



# Weeks 2-3 Global Tropics Hazards Outlook

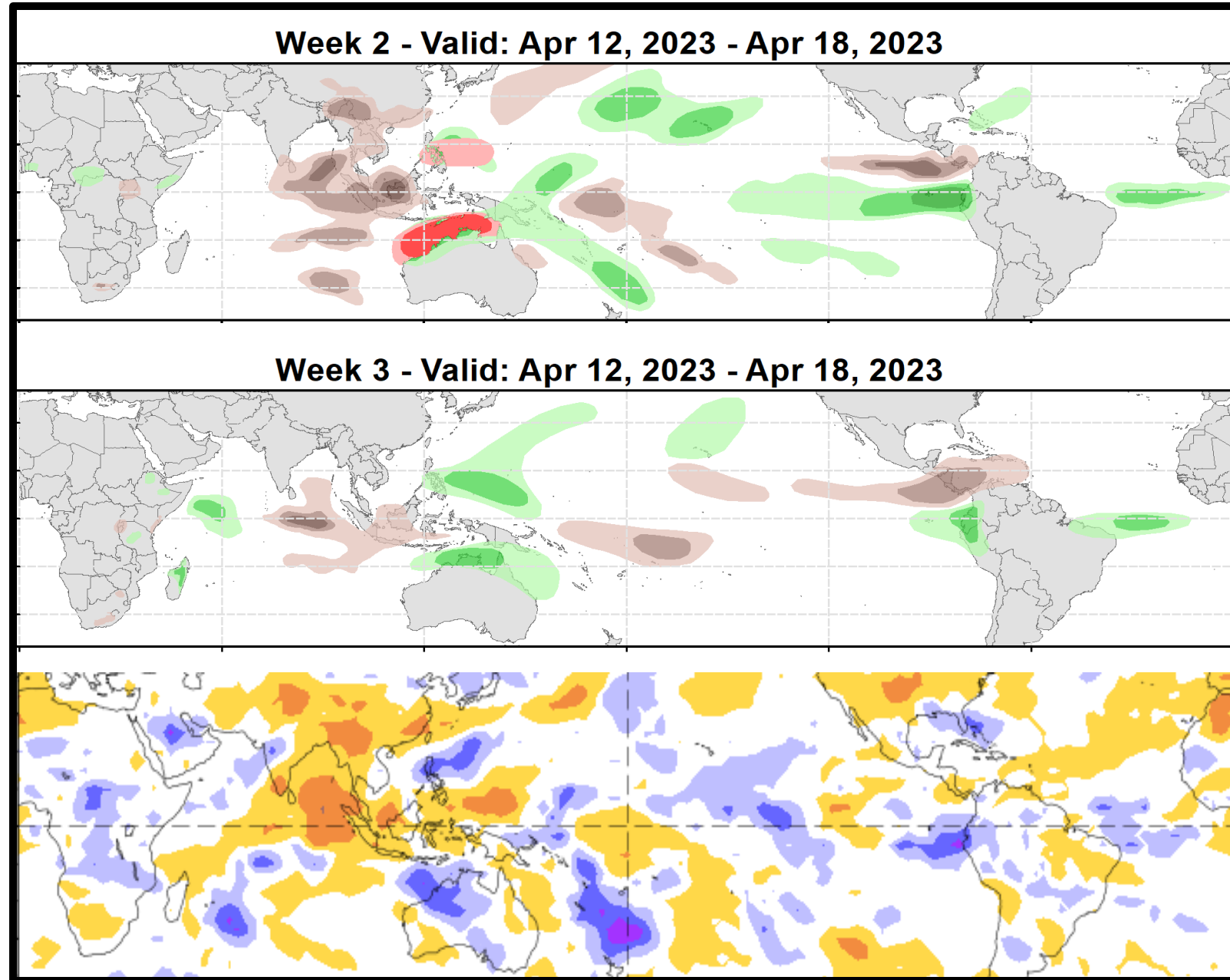
4/18/2023

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NWS / NCEP / Climate Prediction Center

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

- Powerful TC Ilsa formed north of Australia on 8 April (before the Week-2 period) and made landfall near Port Hedland on 13 April.
- Flooding rains over coastal Ecuador and Peru were well captured in the outlooks.



# Synopsis of Climate Modes:

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**ENSO:** (Apr 13, 2023 Update)      *next update on Thursday, May 11<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:**

- The MJO remains active, with the enhanced convective phase now over the West Pacific.
- The RMM and upper level velocity potential MJO indices show a strong signal, though recent observations have become less coherent due to interference from Rossby wave activity, residual low-frequency suppression near the Date Line, and Kelvin wave activity.
- Dynamical models favor renewed MJO activity, crossing the Western Hemisphere during Week-1, followed by increased uncertainty for Week-2 (faster/weaker/Rossby wave interference), and an emerging stronger signal back over the Maritime Continent and West Pacific during Week-3.
- The MJO is favored to continue playing a dominant role in the tropical convective pattern. A slow transition towards a warmer equatorial Pacific may also be influencing the evolution of the pattern.

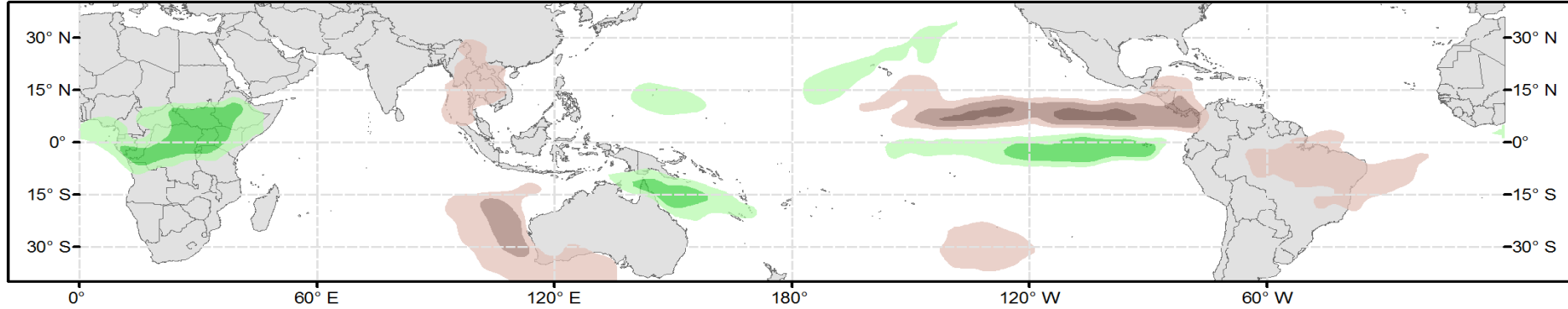
# GTH Outlook:



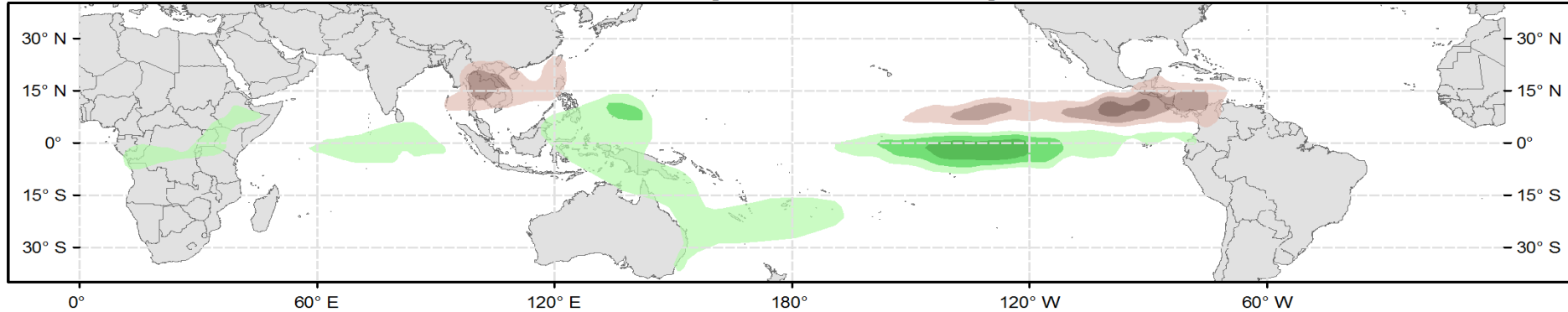
## Global Tropics Hazards Outlook Climate Prediction Center



**Week 2 - Valid: Apr 26, 2023 - May 02, 2023**



**Week 3 - Valid: May 03, 2023 - May 09, 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**

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

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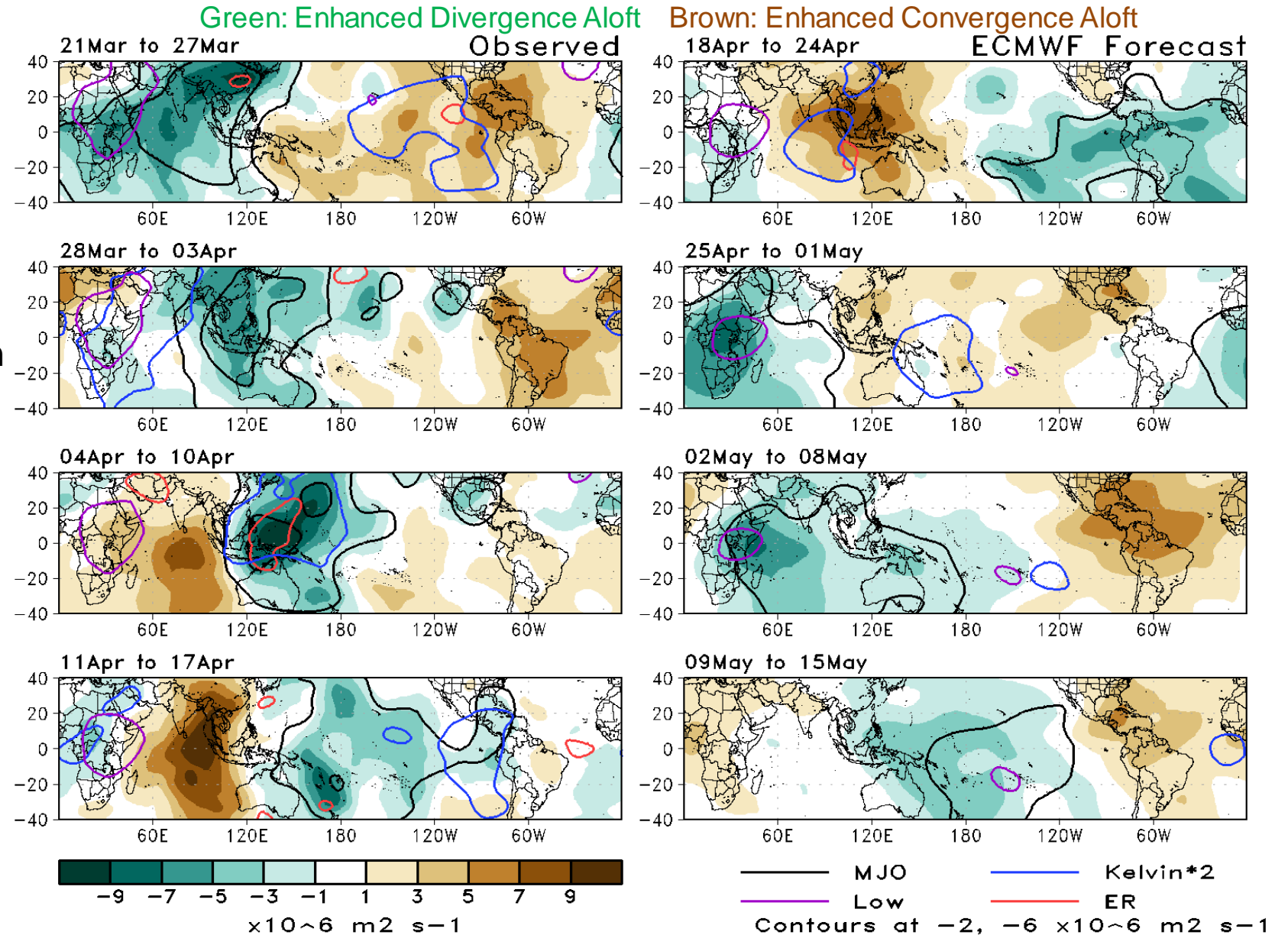
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**Issued: 04/18/2023**  
**Forecaster: Allgood**

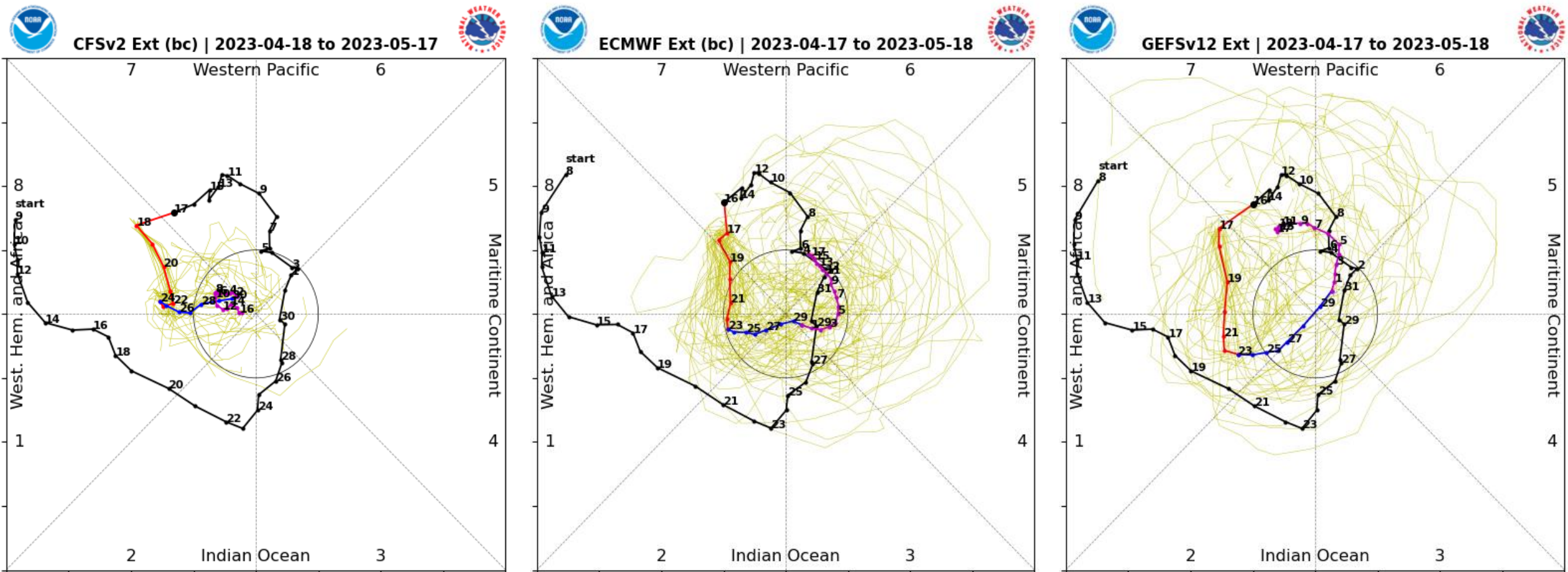
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# 200-hPa Velocity Potential Anomaly Maps:

- The evolution of the pattern since late March has been strongly consistent with the MJO.
- Continued eastward propagation is favored by the ECMWF, with some uncertainty surrounding the signal's transition across the Indian Ocean.

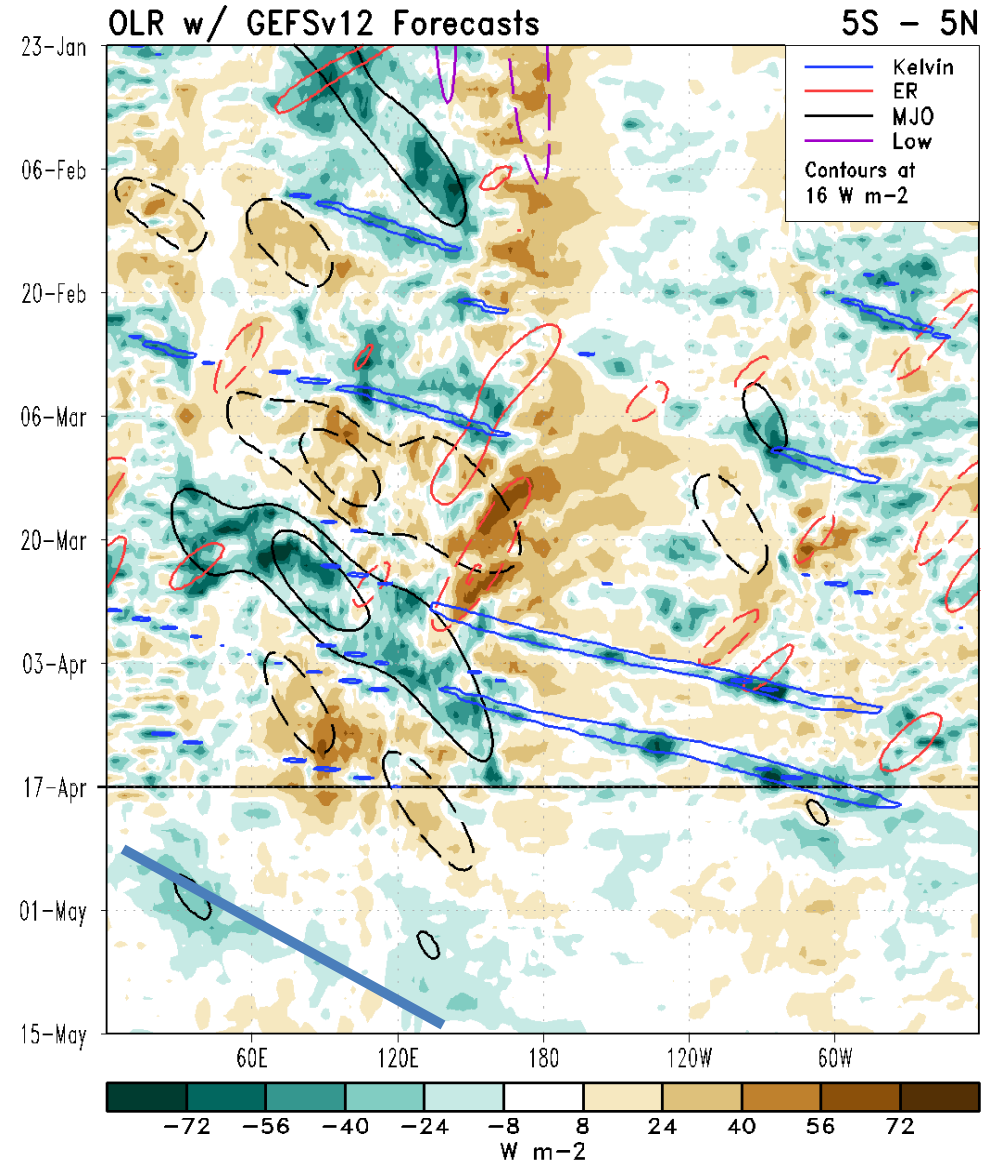
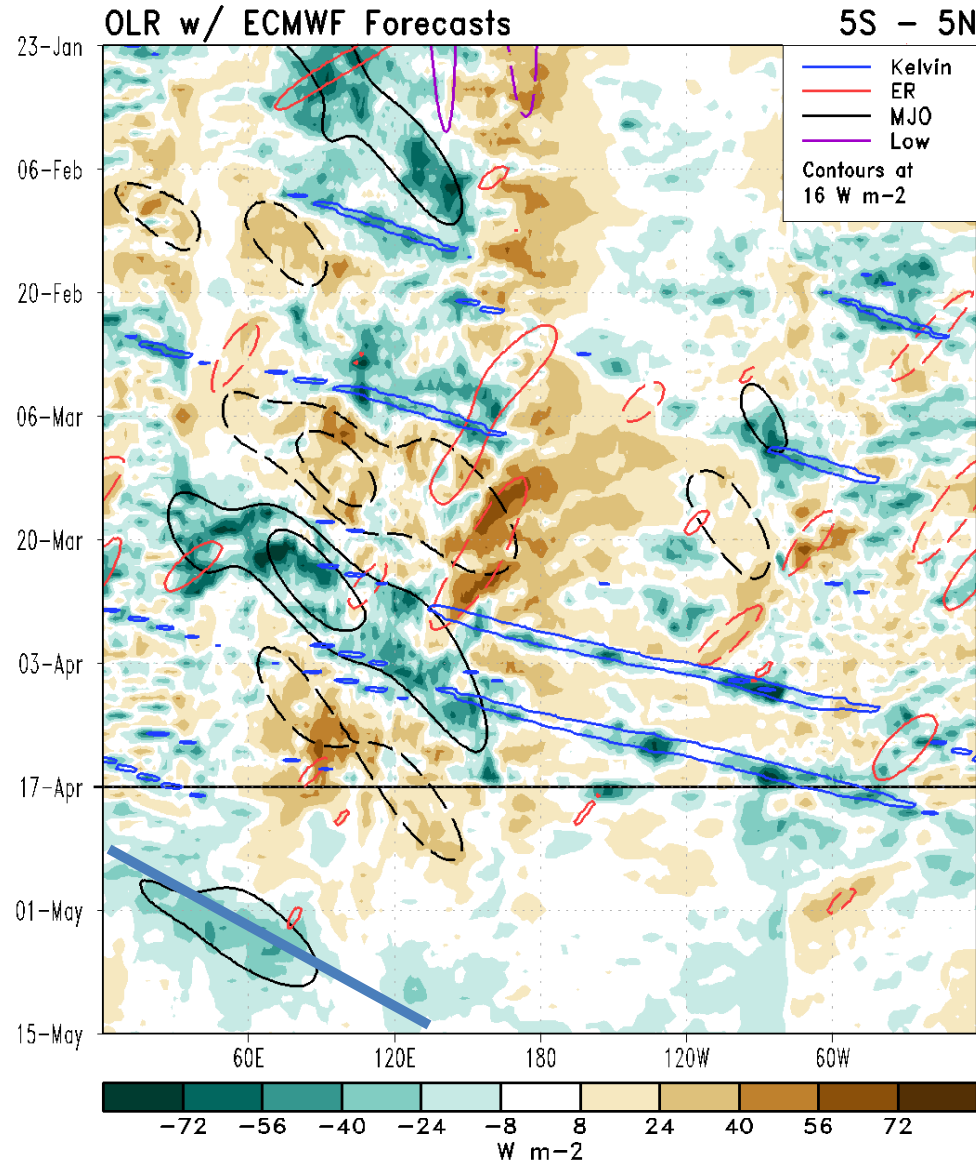


# RMM Index Observations & Forecasts:



- Both the GFS and ECMWF depict a fast propagation to the Western Hemisphere during Week-1.
- During Week-2, the ECMWF reflects possible Rossby wave interference over the Indian Ocean, while the GFS shows a quick transition across the Indian Ocean and Maritime Continent.
- Both model systems show a return to the West Pacific during the Week-3 and Week-4 time frame, with the GFS phase speed a bit faster than the ECMWF (which is also fast).

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

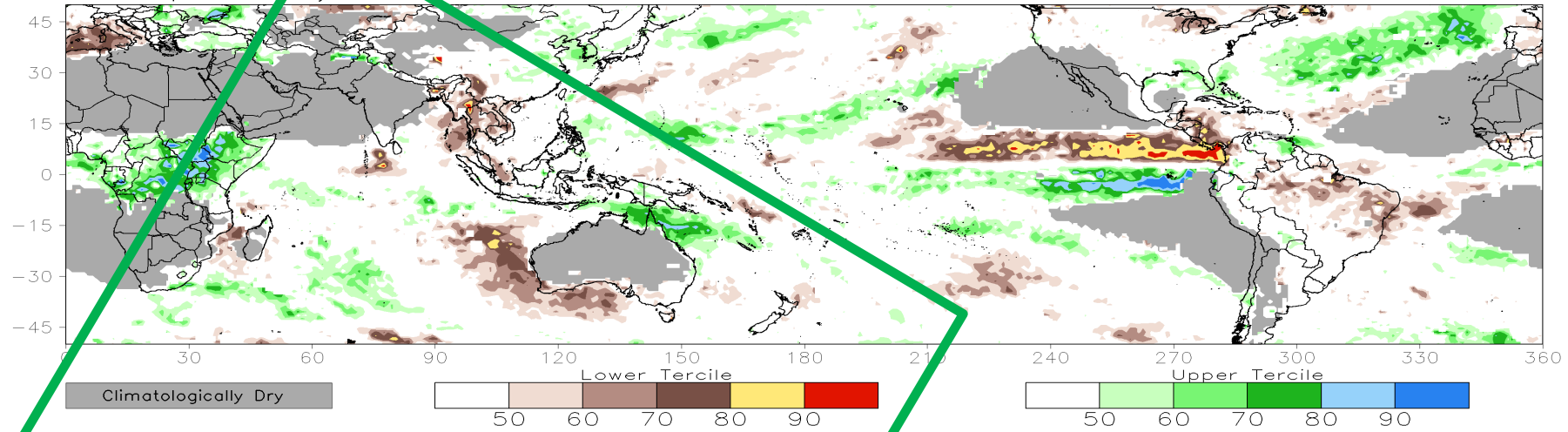


# Consolidated Probabilistic Precipitation: Weeks 2 & 3

Where's the  
MJO precip??

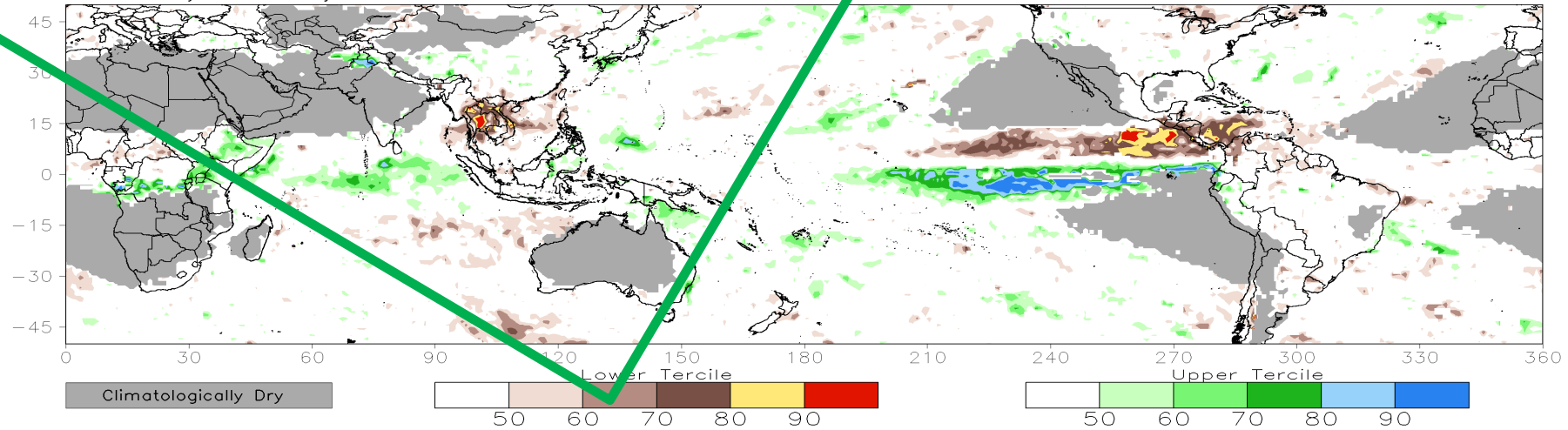
CONS 00z: Week2 Probability for Total Rainfall Below(Above) Lower(Upper) Tercile (%)

Valid: 26Apr2023-07May2023



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

Valid: 03May2023-09May2023

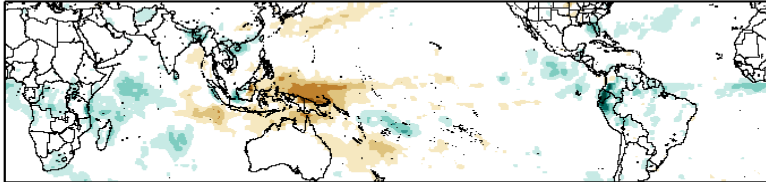




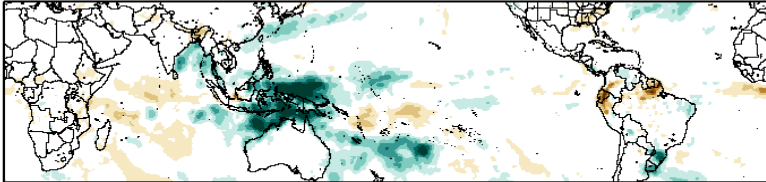
# Historical Precipitation Anomalies By MJO Phase:

MAM MJO Composite: GPCP1DD (mm/day)

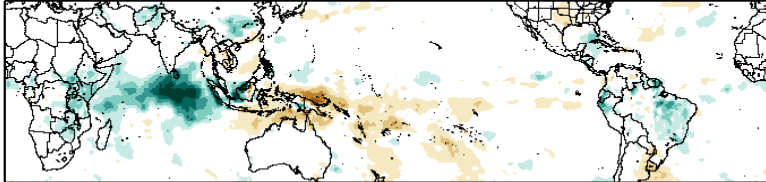
Phase 1



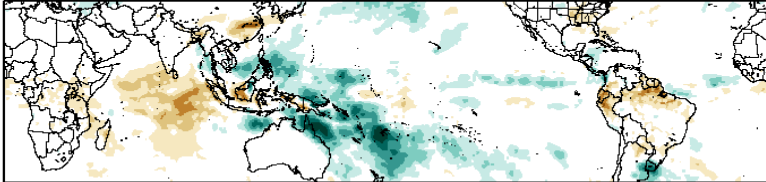
Phase 5



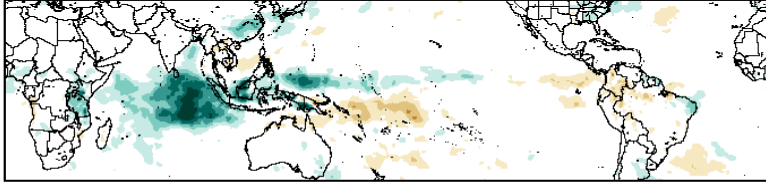
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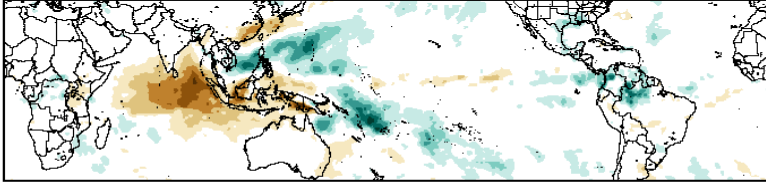
Phase 6



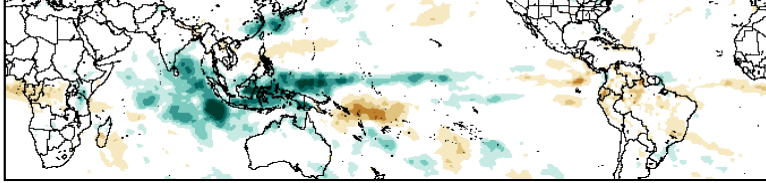
Phase 3



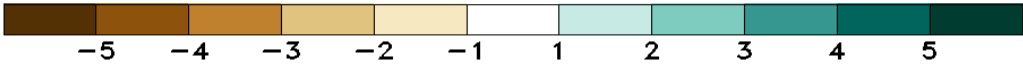
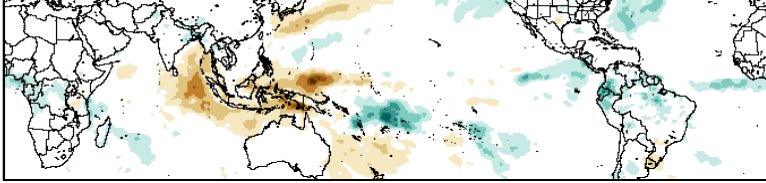
Phase 7



Phase 4

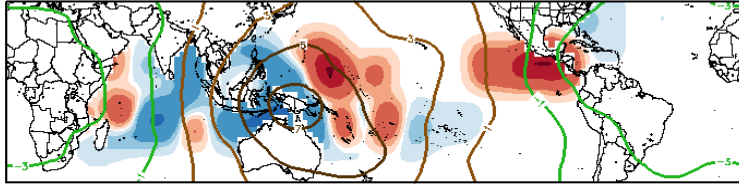


Phase 8

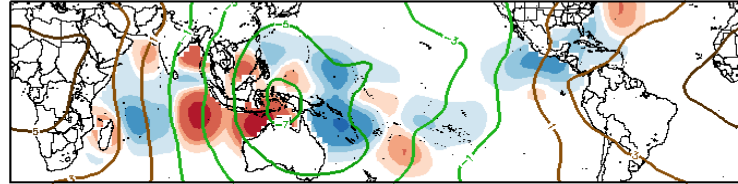


# Historical TC Origin Anomalies By MJO Phase & Weeks 2+3 Genesis Climo:

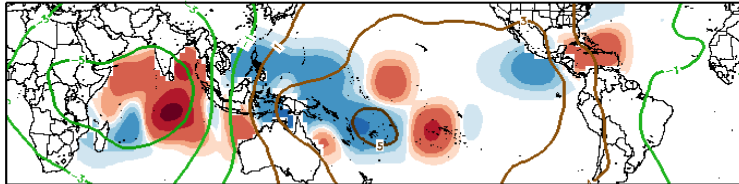
MAM MJO Composite: Mean TC Origin Density Anomaly ( $\#TCs/277km^2*100$ )  
w/ MAM CHI200 ( $\times 10^{-6} m^{-2} s^{-1}$ ) / Contours every  $2 \times 10^{-6} m^{-2} s^{-1}$



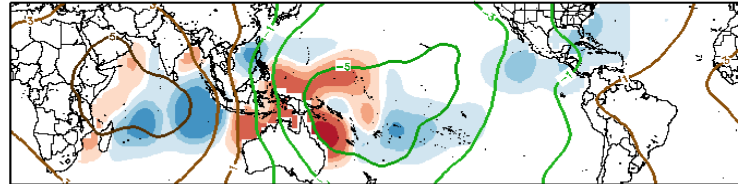
Phase 1



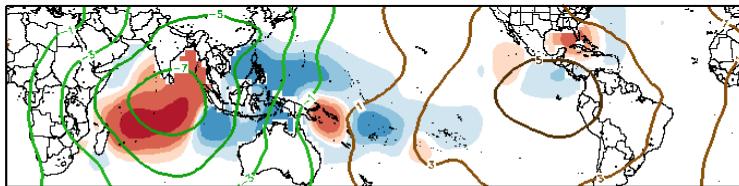
Phase 5



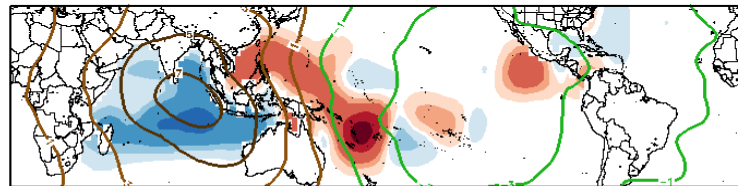
Phase 2



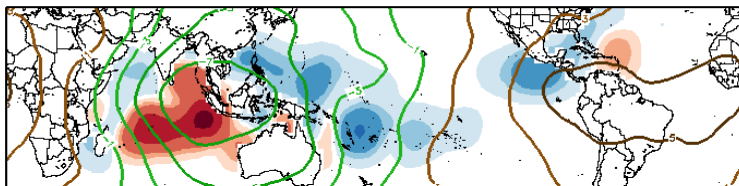
Phase 6



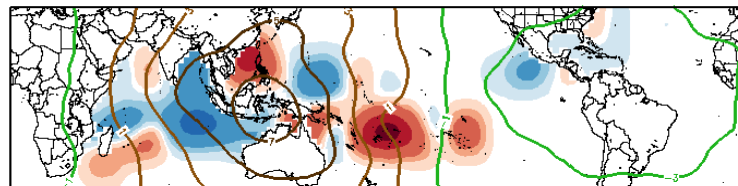
Phase 3



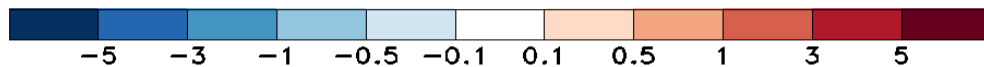
Phase 7



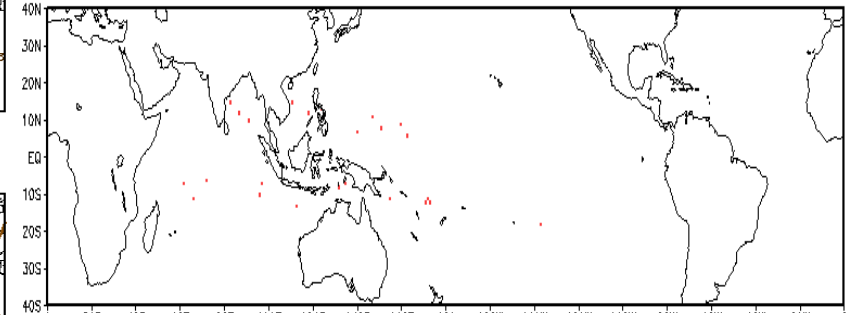
Phase 4



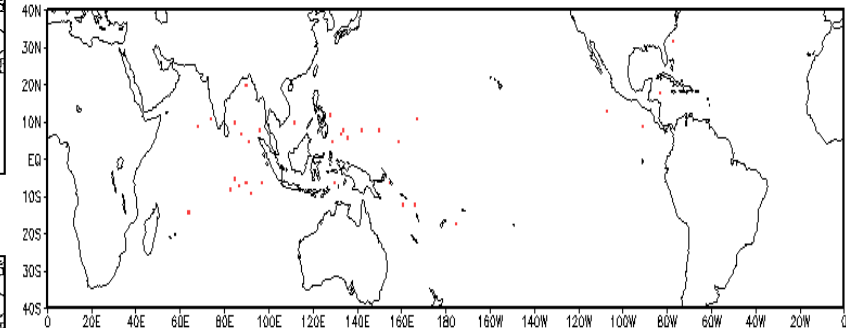
Phase 8



Observed TC Genesis, 1979-2021  
7-day Period 0426 to 0502



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

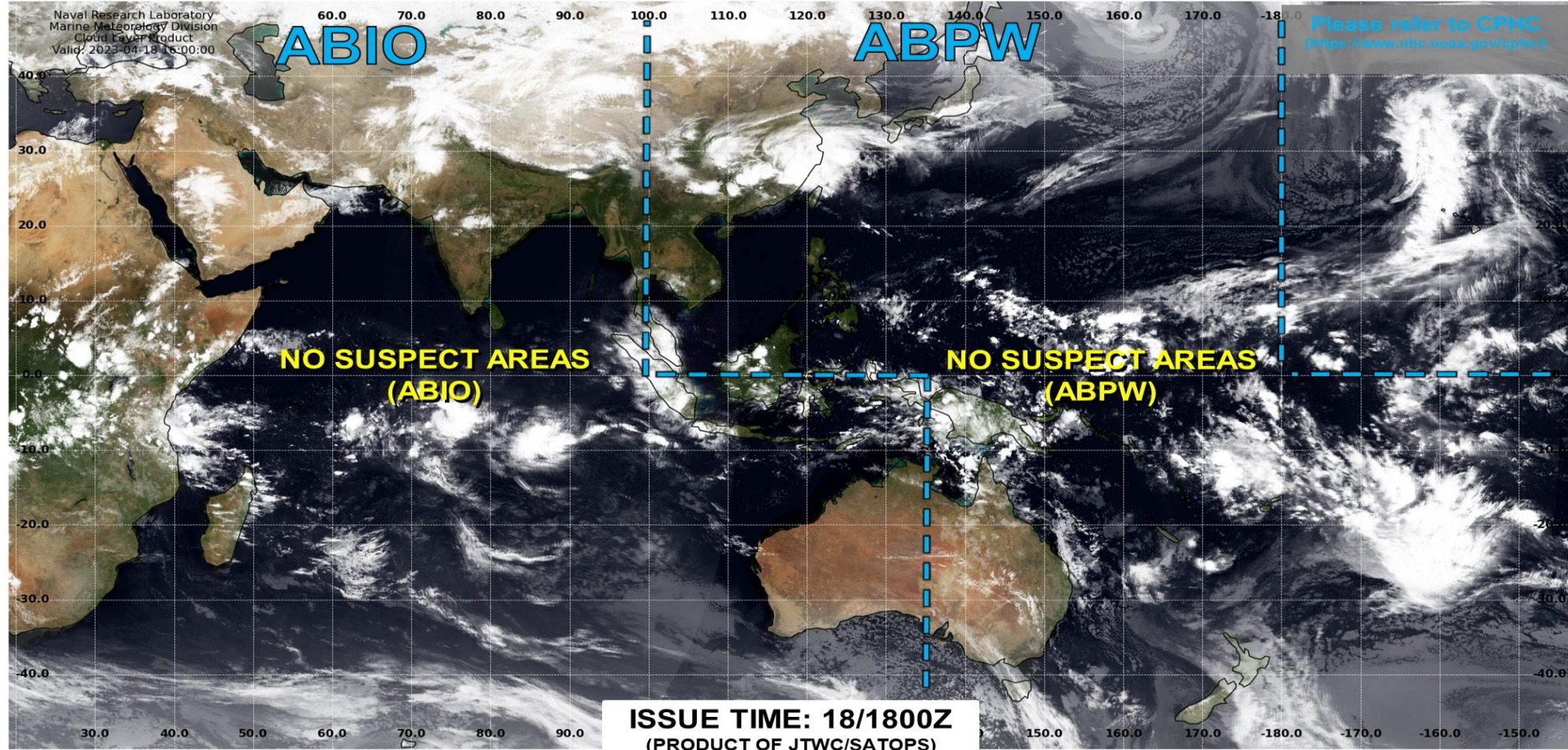


\*Experimental\*

# 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)



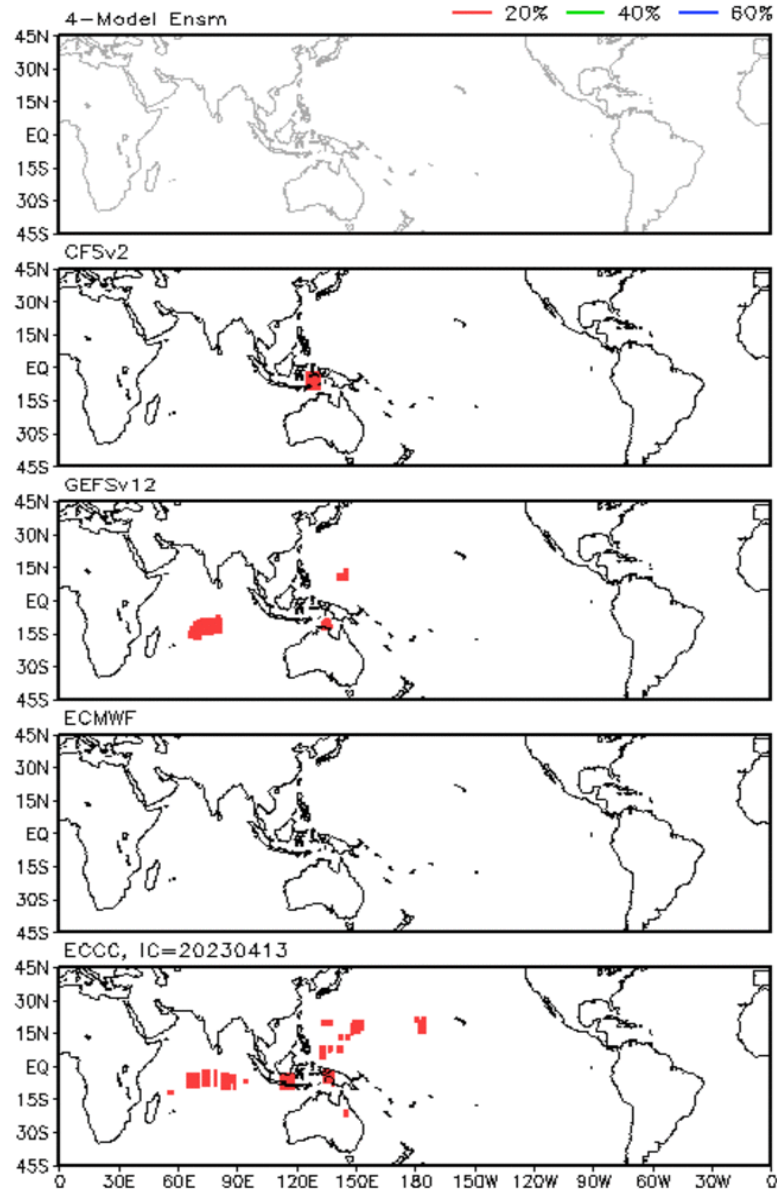
Monitoring for potential transition to TC. Invest label color denotes tropical transition probability



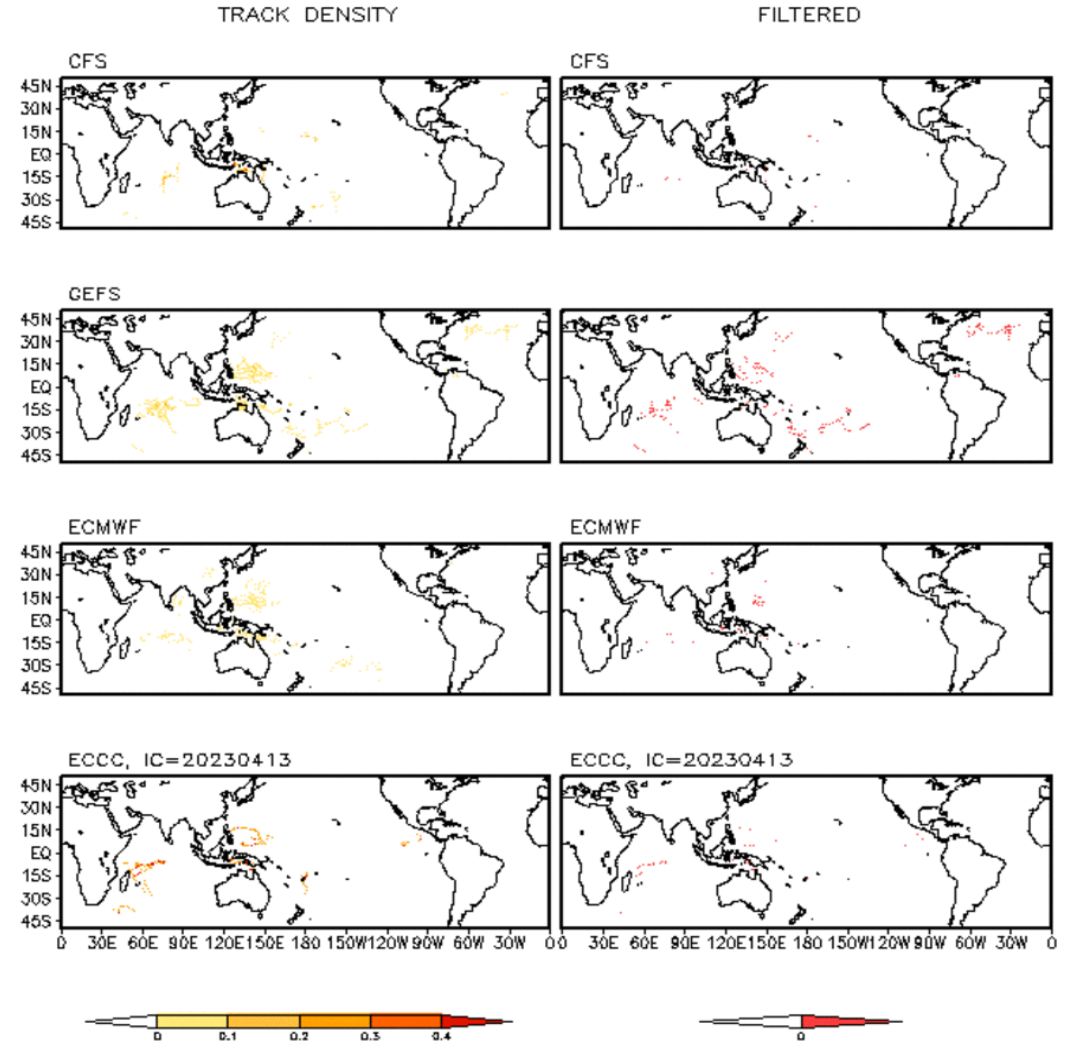
Tropical Cyclone (Reference Warning)

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

Storm Track Probabilities, IC=20230417  
Week 2: 0426 - 0502

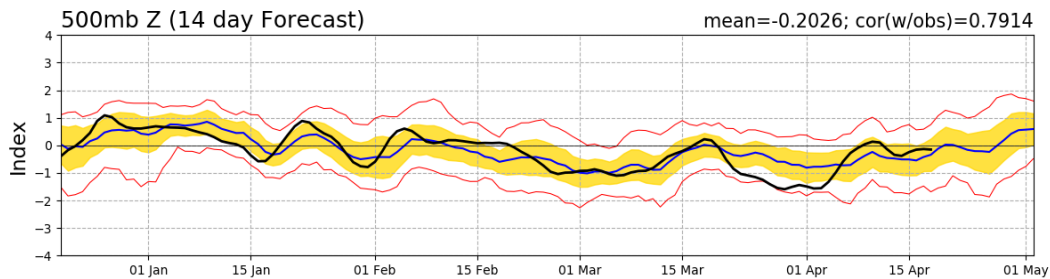
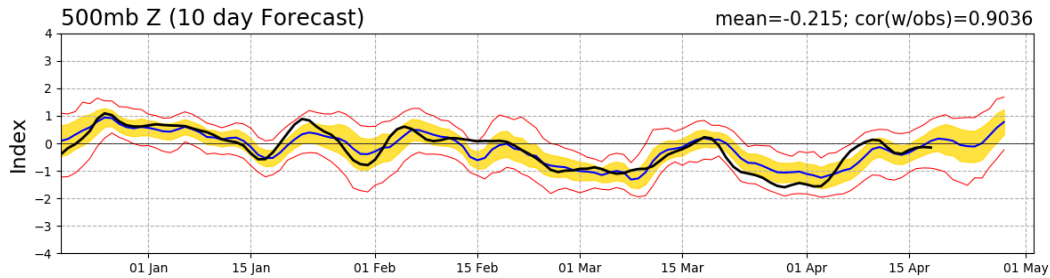
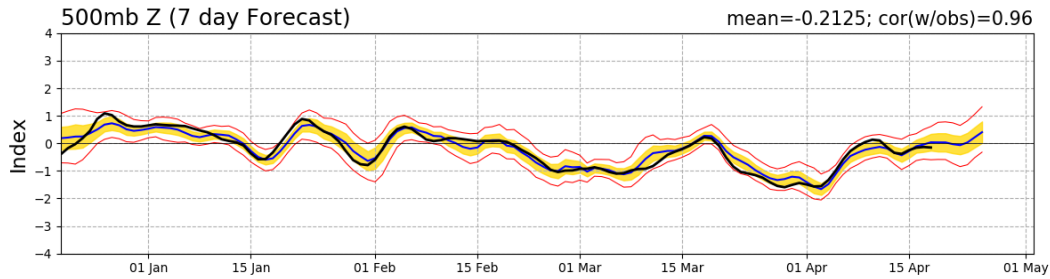
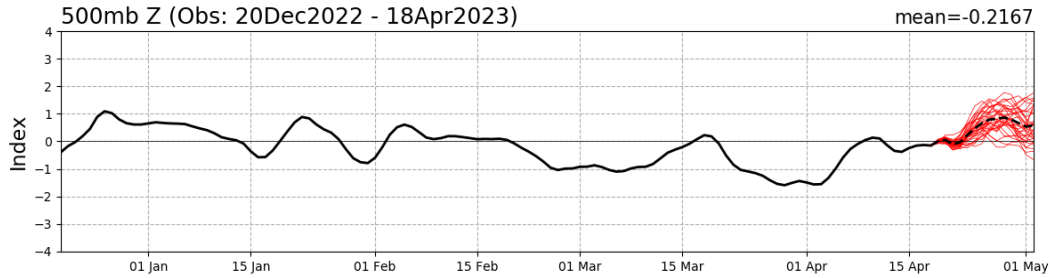


Storm Track Density Distribution, IC=20230417  
Week 2 Forecast: 0426-0502

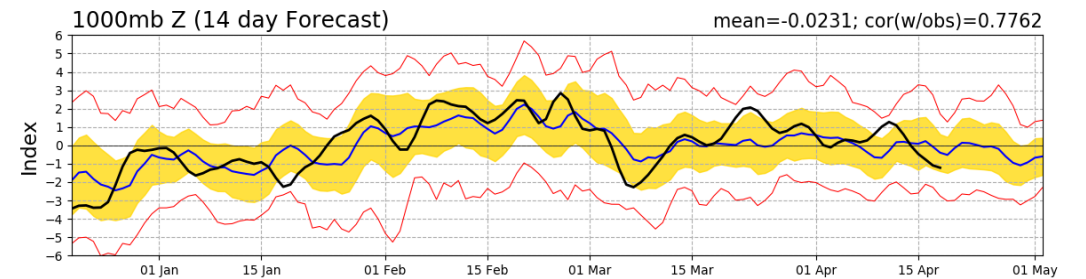
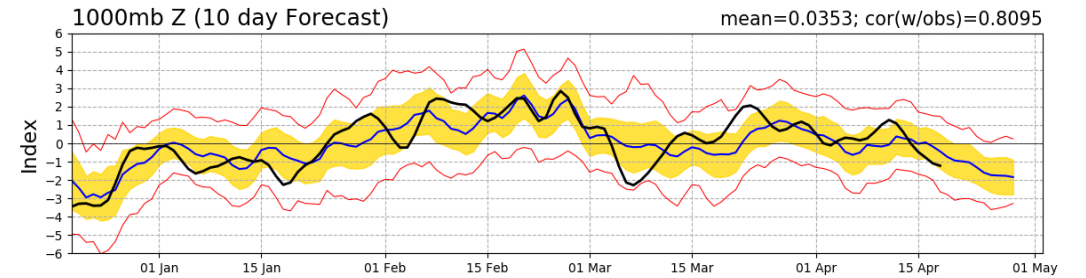
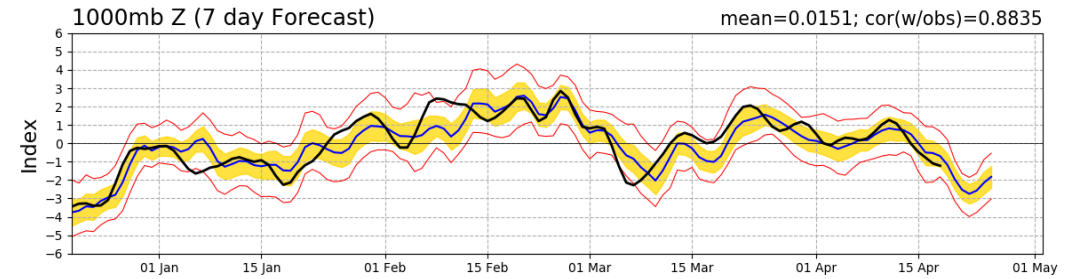
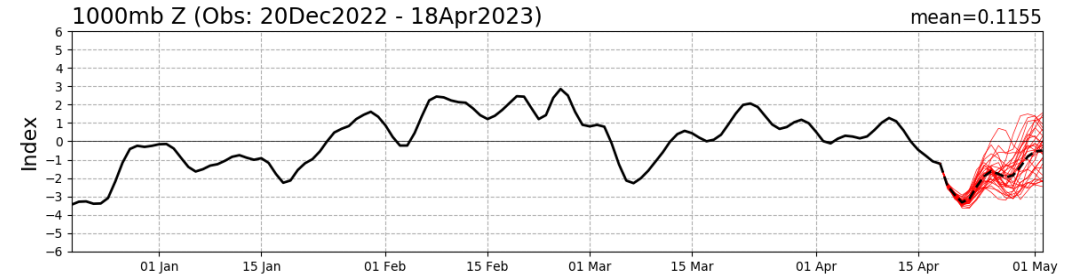


# Teleconnection Indices: PNA / AO:

## PNA Index: Observed & GEFS Forecasts

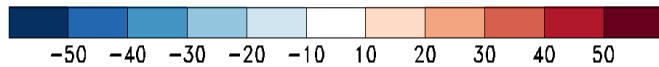
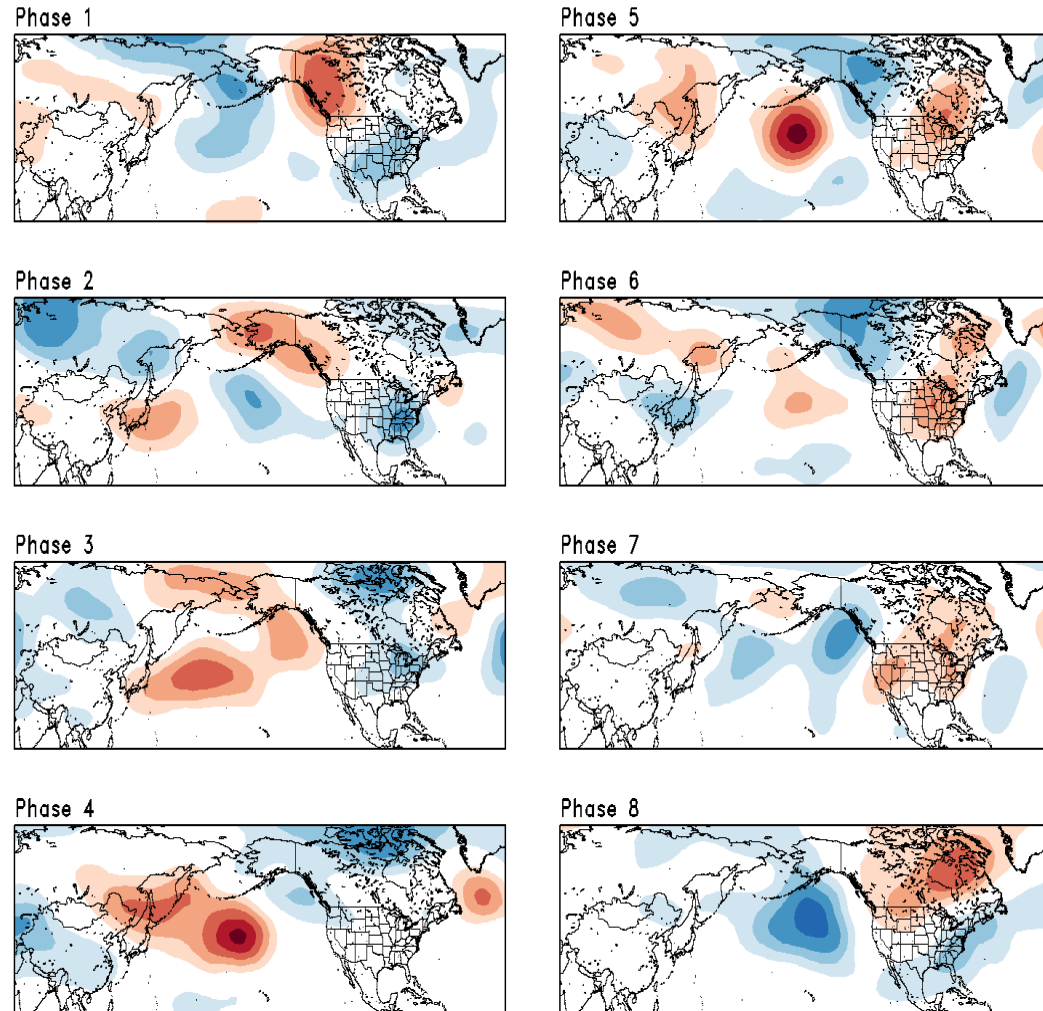


## AO Index: Observed & GEFS Forecasts

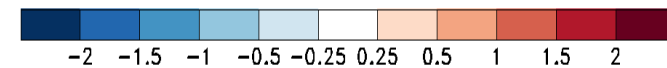
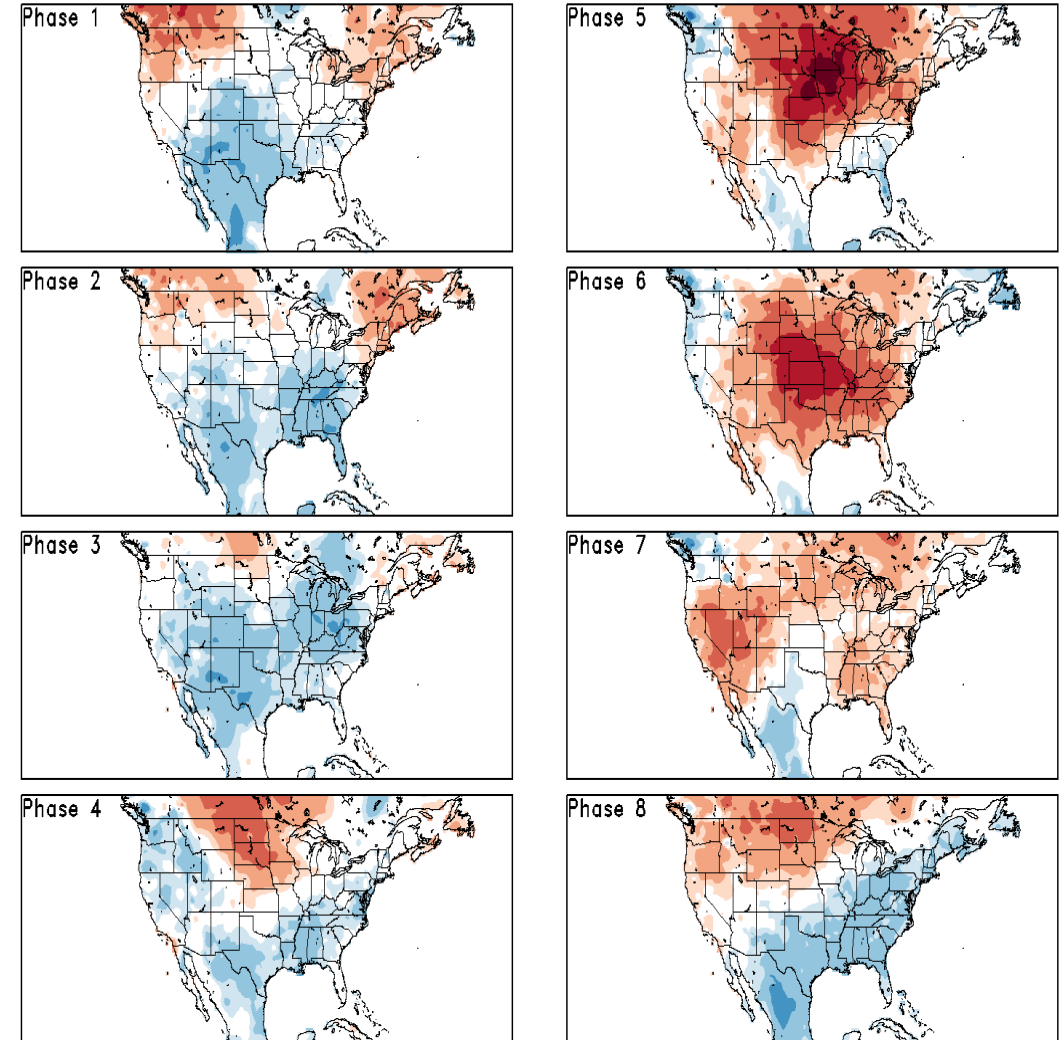


# Historical 500-hPa Height & U.S. Temperatures By MJO Phase:

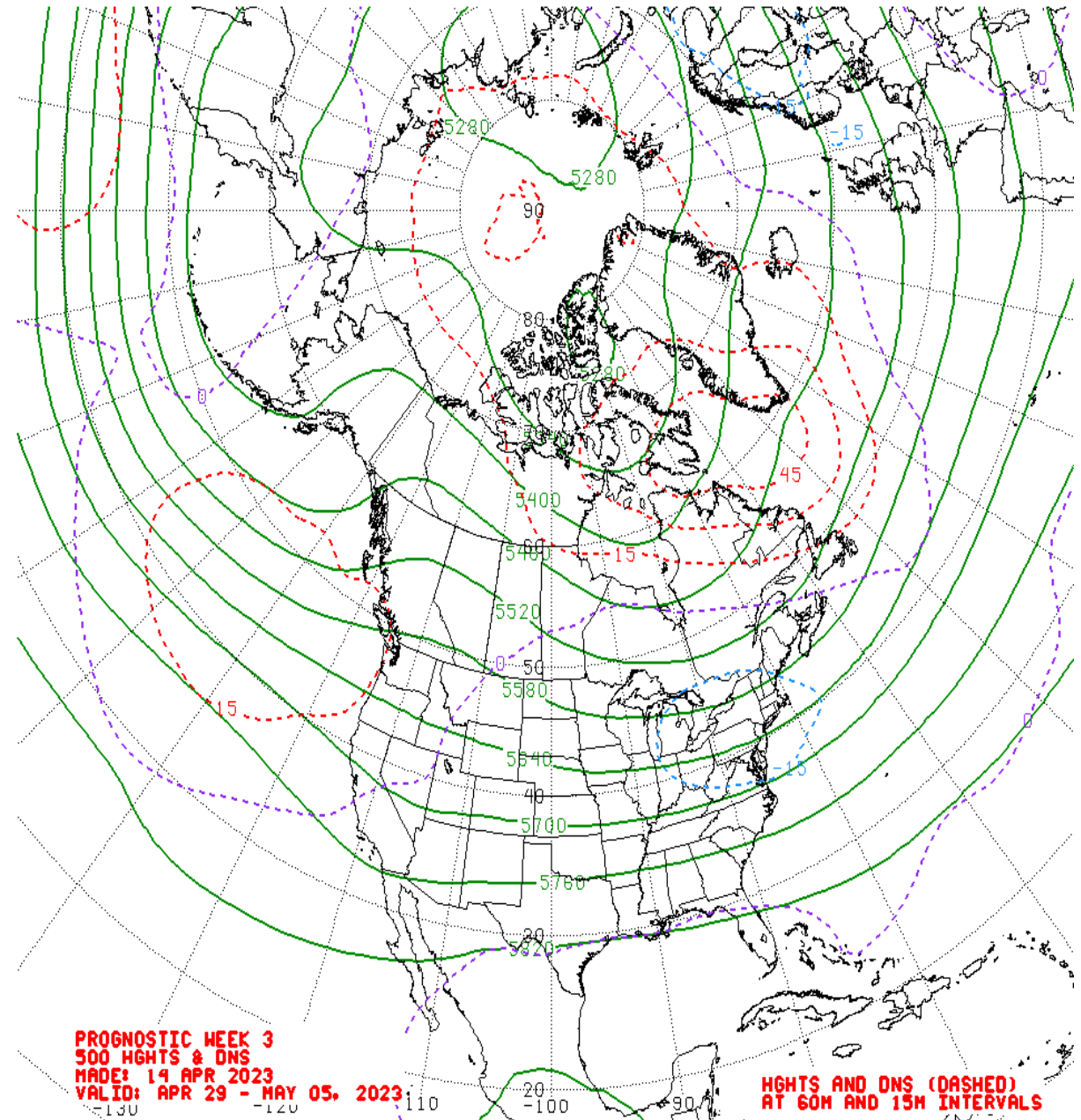
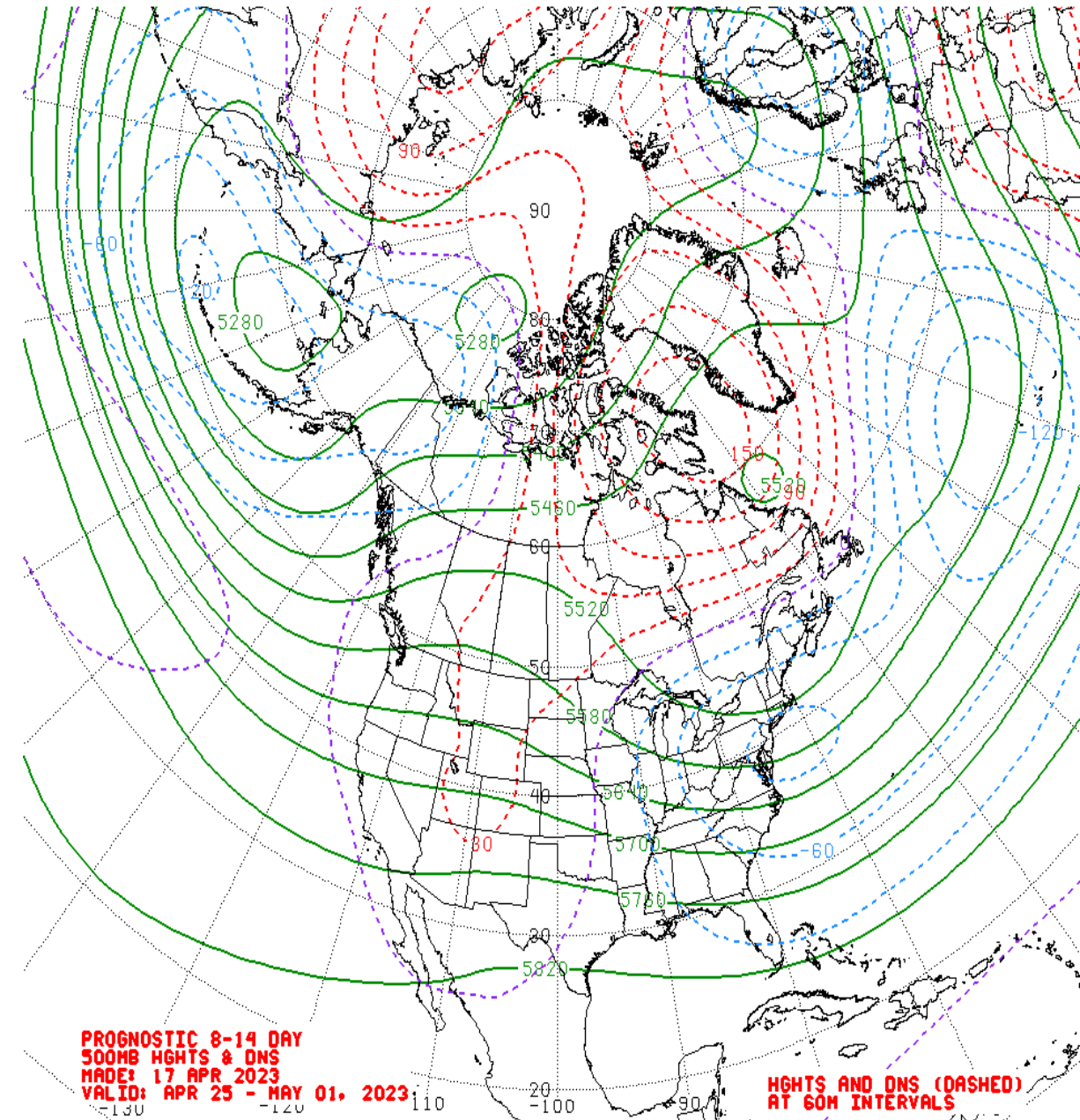
MAM MJO Composite: CDAS 500-hPa Height (m)



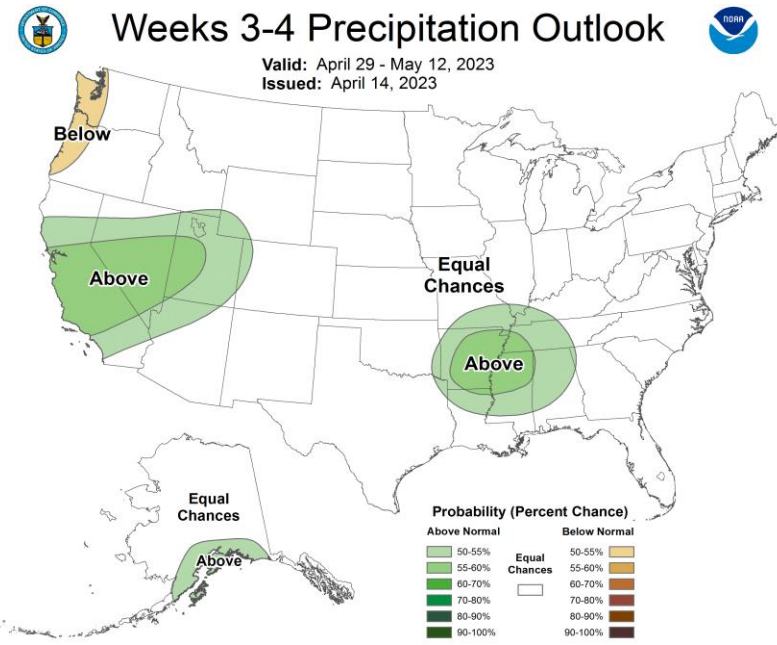
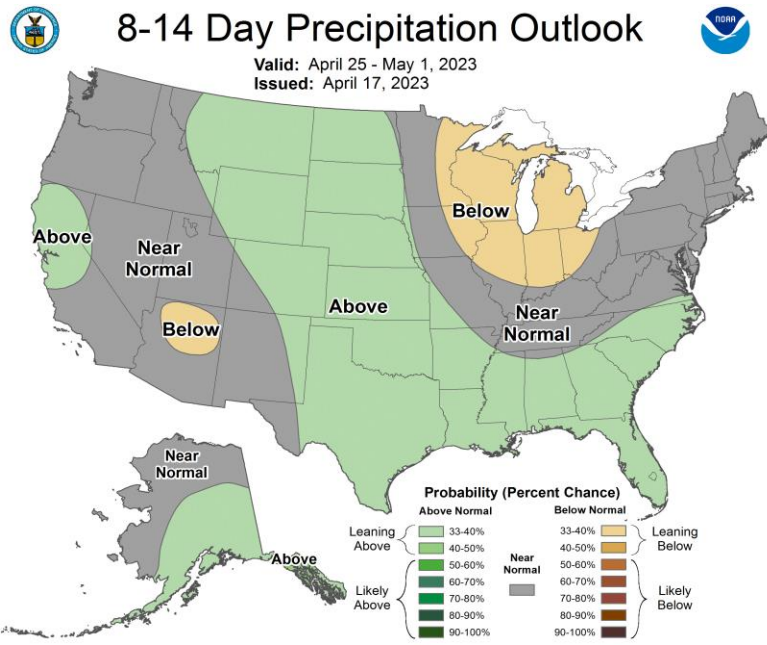
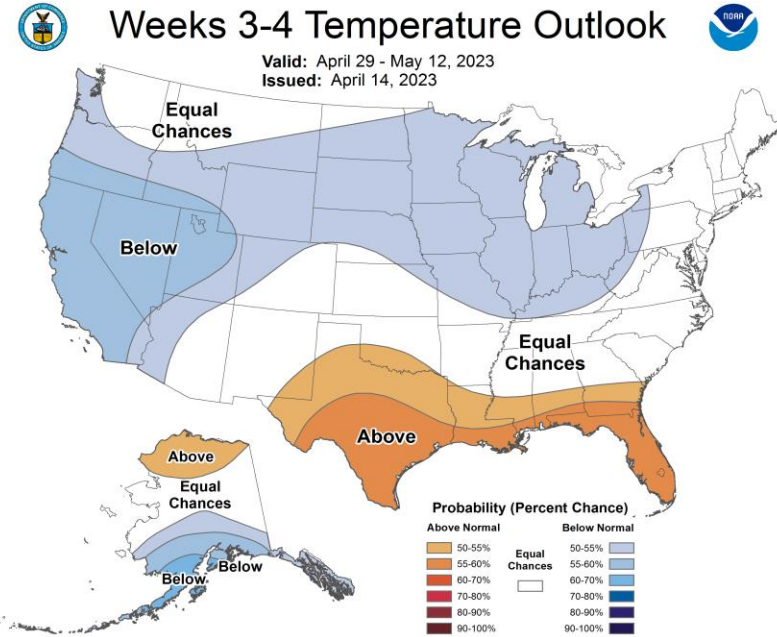
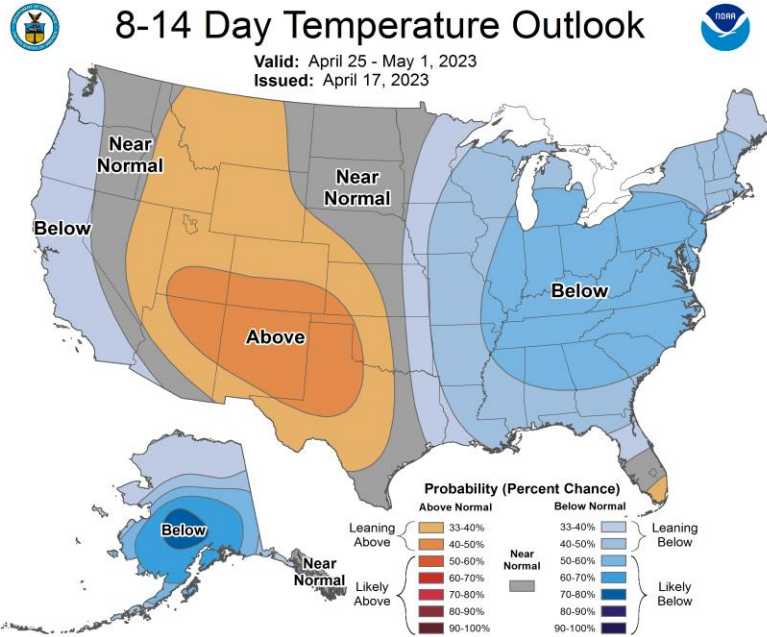
MAM MJO Composite: GLBT (degC)



# Mean 500-hPa Height Anomaly Forecasts:



# Official Temperature & Precipitation Forecasts:





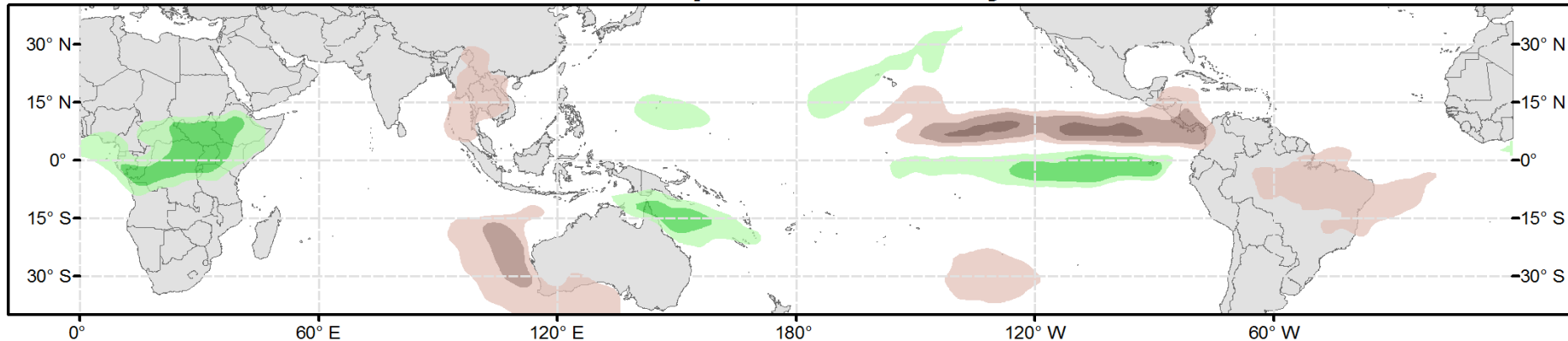


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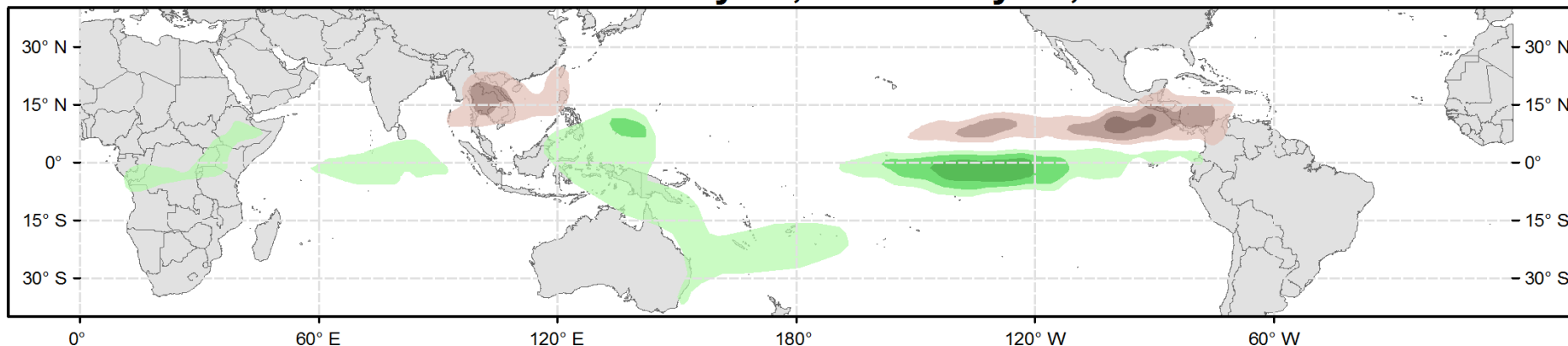
Climate Prediction Center



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