



# Weeks 2-3 Global Tropics Hazards Outlook

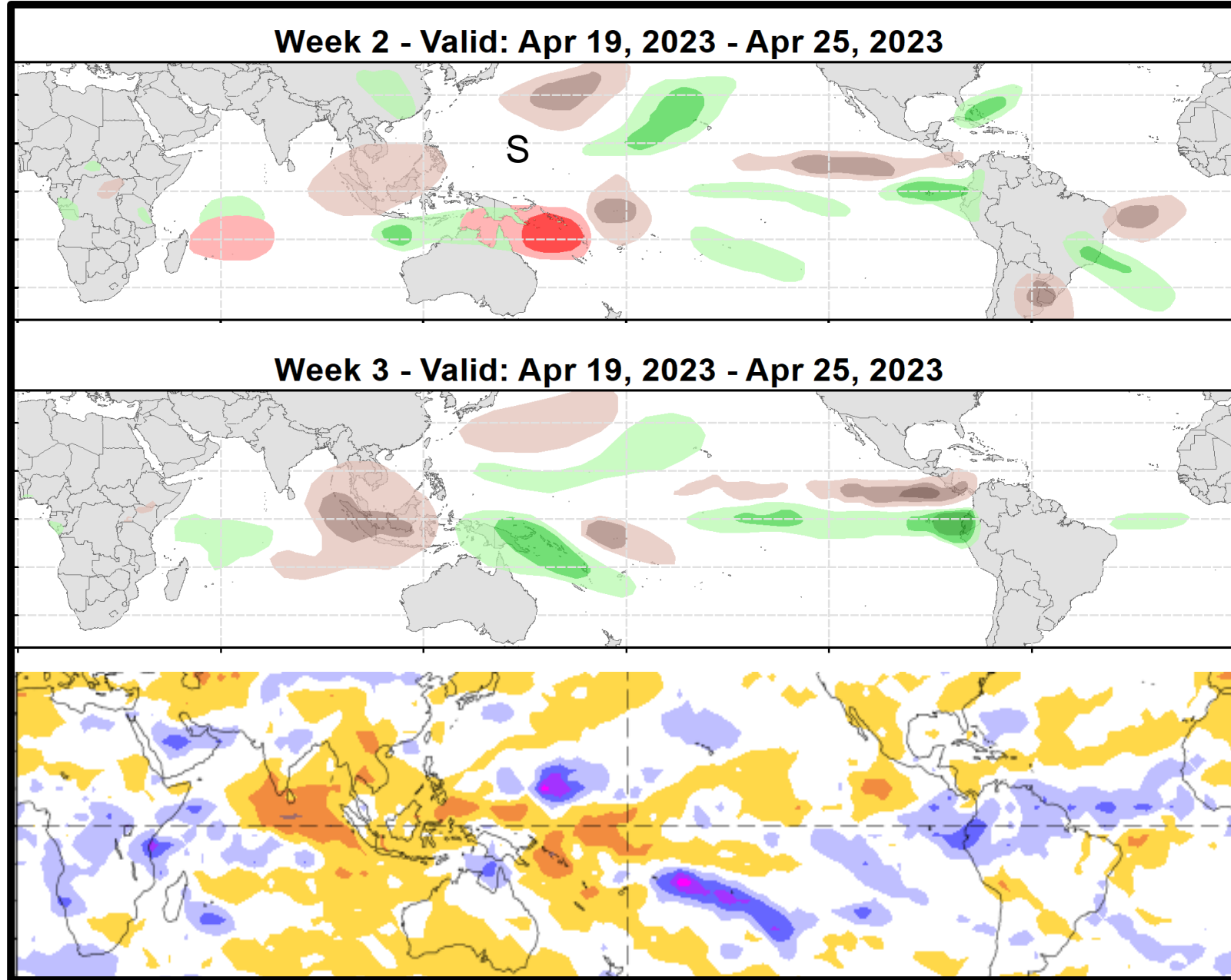
4/25/2023

Nick Novella

NWS / NCEP / Climate Prediction Center

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

- WPAC TC Sanvu (4/19):



# Synopsis of Climate Modes:

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**ENSO:** (Aug 11, 2022 Update)      *next update on Thursday, Sep 8<sup>th</sup>*

- ENSO Alert System Status: [El Niño Watch](#)
- ENSO neutral conditions are expected to continue through the Northern Hemisphere spring, followed by a 62% chance of El Niño developing during May-July 2023.

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

- Well-organized MJO activity remains evident in the RMM based index and upper-level velocity potential fields where the leading edge of the enhanced convective phase cross the Prime Meridian and is centered over Africa.
- Despite the a loss of amplitude depicted in the RMM forecasts as the MJO crosses the Indian Ocean, robust MJO activity is favored to continue at a relatively phase speed, reaching the Maritime Continent and possibly the western Pacific during the next several weeks.
- Given these conditions, the large-scale environment is expected to become increasingly more favorable for tropical cyclogenesis over the Indian Ocean and western Pacific later in May.
- Although extratropical linkages become less clear during the boreal spring, there is some historical support for Maritime Continent MJO events leading to increasing mid-level heights and above-normal temperature over the central and eastern U.S. later in May.

# GTH Outlook:

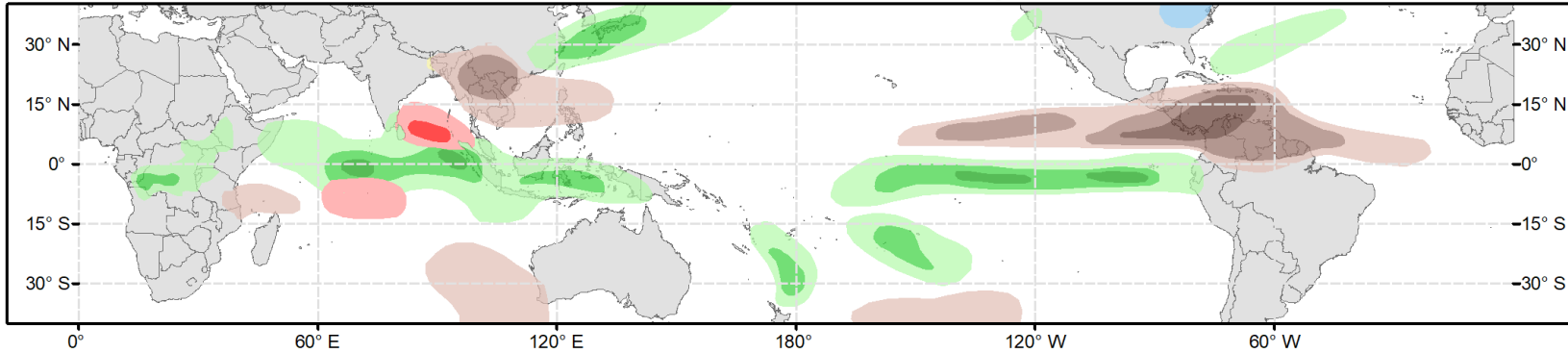


## Global Tropics Hazards Outlook

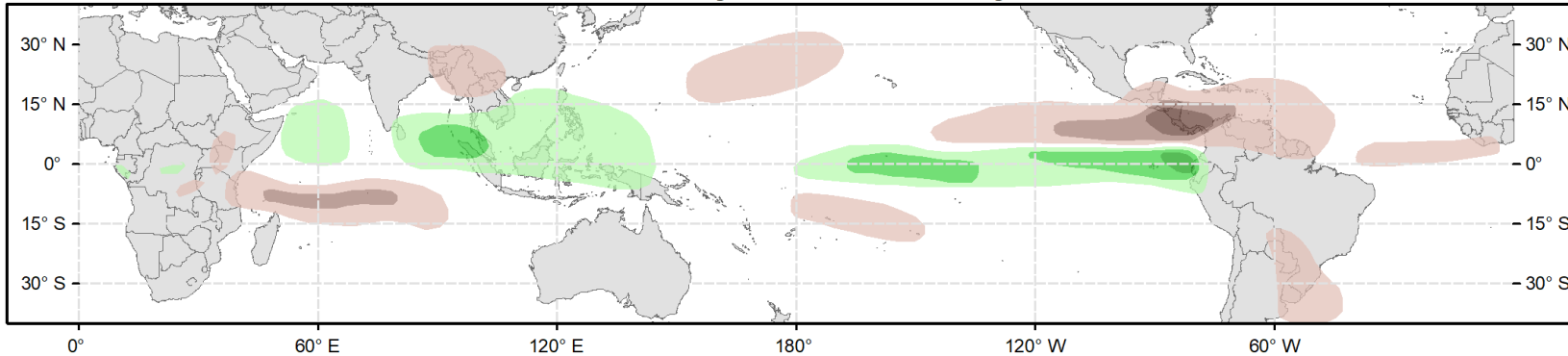
Climate Prediction Center



**Week 2 - Valid: May 03, 2023 - May 09, 2023**



**Week 3 - Valid: May 10, 2023 - May 16, 2023**



**Week-2 Only**

**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**

>50% >65% >80%

*Weekly total rainfall in the Lower third of the historical range*

**Above-Average Temperatures Probability**

>50% >65% >80%

*7-day max temperatures in the Upper third of the historical range*

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*7-day min temperatures in the Lower third of the historical range*

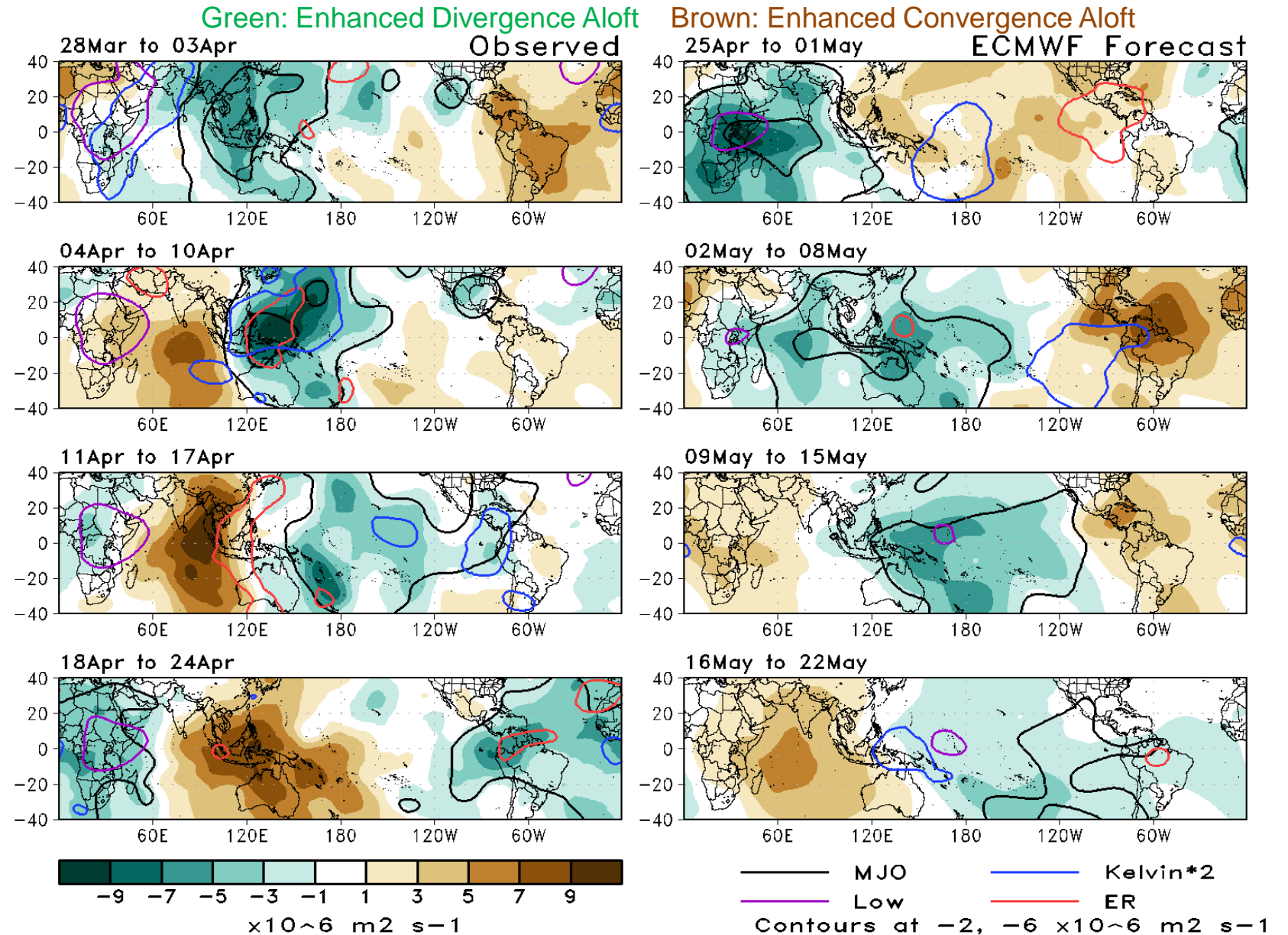
Issued: 04/25/2023

Forecaster: Novella

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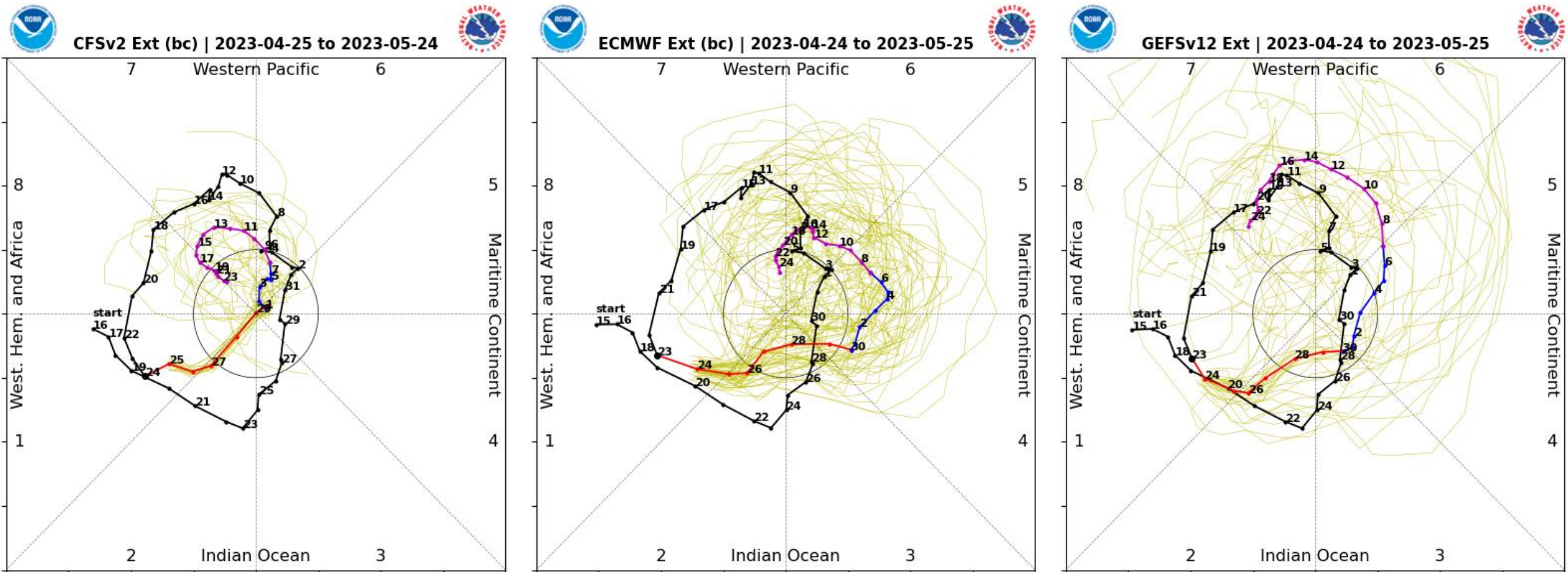
# 200-hPa Velocity Potential Anomaly Maps:

- Robust MJO activity is depicted in the velocity potential observations and forecasts, with Kelvin wave activity moving ahead of the main convective envelope.
- The ECWMF is consistent with GEFS forecasts, albeit slower with the convective envelope during the next several weeks.



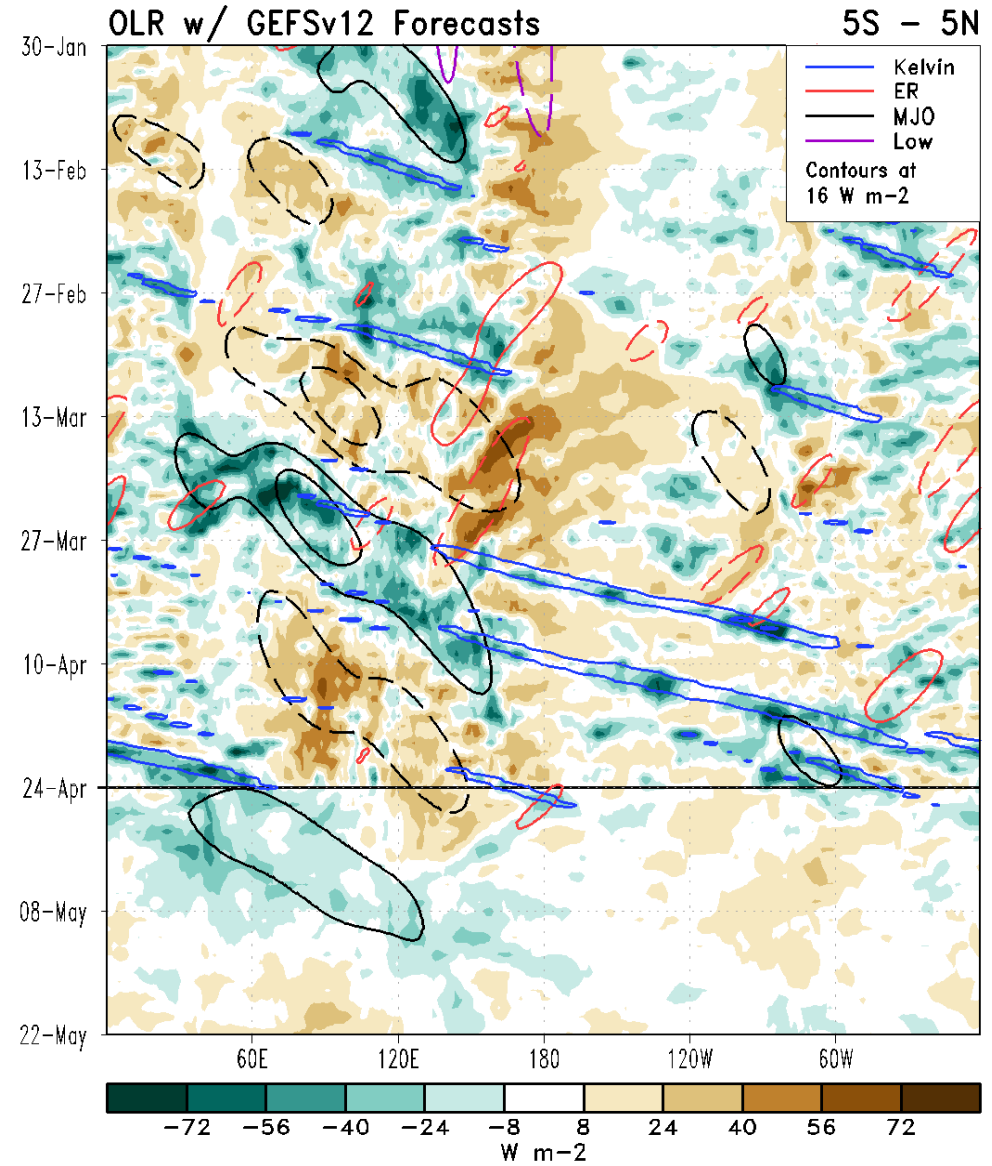
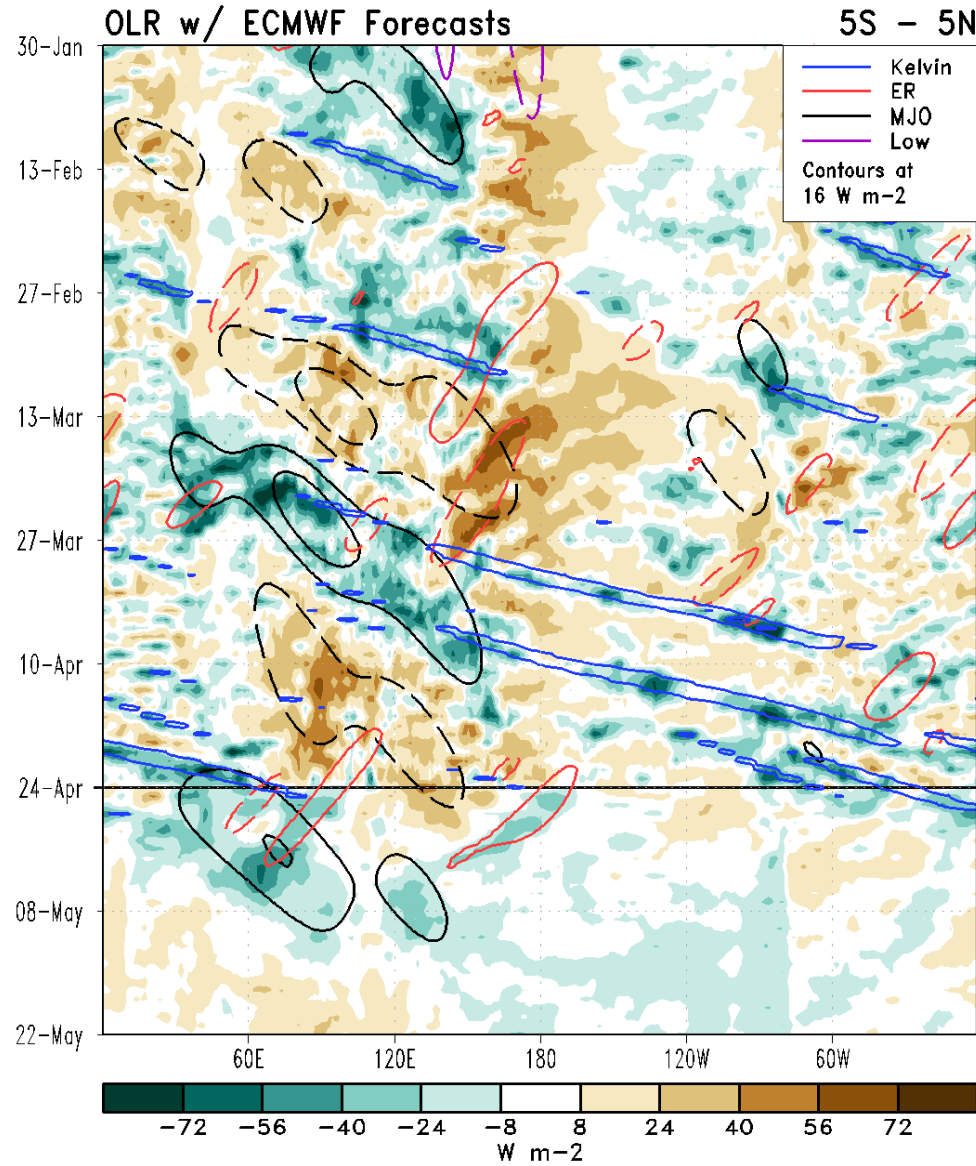


# RMM Index Observations & Forecasts:



- Since last week, RMM forecast continue to point to a loss of amplitude over the Indian Ocean which is at odds with the velocity potential forecast guidance. This is likely due to competing interference with other tropical wave modes.
- Beyond week-1, both the GEFs and ECWMF RMM forecasts favor a potentially stronger signal emerging over the Maritime Continent and into the western Pacific.

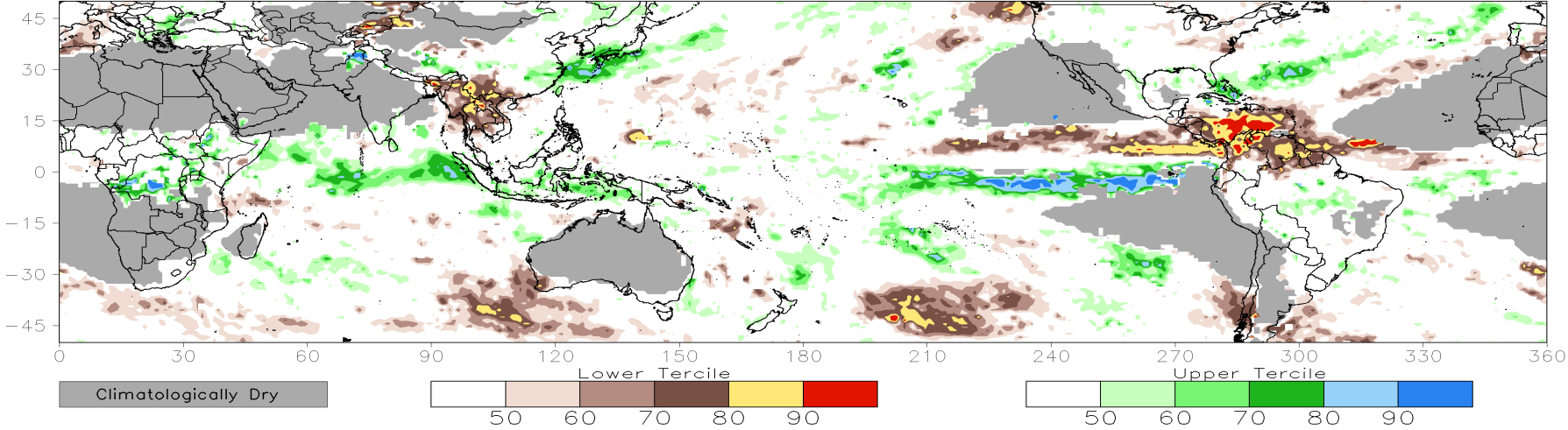
# Outgoing Longwave Radiation (OLR) Anomaly Time/Lon Plots:



# Consolidated Probabilistic Precipitation: Weeks 2 & 3

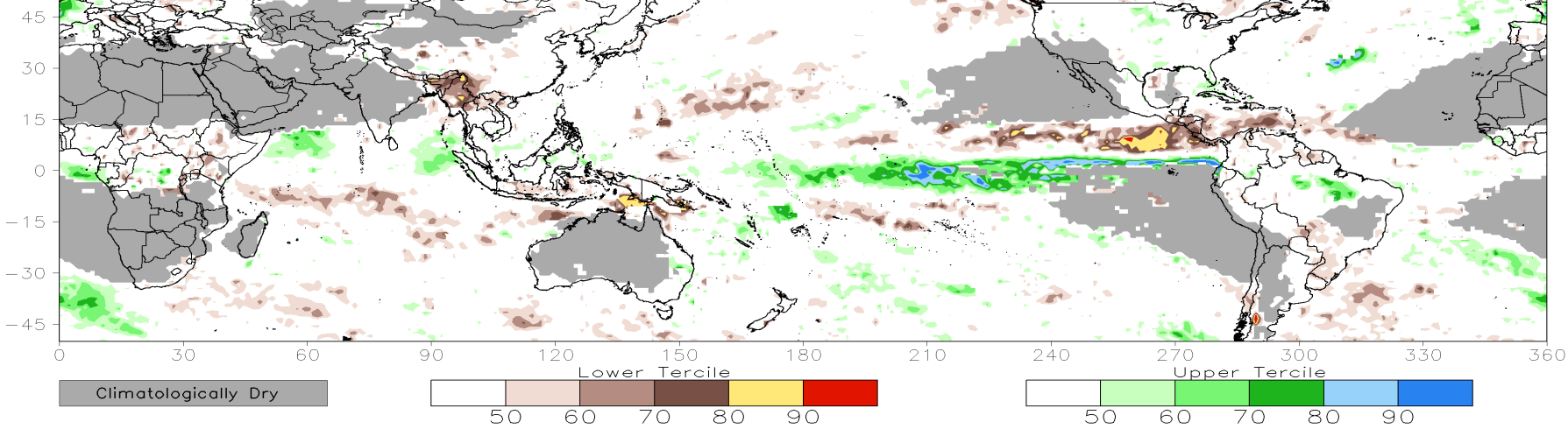
CONS 00z: Week2 Probability for Total Rainfall Below(Above) Lower(Upper) Tercile (%)

Valid: 03May2023-09May2023



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

Valid: 10May2023-16May2023

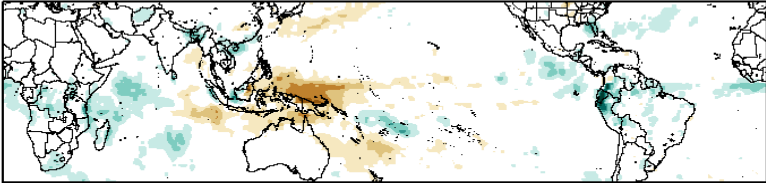




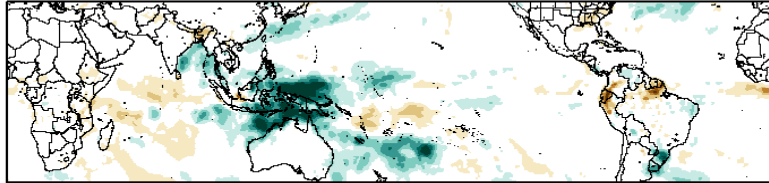
# Historical Precipitation Anomalies By MJO Phase:

MAM MJO Composite: GPCP1DD (mm/day)

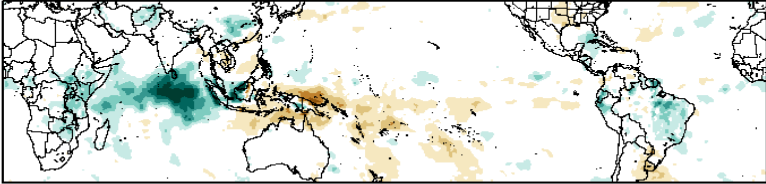
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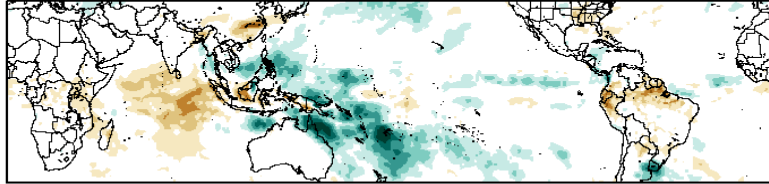
Phase 5



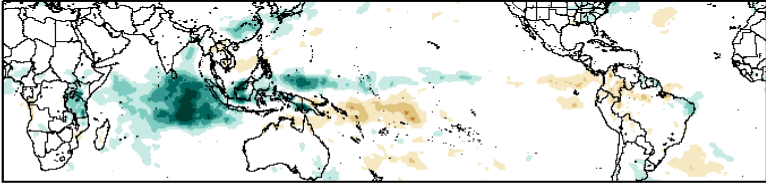
Phase 2



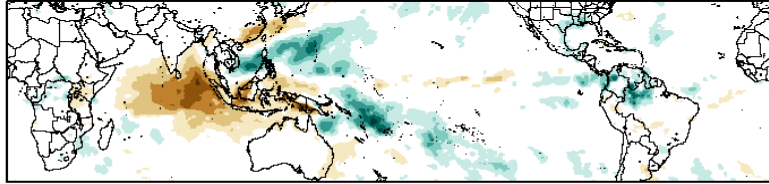
Phase 6



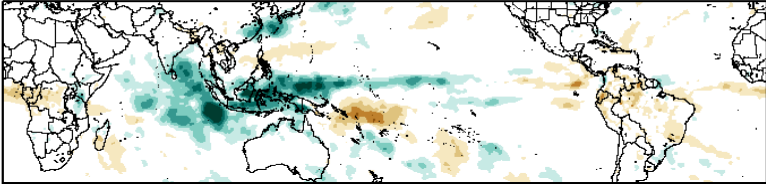
Phase 3



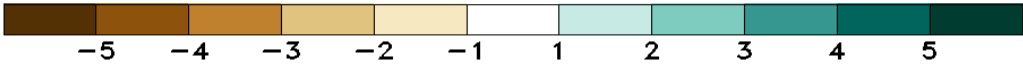
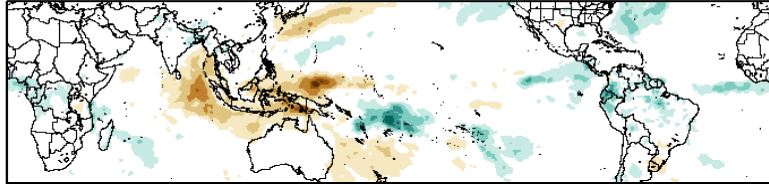
Phase 7



Phase 4



Phase 8

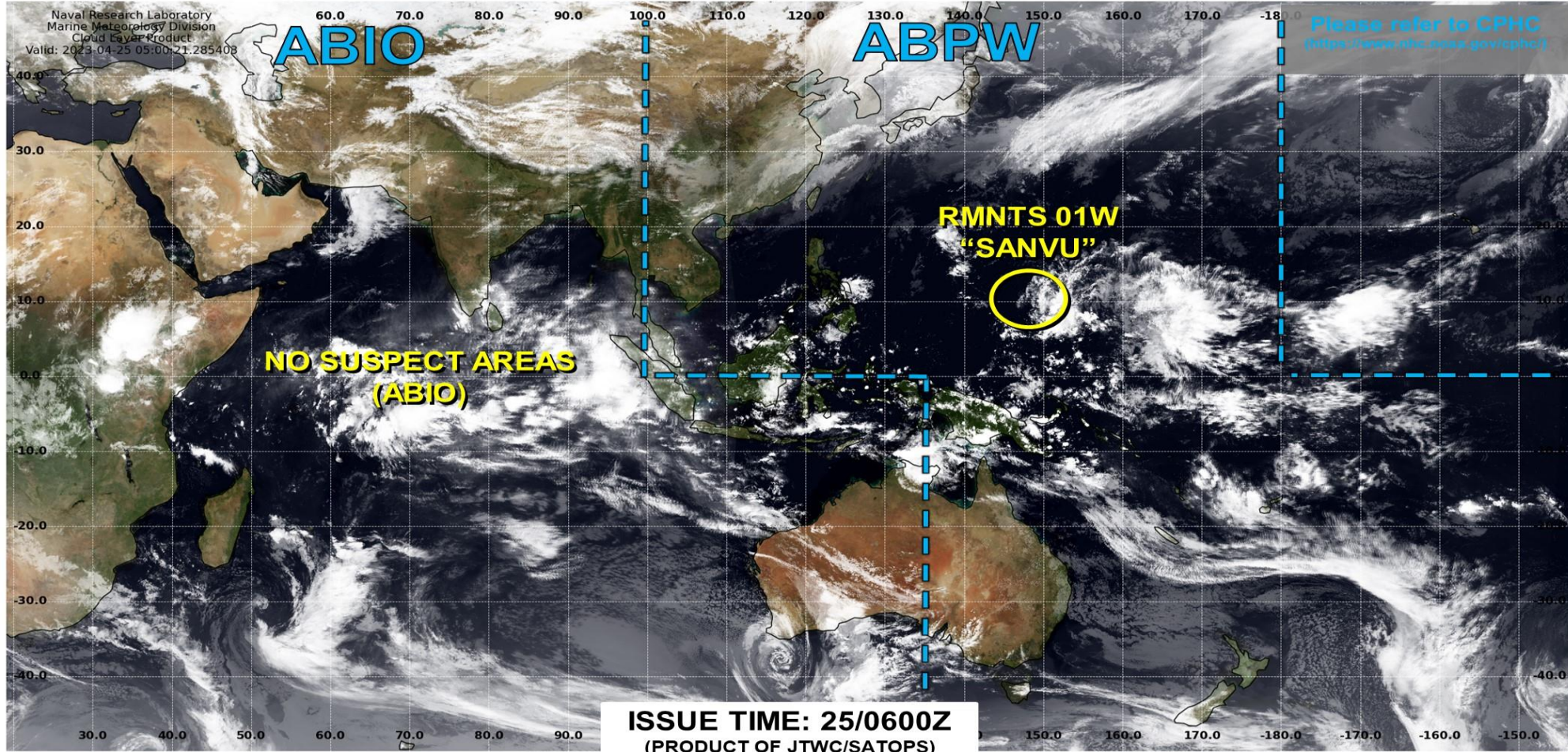




# Tropical Cyclone Monitoring/Forecast: JTWC



## 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)

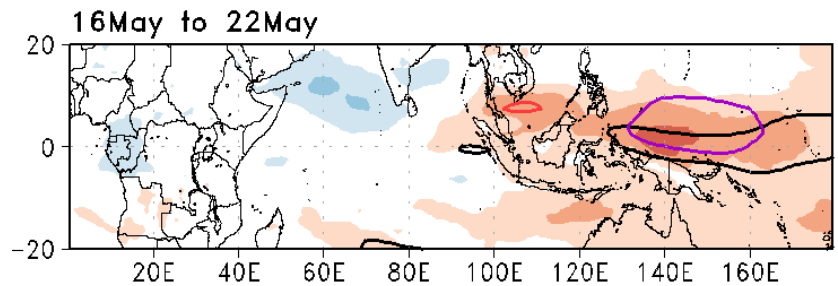
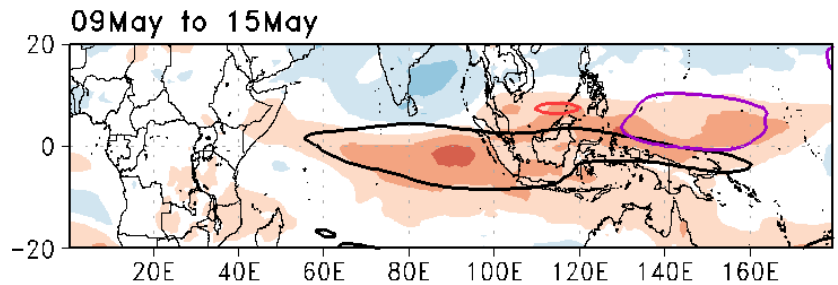
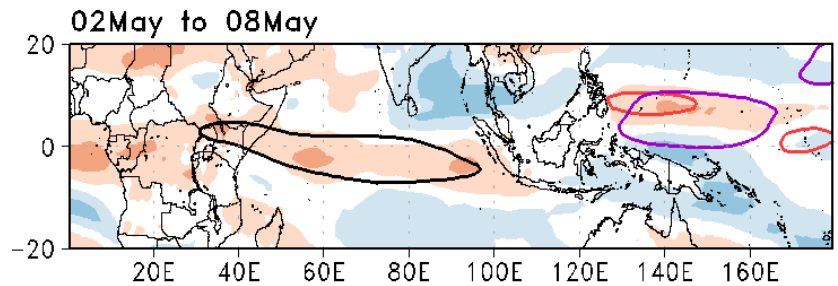
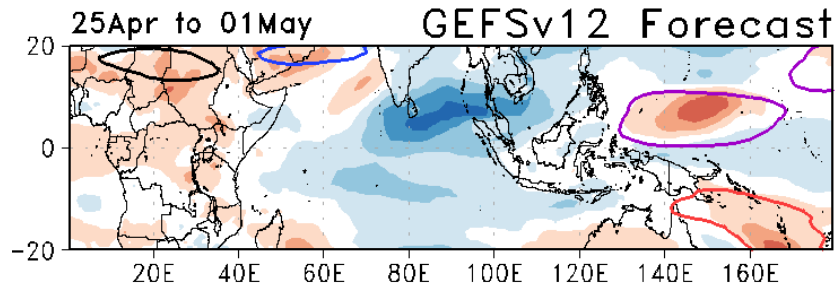


Monitoring for potential transition to TC. Invest label color denotes tropical transition probability

 Tropical Cyclone (Reference Warning)

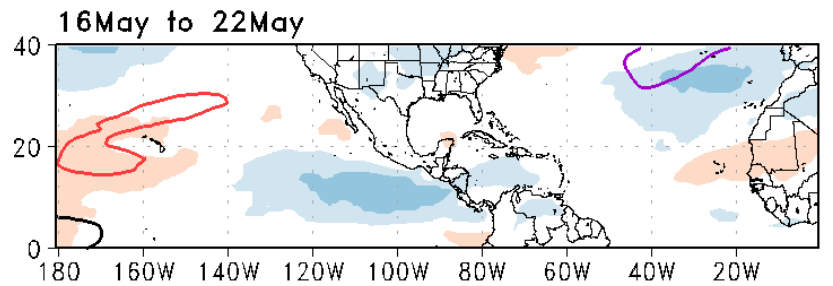
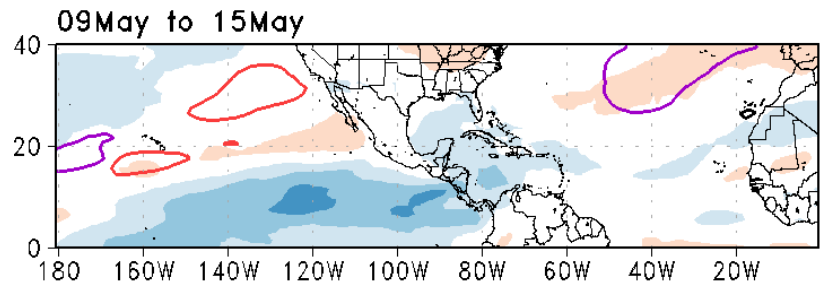
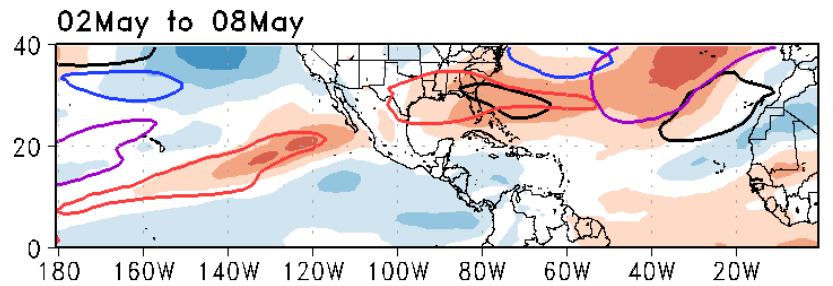
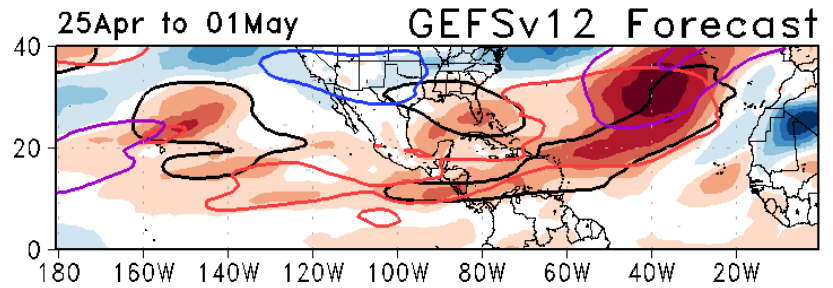


# '-Day Means



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

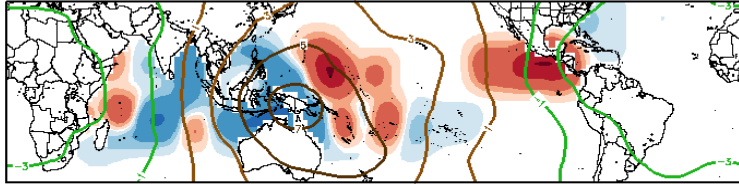
# -Day Means



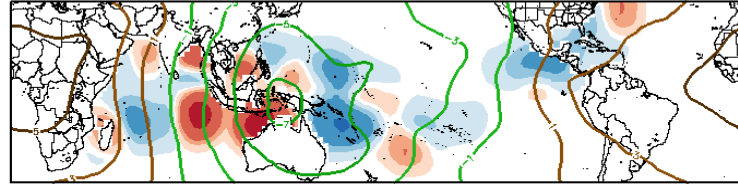
— MJO      — Kelvin\*2  
— Low      — ER  
Contours at 2, 6 m s<sup>-1</sup>

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

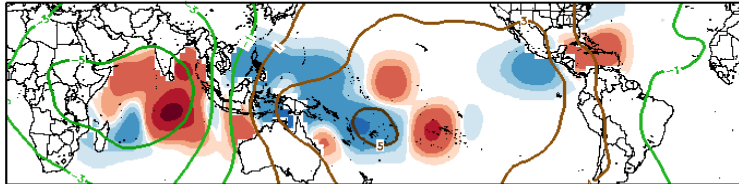
MAM MJO Composite: Mean TC Origin Density Anomaly ( $\#TCs/277km^2*100$ )  
w/ MAM CHI200 ( $\times 10^{-6} m^{-2} s^{-1}$ ) / Contours every  $2 \times 10^{-6} m^{-2} s^{-1}$



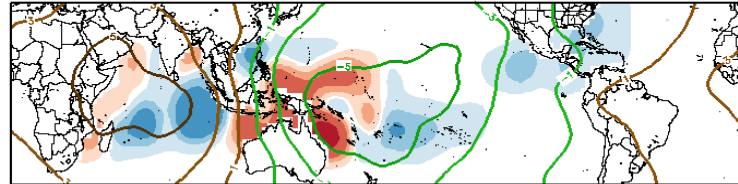
Phase 1



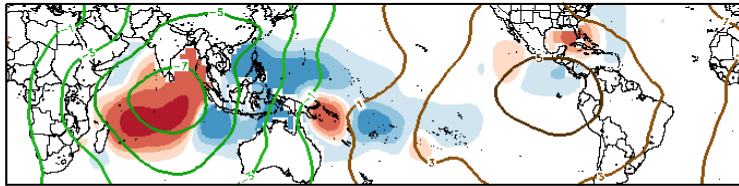
Phase 5



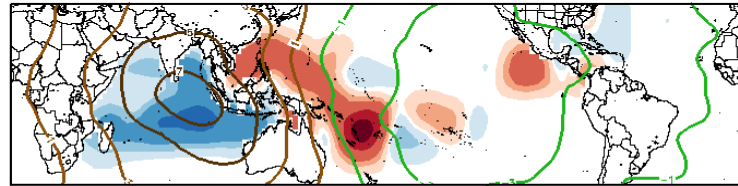
Phase 2



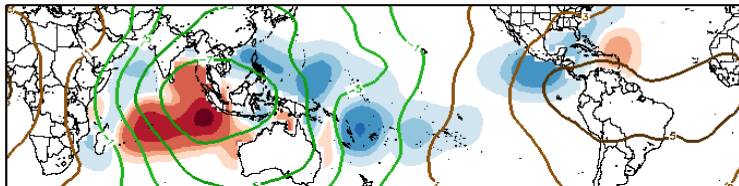
Phase 6



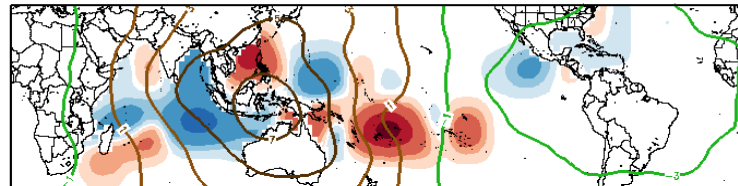
Phase 3



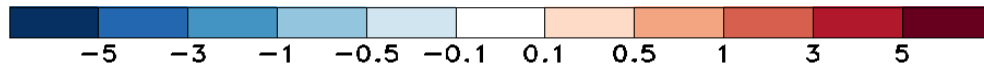
Phase 7



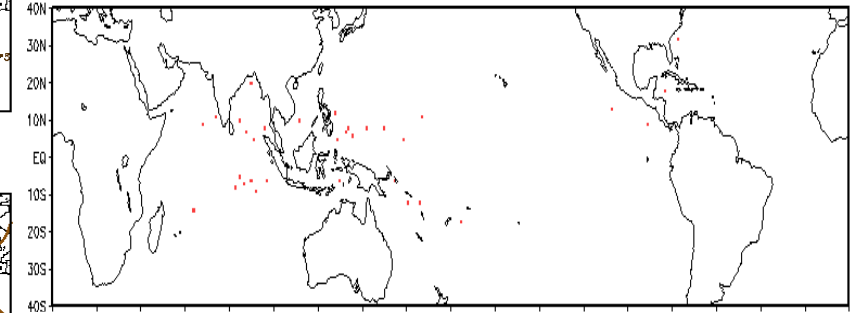
Phase 4



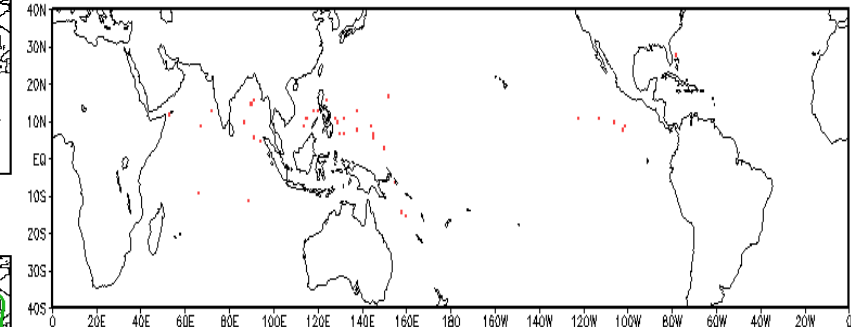
Phase 8



Observed TC Genesis, 1979-2021  
7-day Period 0503 to 0509



Observed TC Genesis, 1979-2021  
7-day Period 0510 to 0516

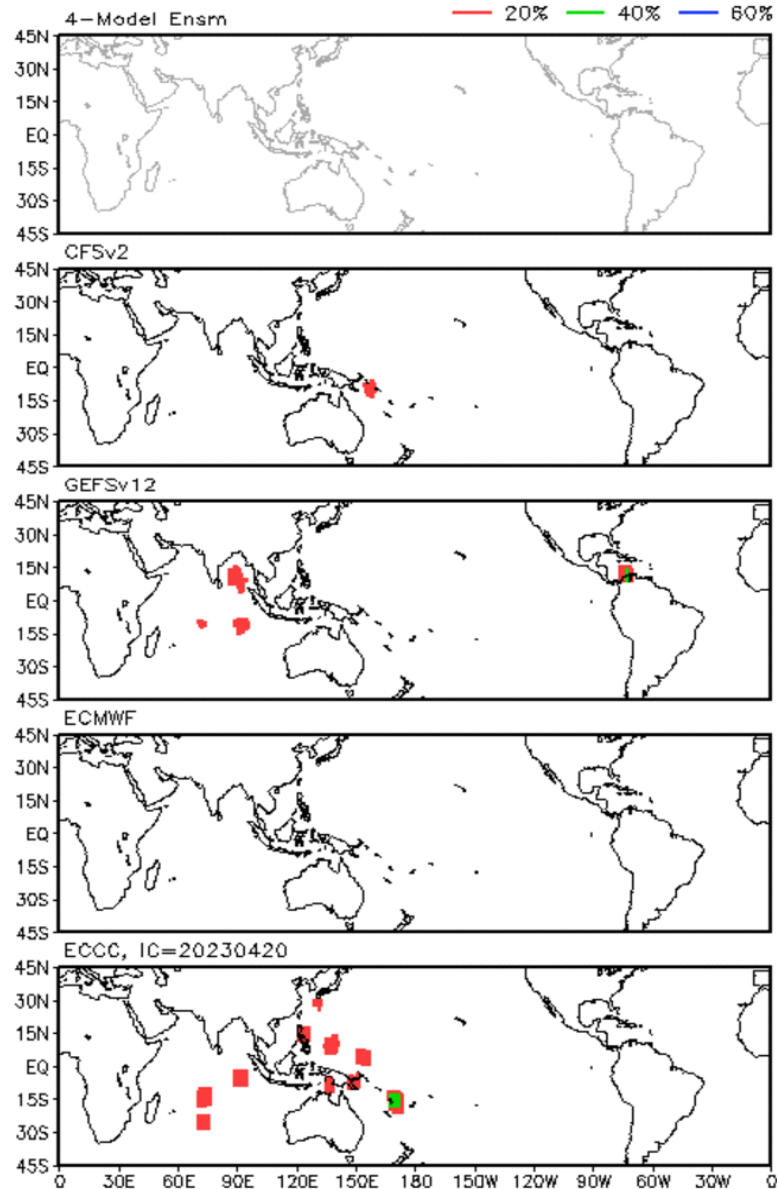


\*Experimental\*

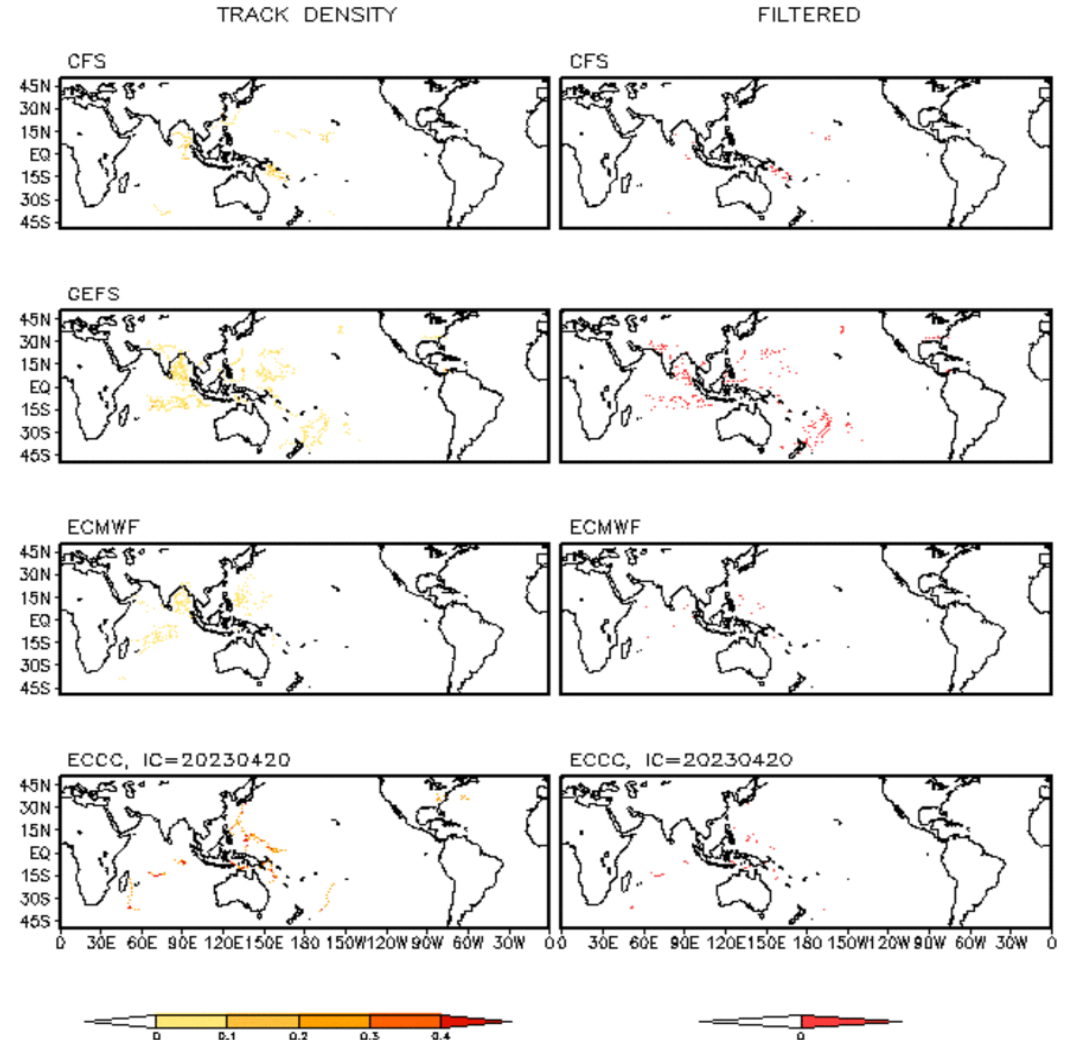


# Multi-Model TC Track Probabilities/Densities: Week-2

Storm Track Probabilities, IC=20230424  
Week 2: 0503 - 0509

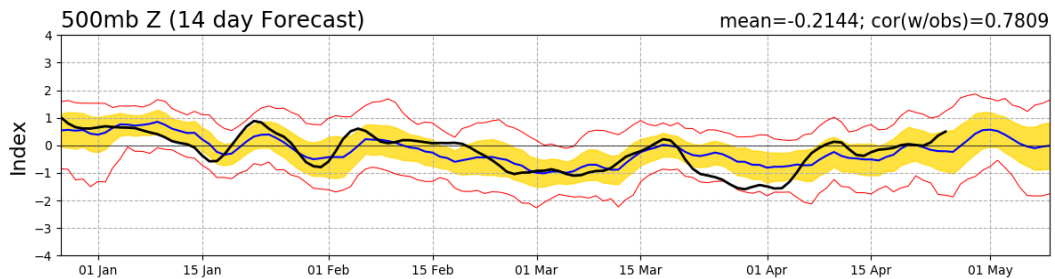
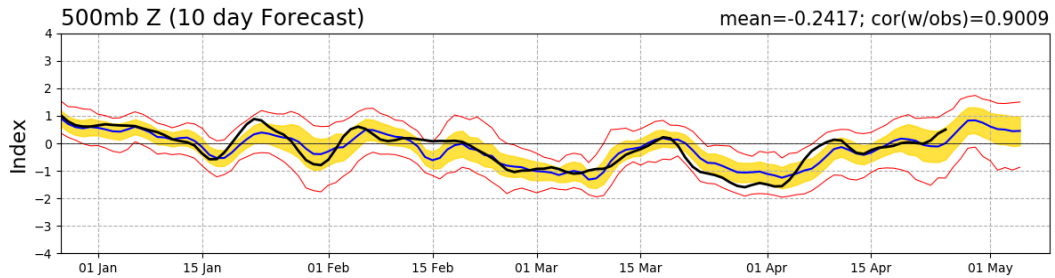
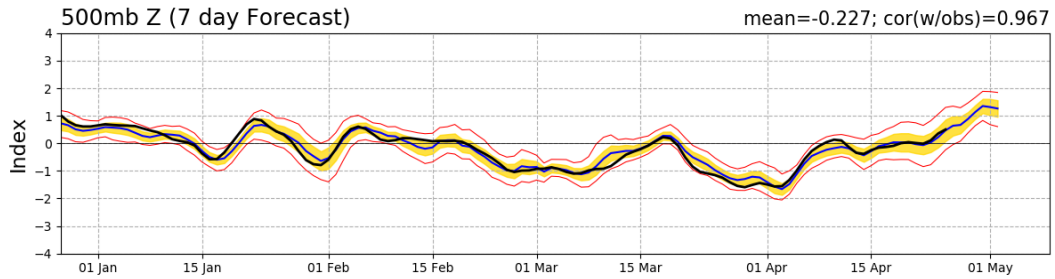
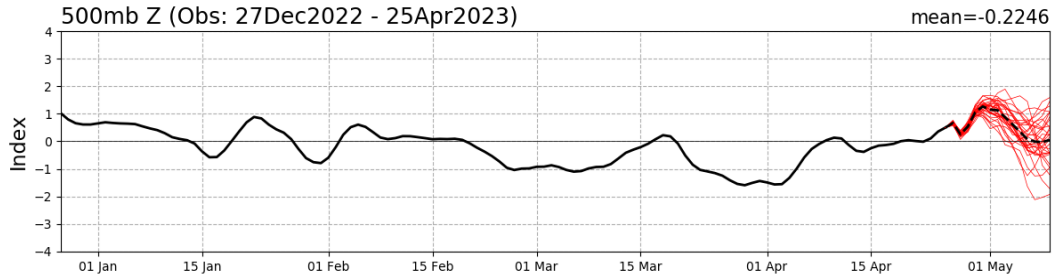


Storm Track Density Distribution, IC=20230424  
Week 2 Forecast: 0503-0509

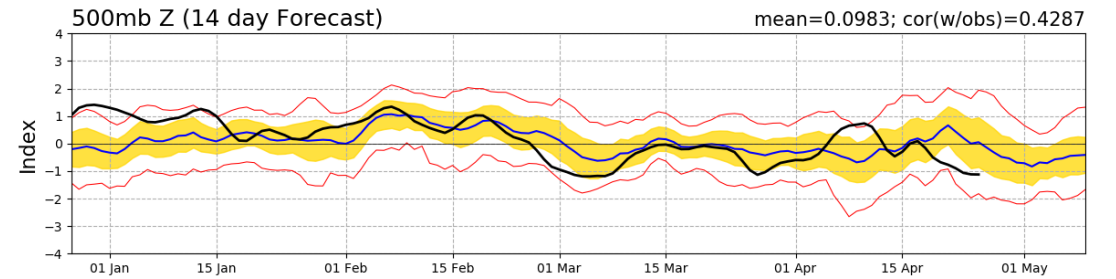
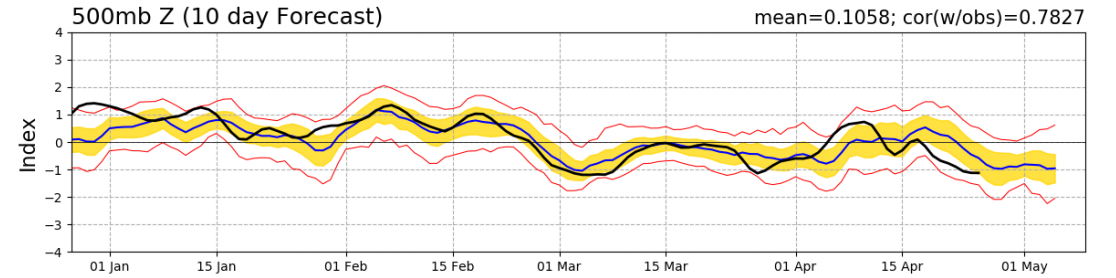
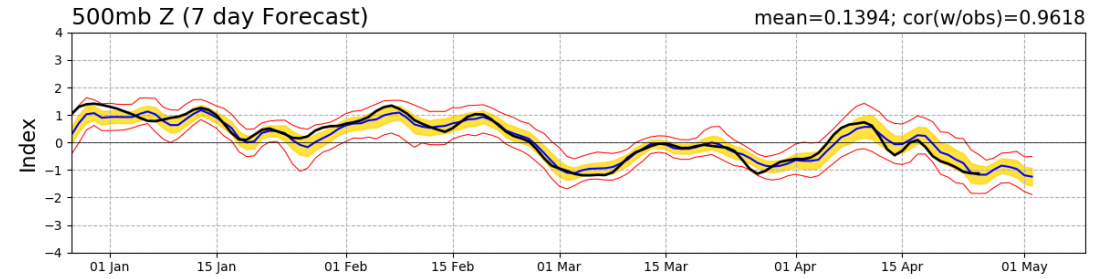
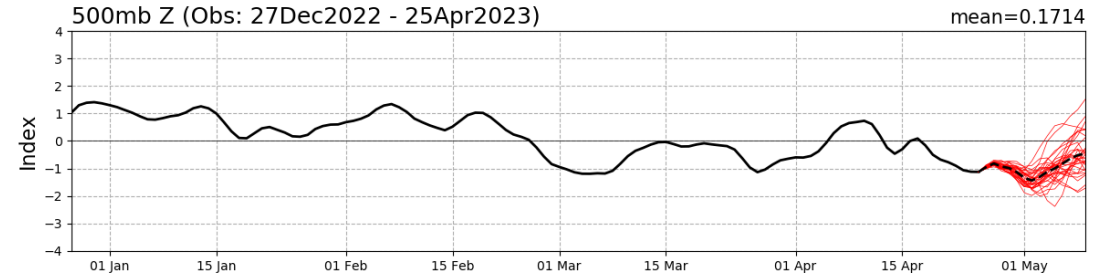


# Teleconnection Indices: PNA / AO:

## PNA Index: Observed & GEFS Forecasts

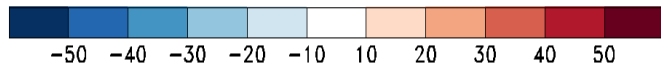
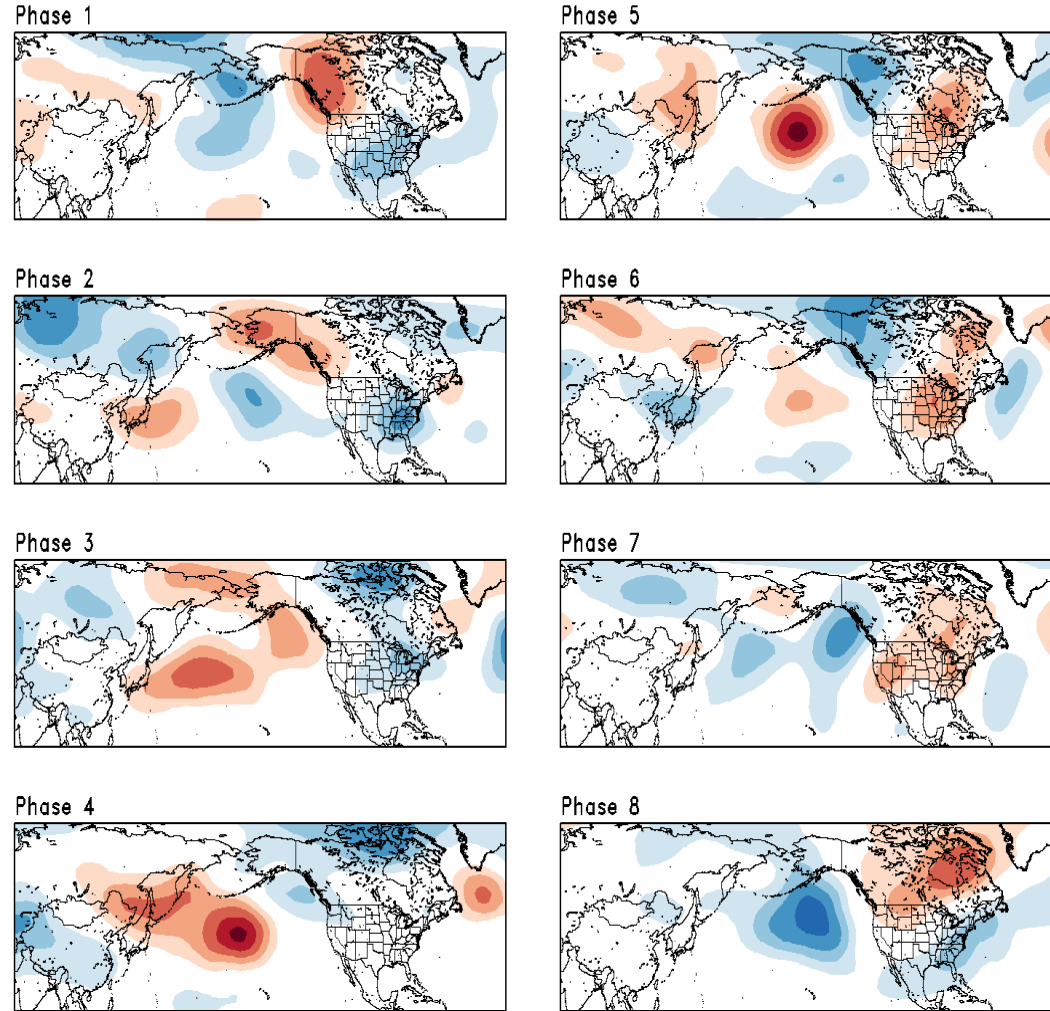


## NAO Index: Observed & GEFS Forecasts

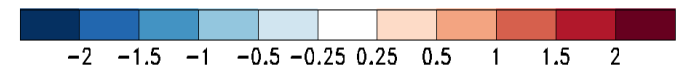
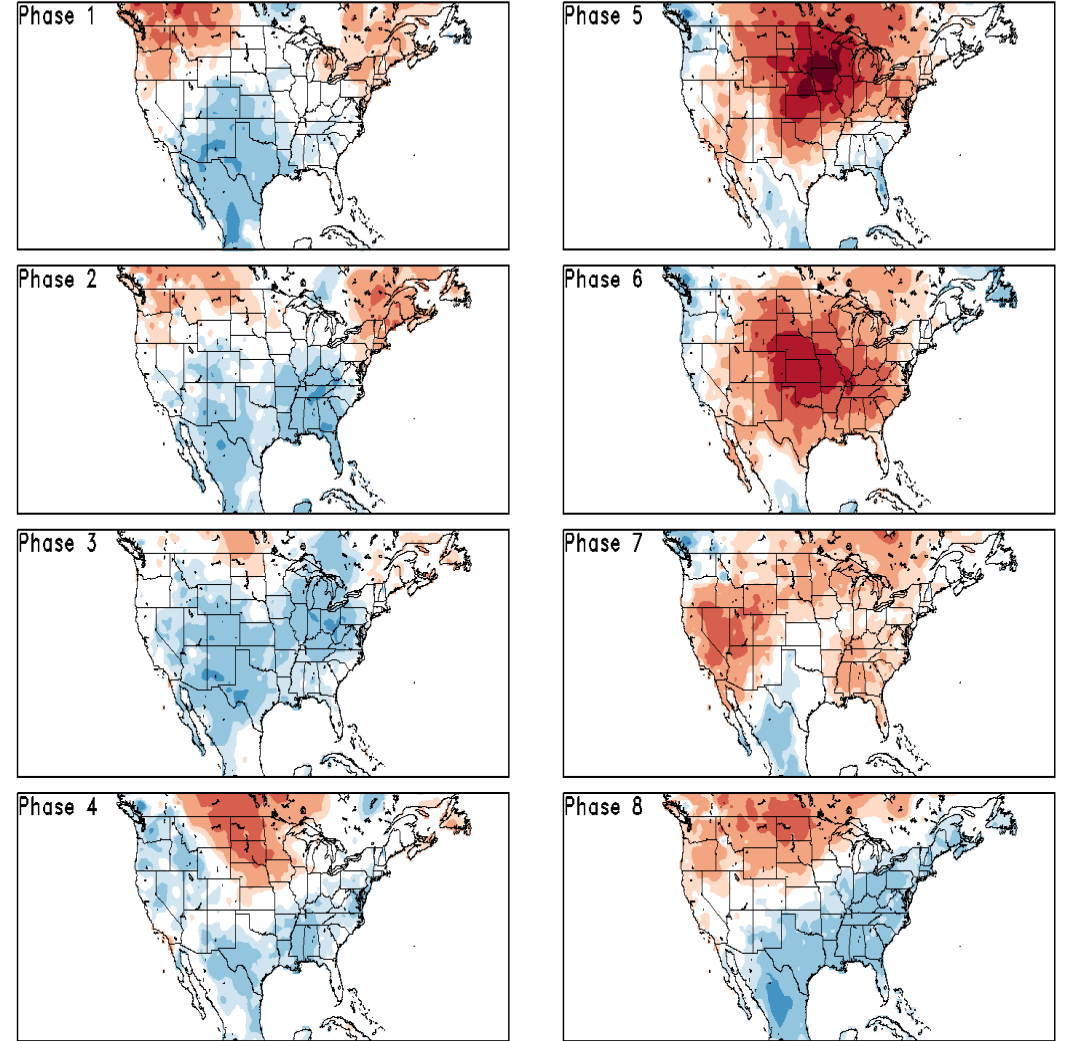


# Historical 500-hPa Height & U.S. Temperatures By MJO Phase:

MAM MJO Composite: CDAS 500-hPa Height (m)

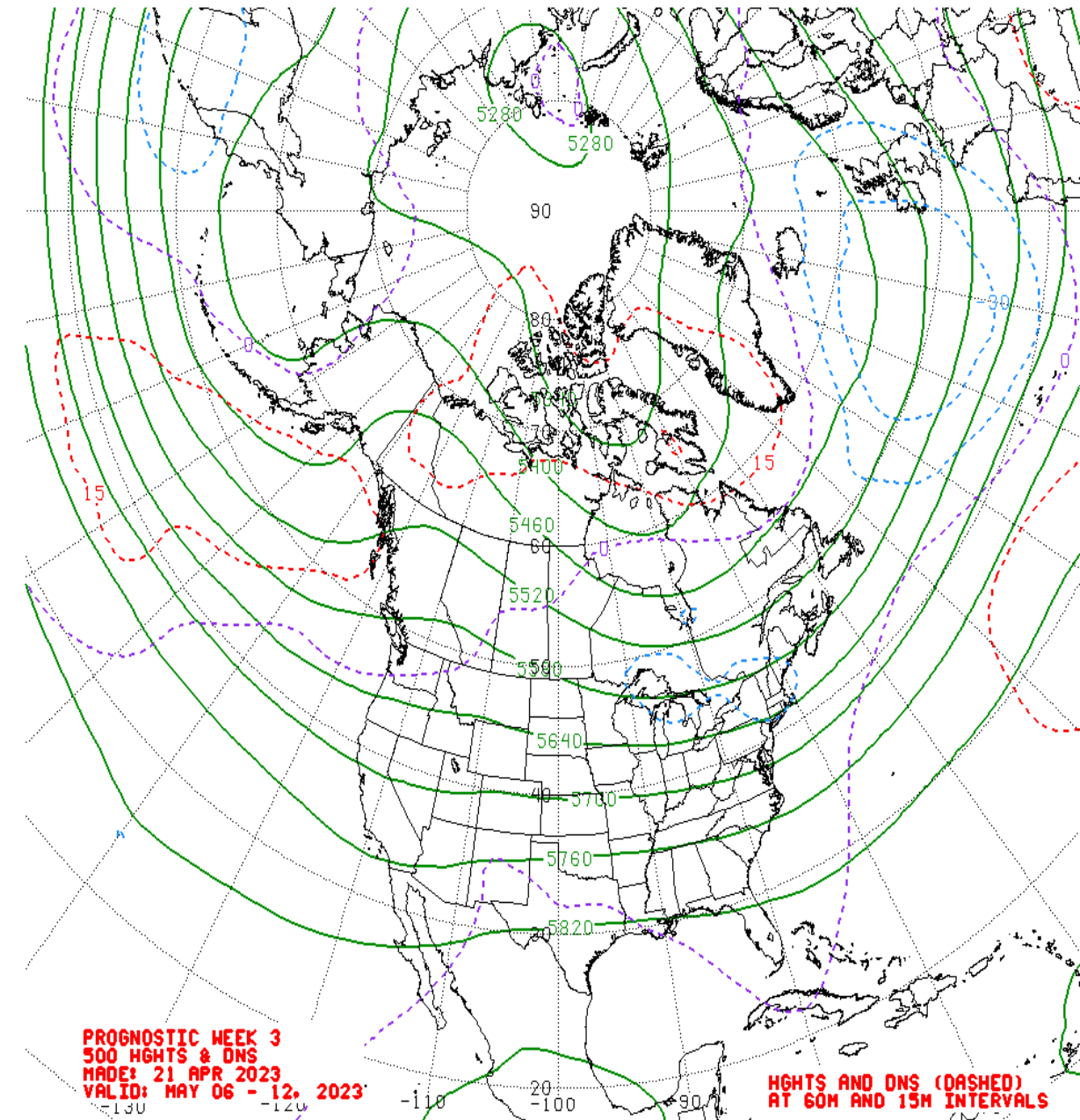
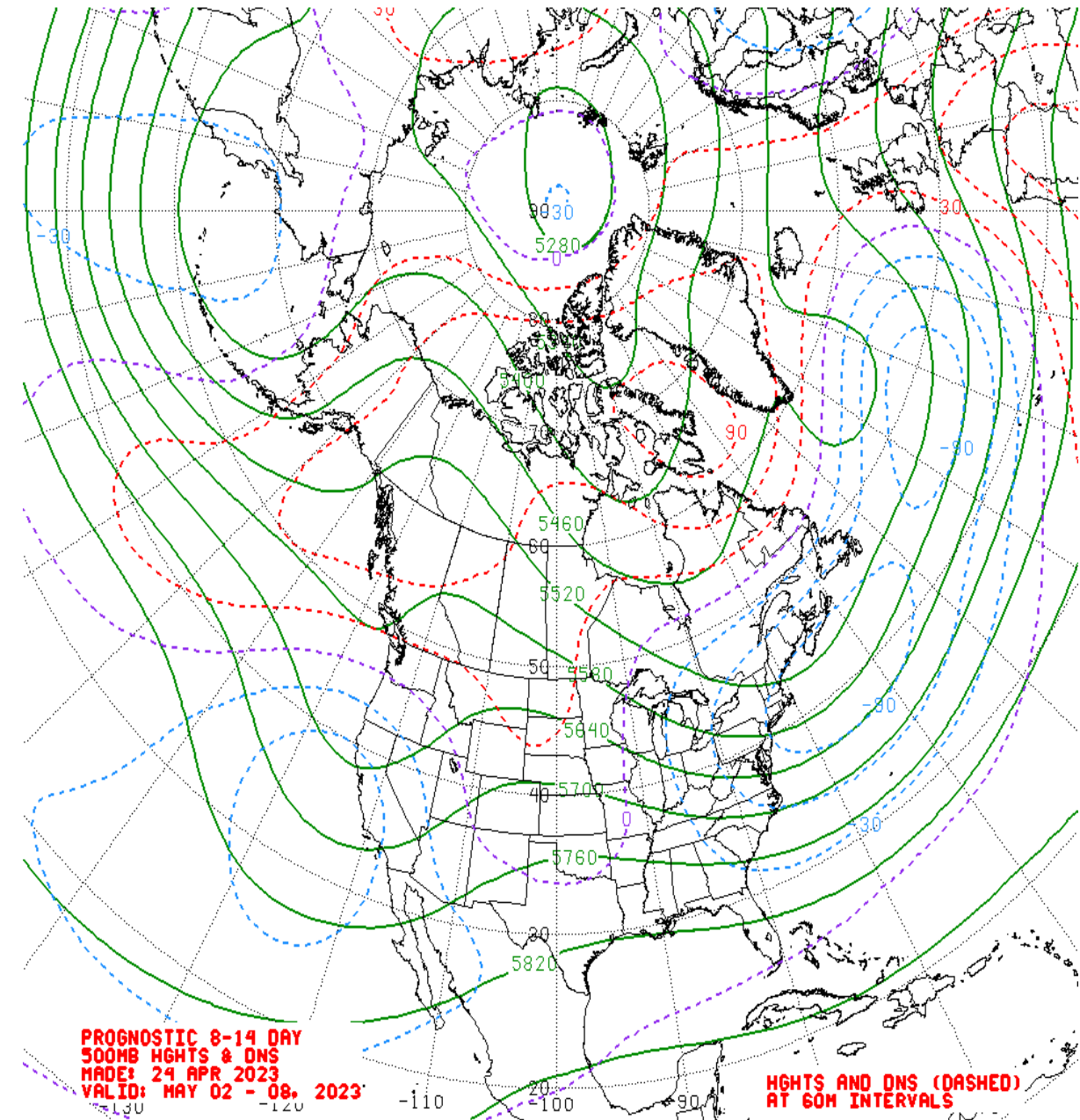


MAM MJO Composite: GLBT (degC)



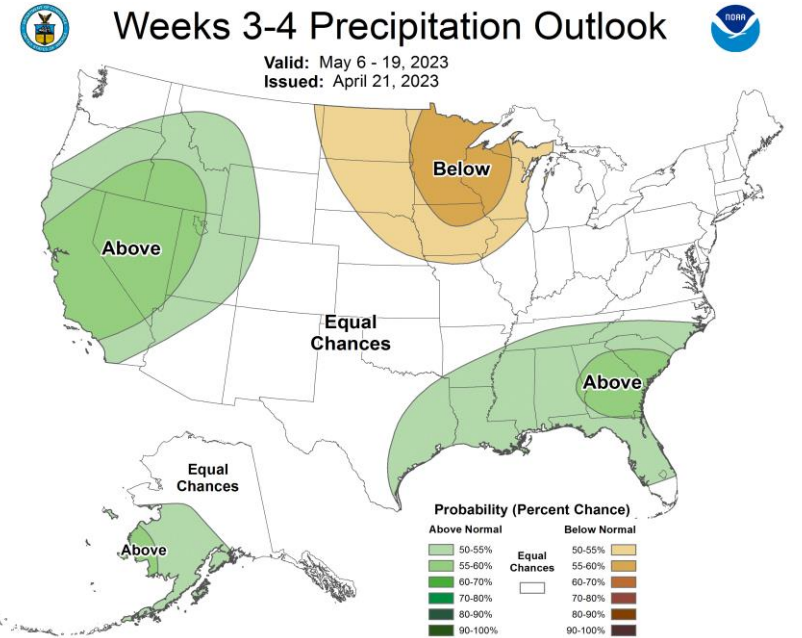
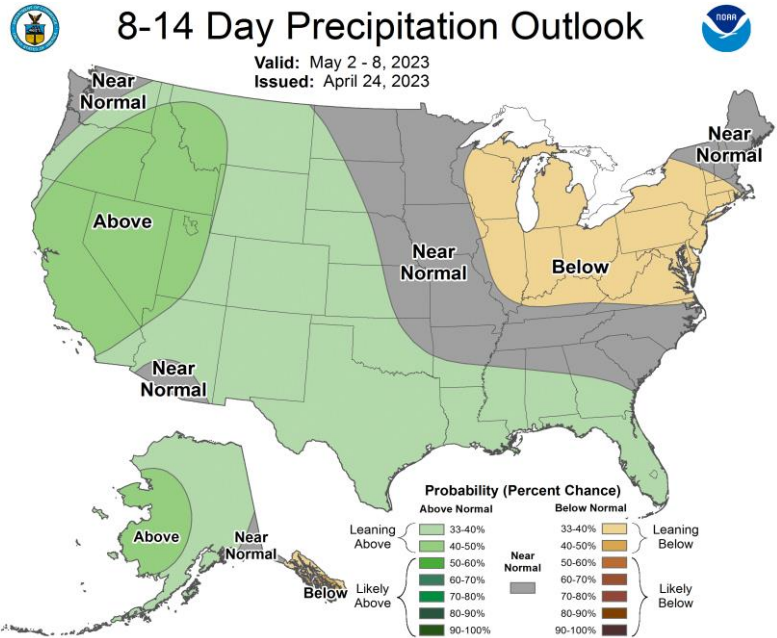
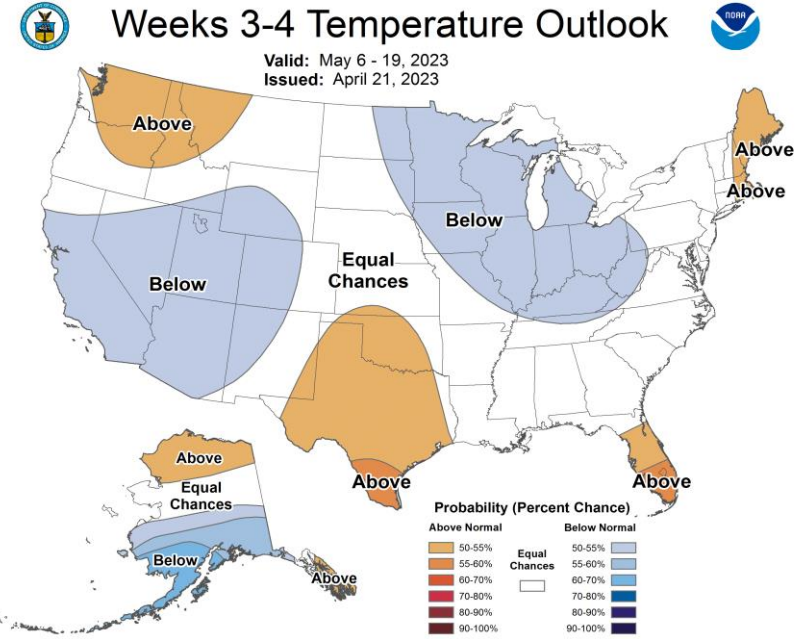
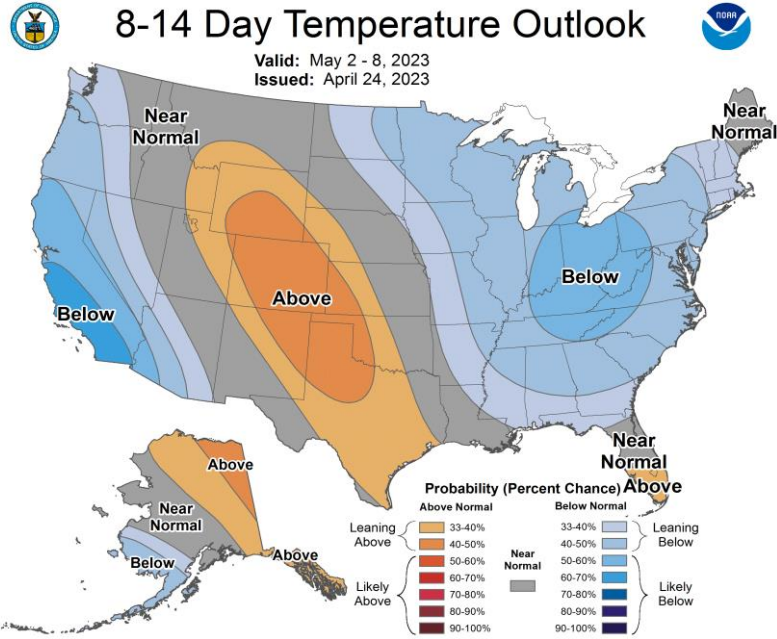


# Mean 500-hPa Height Anomaly Forecasts:





# Official Temperature & Precipitation Forecasts:



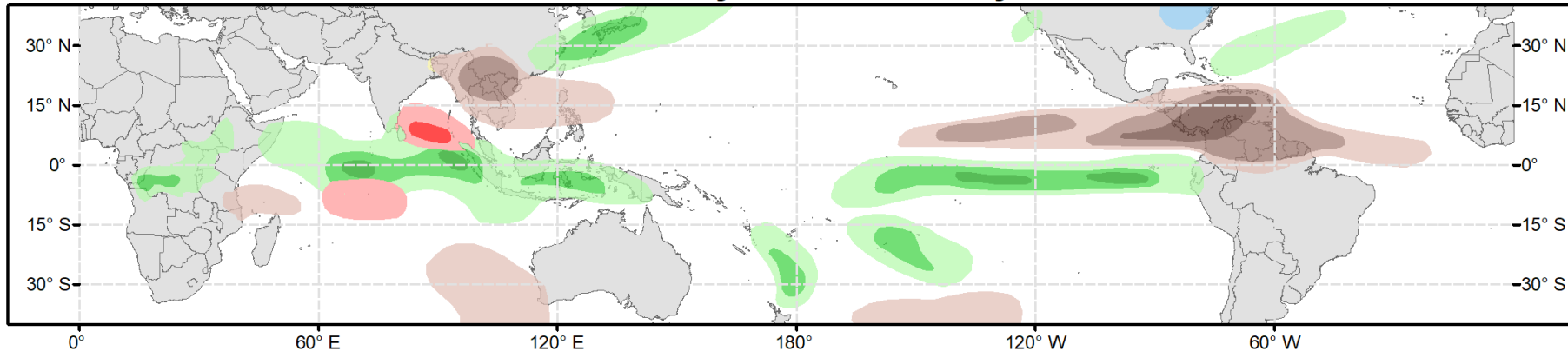


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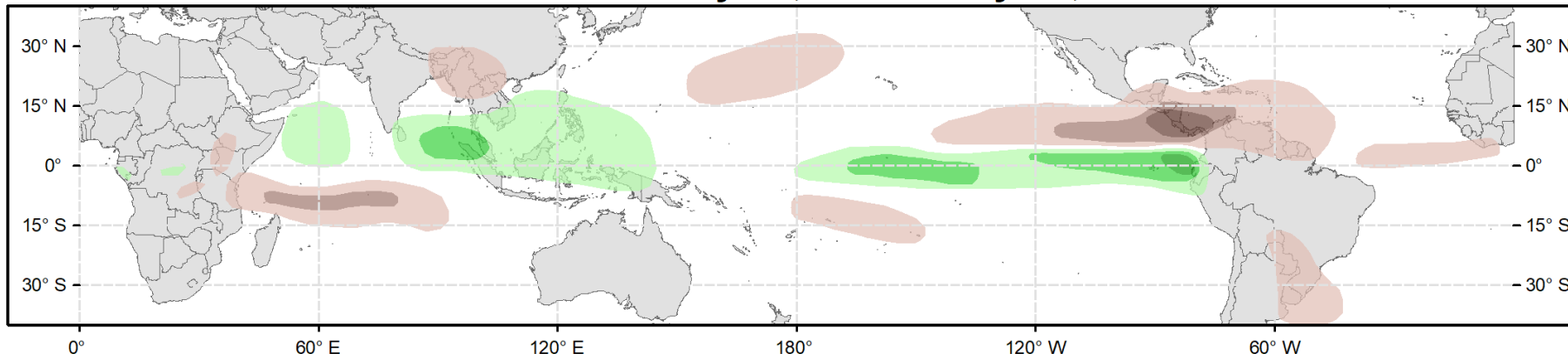
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