	1.4	1.5	1.5
2024	1.2	0.9	0.5	0.1	-0.3	-0.5	-0.5	-0.6	-0.8	-0.8	-0.9	-1.1
2025	-1.1	-0.9	-0.7	-0.5	-0.5	-0.4	-0.5	-0.6	-0.8	-0.9	-0.9	-1.0
2026	-0.9	-0.7	-0.4	0.0	0.5							

SST data based on
ERSSTv5 from
NOAA/NESDIS/NCEI