

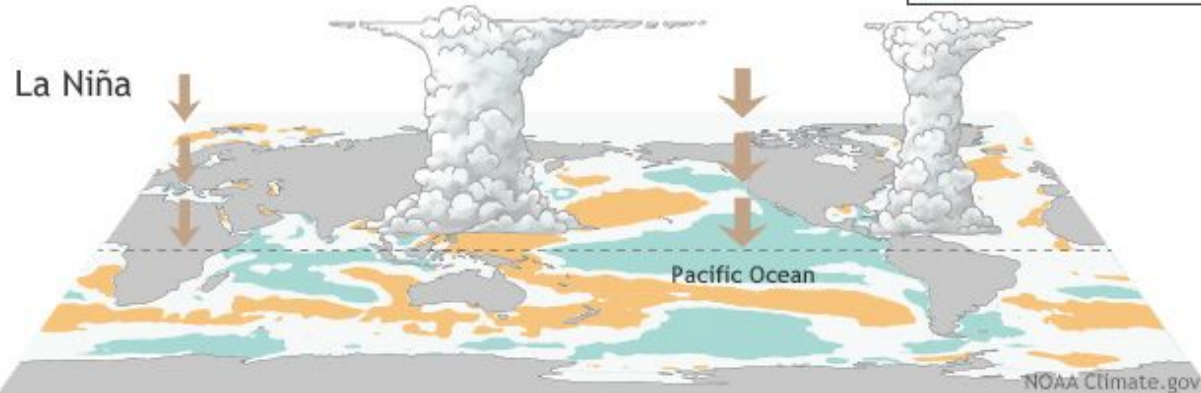
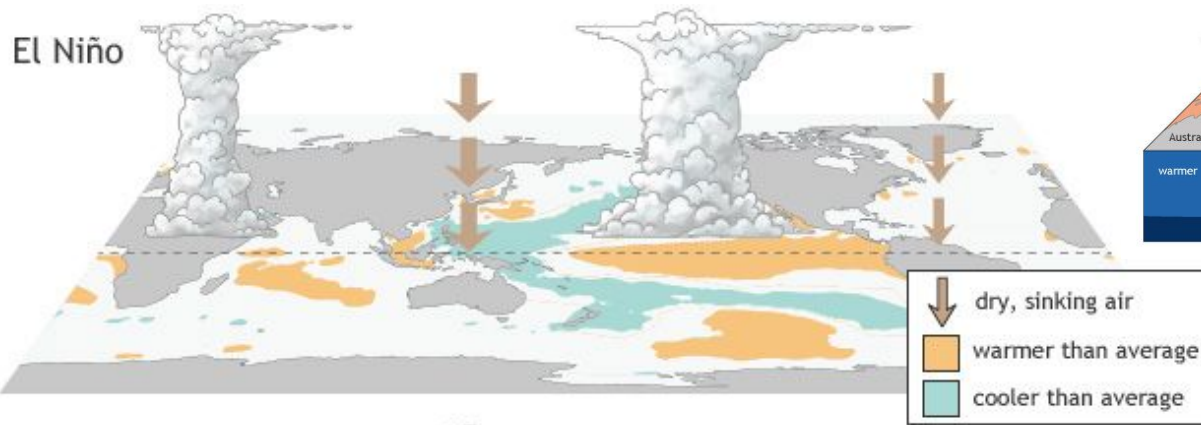


# **NOAA ENSO Update**

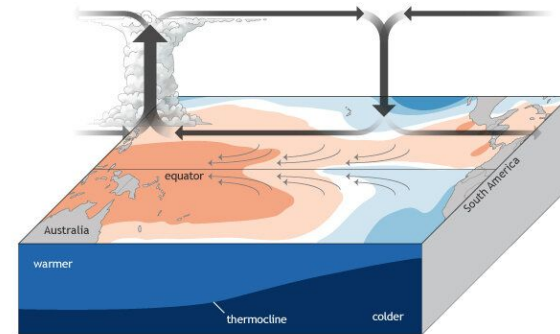
**Dr. Sarah Kapnick**  
Chief Scientist

National Oceanic and Atmospheric Administration

# What is ENSO?



Atmosphere-ocean feedbacks during El Niño-Southern Oscillation  
Neutral

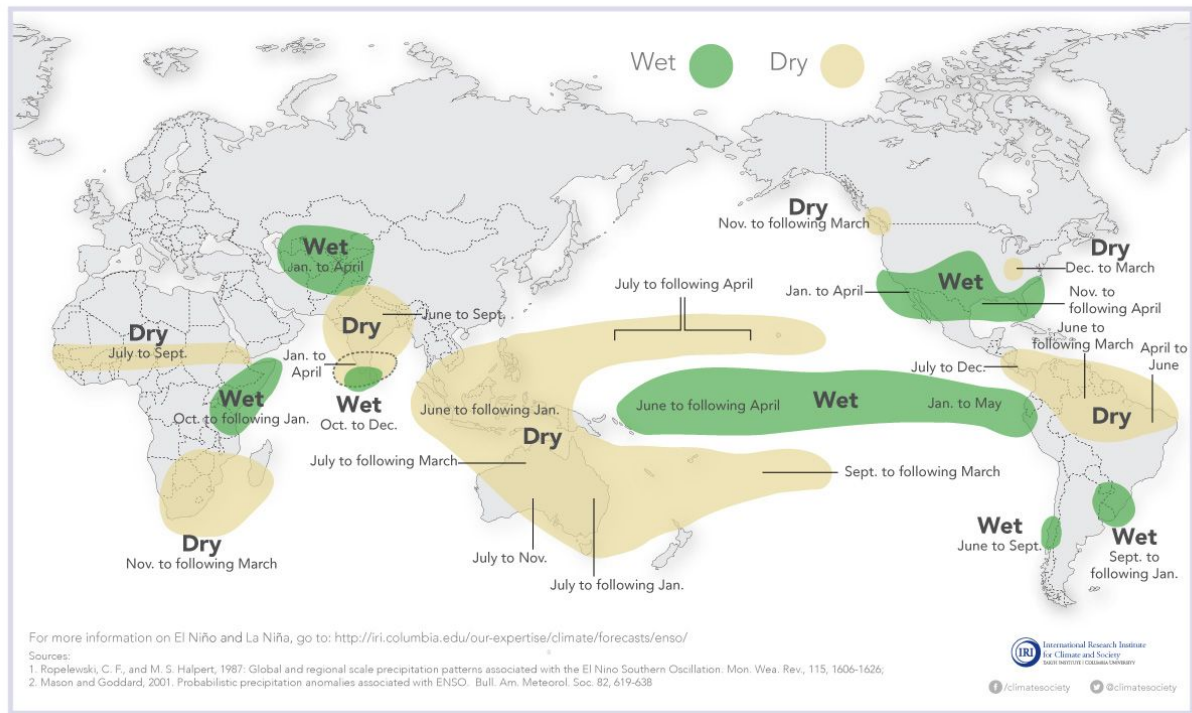


NOAA Climate.gov

# Why does it matter?

## El Niño and Rainfall

El Niño conditions in the tropical Pacific are known to shift rainfall patterns in many different parts of the world. Although they vary somewhat from one El Niño to the next, the strongest shifts remain fairly consistent in the regions and seasons shown on the map below.



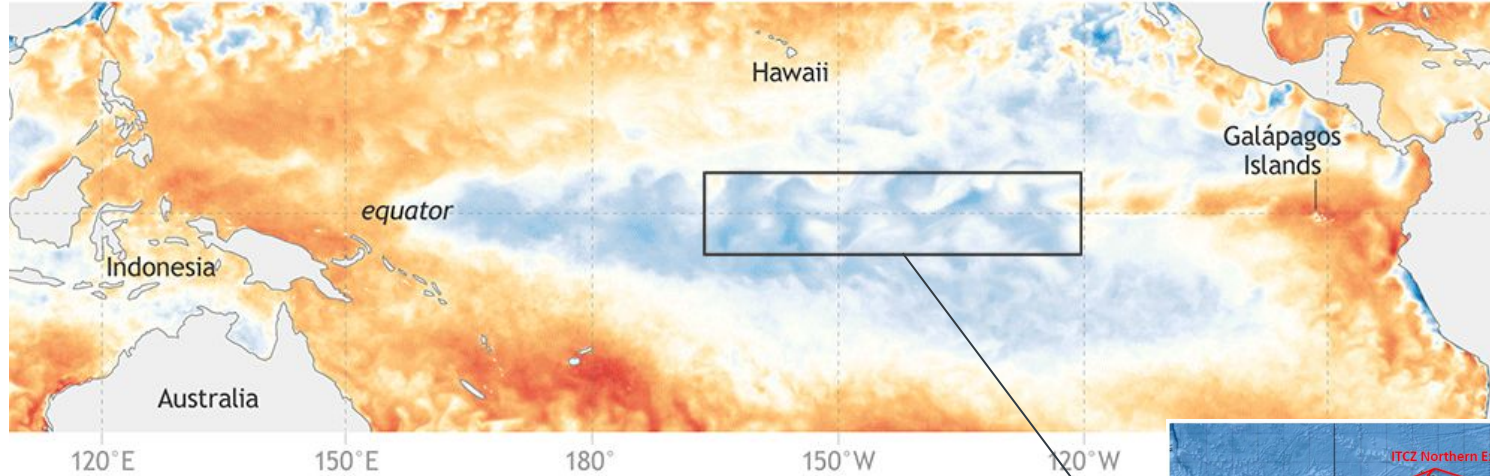




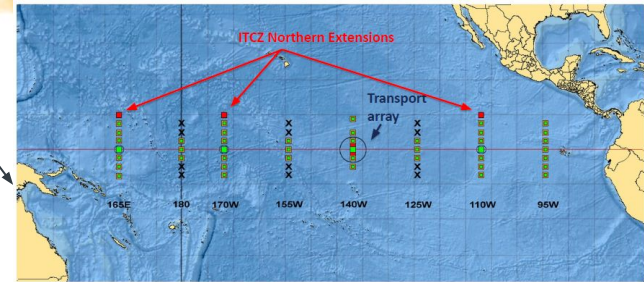
# Current Regional Ocean Conditions

Weekly sea surface temperature patterns in tropical Pacific

Jan 30-Jun 4, 2023



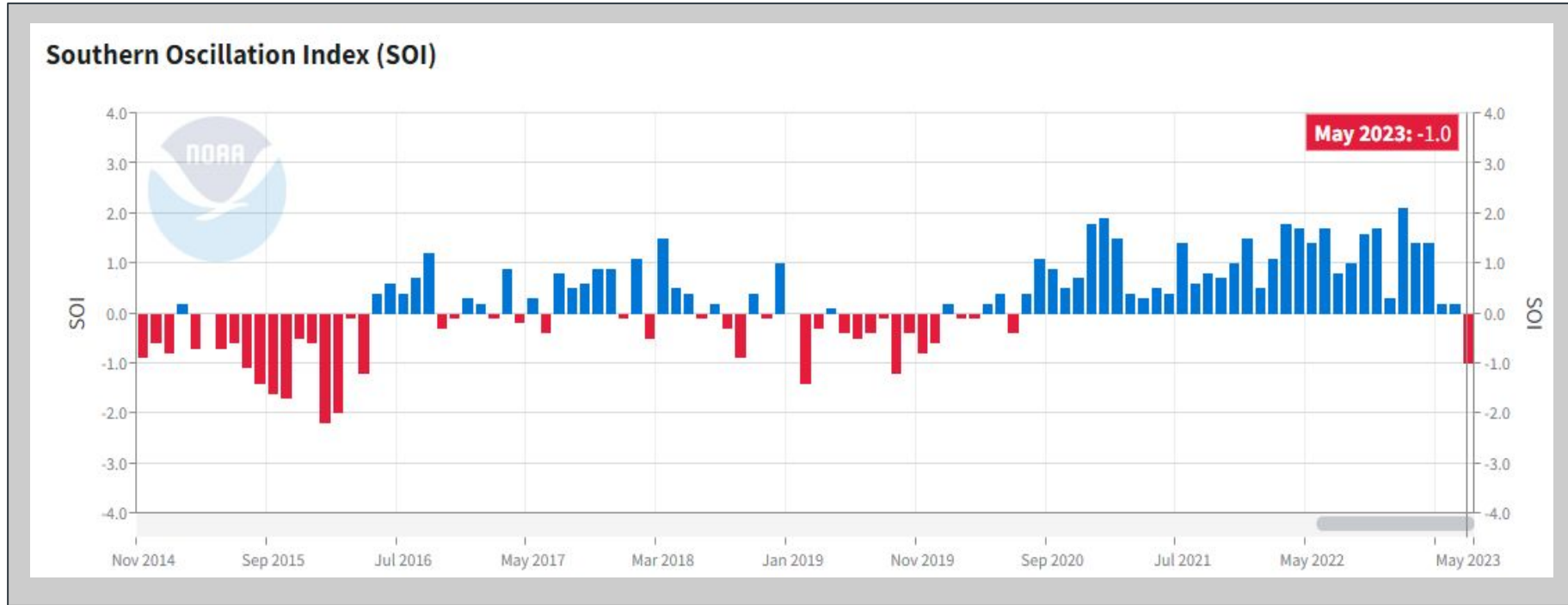
Jan 30-Feb 5, 2023 compared to historical baseline



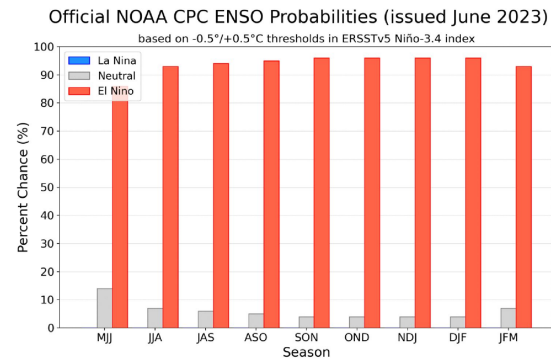
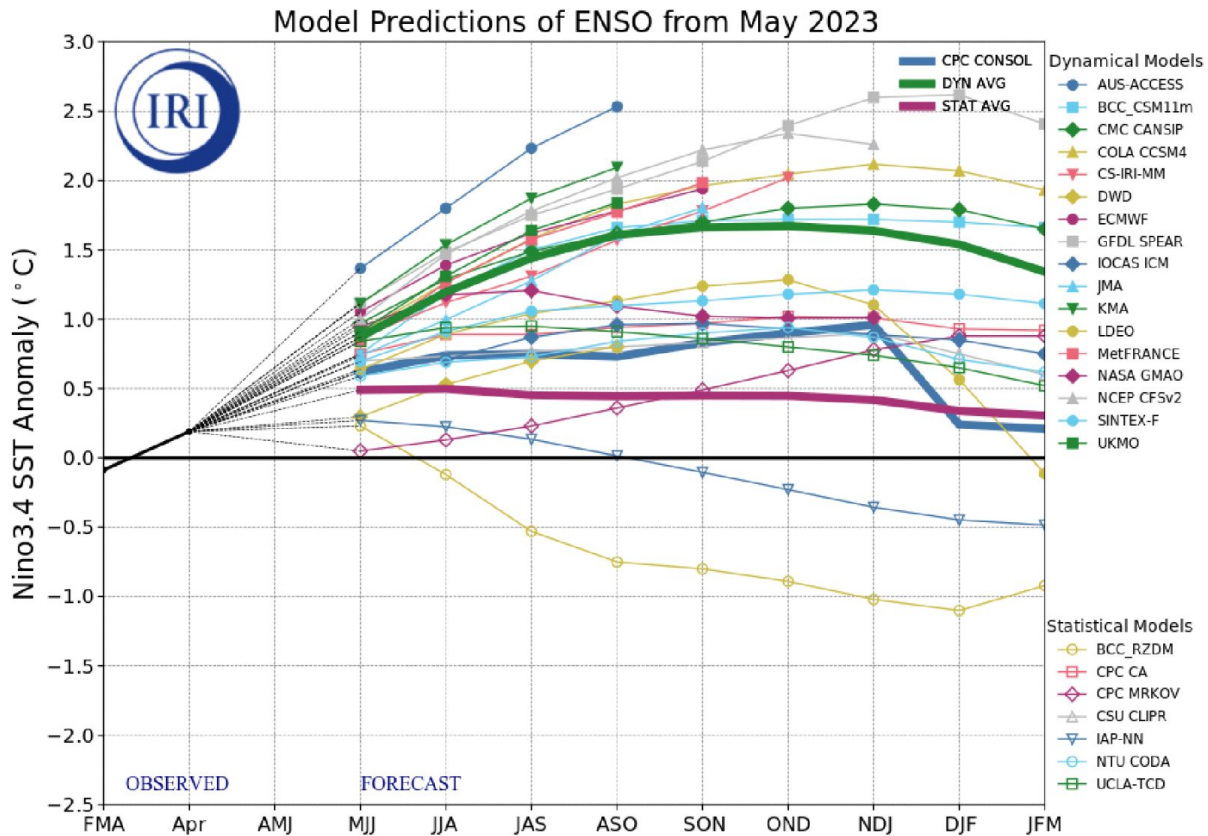
- Existing TAO Recap Enhanced Stations
- New TAO Recap Enhanced Stations
- X Omitted Stations
- FLUX Stations
- ADCP Stations



# Current Regional Atmospheric Conditions



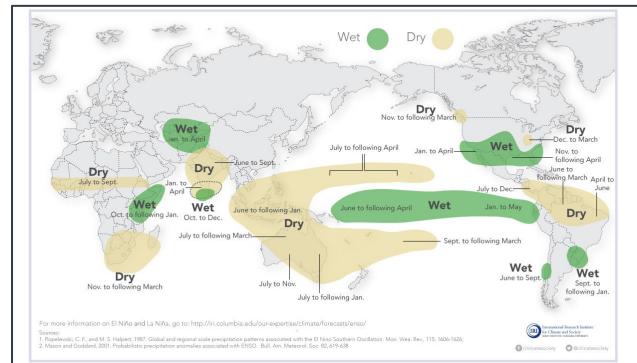
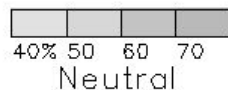
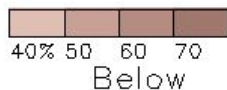
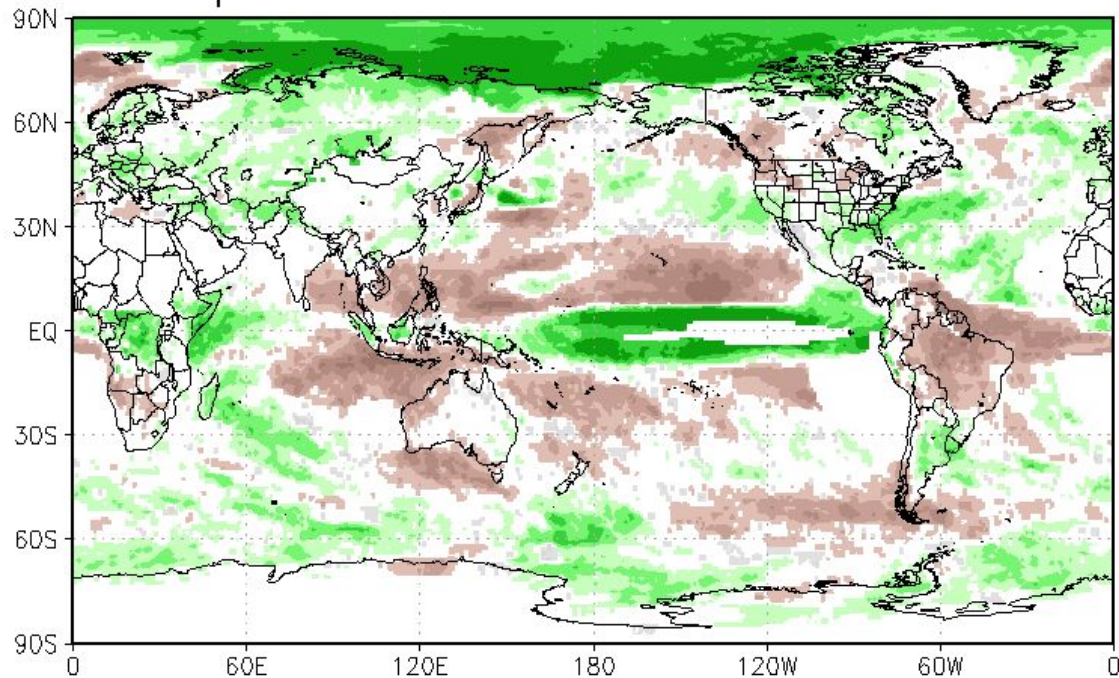
# Current Model Predictions for Nino3.4 Region





# Seasonal Outlook from NMME (Nov-Dec-Jan)

NMME prob fcst Prate IC=202306 for lead 5 2023 NDJ

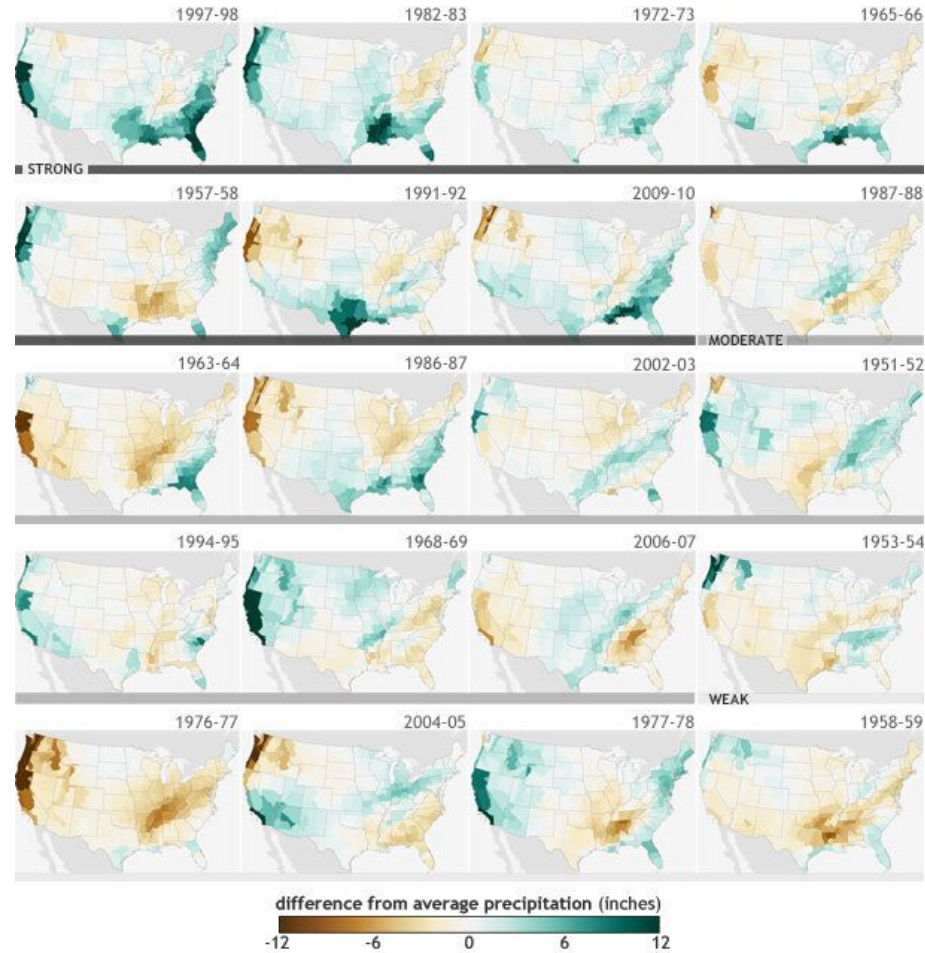






# Reminder: Historic El Niño events have had a variety of winter precipitation responses

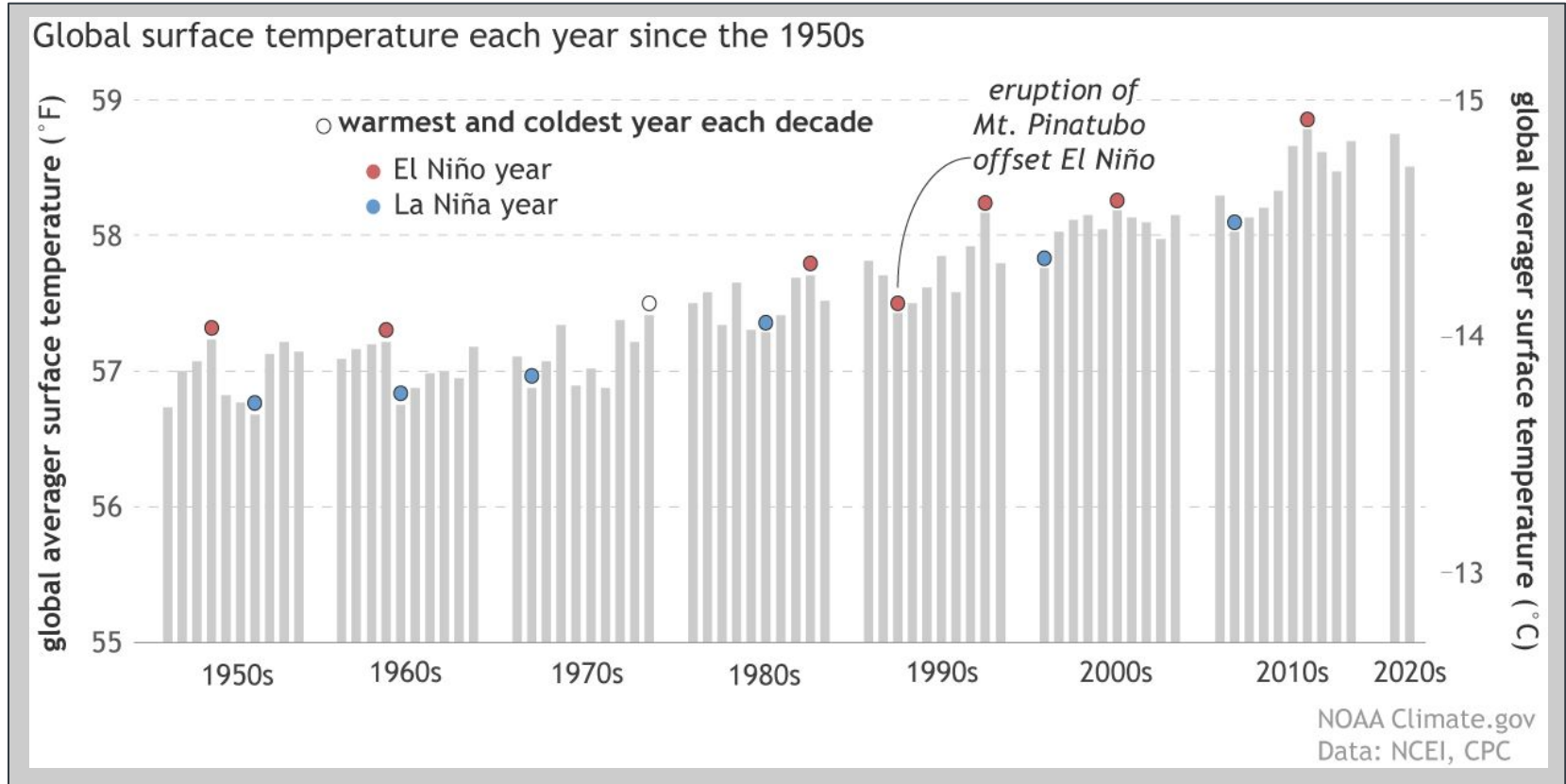
Winter precipitation patterns during strong, moderate, and weak El Niño events since 1950



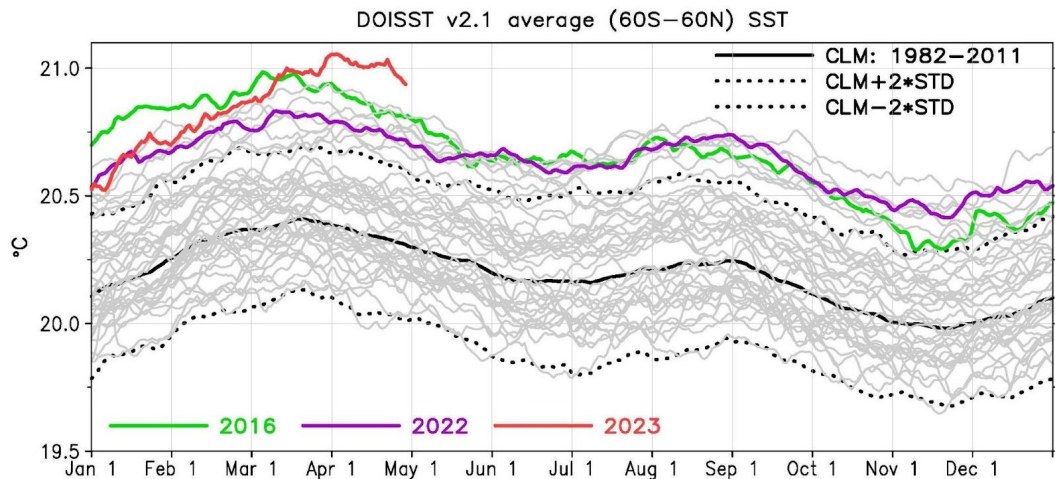




# Influence on Global Temperature

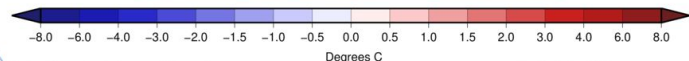
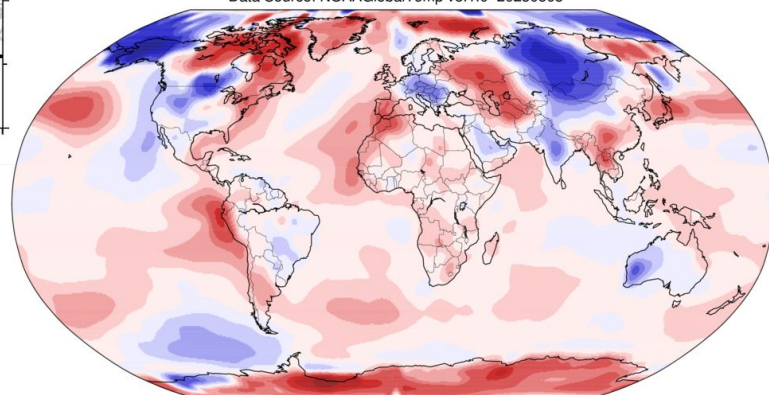


# Ocean Temperatures



Land & Ocean Temperature Departure from Average Apr 2023  
(with respect to a 1991–2020 base period)

Data Source: NOAA GlobalTemp v5.1.0–20230508

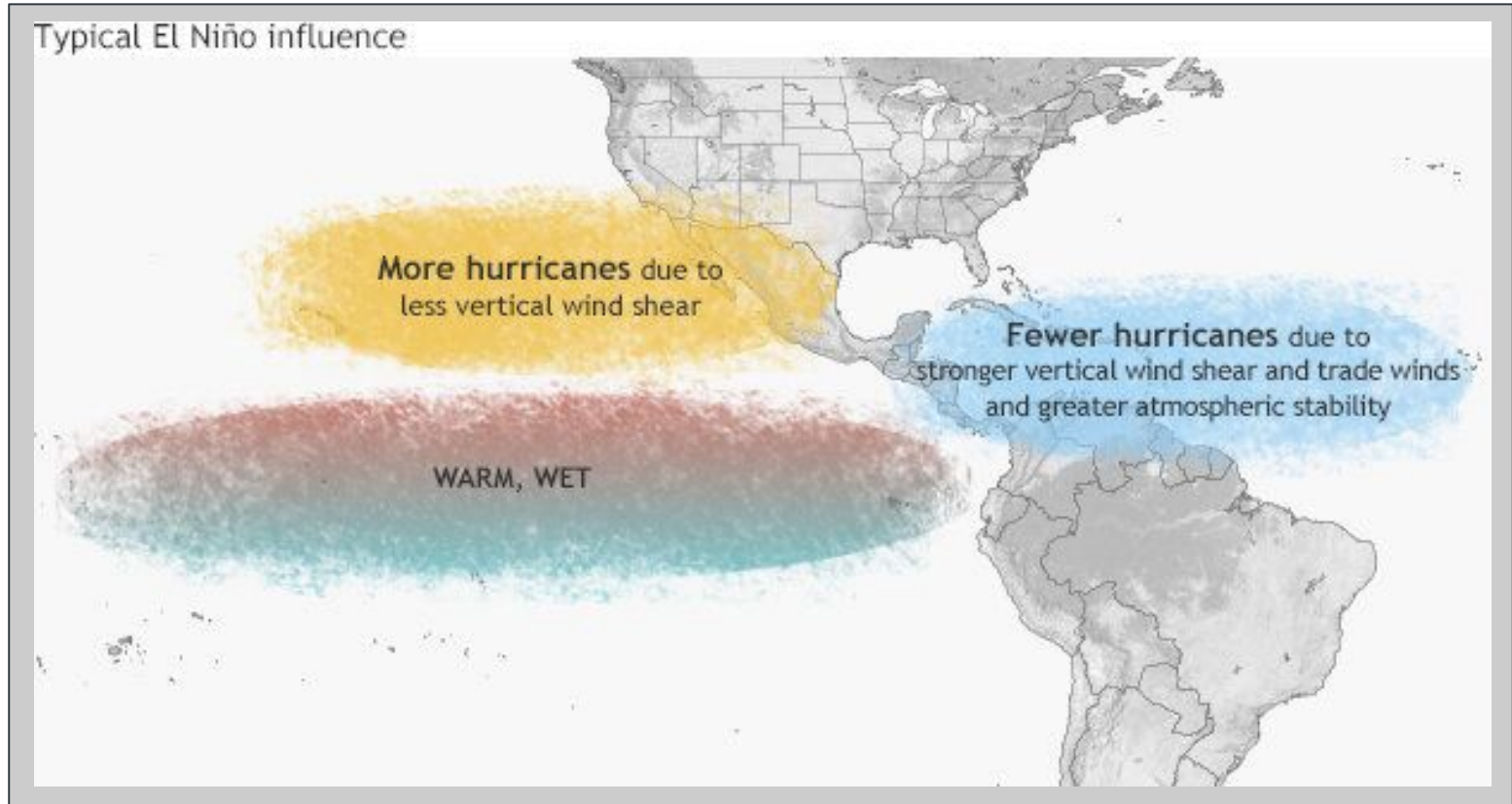


National Centers for Environmental Information

Map Projection: Robinson



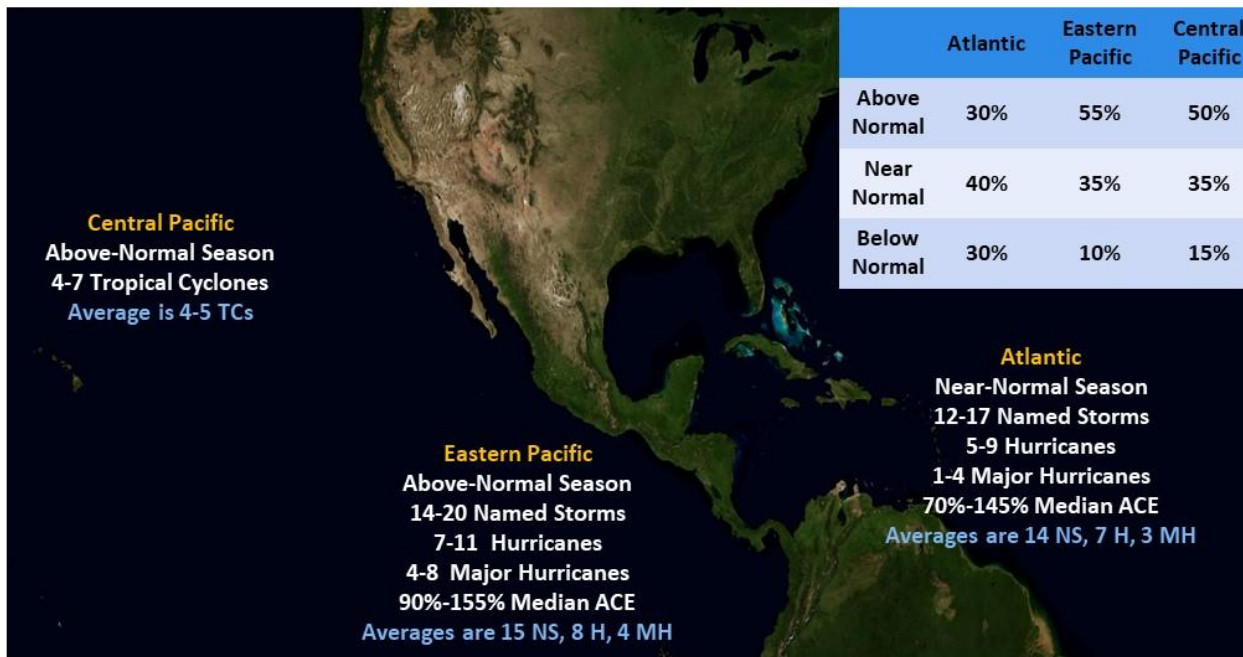
# Hurricane Activity: Historic Response



# Hurricane Activity: Seasonal Outlook



## NOAA's 2023 Hurricane Season Outlooks



For the Atlantic hurricane region, the outlooks indicate a 40% chance of a near-normal season, a 30% chance of an above-normal season, and a 30% chance of an below-normal season.

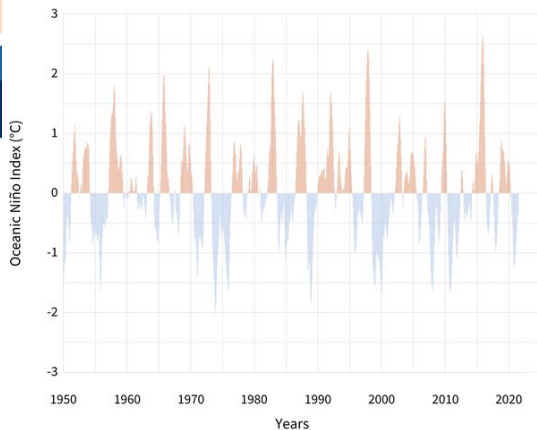
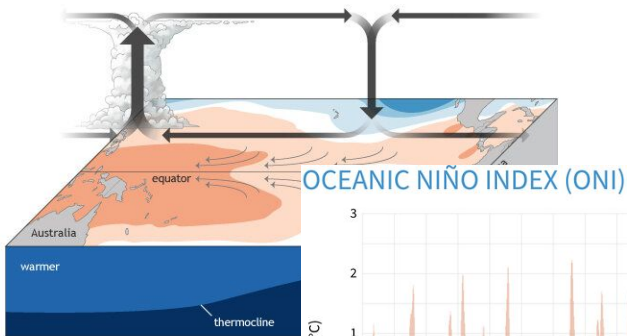
These outlooks are for the overall seasonal activity. They are not a hurricane landfall forecast.



# Big Question: ENSO and Climate Change

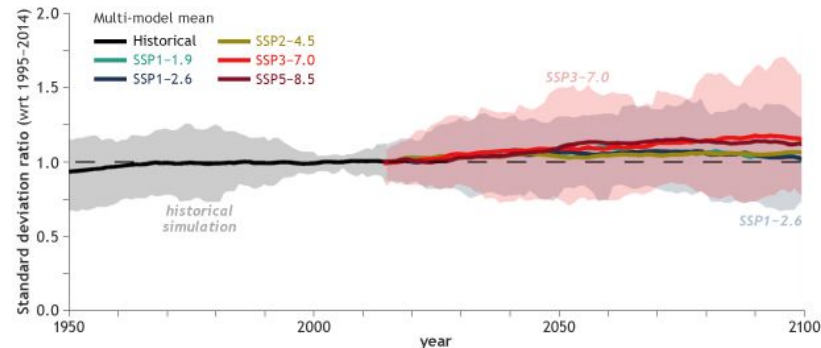
## It's Complicated!

Atmosphere-ocean feedbacks during El Niño-Southern Oscillation Neutral

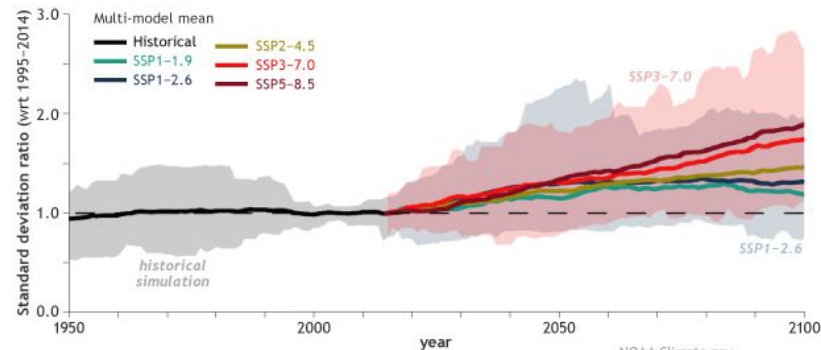


Changes in amplitude of ENSO variability

SST amplitude change in Niño3.4 region



Precipitation amplitude change in Niño3.4 region



NOAA Climate.gov  
Adapted from IPCC AR6 WG1, 2021

