# Climate Indices
## Current Status and Projections

**Tuesday 18 June 2024**

# Sea Surface Temperature (SST)

# Top Layer Temperature Anomaly

## Anomalies in a layer take longer to dissipate than superficial ones, and can last for weeks.

### Top 300m-Layer Anomaly



June 12

unit: °C

NOAA CPC
Source: CPC GODAS, https://www.cpc.ncep.noaa.gov/products/GODAS/

### Surface Anomaly



June 16

NOAA Coral Reef Watch
https://coralreefwatch.noaa.gov/product/5km/index_5km_ssta.php
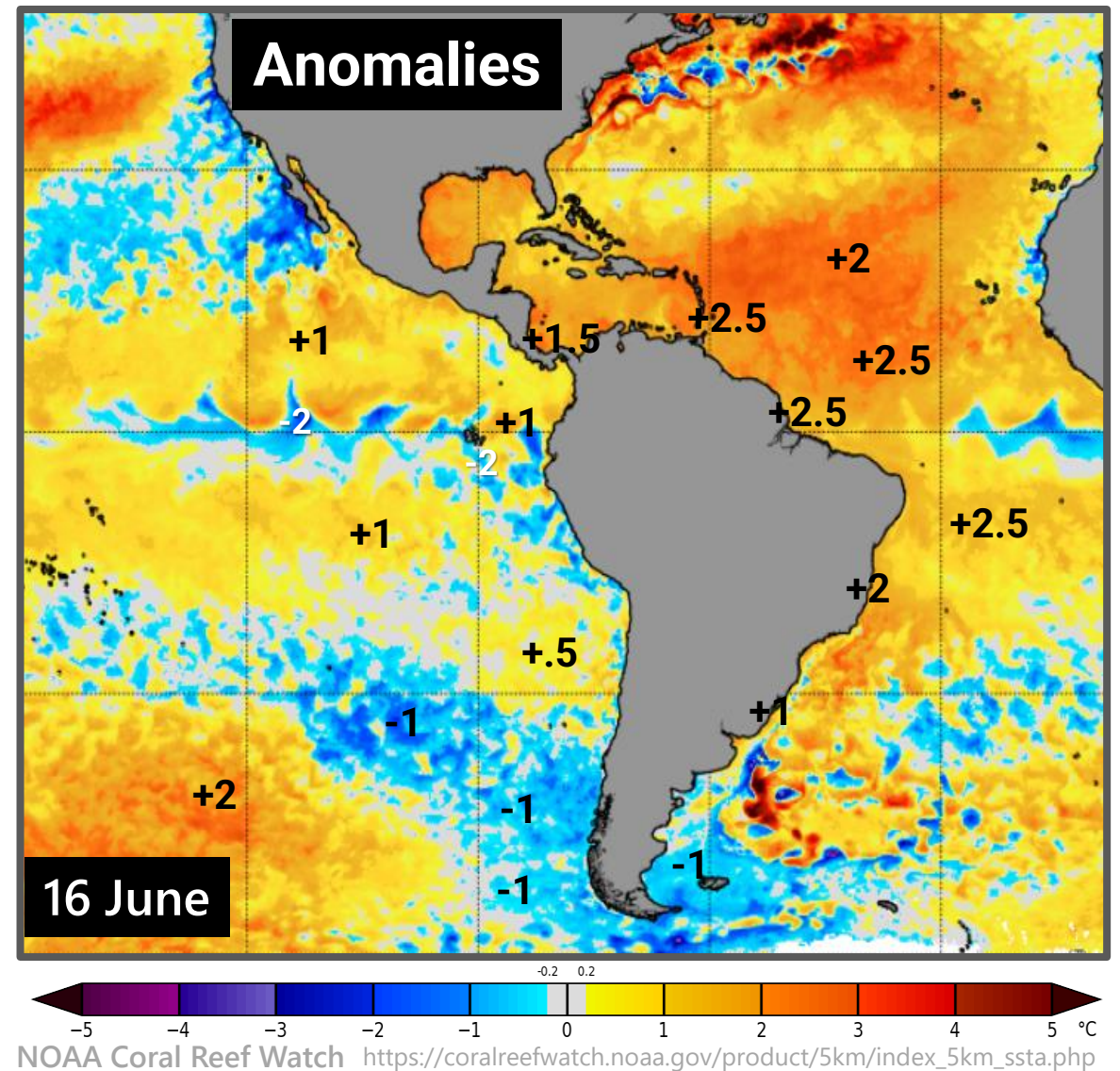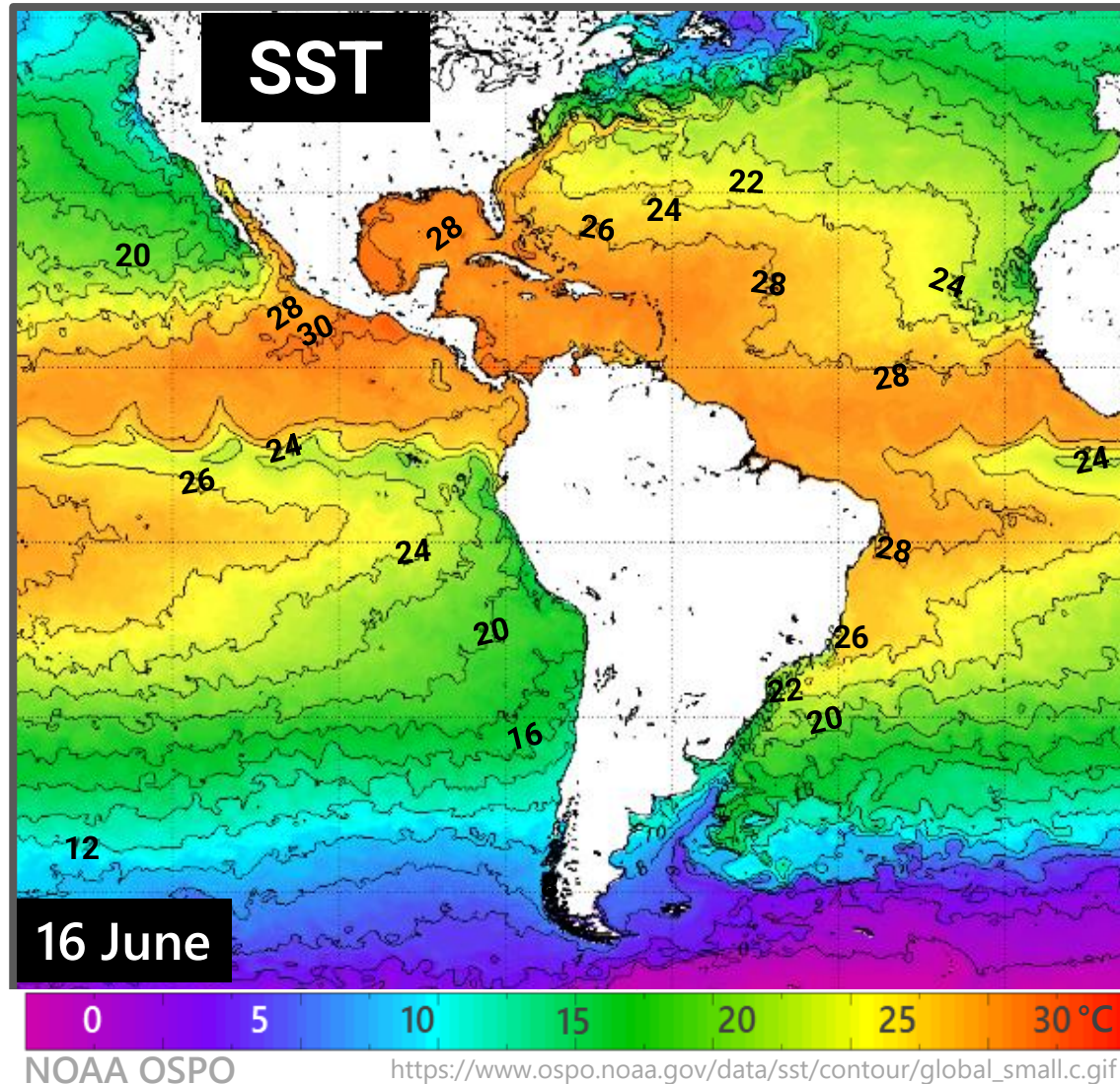
# El Niño-Southern Oscillation (ENSO)

## CPC Official Statement

**El Niño Advisory** / **La Niña Watch**

- ENSO-neutral conditions are present.*

- Equatorial sea surface temperatures (SSTs) are above average in the west-central Pacific Ocean, near average in the east-central Pacific Ocean, and below-average in the far eastern Pacific Ocean.



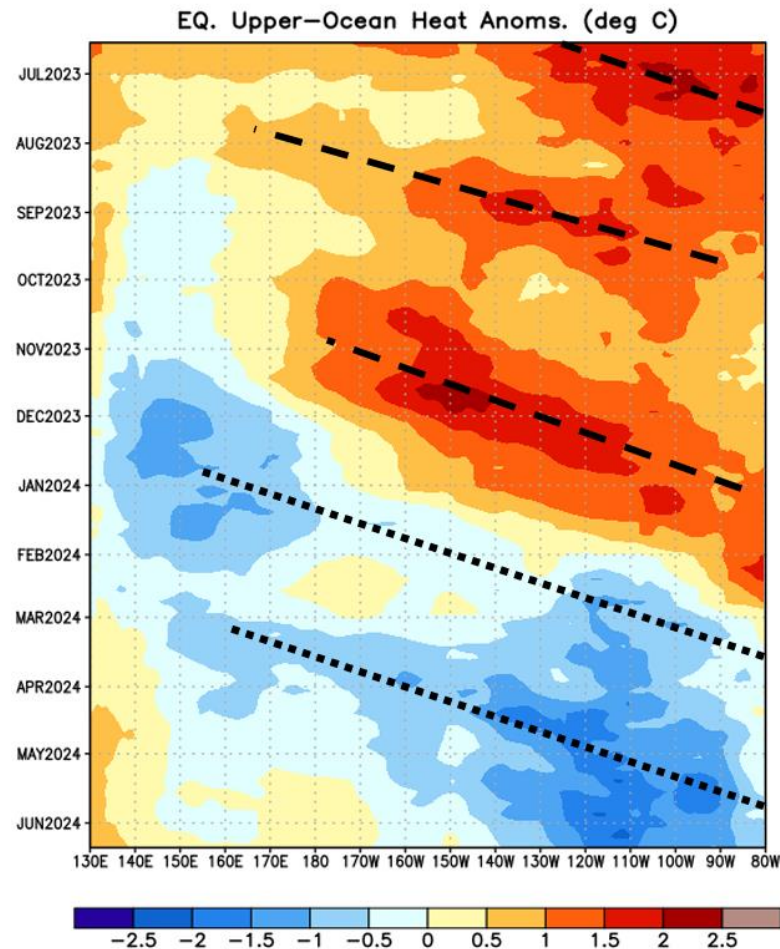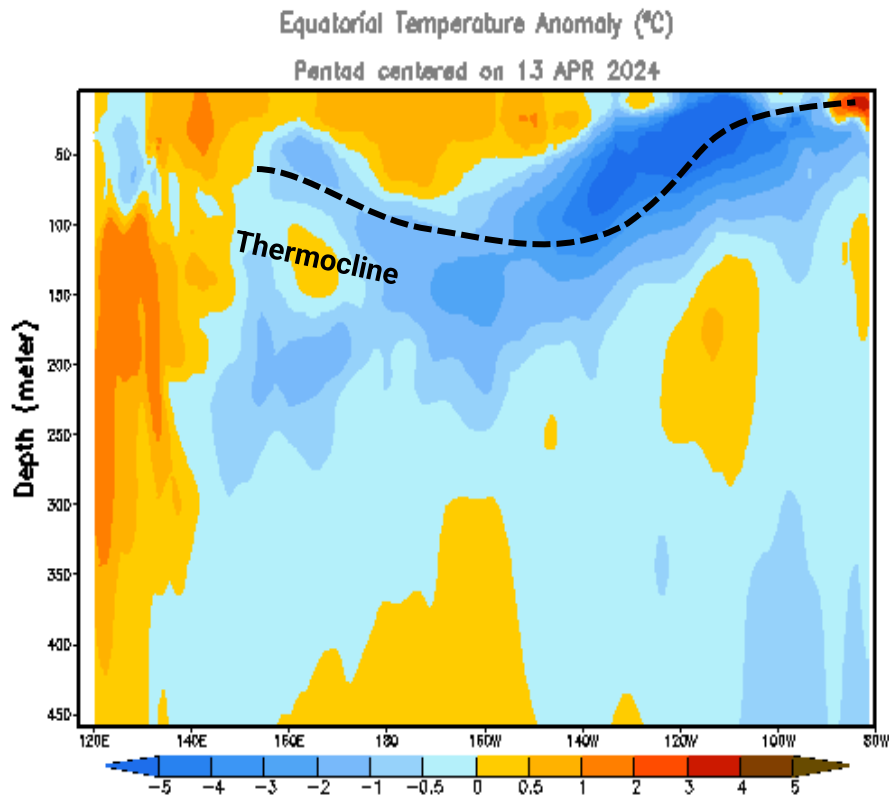Week centered on 27 MAR 2024
SST Anomalies (°C)
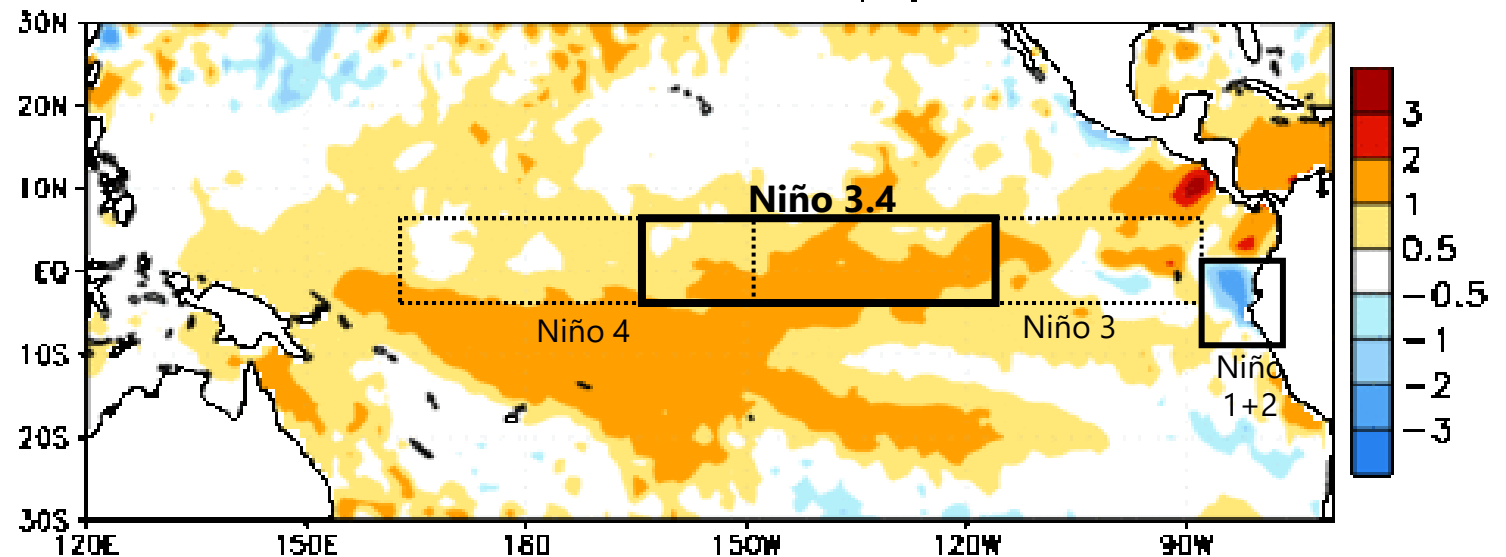
TAKEAWAYS

- Cold tongue continues forming, but the current cooling rate is rapid as what the models were resolving.

- SST in the South American coast continues below normal.

# ENSO: Oceanic Kelvin Waves

## Temperature Anomalies with Depth and Heat Content Anomalies



TAKEAWAYS

- Is there a last cool (downwelling) Kelvin wave propagating towards the South American coast?

- No additional Kelvin waves are propagating behind. Does this mean there might be a "break" in the current surface cooling by August/September?

Source: CPC

# ENSO Outlook

La Niña is favored to develop during July-September (65% chance) and persist into the Northern Hemisphere winter 2024-25 (85% chance during November-January).*
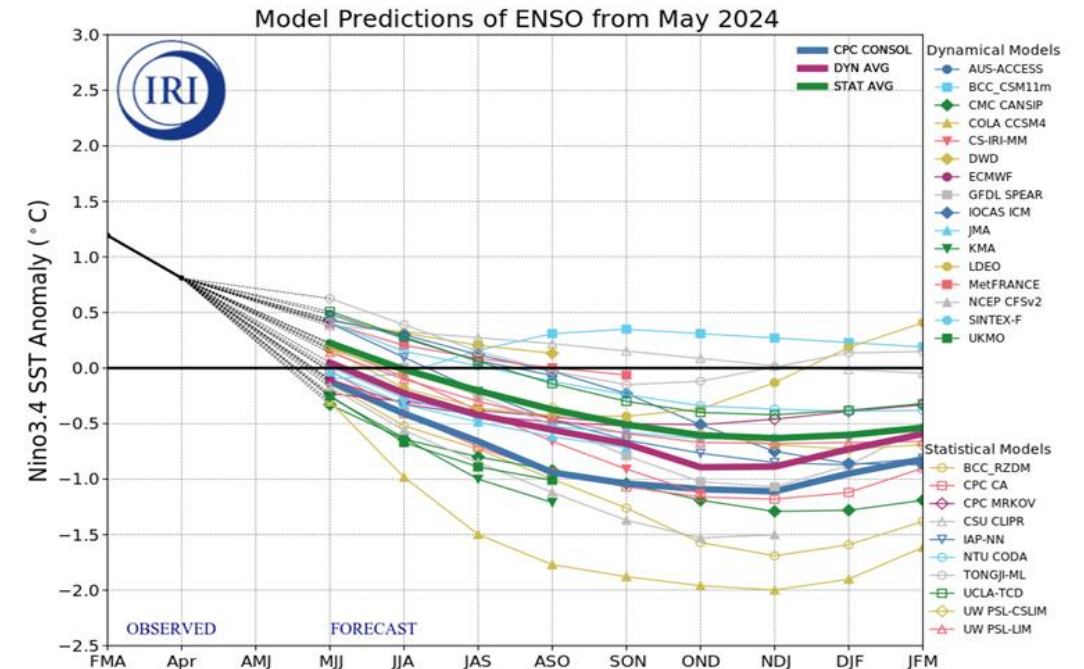
## Probabilistic Forecast
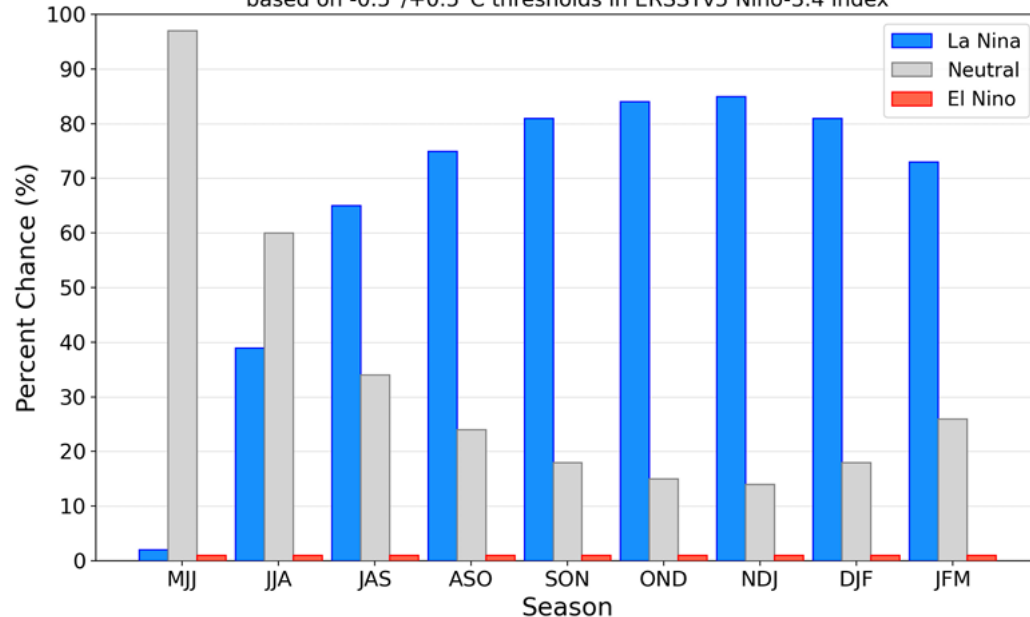


Source: CPC

## IRI/CPC Dynamic Models



Source: IRI, updated 19 May 2024

# Madden-Julian Oscillation (MJO)

## Current Observations:

- The MJO has lost coherence in June, partly due to the summer transition in the north Hemisphere..

- Neutral MJO conditions are located over the Americas, which is allowing heavy rain producing systems such as the Central American Gyre (CAG)

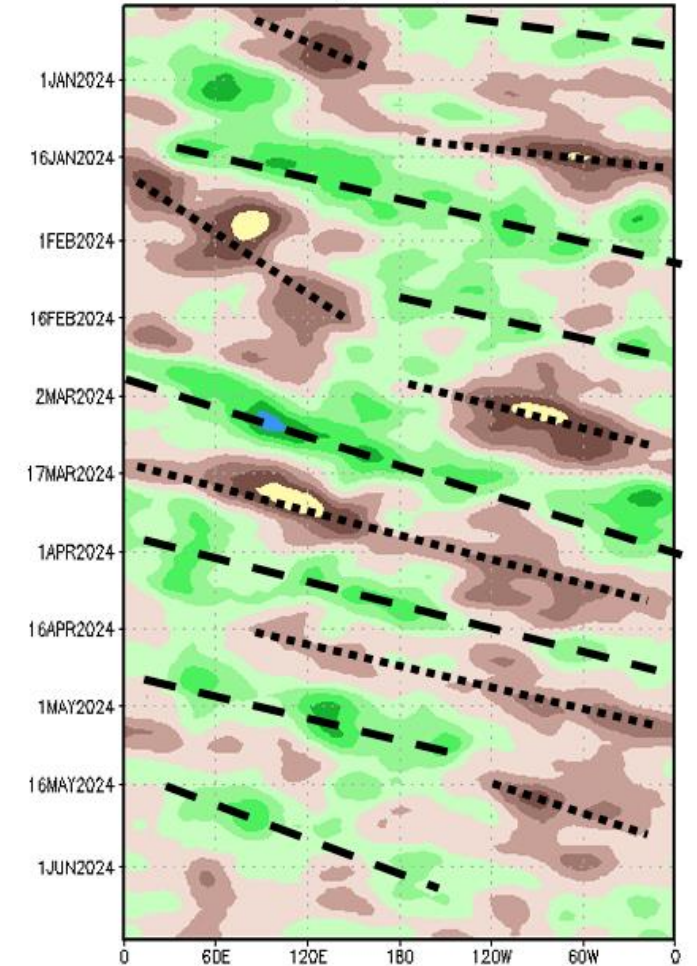**Velocity Potential (CHI) and Brightness Temperature (shaded)**
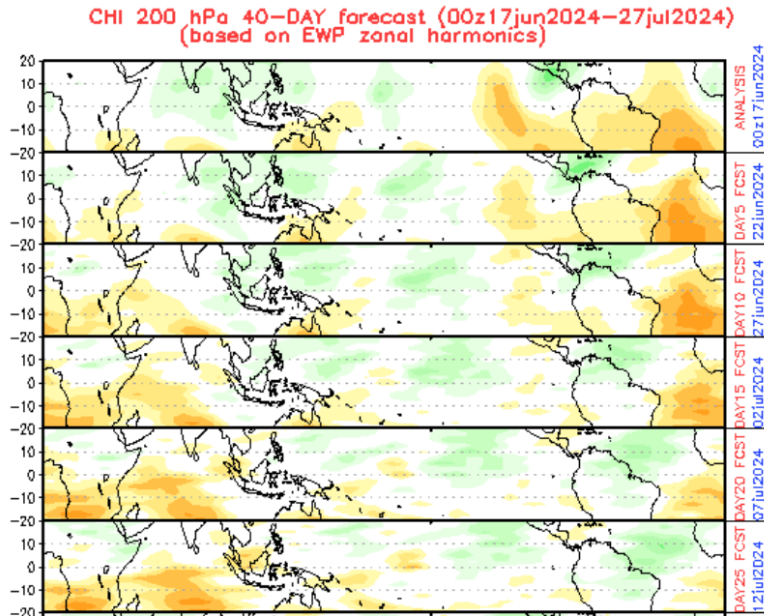

11 JUN 2024

June 11


16 JUN 2024
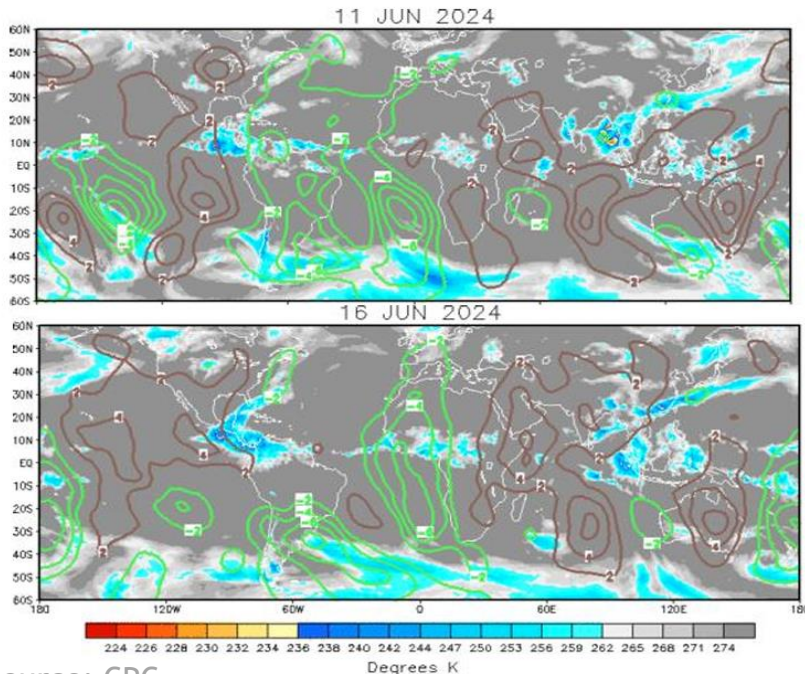
June 16


Favors rain storms
Enhanced upper divergence


Favors limited rainfall
Enhanced upper convergence


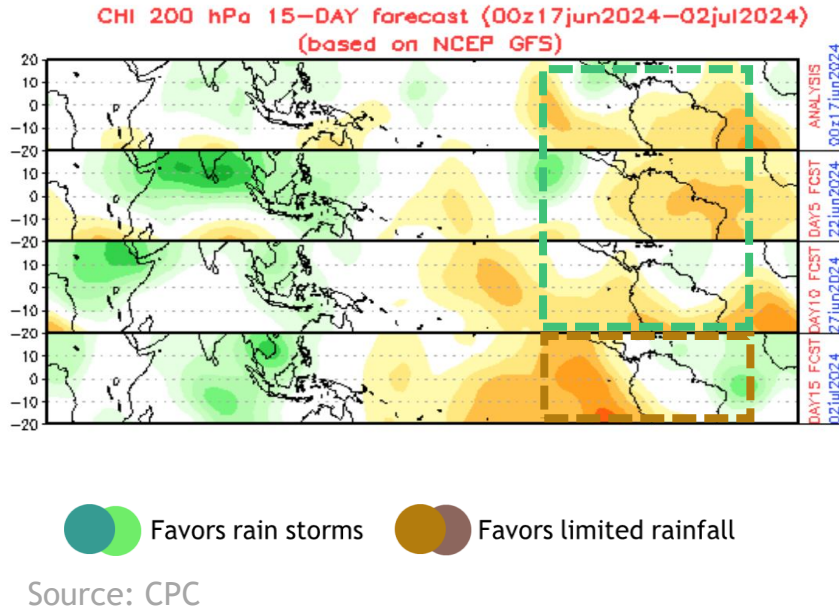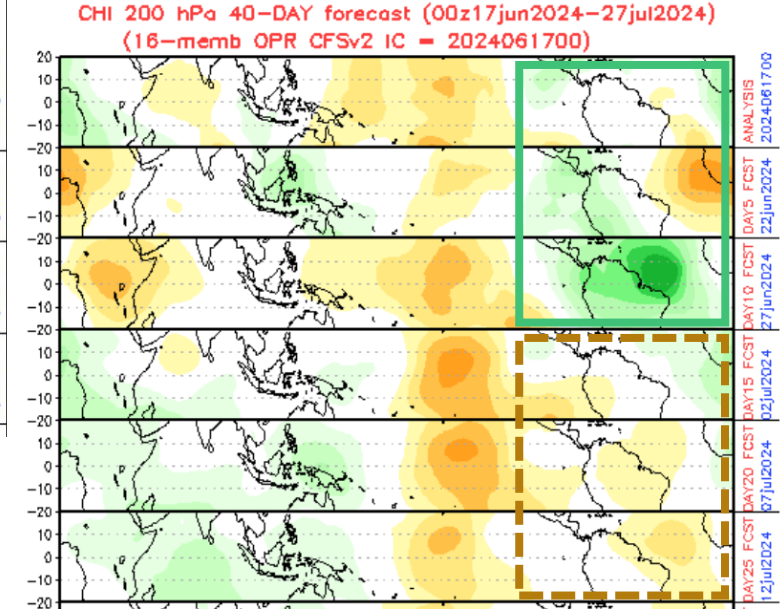200-hPa Velocity Potential Anomaly: 5N-5S
5-day Running Mean

# MJO Forecasts

**Empirical Wave Propagation (EWP)**

**Global Forecast System (GFS)**

**Climate forecast System (CFS)**



Favors rain storms · Favors limited rainfall

Source: CPC

**TAKEAWAYS**

- Since the MJO is loosely organized, confidence in models is limited. Especially EWP.
- CFS and GFS are also struggling, but there is some consistency on neutral-to-wet conditions through late June.
- July appears drier in terms of potential MJO enhancement. But confidence is limited.
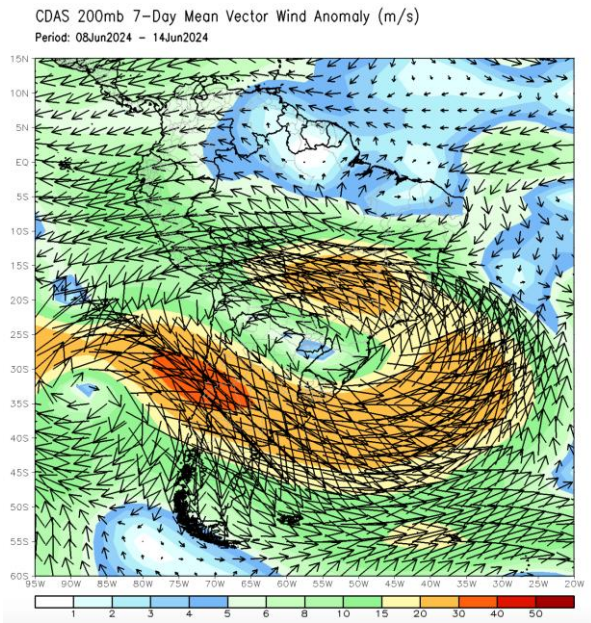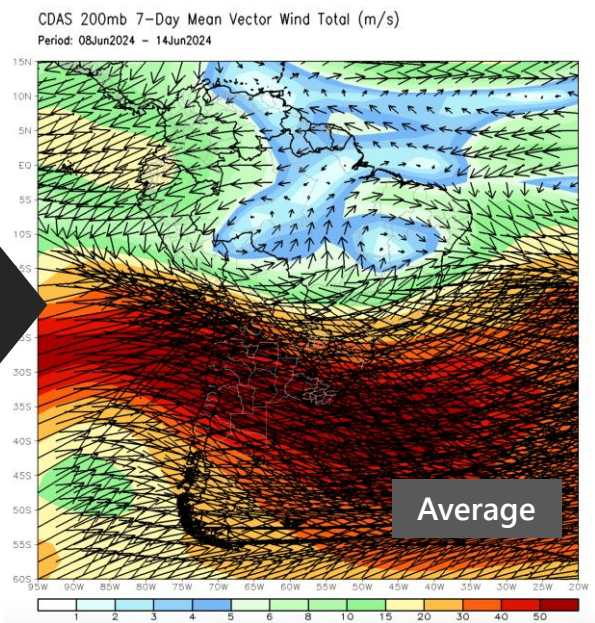
# MJO and Upper Tropospheric Waves

## Outlook for the next few days:

- Although a large-scale upper divergence pattern is present in the Americas, a Kelvin wave is forecast to cross the region through the weekend.

- This might enhance rainfall events occurring in Central America/Mexico and the Greater Antilles through Saturday June 26th.
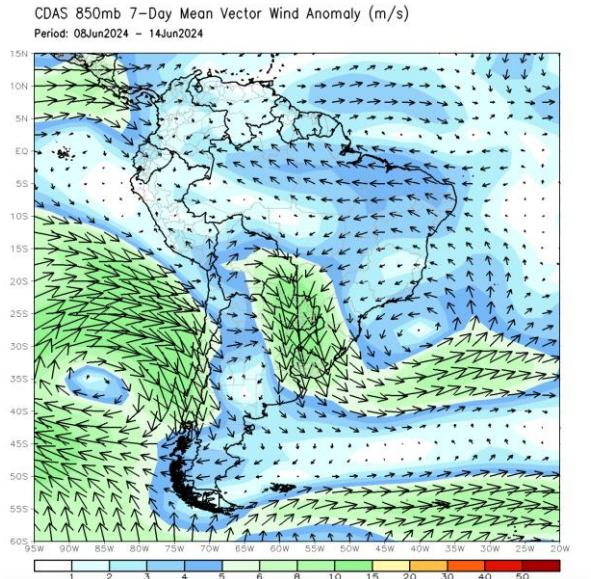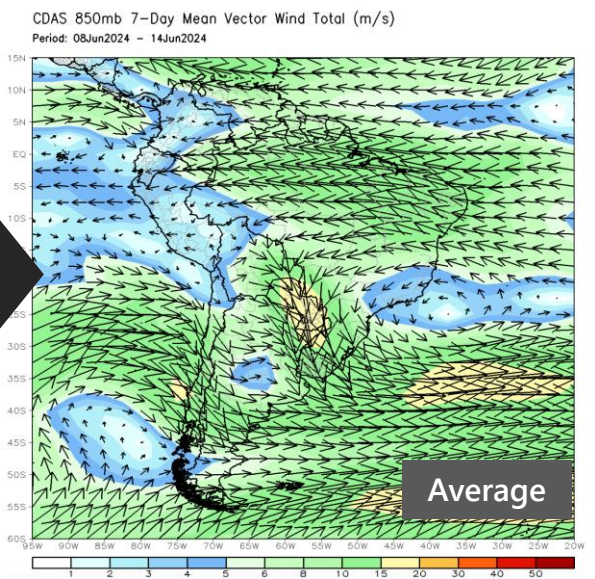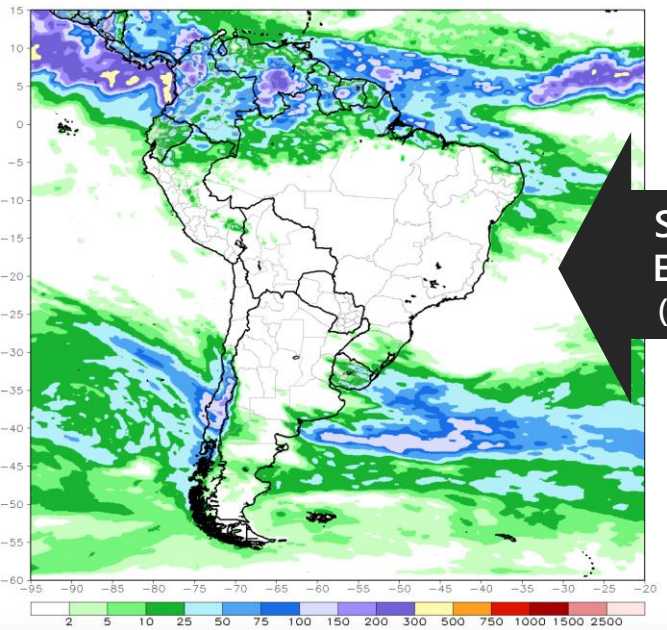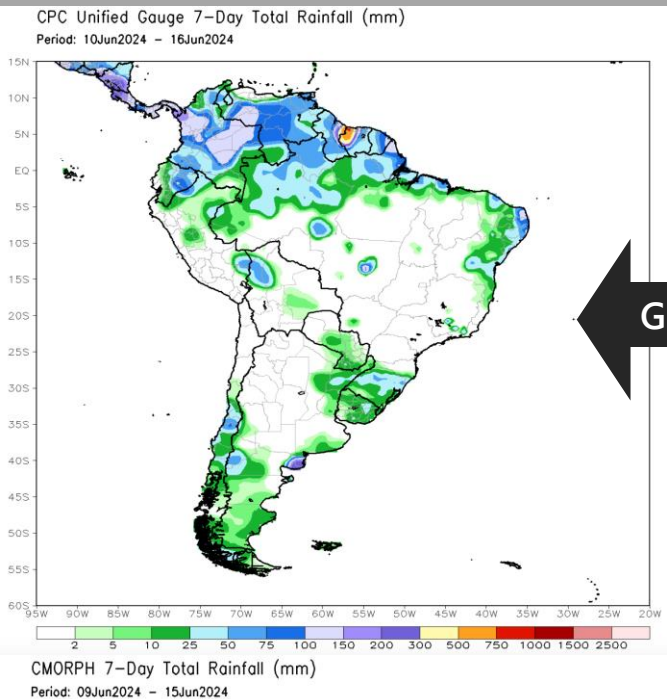


Source: NCICS
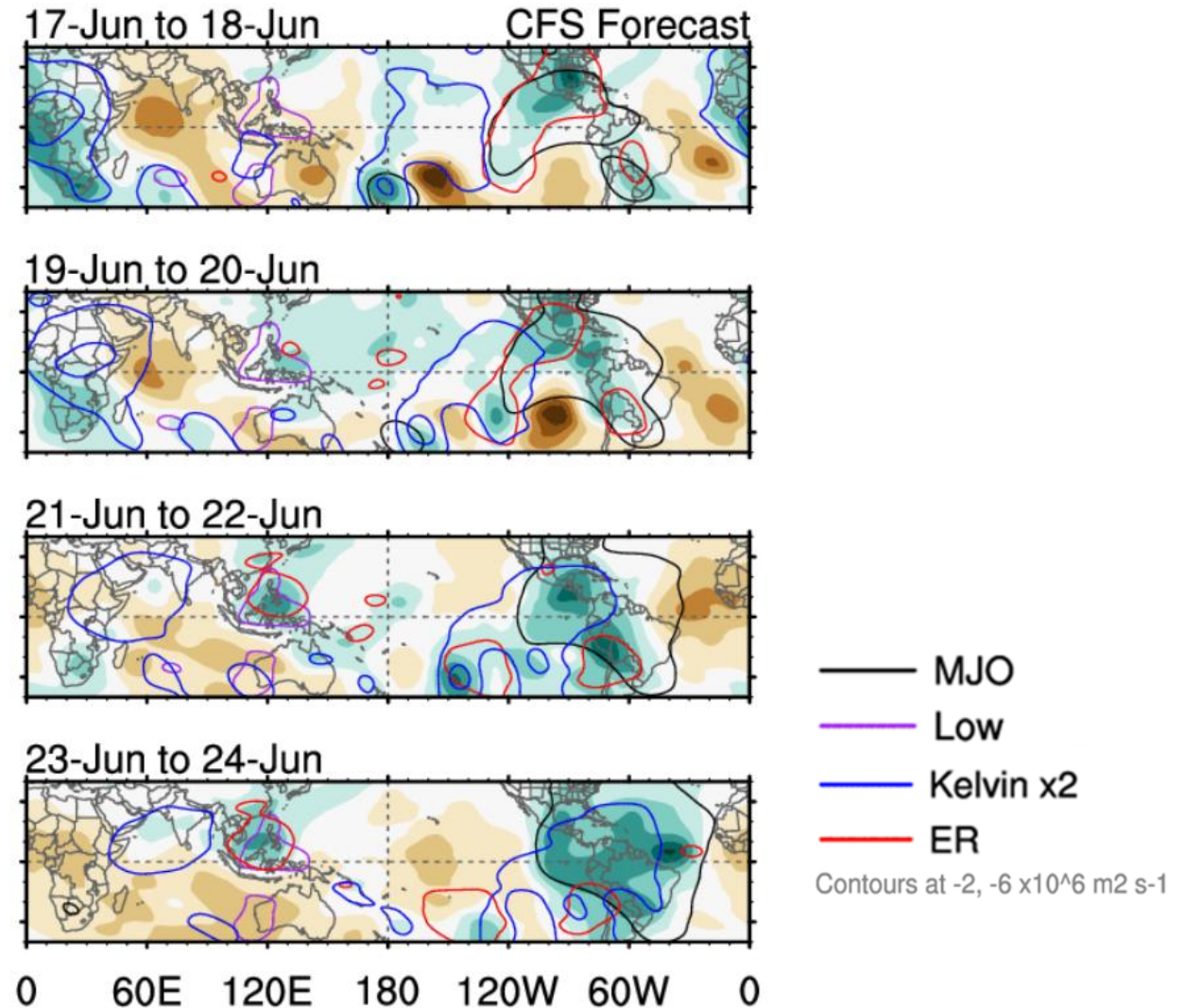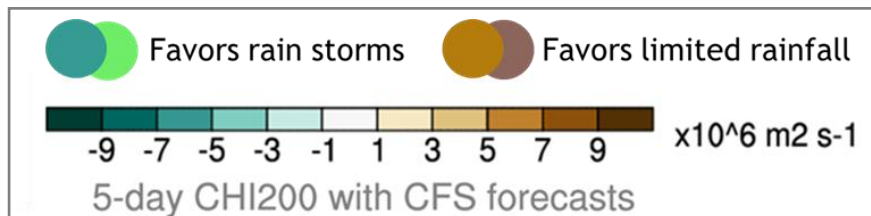
# South America, Last 7 Days



**Rainfall Anomalies**

200 hPa Flow

850 hPa Flow

Gauges

Satellite – Estimated (CMORPH)
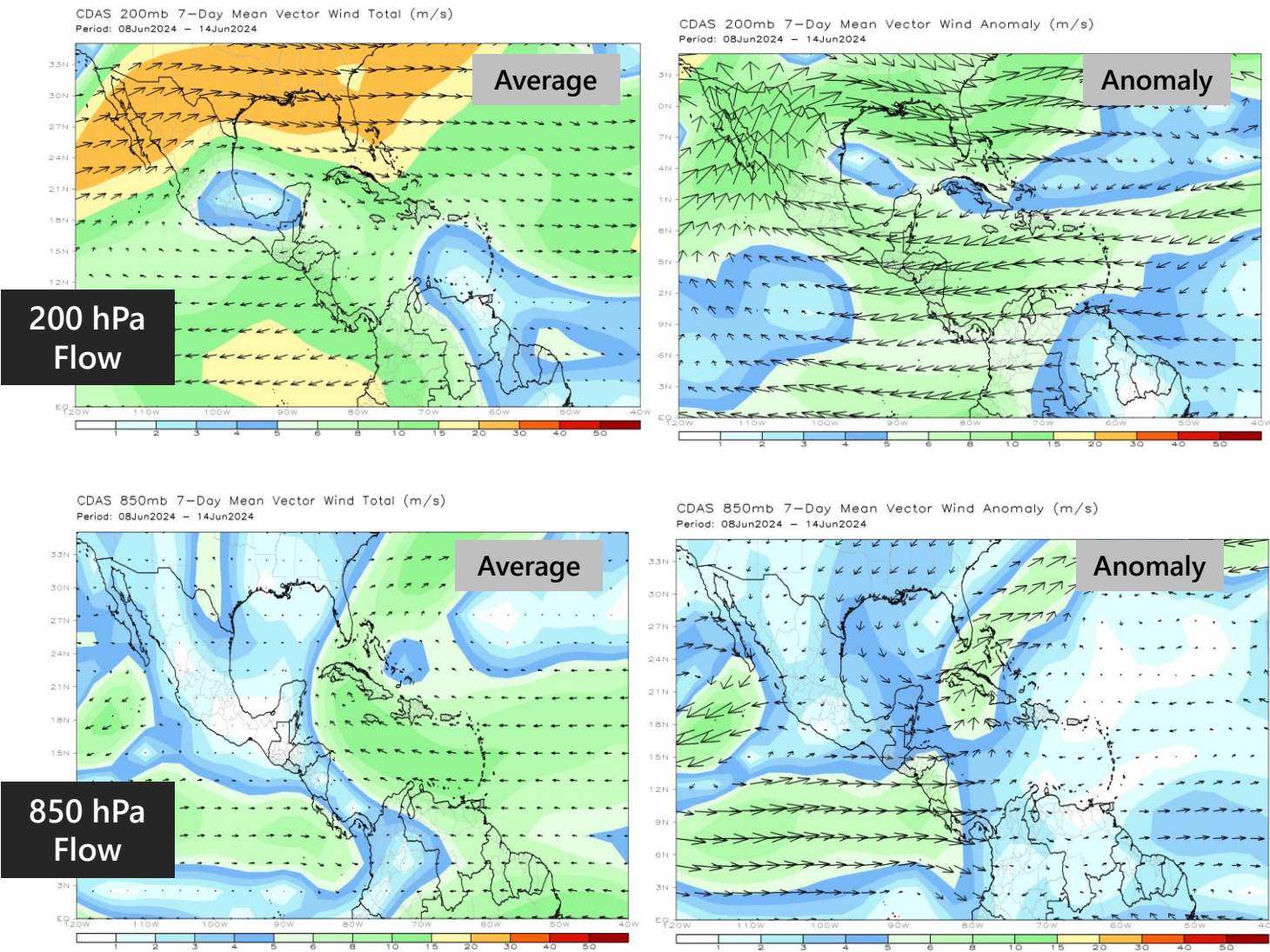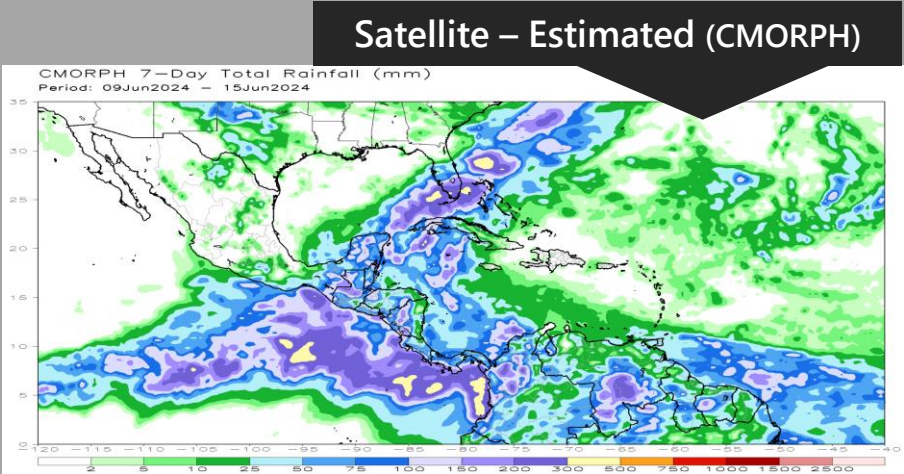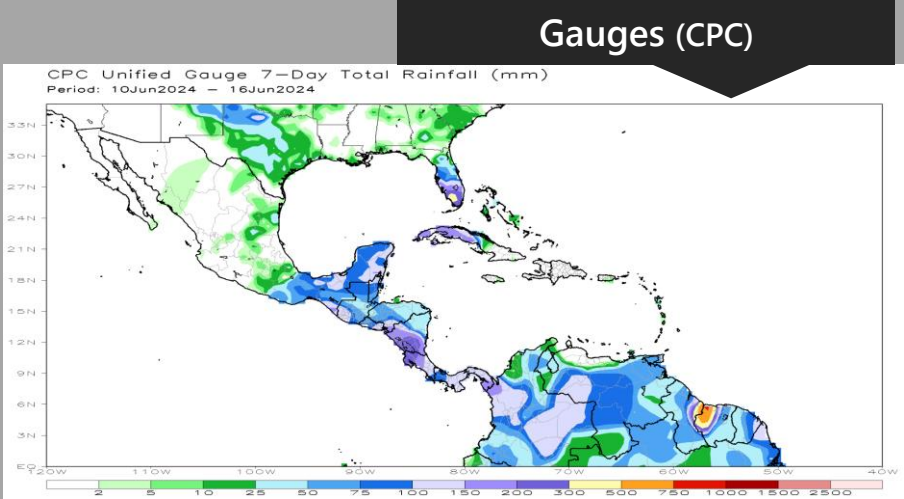
# Caribbean and Central America, Last 7 Days



**Rainfall Anomalies**

# ¡Gracias!    Thank you!    ¡Obrigado!

## Next Session: Thursday July 18, 15 UTC

Following Sessions:
22 August 2024 at 15:00 UTC
18 September 2024 at 15:00 UTC

Recorded sessions and more information available at:
https://rammb2.cira.colostate.edu/training/rmtc/focusgroup/

For enrolling in the distribution list for RFG announcements, please send
an email to jose.galvez@noaa.gov or bernie.connell@colostate.edu