



# Weeks 2-3 Global Tropics Hazards Outlook

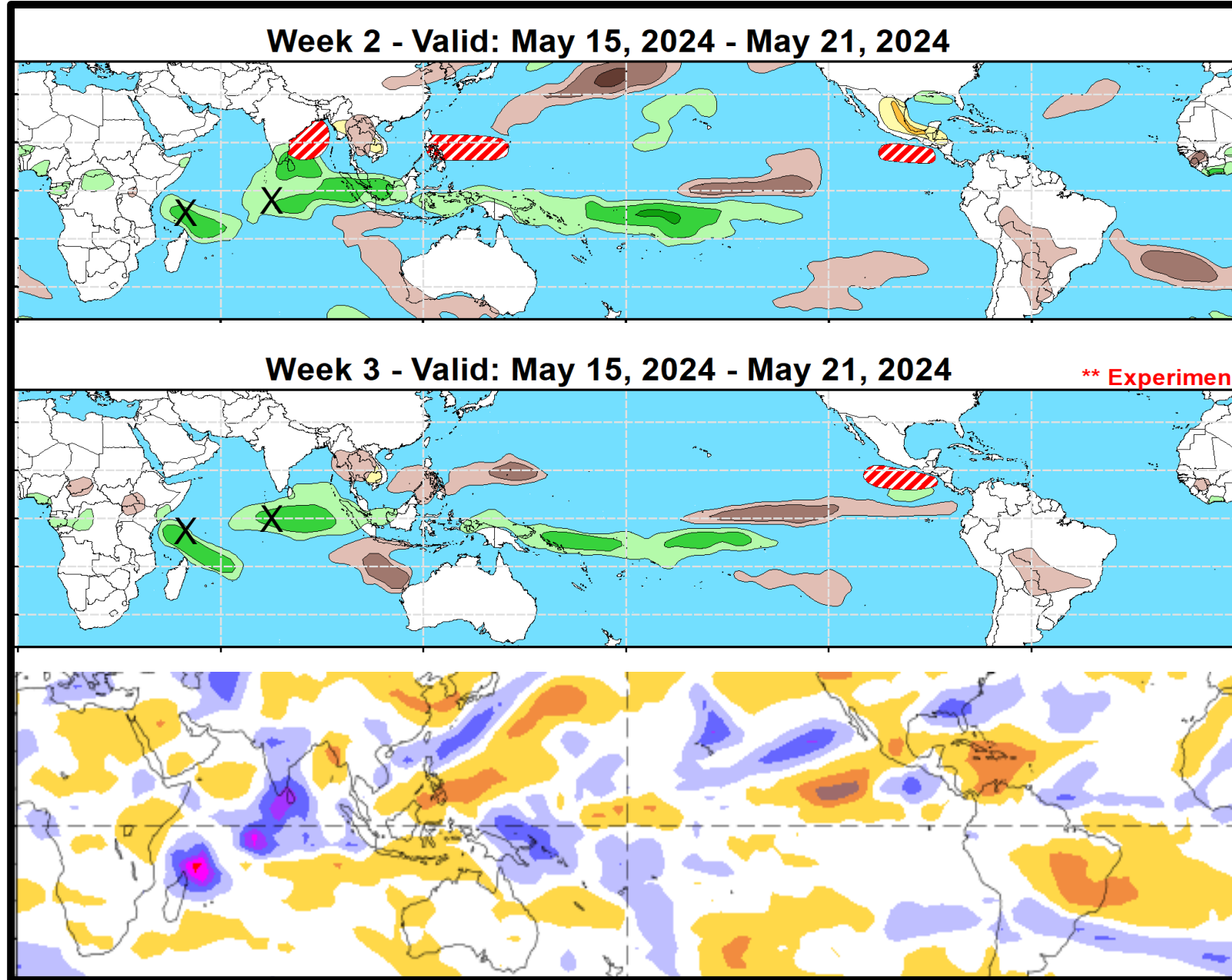
5/21/2024

Nick Novella

NWS / NCEP / Climate Prediction Center

# Outlook Review: TC development & anomalous precipitation during the past week

- SIO: Ialy (5/17)
- SIO: TC25S (5/19)



# Synopsis of Climate Modes:

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**ENSO:** (May 9, 2024 Update)      *next update on Thursday, Jun 13<sup>th</sup>*

- ENSO Alert System Status: [El Niño Advisory](#) / [La Niña Watch](#)
- A transition from El Niño to ENSO-neutral is likely in the next month. La Niña may develop in June-August (49% chance) for July-September (69% chance)

## **MJO and other subseasonal tropical variability:**

- The MJO showed better signs of reorganization over the Indian Ocean during the past week, which is reflected in both the RMM observations and 200-hPa velocity potential anomaly fields. Renewed MJO activity was aided by constructively interfering equatorial Kelvin and Rossby wave activity traversing the basin and contributed to a pair of low-latitude, late season Tropical Cyclones (TCs) south of the equator.
- Good agreement exists in the dynamical models favored continued eastward propagation of the MJO across the Maritime Continent through the end of May, while becoming more incoherent as it nears the western Pacific. The predicted weakening may be tied to an emerging low frequency response favored over the Maritime Continent.
- TC development is favored in the Indian Ocean and western Pacific, with conditions becoming increasingly favorable for development across the Tropical Americas by the week-3 period.

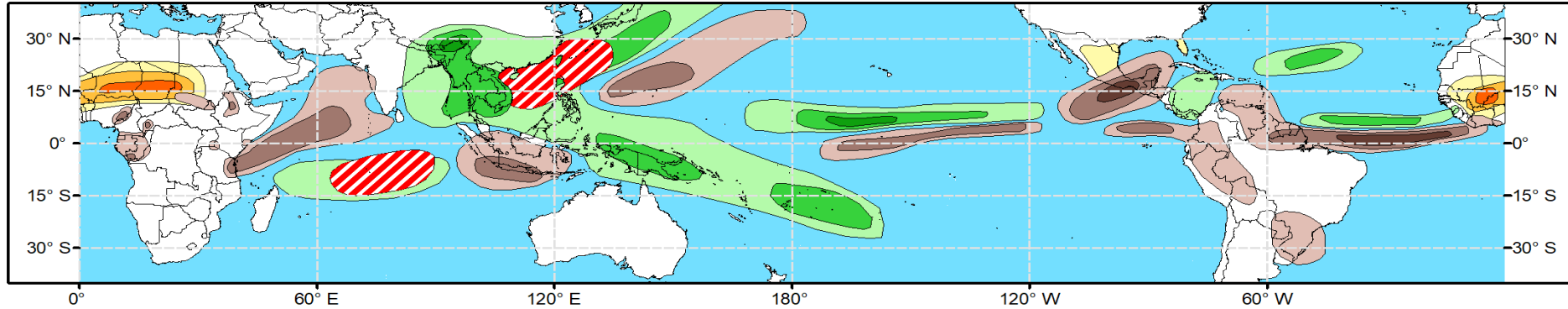
# GTH Outlook:



## Global Tropics Hazards Outlook Climate Prediction Center

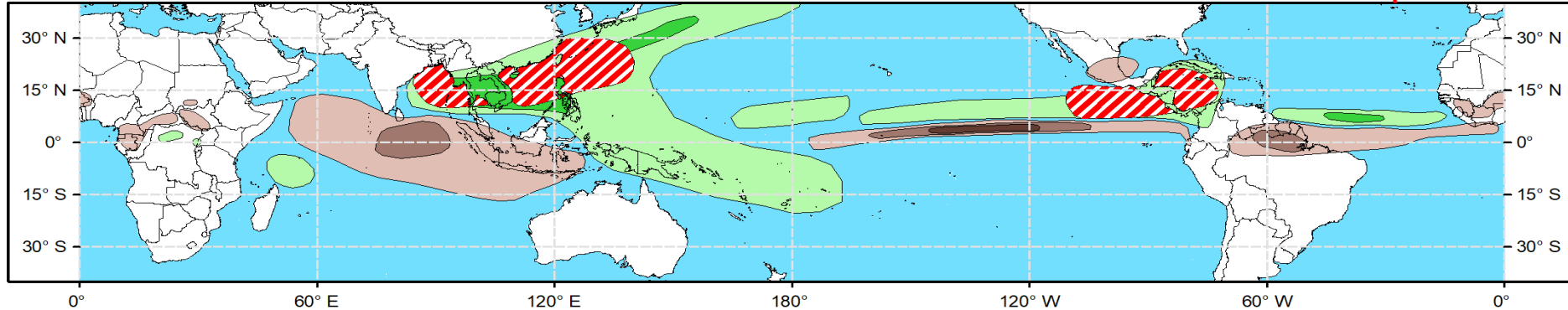


**Week 2 - Valid: May 29, 2024 - Jun 04, 2024**



**Week 3 - Valid: Jun 05, 2024 - Jun 11, 2024**

**\*\* Experimental \*\***



**Tropical Cyclone (TC)  
Formation Probability**



>20% >40% >60%

Tropical Depression (TD)  
or greater strength

**Above-Average  
Rainfall Probability**



>50% >65% >80%

Weekly total rainfall in the  
Upper third of the historical range

**Below-Average  
Rainfall Probability**



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Weekly total rainfall in the  
Lower third of the historical range

**Above-Average  
Temperatures Probability**



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7-day max temperatures in the  
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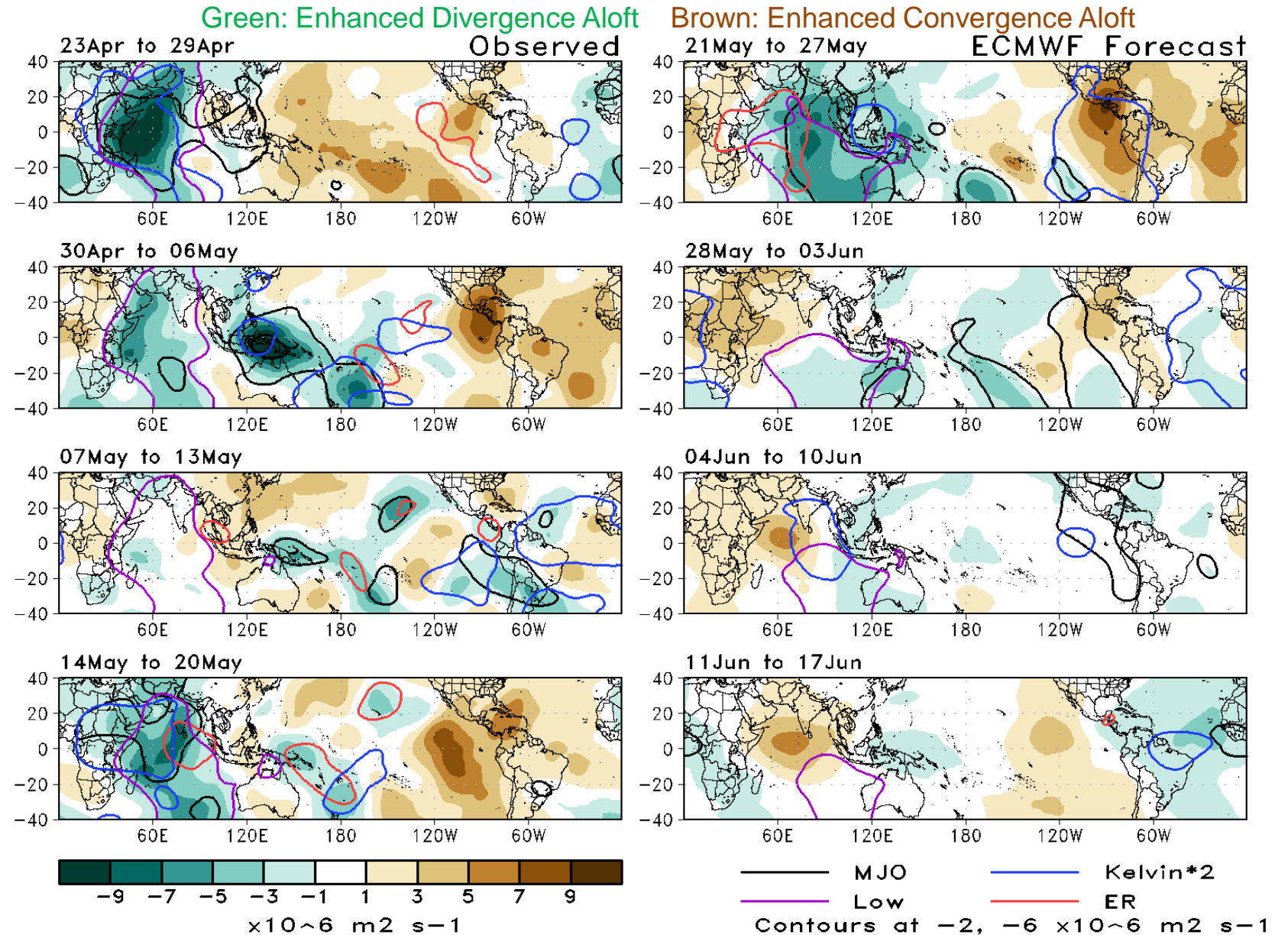
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**Issued: 05/21/2024  
Forecaster: Novella**

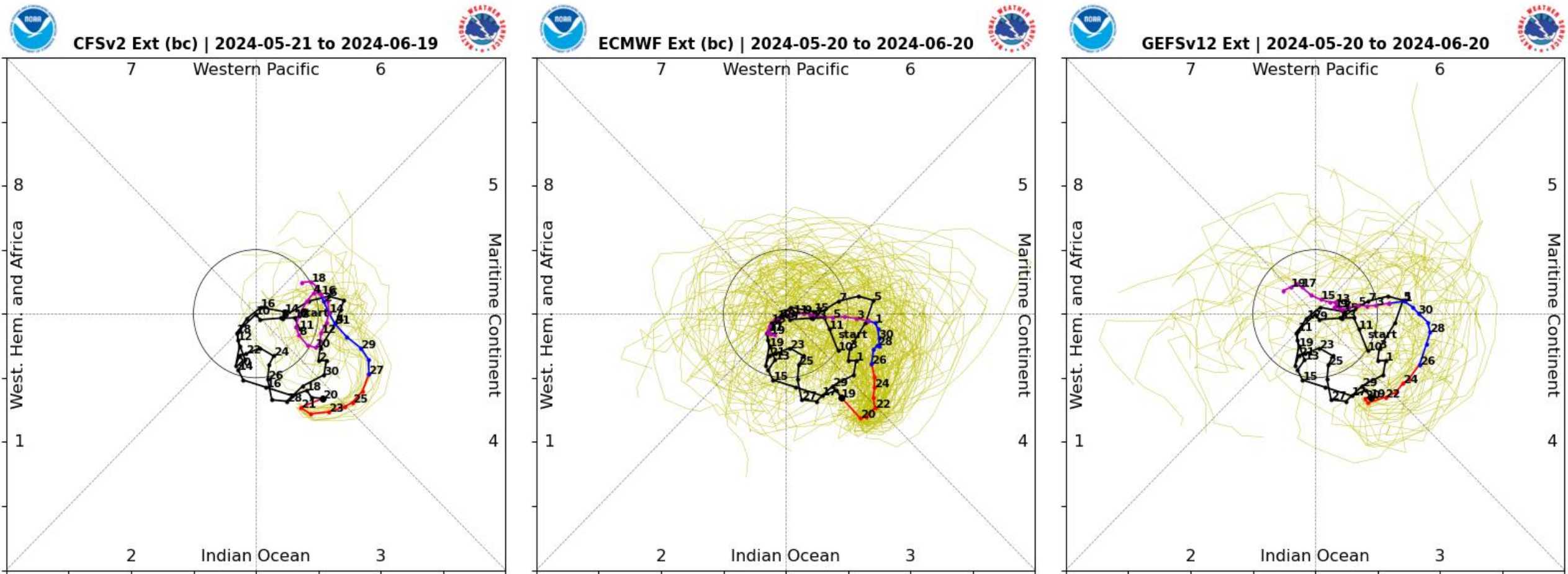
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# 200-hPa Velocity Potential Anomaly Maps:

- The upper-level pattern became more coherent during the past week, with **Kelvin** and **Rossby** wave activity, and **Low Frequency** variability became in phase with the **MJO** another over the western Indian Ocean.
- Forecasts show **MJO** activity coming through the filtering, but weakens as it propagates eastward across the equatorial Pacific.
- Low Frequency** variability is becoming more pronounced closer to Maritime Continent later in June with more of a wave-2 pattern unfolding.

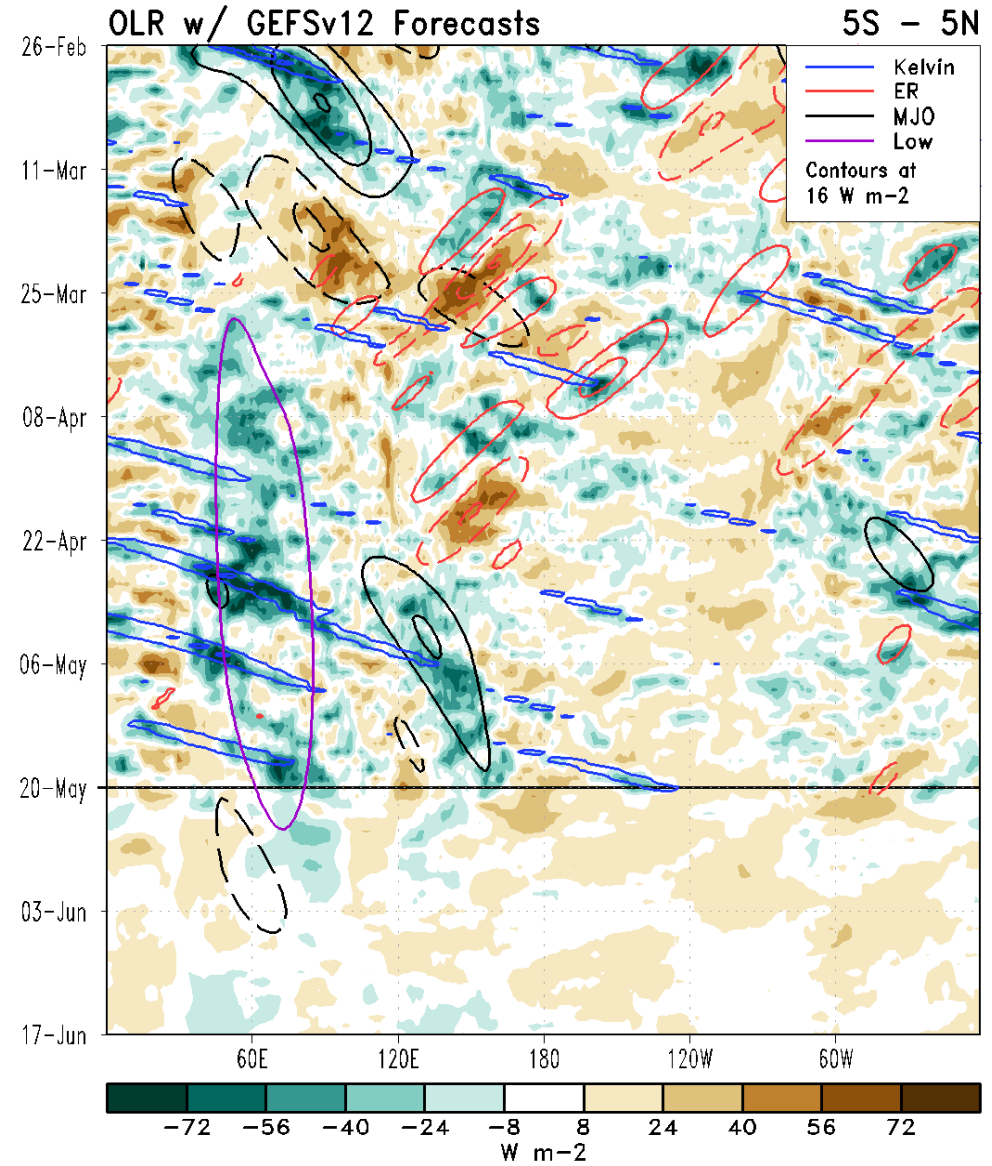
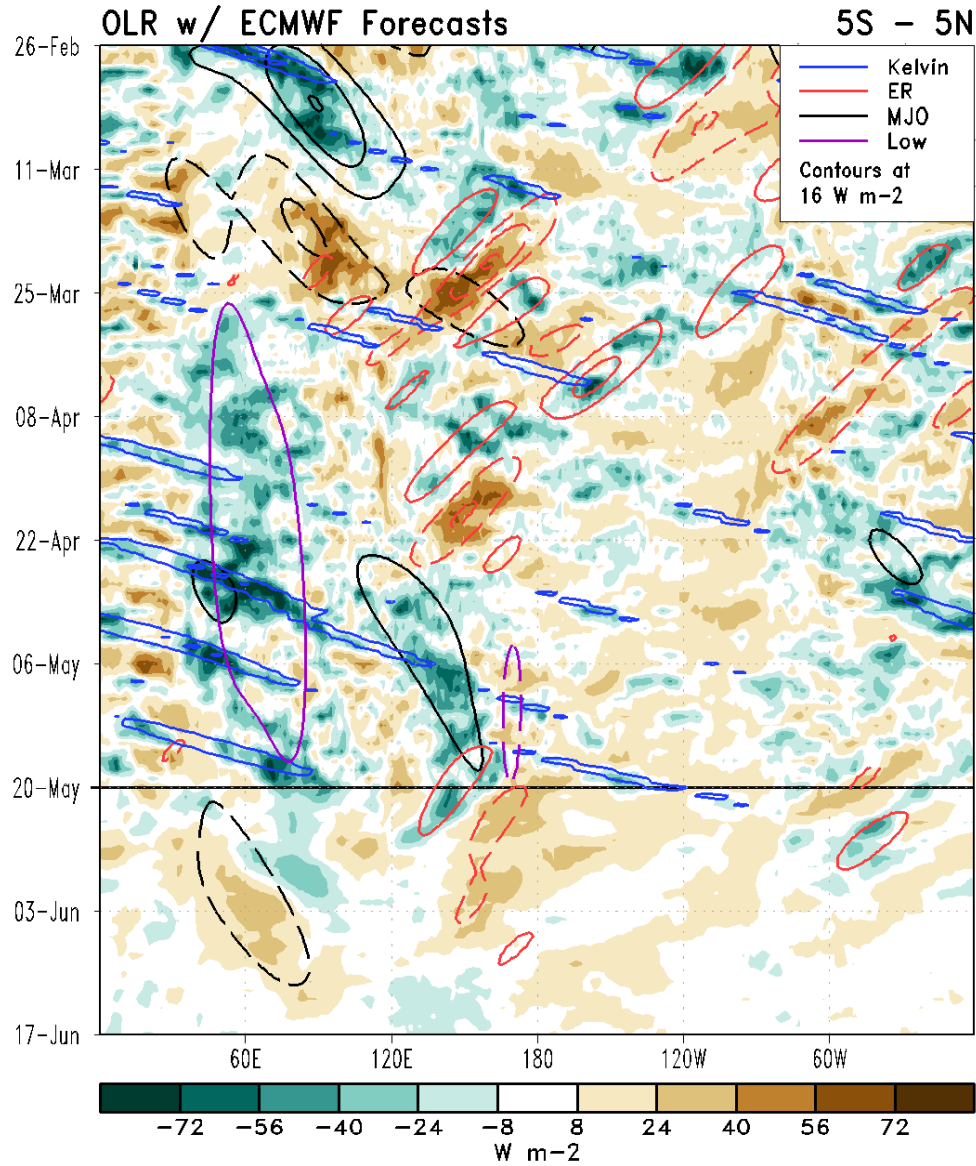


# RMM Index Observations & Forecasts:



- RMM forecasts favor a weakening MJO signal at it crosses the Maritime Continent, consistent with the previous two trips over this part of the global tropics earlier this spring.

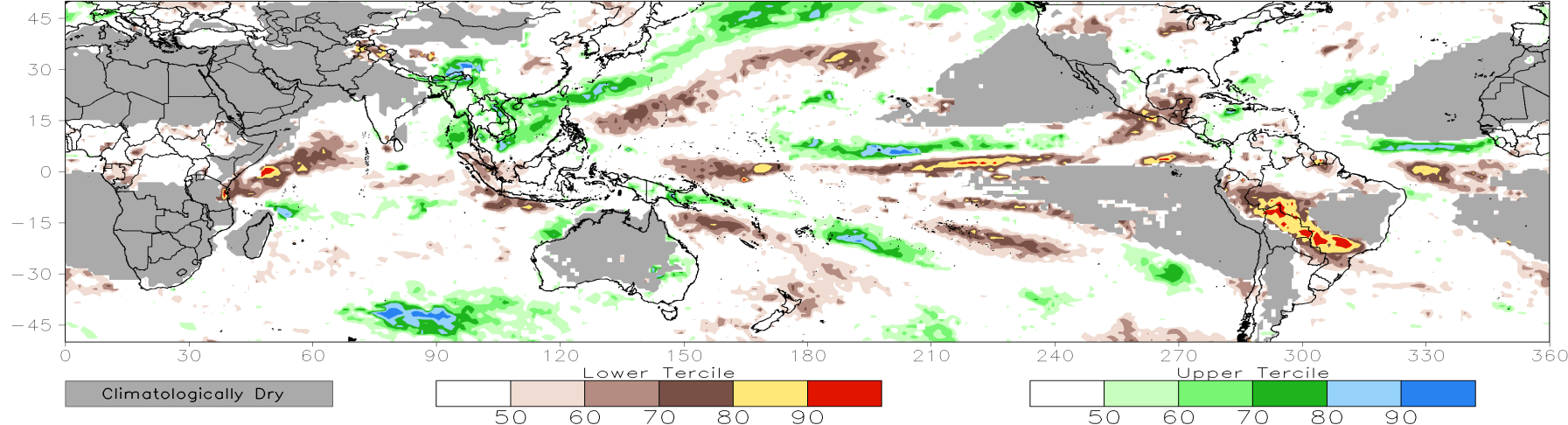
# Outgoing Longwave Radiation (OLR) Anomaly Time/Lon Plots:



# Consolidated Probabilistic Precipitation: Weeks 2 & 3

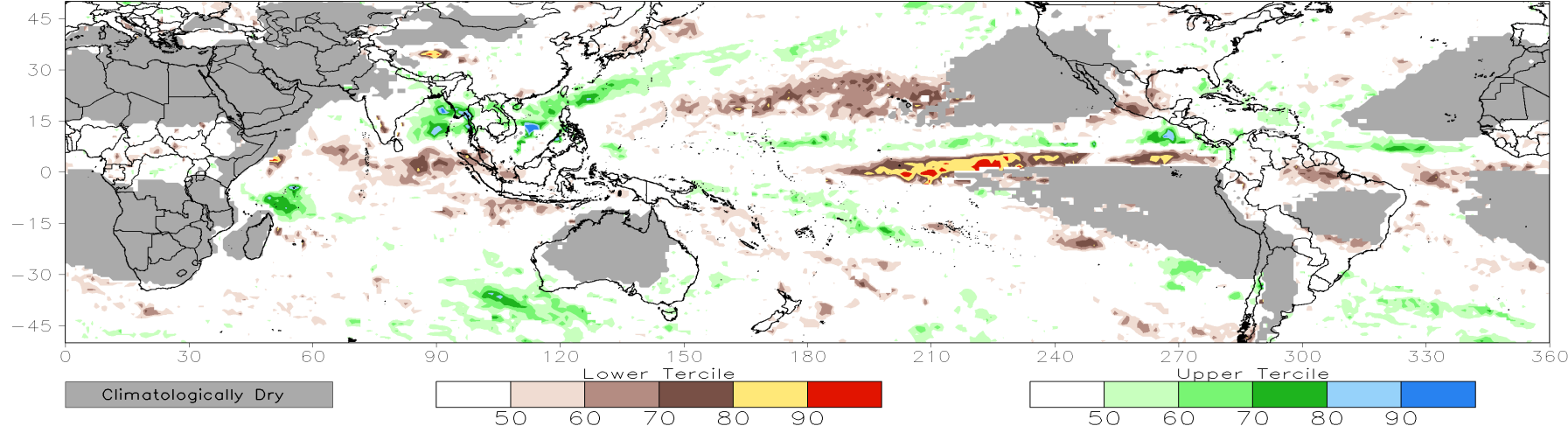
CONS 00z: Week2 Probability for Total Rainfall Below(Above) Lower(Upper) Tercile (%)

Valid: 29May2024-04Jun2024



CONS 00z: Week3 Probability for Total Rainfall Below(Above) Lower(Upper) Tercile (%)

Valid: 05Jun2024-11Jun2024

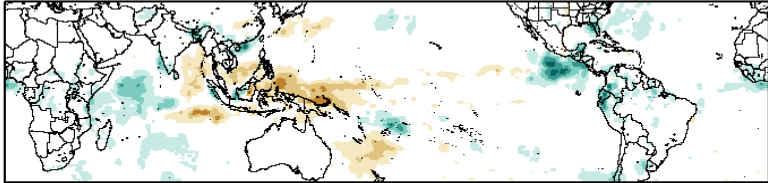




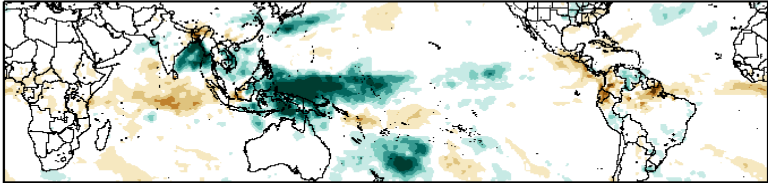
# Historical Precipitation Anomalies By MJO Phase:

AMJ MJO Composite: GPCP1DD (mm/day)

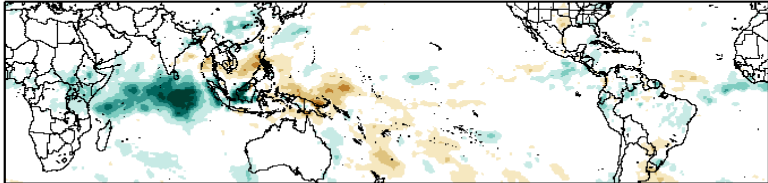
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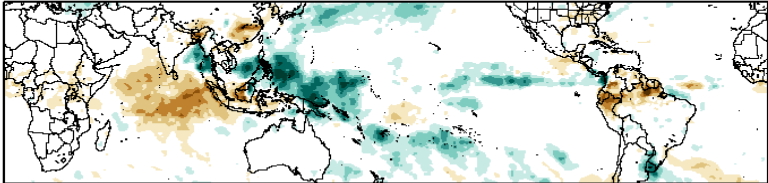
Phase 5



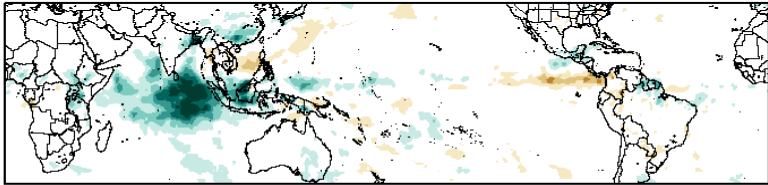
Phase 2



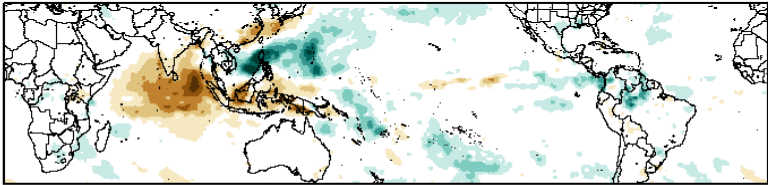
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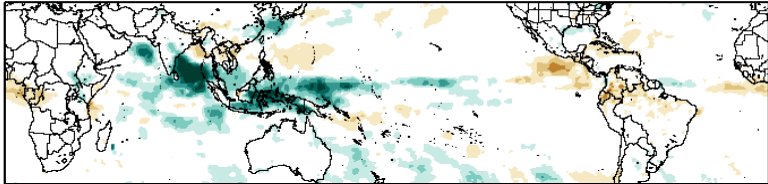
Phase 3



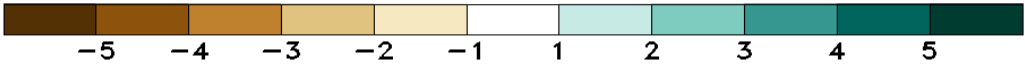
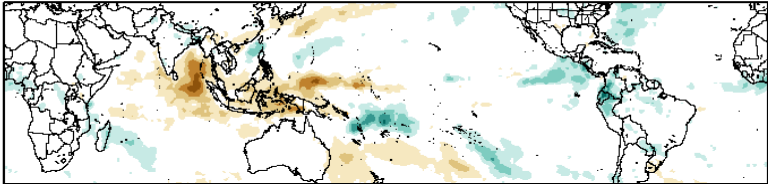
Phase 7



Phase 4

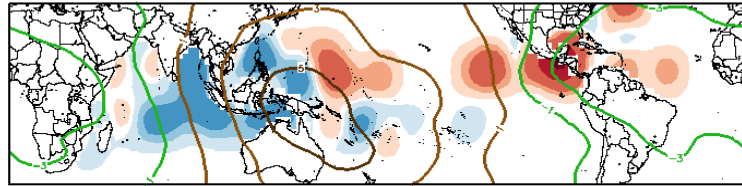


Phase 8

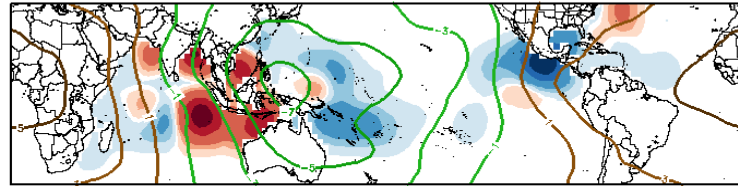


# Historical TC Origin Anomalies By MJO Phase & Weeks 2+3 Genesis Climo:

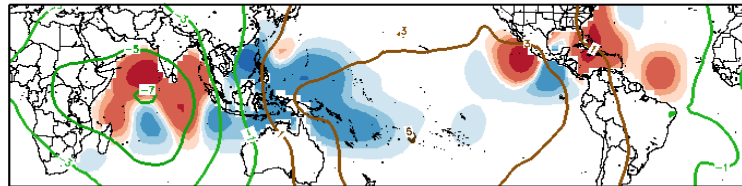
AMJ MJO Composite: Mean TC Origin Density Anomaly ( $\#TCs/277km^2*100$ )  
w/ AMJ CHI200 ( $\times 10^6 m^2 s^{-1}$ ) / Contours every  $2 \times 10^6 m^2 s^{-1}$



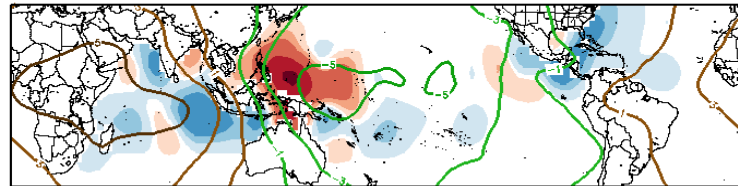
Phase 1



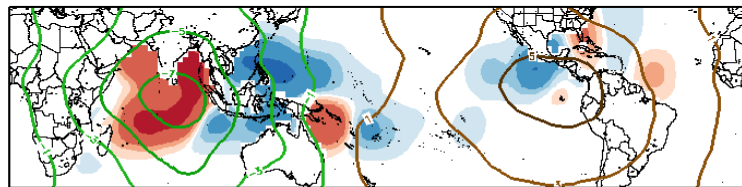
Phase 5



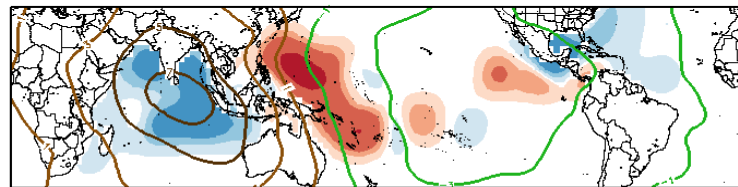
Phase 2



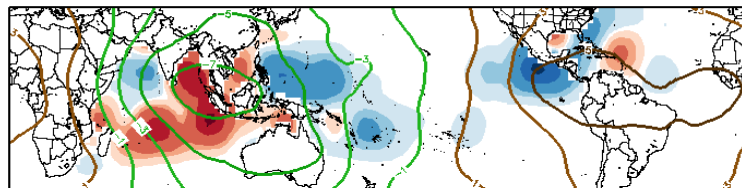
Phase 6



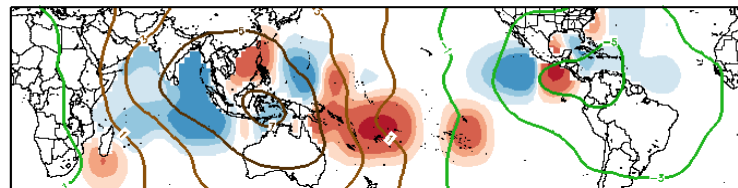
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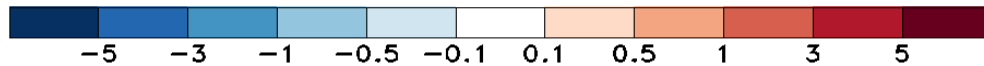
Phase 7



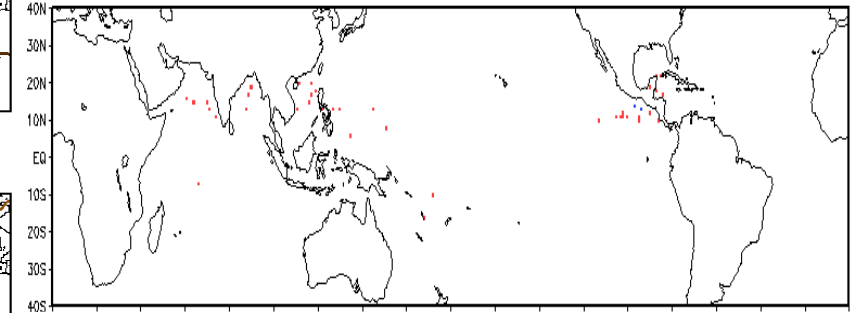
Phase 4



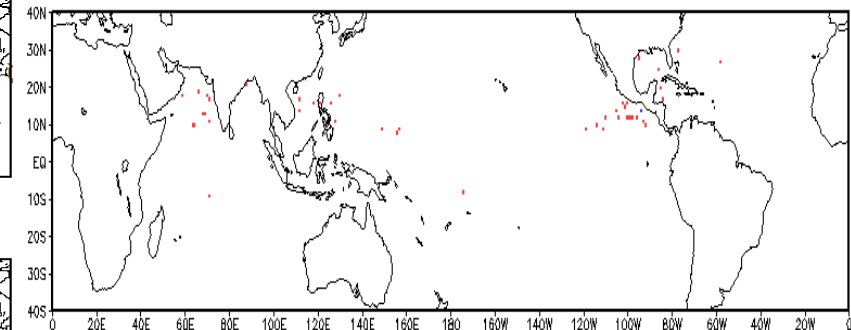
Phase 8



Observed TC Genesis, 1979-2021  
7-day Period 0529 to 0604

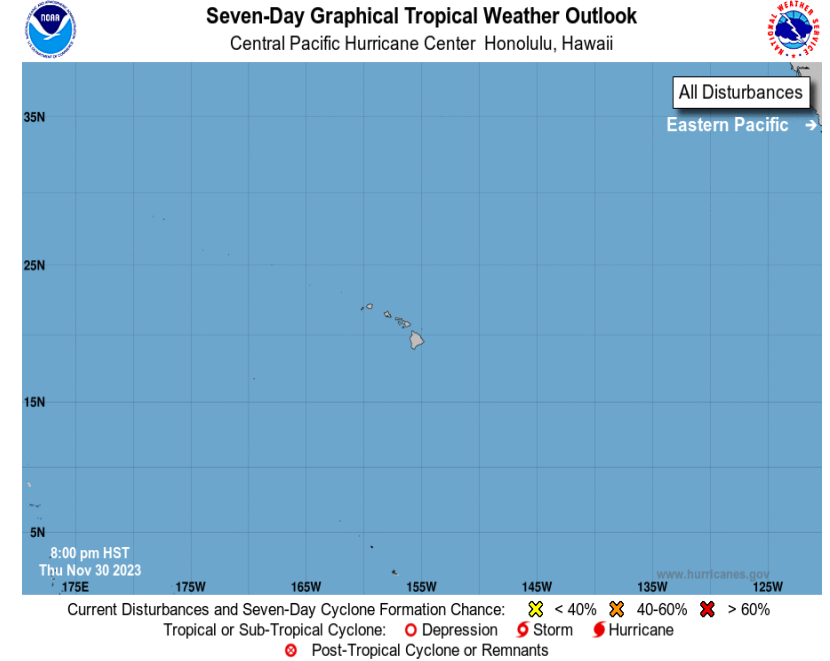
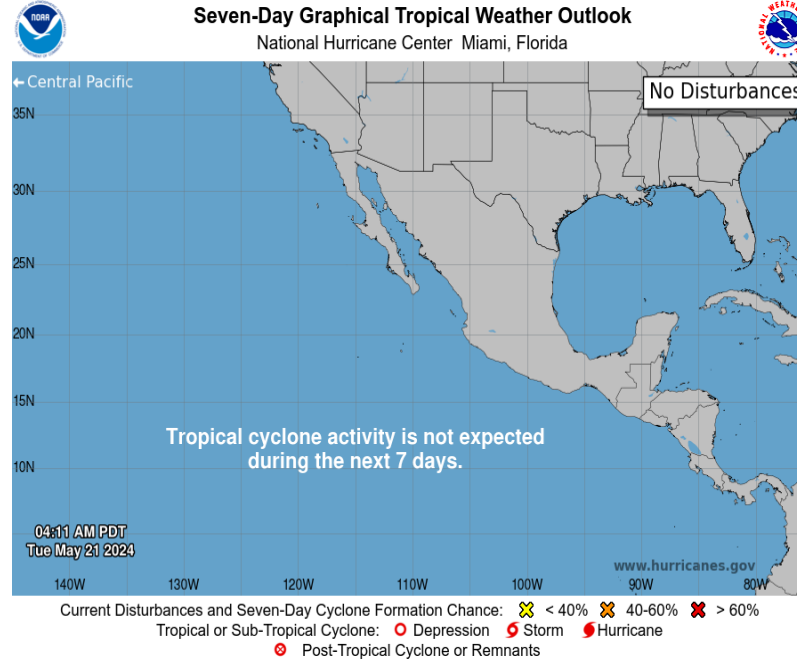
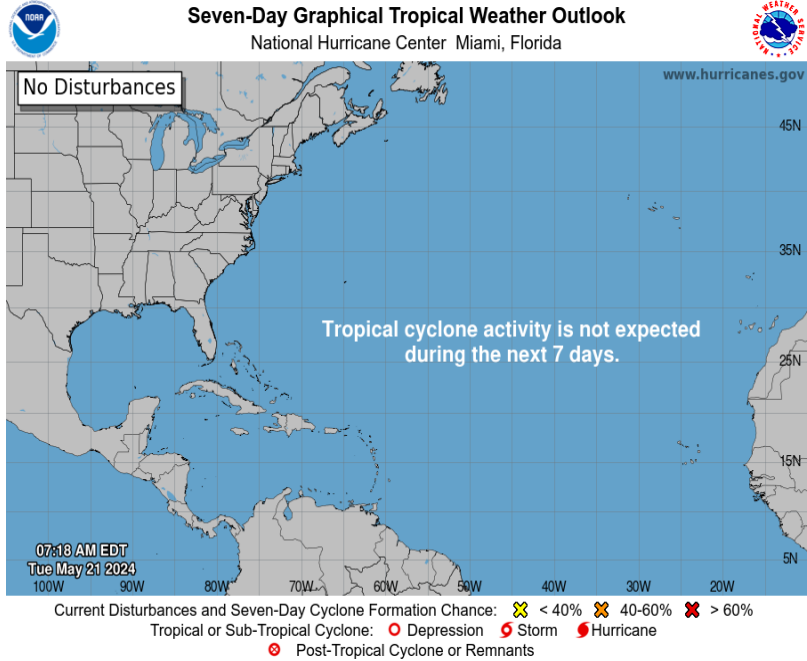


Observed TC Genesis, 1979-2021  
7-day Period 0605 to 0611



\*Experimental\*

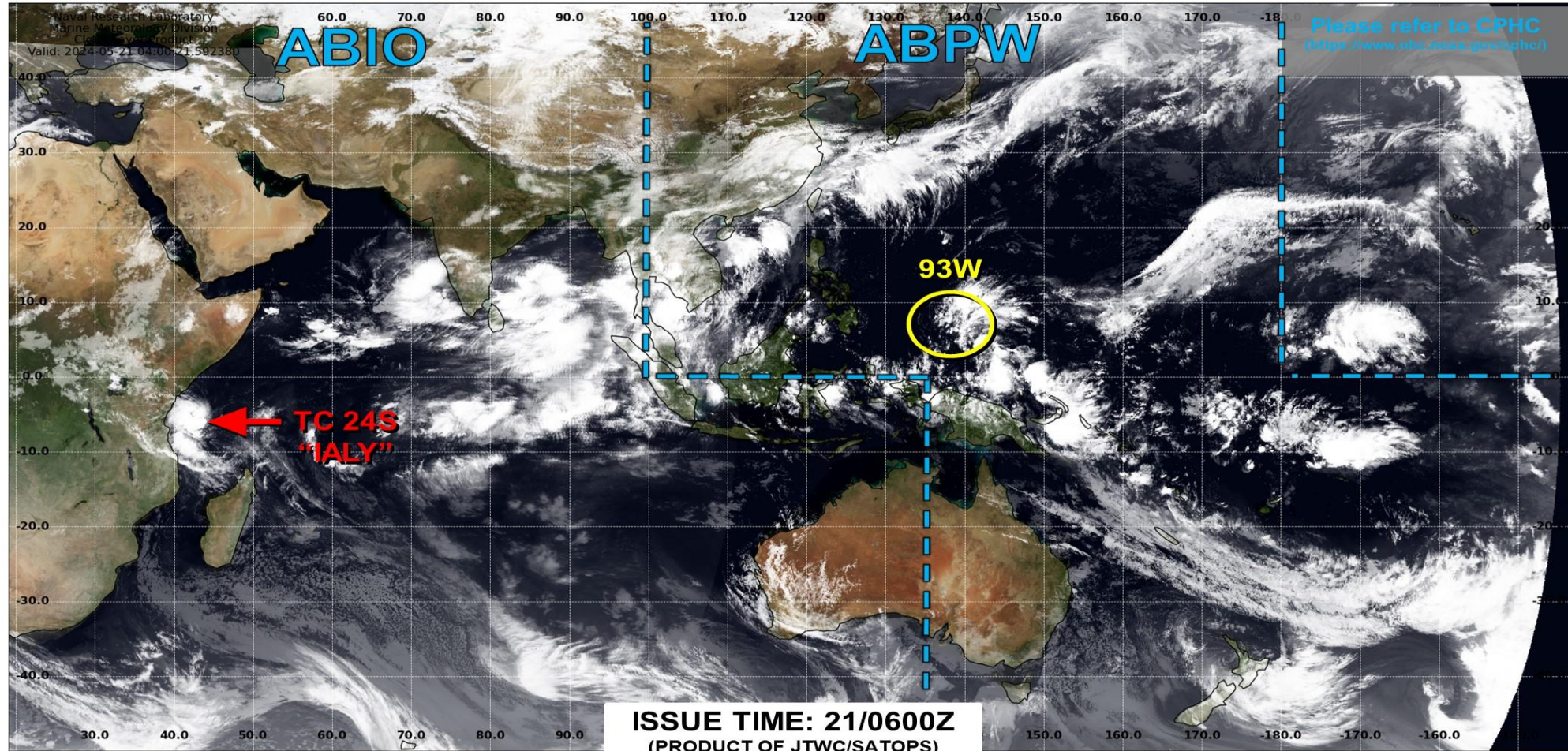
# Tropical Cyclone Monitoring/Forecast: NHC / CPHC



# Tropical Cyclone Monitoring/Forecast: JTWC



## JOINT TYPHOON WARNING CENTER



TC development unlikely within 24 hours



TC development likely, but expected to occur beyond 24 hours



TC development likely within 24 hours (Reference TCFA)



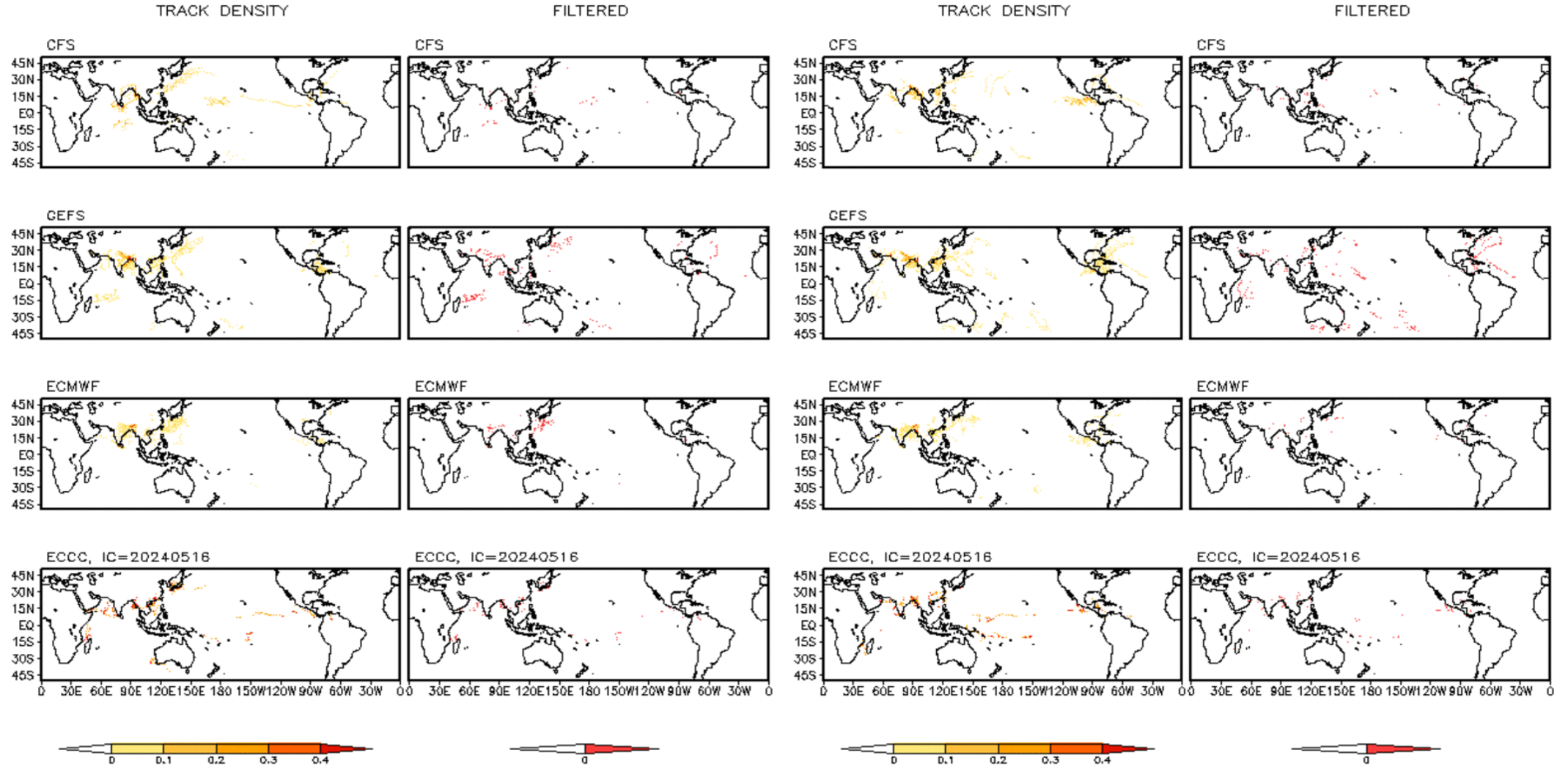
Monitoring for potential transition to TC. Invest label color denotes tropical transition probability



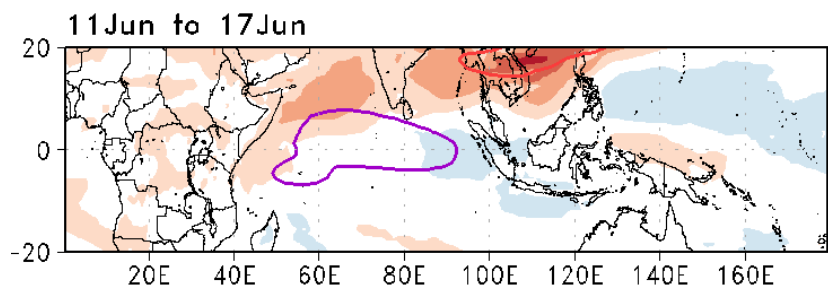
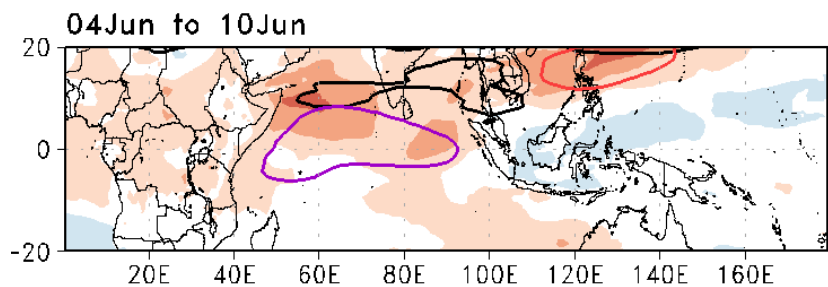
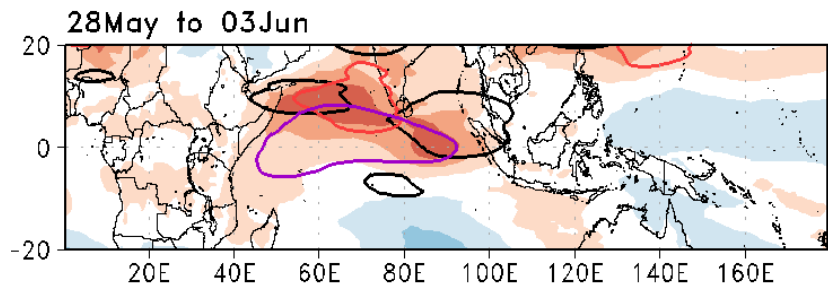
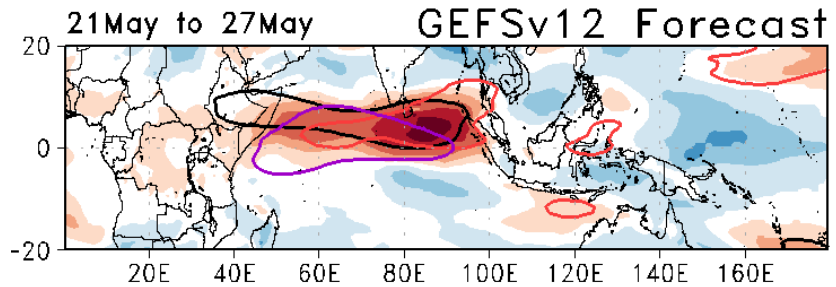
# Multi-Model TC Track Densities: Weeks 2+3

Storm Track Density Distribution, IC=20240520  
Week 2 Forecast: 0529-0604

Storm Track Density Distribution, IC=20240520  
Week 3 Forecast: 0605-0611

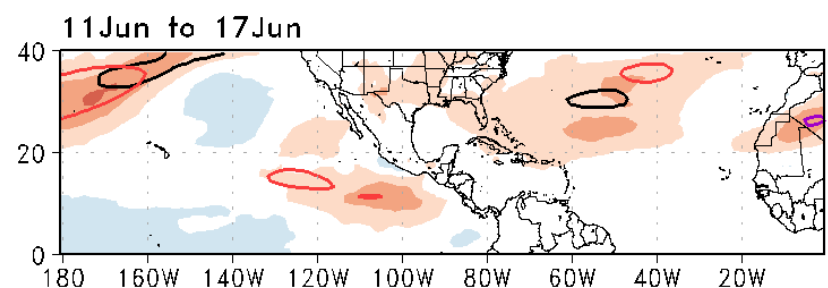
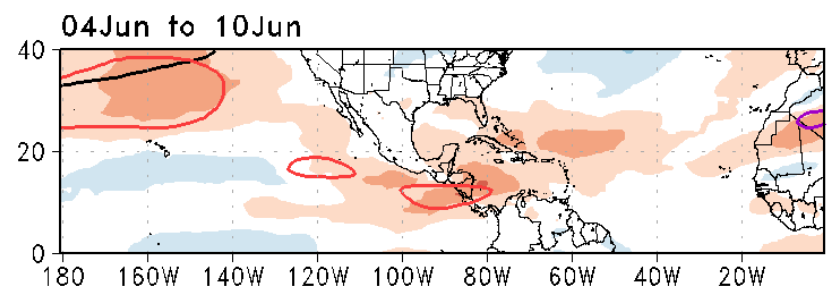
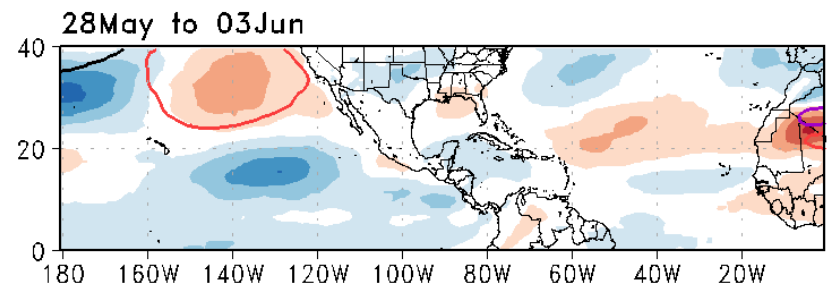
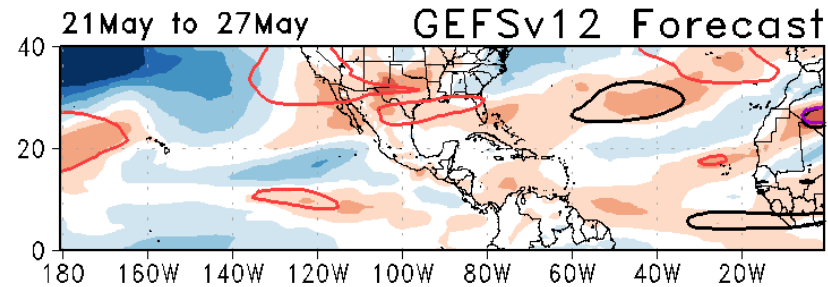


# -Day Means



— MJO      — Kelvin\*2  
— Low      — ER  
Contours at 2, 6 m s<sup>-1</sup>

# -Day Means

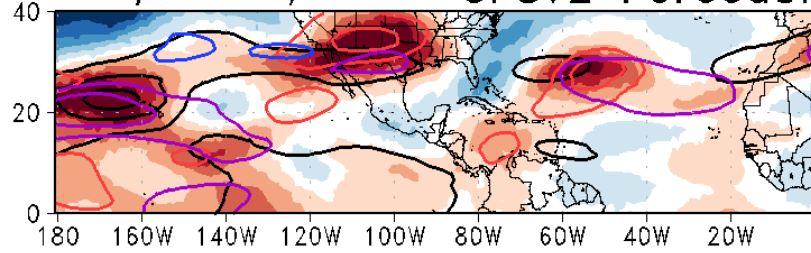


— MJO      — Kelvin\*2  
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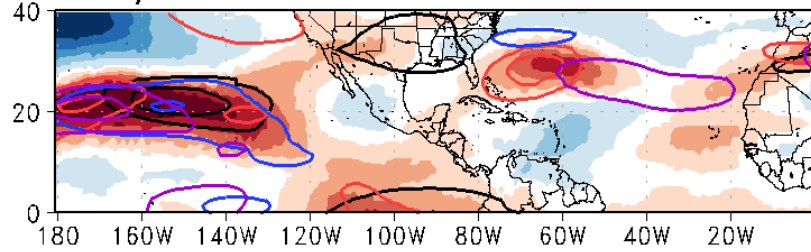
# -Day Means

21May to 27May

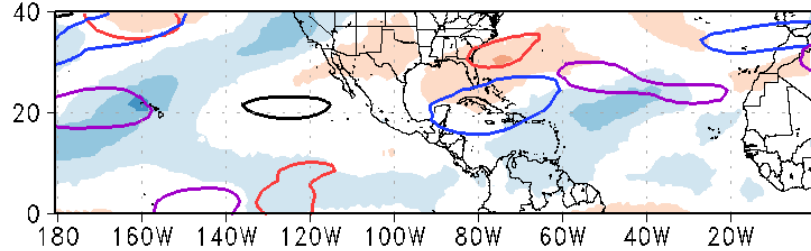
CFSv2 Forecast



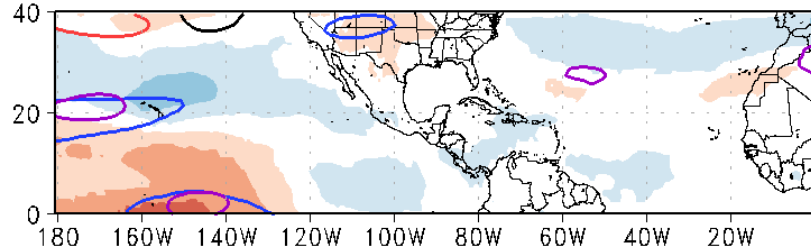
28May to 03Jun



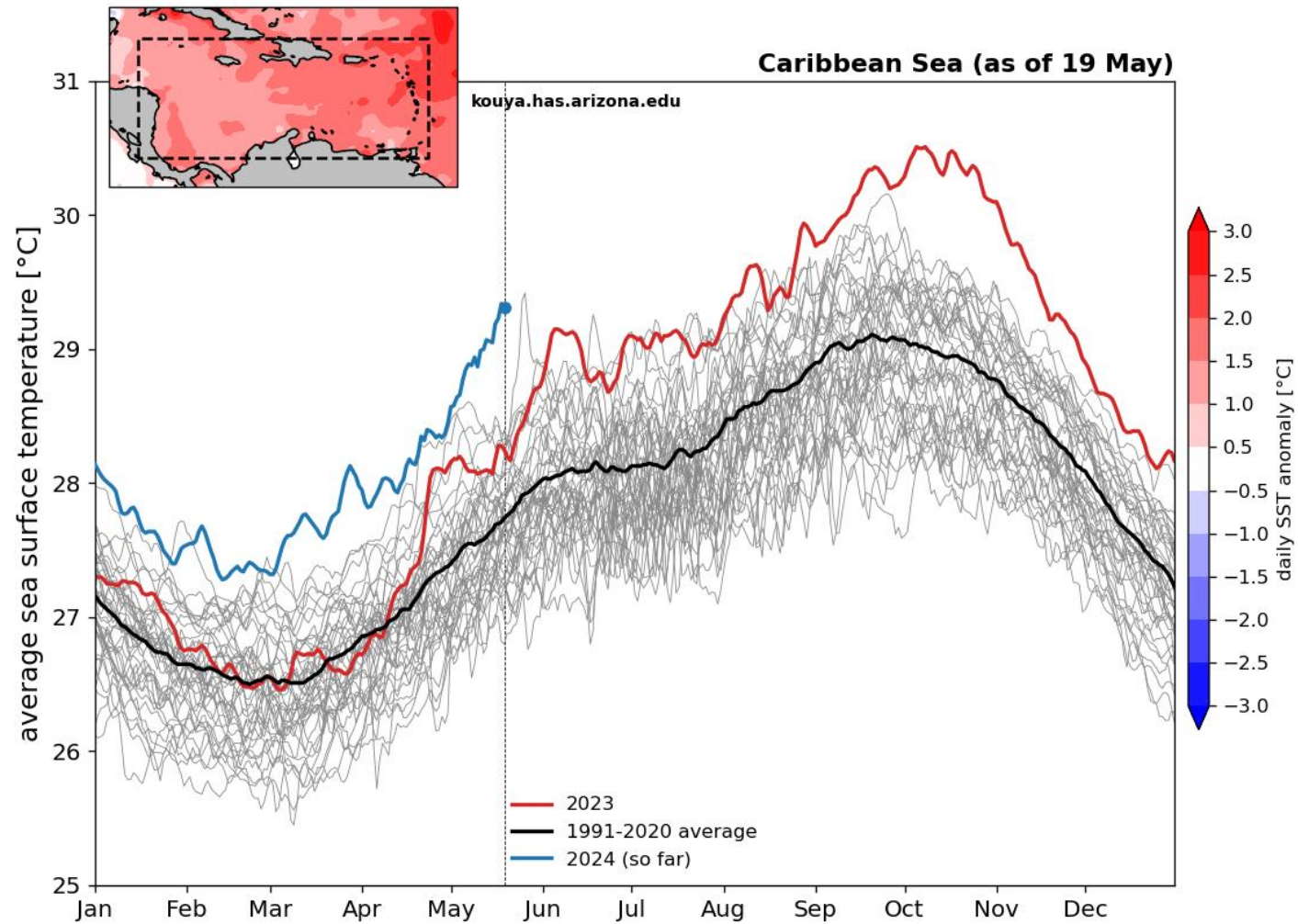
04Jun to 10Jun



11Jun to 17Jun



— MJO      — Kelvin\*2  
— Low      — ER  
Contours at 4 m s<sup>-1</sup>

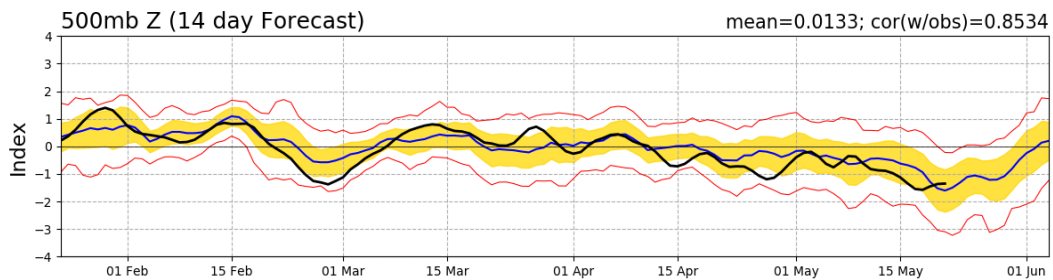
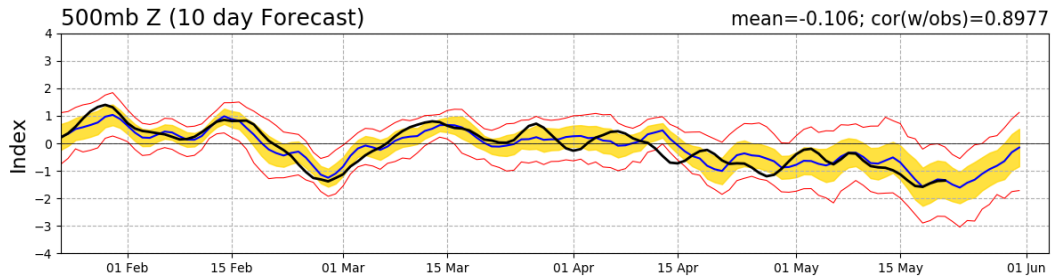
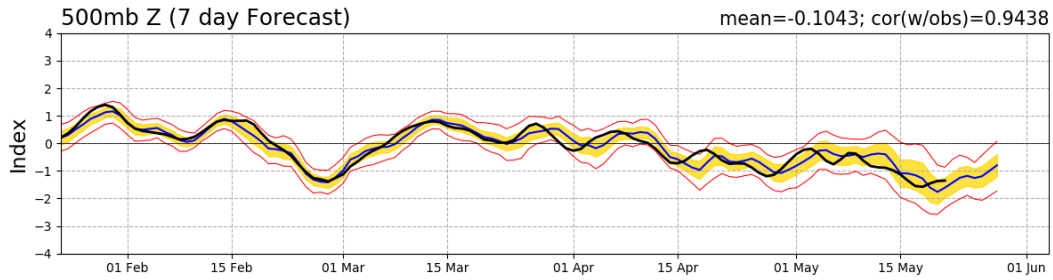
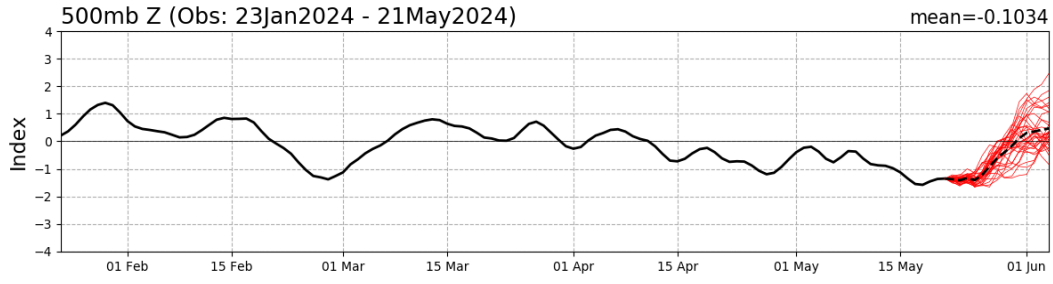


powered by NOAA THREDDS + Python

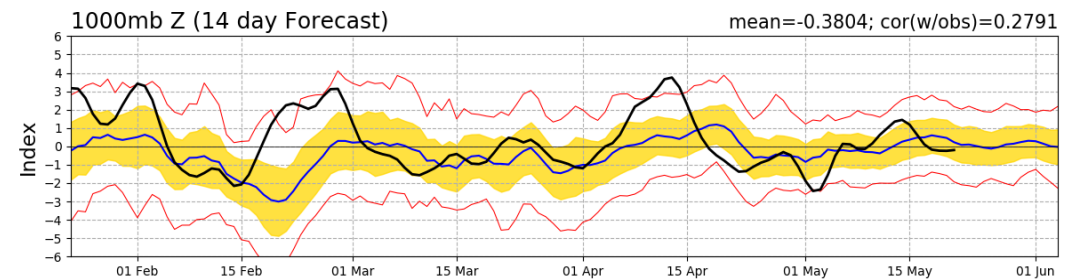
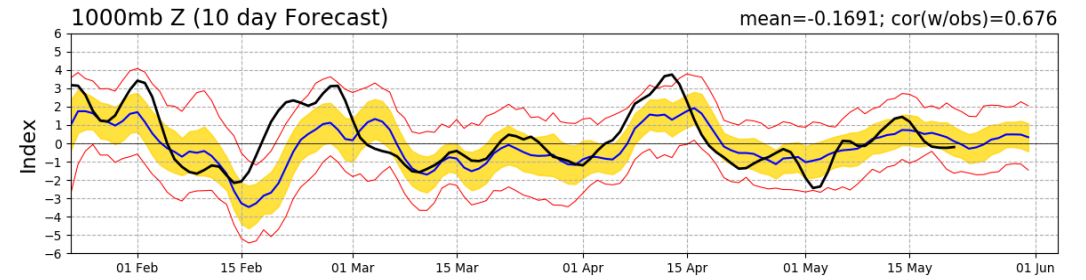
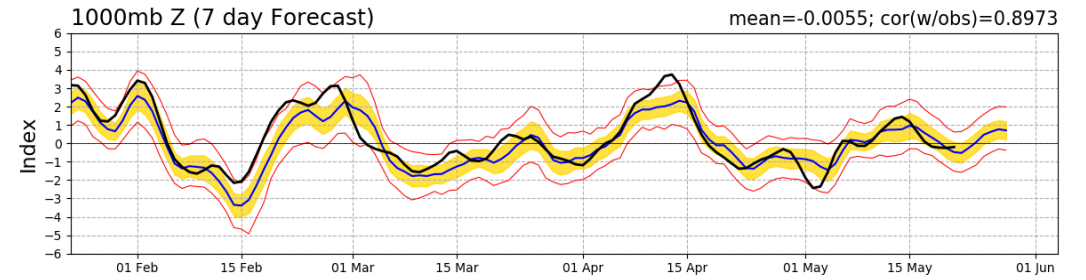
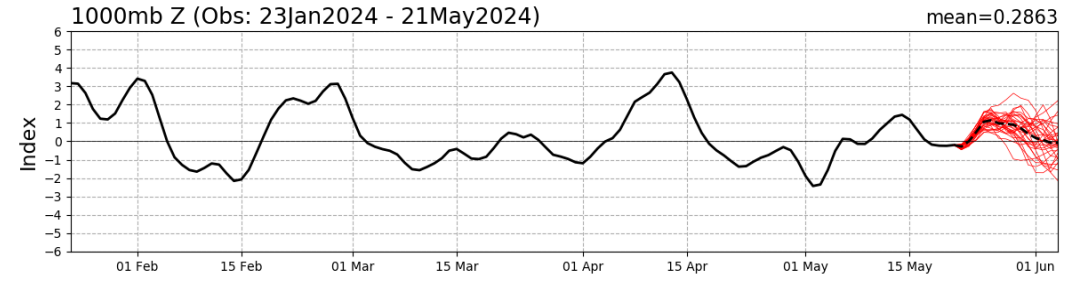
source: NOAA OISST

# Teleconnection Indices: PNA / AO:

## PNA Index: Observed & GEFS Forecasts

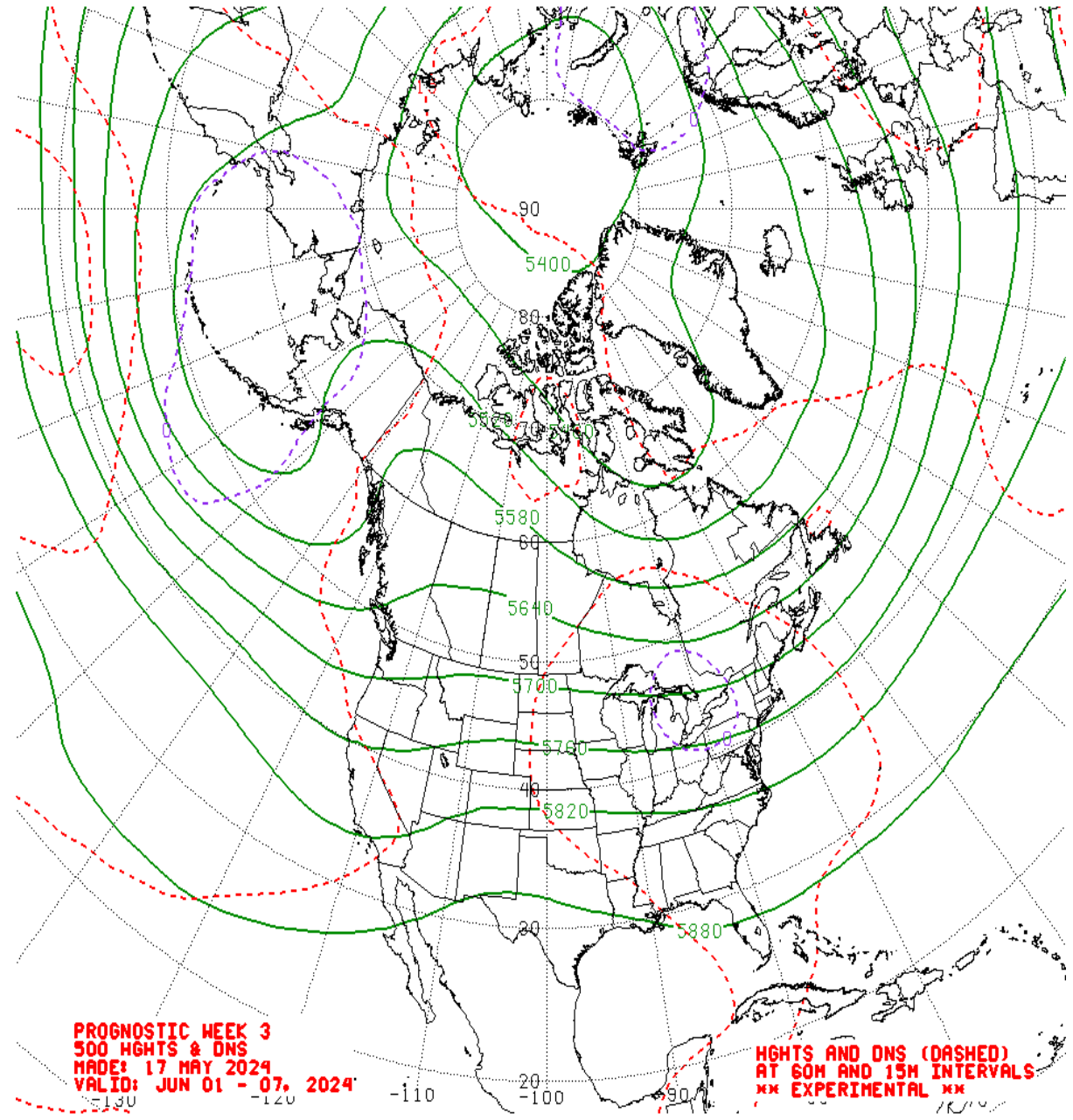
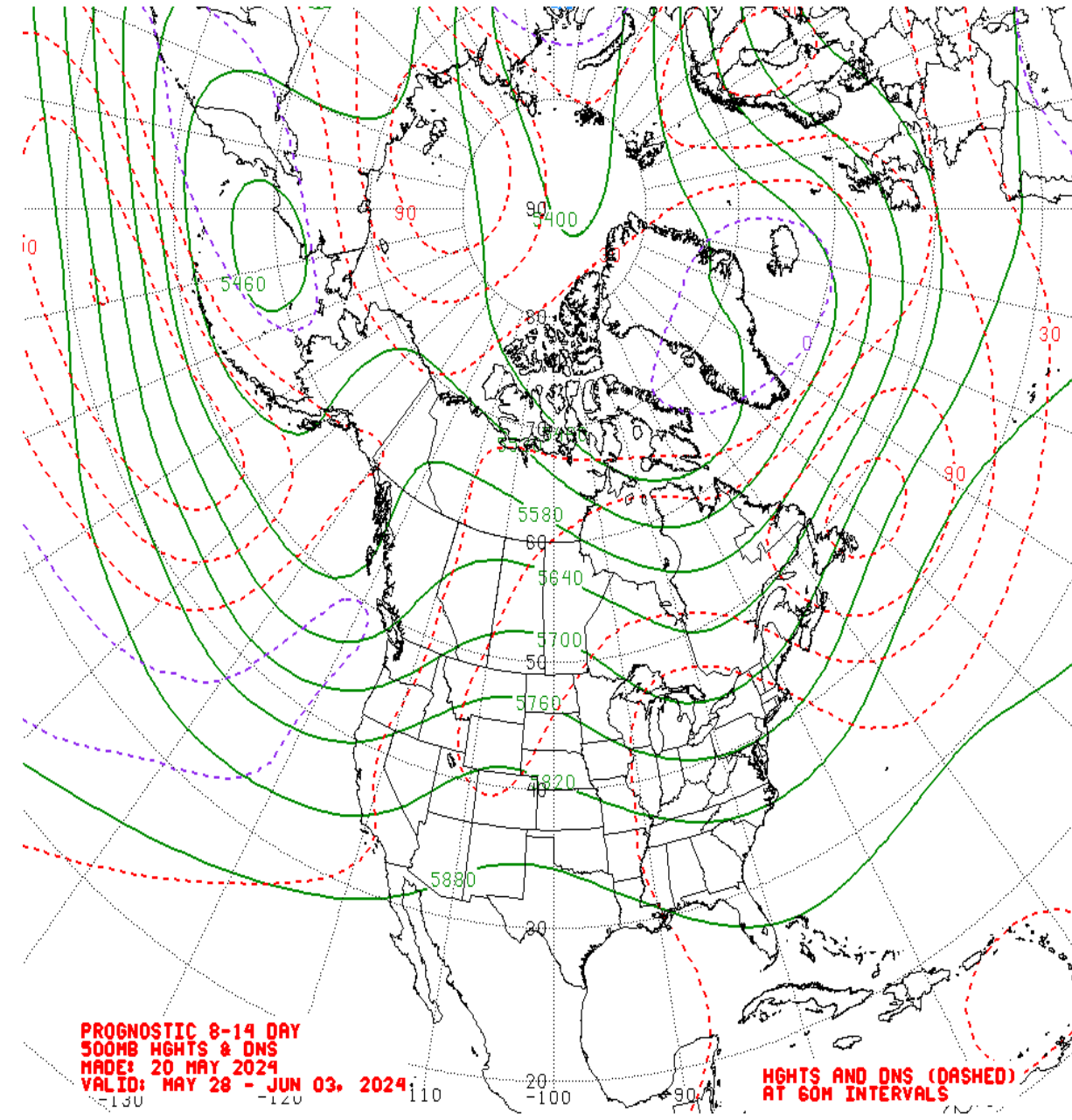


## AO Index: Observed & GEFS Forecasts

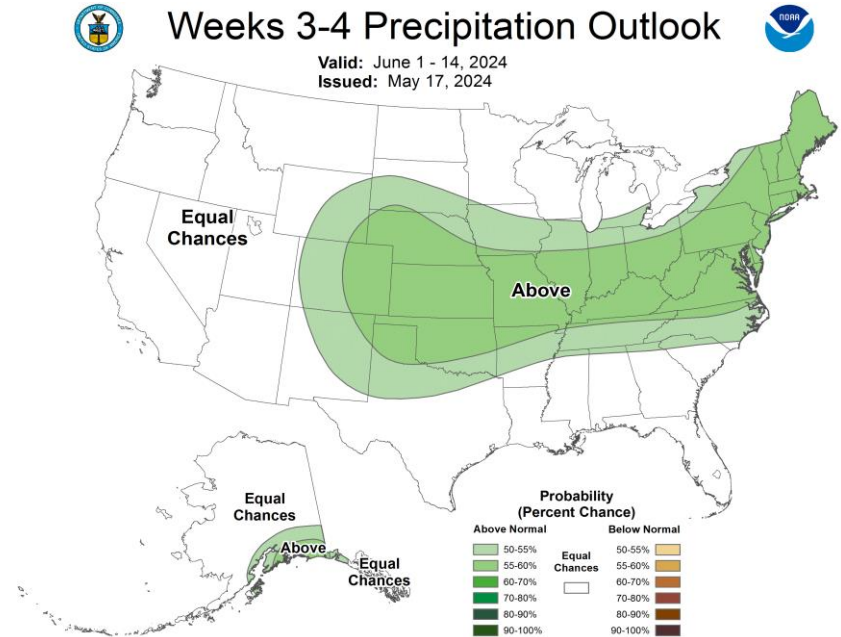
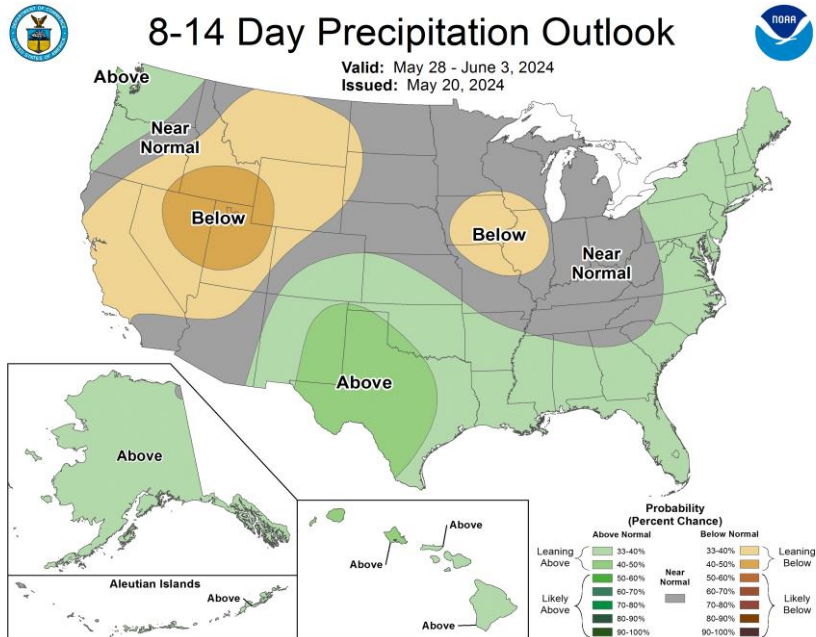
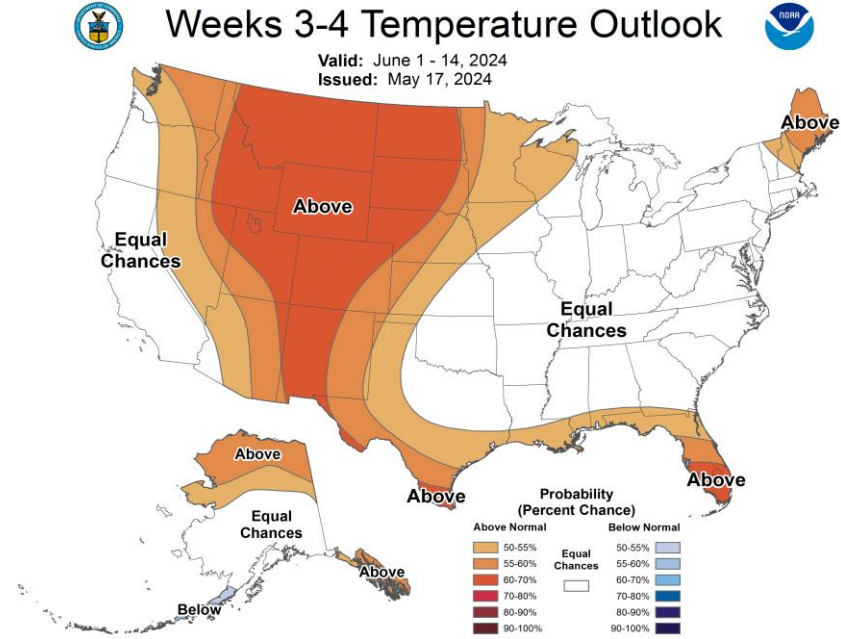
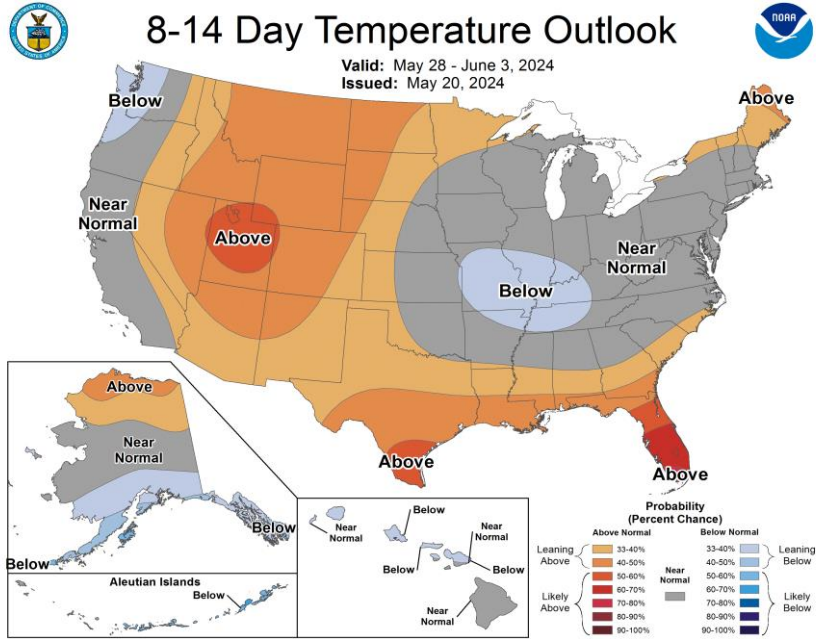




# Mean 500-hPa Height Anomaly Forecasts: Weeks 2+3



# Official Temperature & Precipitation Forecasts:



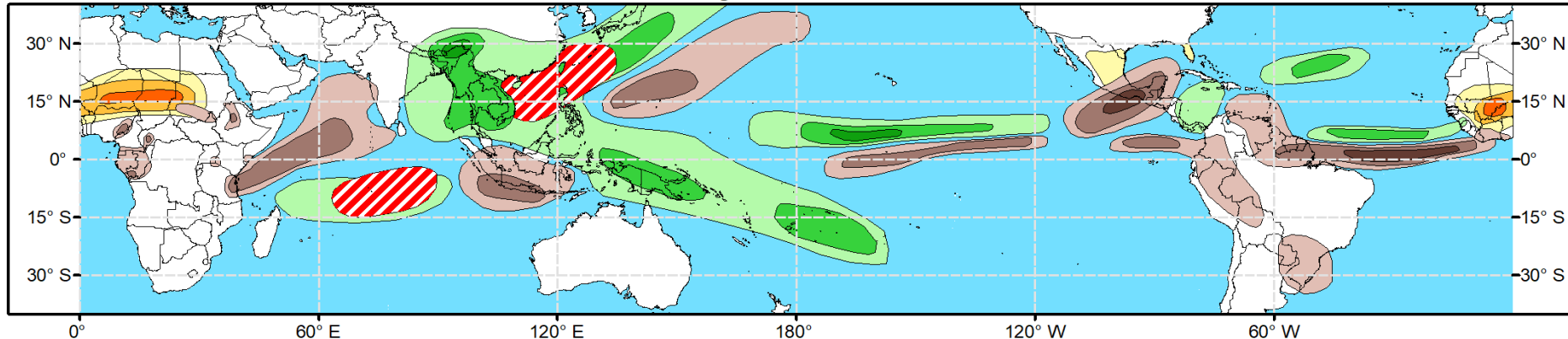


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Climate Prediction Center

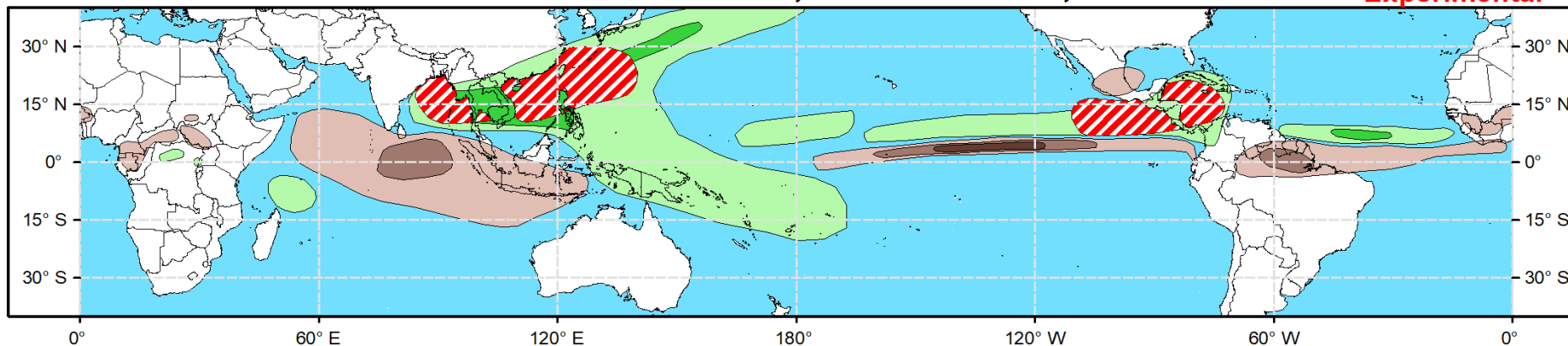


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